INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-05-01
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	1	ROTHERMEL et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, April 18-21, 1995, 12 pages	
	2	ROTHERMEL et al., "Clock Hierarchies- An Abstraction for Grouping and Controlling Media Streams," University of Stuttgart Institute of Parallel and Distributed High-Performance Systems, January 1996, 23 pages	
	3	ROTHERMEL et al., "Synchronization in Joint-Viewing Environments," University of Stuttgart Institute of Parallel and Distributed High-Performance Systems, 1992, 13 pages	
	4	ROTHERMEL, Kurt, "State-of-the-Art and Future Research in Stream Synchronization," University of Stuttgart, 3 pages	
	5	'RVL-6 Modular Multi-Room Controller, Installation & Operation Guide," Nile Audio Corporations, 1999, 46 pages	
	6	SCHMANDT et al., "Impromptu: Managing Networked Audio Applications for Mobile Users," 2004, 11 pages.	
	7	SCHULZRINNE H., et al., "RTP: A Transport Protocol for Real-Time Applications, RFC 3550," Network Working Group, 2003, pp. 1-89.	
	8	Simple Network Time Protocol (SNTPI), RFC 1361 (August 1992) (D+M_0397537-46) (10 pages)	
	9	Simple Network Time Protocol (SNTPII), RFC 1769 (March 1995) (D+M_0397663-76) (14 pages)	
	10	Simple Service Discovery Protocol/1.0 Operating without an Arbiter (Oct. 28, 1999) (24 pages)	
	11	Sonos, Inc. v D&M Holdings, D&M Supp Opposition Brief including Exhibits, 17 March 2017, 23 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	12	Sonos, Inc. v. D&M Holdings, Expert Report of Jay P. Kesan including Appendices A-P, Feb. 20, 2017, 776 pages.	
	13	Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' First Amended Answer to Plaintiffs' Third Amended Complaint, provided August 1, 2016, 26 pages.	
	14	Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, provided September 9, 2016, 88 pages.	
	15	Sonos, Inc. v. D&M Holdings Inc. et al., Sonos's Motion to Strike Defendants' New Amended Answer Submitted with their Reply Brief, provided September 15, 2016, 10 pages.	
	16	Sonos, Inc. v. D&M Holdings Inc. et al., Sonos's Opposition to Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided October 31, 2016, 26 pages.	
	17	Sonos, Inc. v. D&M Holdings, Inc. (No. 14-1330-RGA), Defendants' Final Invalidity Contentions (Jan. 18, 2017) (106 pages)	
	18	Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 226, Opinion Denying Inequitable Conduct Defenses, Feb. 6, 2017, updated, 5 pages.	
	19	Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 242, US District Judge Andrews 101 Opinion, Mar. 13, 2017, 16 pages.	
	20	Sonos, Inc. v D&M Holdings, Sonos Supp Opening Markman Brief including Exhibits, 3 March 2017, 17 pages	
	21	Sonos, Inc. v. D&M Holdings, Sonos Supp Reply Markman Brief including Exhibits, 29 March 2017, 36 pages	
	22	Sonos, Inc. v. D&M Holdings Inc. et al., Complaint for Patent Infringement, filed October 21, 2014, 20 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	23	Sonos, Inc. v. D&M Holdings Inc. et al., Declaration of Steven C. Visser, executed September 9, 2016, 40 pages.	
	24	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 1: Defendants' Invalidity Contentions for U.S. Patent No. 7,571,014 filed September 16, 2016, 270 pages.	
	25	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Patent No. 9,219,959 filed September 27, 2016, 236 pages.	
	26	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 11: Defendants' Invalidity Contentions for U.S. Design Patent No. D559,197 filed September 27, 2016, 52 pages.	
	27	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 2: Defendants' Invalidity Contentions for U.S. Patent No. 8,588,949 filed September 27, 2016, 224 pages.	
	28	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 3: Defendants' Invalidity Contentions for U.S. Patent No. 8,843,224 filed September 27, 2016, 147 pages.	
	29	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 4: Defendants' Invalidity Contentions for U.S. Patent No. 8,938,312 filed September 27, 2016, 229 pages.	
	30	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 5: Defendants' Invalidity Contentions for U.S. Patent No. 8,938,637 filed September 27, 2016, 213 pages.	
	31	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 6: Defendants' Invalidity Contentions for U.S. Patent No. 9,042,556 filed September 27, 2016, 162 pages.	
	32	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 7: Defendants' Invalidity Contentions for U.S. Patent No. 9,195,258 filed September 27, 2016, 418 pages.	
	33	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 8: Defendants' Invalidity Contentions for U.S. Patent No. 9,202,509 filed September 27, 2016, 331 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	34	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 9: Defendants' Invalidity Contentions for U.S. Patent No. 9,213,357 filed September 27, 2016, 251 pages.	
	35	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions, filed September 14, 2016, 100 pages.	
	36	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 1: Defendants' Invalidity Contentions for U.S. Patent No. 7,571,014 filed April 15, 2016, 161 pages.	
	37	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Patent No. 9,213,357 filed April 15, 2016, 244 pages.	
	38	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants' Invalidity Contentions for U.S. Patent No. 9,219,959 filed April 15, 2016, 172 pages.	
	39	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 12: Defendants' Invalidity Contentions for U.S. Design Patent No. D559,197 filed April 15, 2016, 36 pages.	
	40	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 2: Defendants' Invalidity Contentions for U.S. Patent No. 8,588,949 filed April 15, 2016, 112 pages.	
	41	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 3: Defendants' Invalidity Contentions for U.S. Patent No. 8,843,224 filed April 15, 2016, 118 pages.	
	42	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 4: Defendants' Invalidity Contentions for U.S. Patent No. 8,938,312 filed April 15, 2016, 217 pages.	
	43	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 5: Defendants' Invalidity Contentions for U.S. Patent No. 8,938,637 filed April 15, 2016, 177 pages.	
	44	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 6: Defendants' Invalidity Contentions for U.S. Patent No. 9,042,556 filed April 15, 2016, 86 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	45	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 7: Defendants' Invalidity Contentions for U.S. Patent No. 9,130,771 filed April 15, 2016, 203 pages.	
	46	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 8: Defendants' Invalidity Contentions for U.S. Patent No. 9,195,258 filed April 15, 2016, 400 pages.	
	47	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 9: Defendants' Invalidity Contentions for U.S. Patent No. 9,202,509 filed April 15, 2016, 163 pages.	
	48	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions, filed April 15, 2016, 97 pages.	
	49	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Preliminary Identification of Indefinite Terms, provided July 29, 2016, 8 pages	
	50	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Preliminary Identification of Prior Art References, provided July 29, 2016, 5 pages.	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-05-01
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	1	Notice of Allowance mailed on 17 July 2015, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 20 pages	
	2	Notice of Allowance mailed on 19 May 2015, issued in connection with U.S. Patent Application No. 13/907666, filed on 31 May 2013, 7 pages	
	3	Notice of Allowance mailed on 19 October 2016, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 14 pages	
	4	Notice of Allowance mailed on 21 September 2015, issued in connection with U.S. Patent Application No. 13/297000, filed on 15 November 2011, 11 pages.	
	5	Notice of Allowance mailed on 22 December 2016, issued in connection with U.S. Patent Application No. 15/080716, filed on 25 March 2016, 9 pages.	
	6	Notice of Allowance mailed on 22 September 2015, issued in connection with U.S. Patent Application No. 13/888203, filed on 06 May 2013, 7 pages	
	7	Notice of Allowance mailed on 24 September 2015, issued in connection with U.S. Patent Application No. 13/705174, filed on 05 December 2012, 7 pages.	
	8	Notice of Allowance mailed on 24 September 2015, issued in connection with U.S. Patent Application No. 14/184935, filed on 20 February 2014, 7 pages	
	9	Notice of Allowance mailed on 25 September 2014, issued in connection with U.S. Patent Application No. 14/176808, filed on 10 February 2014, 5 pages	
	10	Notice of Allowance mailed on 27 August 2015, issued in connection with U.S. Patent Application No. 13/705177, filed on 05 December 2012, 34 pages.	
	11	Notice of Allowance mailed on 27 August 2015, issued in connection with U.S. Patent Application No. 14/505027, filed on 02 October 2014, 18 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	12	Notice of Allowance mailed on 27 December 2011, issued in connection with U.S. Patent Application No. 10/816217, filed 01 April 2004, 15 pages	
	13	Notice of Allowance mailed on 28 March 2017, issued in connection with U.S. Patent Application No. 15155149, filed on 16 May 2016, 7 pages.	
	14	Notice of Allowance mailed on 29 July 2015, issued in connection with U.S. Patent Application No. 13/359976, filed on 27 January 2012, 28 pages	
	15	Notice of Allowance mailed on 29 July 2015, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 9 pages	
	16	Notice of Allowance mailed on 30 August 2016, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 7 pages	
	17	Notice of Allowance mailed on 30 July 2015, issued in connection with U.S. Patent Application No. 13/705178, filed on05 December 2012, 18 pages	
	18	Notice of Allowance mailed on 5 August 2015, issued in connection with U.S. Patent Application No. 13/435776, filed on 30 March 2012, 26 pages	
	19	Notice of Allowance mailed on 6 July 2015, issued in connection with U.S. Patent Application No. 13/297000, filed on 15 November 2011, 24 pages.	
	20	NUTZEL et al., "Sharing Systems for Future HiFi Systems," IEEE, 2004, 9 pages.	
	21	Palm, Inc., "Handbook for the Palm VII Handheld," May 2000, 311 pages	
	22	Parasound Zpre2 Zone Preamplifier with PTZI Remote Control, 2005, 16 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	23	PARK et al., "Group Synchronization in MultiCast Media Communications," Proceedings of the 5th Research on Multicast Technology Workshop, 2003, 5 pages	
	24	PILLAI et al., "A Method to Improve the Robustness of MPEG Video Applications over Wireless Networks," Kent Ridge Digital Labs, 2000, 15 pages.	
	25	Polycom Conference Composer User Guide, copyright 2001, 29 pages	
	26	Pre-Interview First Office Action mailed on 10 March 2015, issued in connection with U.S. Patent Application No. 14/505027, filed on 02 October 2014, 4 pages.	
	27	Presentations at WinHEC 2000, May 2000, 138 pages	
	28	PRISMIQ, Inc., "PRISMIQ Media Player User Guide," 2003, 44 pages.	
	29	Proficient Audio Systems M6 Quick Start Guide, 2011, 5 pages.	
	30	Proficient Audio Systems: Proficient Editor Advanced Programming Guide, 2007, 40 pages.	
	31	Programming Interface for WL54040 Dual-Band Wireless Transceiver, AVAGO0066, Agere Systems, May 2004, 16 pages	
	32	Radio Shack, "Auto-Sensing 4-Way Audio/Video Selector Switch," 2004, 1 page	
	33	RadioShack, Pro-2053 Scanner, 2002 Catalog, part 1, 100 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	34	RadioShack, Pro-2053 Scanner, 2002 Catalog, part 2, 100 pages	
	35	RadioShack, Pro-2053 Scanner, 2002 Catalog, part 3, 100 pages	
	36	RadioShack, Pro-2053 Scanner, 2002 Catalog, part 4, 100 pages	
	37	RadioShack, Pro-2053 Scanner, 2002 Catalog, part 5, 46 pages	
	38	RANGAN et al., "Feedback Techniques for Continuity and Synchronization in Multimedia Information Retrieval," ACM Transactions on Information Systems, 1995, pp. 145-176, Vol. 13, No. 2	
	39	Real Time Control Protocol (RTCP) and Realtime Transfer Protocol (RTP), RFC 1889 (Jan. 1996) (D+M_0397810-84) (75 pages)	
	40	Realtime Streaming Protocol (RTSP), RFC 2326 (Apr. 1998) (D+M_0397945-8036) (92 pages)	
	41	Realtime Transport Protocol (RTP), RFC 3550 (July 2003) (D+M_0398235-323) (89 pages)	
	42	Re-Exam Final Office Action mailed on 5 August 2015, issued in connection with U.S. Patent Application No. 90/013423, filed on 5 January 2015, 25 pages.	
	43	Re-Exam Non-Final Office Action mailed on 22 April 2015, issued in connection with U.S. Patent Application No. 90/013423, filed on 05 January 2015, 16 pages.	
	44	REID, Mark, "Multimedia conferencing over ISDN and IP networks using ITU-T H-series recommendations: architecture, control and coordination," Computer Networks, 1999, pp. 225-235, Vol. 31	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	45	RenderingControl:1 Service Template Version 1.01 For UPnP, Version 1.0, (June 25, 2002) (SONDM000115187-249) (63 pages).	
	46	Renkus Heinz Manual; available for sale at least 2004, 6 pages	
	47	"Residential Distributed Audio Wiring Practices," Leviton Network Solutions, 2001, 13 pages	
	48	ROLAND CORPORATION, "Roland announces BA-55 Portable PA System," press release, April 6, 2011, 2 pages.	
	49	ROTHERMEL et al., "An Adaptive Protocol for Synchronizing Media Streams," Institute of Parallel and Distributed High-Performance Systems (IPVR), 1997, 26 pages	
	50	ROTHERMEL et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, 1995, 13 pages	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-04-27
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	1	ISHIBASHI et al., "A Group Synchronization Mechanism for Live Media in Multicast Communications," IEEE Global Telecommunications Conference, 1997, pp. 746-752, Vol. 2	
	2	ISHIBASHI et al., "A Group Synchronization Mechanism for Stored Media in Multicast Communications," IEEE Information Revolution and Communications, 1997, pp. 692-700, Vol. 2	
	3	Issues with Mixed IEEE 802.b/802.11g Networks, AVAGO0058, Agere Systems, February 2004, 5 pages	
	4	JAPANESE PATENT OFFICE, Decision of Rejection mailed on 08 July 2014, issued in connection with Japanese Patent Application No. 2012-178711, 3 pages	
	5	JAPANESE PATENT OFFICE, Final Office Action mailed on 08 November 2016, issued in connection with Japanese Patent Application No. 2015-520286, 5 pages.	
	6	JAPANESE PATENT OFFICE, Notice of Rejection, mailed on 03 February 2015, issued in connection with Japanese Patent Application No. 2014-521648, 7 pages.	
	7	JAPANESE PATENT OFFICE, Notice of Rejection mailed on 15 September 2015, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages	
	8	JAPANESE PATENT OFFICE, Office Action mailed on 22 November 2016, issued in connection with Japanese Application No. 2015-520288, 6 pages.	
	9	JAPANESE PATENT OFFICE, Office Action mailed on 24 May 2016, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages.	
	10	JAPANESE PATENT OFFICE, Office Action mailed on 29 March 2016, issued in connection with Japanese Patent Application No. JP2015-520288, 12 pages	
	11	JAPANESE PATENT OFFICE, Office Action mailed on 29 November 2016, issued in connection with Japanese Application No. 2015-516169, 4 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	12	JAPANESE PATENT OFFICE, Office Action Summary mailed on 02 February 2016, issued in connection with Japanese Patent Application No. 2015-520286, 6 pages.	
	13	JAPANESE PATENT OFFICE, Office Action Summary mailed on 19 November 2013, issued in connection with Japanese Patent Application No. 2012-178711, 5 pages	
	14	JO et al., "Synchronized One-to-many Media Streaming with Adaptive Playout Control," Proceedings of SPIE, 2002, pp. 71-82, Vol. 4861	
	15	JONES, Stephen, "Dell Digital Audio Receiver: Digital upgrade for your analog stereo," Analog Stereo, 24 June 2000 retrieved 18 June 2014, 2 pages	
	16	Lake Processors: Lake® LM Series Digital Audio Processors Operation Manual, 2011, 71 pages.	
	17	LEVERGOOD et al., "AudioFile: A Network-Transparent System for Distributed Audio Applications," Digital Equipment Corporation, 1993, 109 pages.	
	18	LG: RJP-201M Remote Jack Pack Installation and Setup Guide, 2010, 24 pages.	
	19	LIENHART et al., "On the Importance of Exact Synchronization for Distributed Audio Signal Processing," Session L: Poster Session II - ICASSP'03 Papers, 2002, 1 page	
	20	LinkSys by Cisco, Wireless Home Audio Controller, Wireless-N Touchscreen Remote DMRW1000 Datasheet, Copyright 2008, 2 pages	
	21	LinkSys by Cisco, Wireless Home Audio Controller, Wireless-N Touchscreen Remote DMRW1000 User Guide, Copyright 2008, 64 pages	
	22	LinkSys by Cisco, Wireless Home Audio Player, Wireless-N Music Extender DMP100 Quick Installation Guide, Copyright 2009, 32 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	23	LinkSys by Cisco, Wireless Home Audio Player, Wireless-N Music Extender DMP100 User Guide, Copyright 2008,65 pages.	
	24	Linux SDK for UPnP Devices v. 1.2 (Sep. 6, 2002) (101 pages)	
	25	LIU et al., "A synchronization control scheme for real-time streaming multimedia applications," Packet Video, 2003, 10 pages, Vol. 2003	
	26	LIU et al., "Adaptive Delay Concealment for Internet Voice Applications with Packet-Based Time-Scale Modification," Information Technologies 2000, pp. 91-102	
	27	LOUDERBACK, Jim, "Affordable Audio Receiver Furnishes Homes With MP3," TechTV Vault. 28 June 2000 retrieved 10 July 2014, 2 pages	
	28	Maniactools, "Identify Duplicate Files by Sound," 09/28/2010, http://www.maniactools.com/soft/music-duplicate-remover/identify-duplicate-files-by-sound.shtml	
	29	MediaRenderer:1 Device Template Version 1.01 For UPnP, Version 1.0 (June 25, 2002) (12 pages)	
	30	MediaServer:1 Device Template Version 1.01 For UPnP, Version 1.0 (June 25, 2002) (12 pages)	
	31	Microsoft, Universal Plug and Play (UPnP) Client Support ("Microsoft UPnP") (August 2001) (D+M_0402007-24) (18 pages)	
	32	Microsoft Window's XP Reviewer's Guide (August 2001) (D+M_0402225-85) (61 pages)	
	33	MILLS David L., "Network Time Protocol (Version 3) Specification, Implementation and Analysis," Network Working Group, March 1992, 7 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	34	MILLS, David L., "Precision Synchronization of Computer Network Clocks," ACM SIGCOMM Computer Communication Review, 1994, pp. 28-43, Vol. 24, No. 2.	
	35	"Model MRC44 Four Zone - Four Source Audio/Video Controller/Amplifier System," Xantech Corporation, 2002, 52 pages	
	36	MOTOROLA, "Simplefi, Wireless Digital Audio Receiver, Installation and User Guide," December 31, 2001, 111 pages.	
	37	Network Time Protocol (NTP), RFC 1305 (Mar. 1992) (D+M_0397417-536) (120 pages)	
	38	NILSSON, M., "ID3 Tag Version 2," March 26,1998, 28 pages	
	39	Non-Final Office Action mailed 01 May 2014, issued in connection with U.S. Patent Application No. 14/184522, filed 19 February 2014, 31 pages	
	40	Non-Final Office Action mailed 05 December 2013, issued in connection with U.S. Patent Application No. 13/827653, filed 14 March 2013, 28 pages	
	41	Non-Final Office Action mailed 05 January 2012, issued in connection with U.S. Patent Application No. 13/298090, filed on 16 November 2011, 40 pages	
	42	Non-Final Office Action mailed 06 May 2014, issued in connection with U.S. Paten Application No. 13/705176, filed 05 December 2012, 23 pages	
	43	Non-Final Office Action mailed 07 September 2016, issued in connection with U.S. Patent Application No. 13/864248, filed 17 April 2013, 12 pages.	
	44	Non-final Office Action mailed 10 April 2013, issued in connection with U.S. Patent Application No. 13/619237, filed 14 September 2012, 10 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	45	Non-Final Office Action mailed 12 May 2014, issued in connection with U.S. Patent Application No. 14/184528, filed 19 February 2014, 23 pages	
	46	Non-Final Office Action mailed 14 May 2014, issued in connection with U.S. Patent Application No. 13/848932, filed 22 March 2013, 14 pages	
	47	Non-Final Office Action mailed 17 June 2014, issued in connection with U.S. Patent Application No. 14/176808, filed 10 February 2014, 6 pages	
	48	Non-Final Office Action mailed 18 December 2013, issued in connection with U.S. Patent Application No. 13/907666, filed 31 May 2013, 12 pages	
	49	Non-Final Office Action mailed 18 January 2008, issued in connection with U.S. Patent Application No. 10/816217, filed 01 April 2004, 38 pages	
	50	Non-Final Office Action mailed 19 April 2010, issued in connection with U.S. Patent Application No. 11/801468, filed 09 May 2007, 16 pages	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-04-26
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	1	Non-Final Office Action mailed on 23 October 2014, issued in connection with U.S. Patent Application No. 13/888203, filed on 06 May 2013, 9 pages	
	2	Non-final Office Action mailed on 24 October 2014, issued in connection with U.S. Patent Application No. 13/435776, filed 30 March 2012, 14 pages	
	3	Non-Final Office Action mailed on 26 February 2015, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 25 pages.	
	4	Non-Final Office Action mailed on 26 March 2015, issued in connection with U.S. Patent Application No. 14/184528, filed on 19 February 2014, 18 pages	
	5	Non-Final Office Action mailed on 27 June 2008, issued in connection with U.S. Patent Application No. 10/861653, filed on 05 June 2004, 19 pages.	
	6	Non-Final Office Action mailed on 27 March 2015, issued in connection with U.S. Patent Application No. 13/705178, filed on 05 December 2012, 14 pages.	
	7	Non-Final Office Action mailed on 28 December 2015, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 29 pages.	
	8	Non-Final Office Action mailed on 29 November 2016, issued in connection with U.S. Patent Application No. 13/894179, filed on 14 May 2013, 14 pages	
	9	Non-Final Office Action mailed on 30 April 2012, issued in connection with U.S. Patent Application No. 13/204511, filed on 05 August 2011, 30 pages	
	10	Non-Final Office Action mailed on 30 January 2015, issued in connection with U.S. Patent Application No. 14/504812, filed on 02 October 2014, 13 pages	
	11	Non-Final Office Action mailed on 30 January 2015, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 29 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	12	Non-Final Office Action mailed on 30 November 2016, issued in connection with U.S. Patent Application No. 15/243186, filed on 22 August 2016, 12 pages	
	13	Non-Final Office Action mailed on 30 September 2016, issued in connection with U.S. Patent Application No. 13/864249, filed on 17 April 2013, 12 pages	
	14	North American MPEG-2 Information, "The MPEG-2 Transport Stream," Retrieved from the Internet: URL: http://www.coolstf.com/mpeg/#ts, 2006, pp. 1-5.	
	15	Notice of Allowance mailed 31 January 2013, issued in connection with U.S. Patent Application No. 13/298090, filed on 16 November 2011, 19 pages	
	16	Notice of Allowance mailed on 01 December 2016, issued in connection with U.S. Patent Application No. 15/088283, filed on 01 April 2016, 9 pages	
	17	Notice of Allowance mailed on 02 December 2016, issued in connection with U.S. Patent Application No. 15/088532, filed on 01 April 2016, 9 pages	
	18	Notice of Allowance mailed on 02 December 2016, issued in connection with U.S. Patent Application No. 15/088678, filed on 01 April 2016, 9 pages	
	19	Notice of Allowance mailed on 02 December 2016, issued in connection with U.S. Patent Application No. 15/089758, filed on 04 April 2016, 9 pages	
	20	Notice of Allowance mailed on 02 December 2016, issued in connection with U.S. Patent Application No. 15/155149, filed on 16 May 2016, 9 pages	
	21	Notice of Allowance mailed on 02 July 2015, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 17 pages	
	22	Notice of Allowance mailed on 02 July 2015, issued in connection with U.S. Patent Application No. 13/888203, filed on 06 May 2013, 19 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	23	Notice of Allowance mailed on 02 July 2015, issued in connection with U.S. Patent Application No. 14/184935, filed on 20 February 2014, 23 pages	
	24	Notice of Allowance mailed on 03 April 2017, issued in connection with U.S. Patent Application No. 15088678, filed on 01 April 2016, 8 pages.	
	25	Notice of Allowance mailed on 03 September 2015, issued in connection with U.S. Patent Application No. 13/705174, filed on 05 December 2012, 4 pages.	
	26	Notice of Allowance mailed on 04 August 2015, issued in connection with U.S. Patent Application No. 14/516867, filed on 17 October 2014, 13 pages	
	27	Notice of Allowance mailed on 05 October 2012, issued in connection with U.S. Patent Application No. 13/204511, filed on 05 August 2011, 11 pages	
	28	Notice of Allowance mailed on 06 March 2014, issued in connection with U.S. Patent Application No. 13/827653, filed 14 March 2013, 17 pages	
	29	Notice of Allowance mailed on 06 May 2011, issued in connection with U.S. Patent Application No. 11/801468, filed 09 May 2007, 10 pages.	
	30	Notice of Allowance mailed on 06 September 2013, issued in connection with U.S. Patent Application No. 13/619237, filed on 14 September 2012, 10 pages	
	31	Notice of Allowance mailed on 07 April 2016, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 40 pages	
	32	Notice of Allowance mailed on 07 December 2016, issued in connection with U.S. Patent Application No. 15/156392, filed on 17 May 2016, 9 pages	
	33	Notice of Allowance mailed on 07 October 2015, issued in connection with U.S. Patent Application No. 14/184526, filed on 19 February 2014, 7 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	34	Notice of Allowance mailed on 09 March 2017, issued in connection with U.S. Patent Application No. 15/080591, filed on 25 March 2016, 7 pages	
	35	Notice of Allowance mailed on 09 October 2015, issued in connection with U.S. Patent Application No. 13/435739, filed on 30 March 2012, 4 pages.	
	36	Notice of Allowance mailed on 10 August 2015, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 9 pages	
	37	Notice of Allowance mailed on 10 February 2017, issued in connection with U.S. Application No. 14/290493, filed on 29 May 2014, 13 pages	
	38	Notice of Allowance mailed on 10 November 2011, issued in connection with U.S. Patent Application No. 11/906702, filed on 02 October 2007, 17 pages	
	39	Notice of Allowance mailed on 11 April 2016, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 21 pages	
	40	Notice of Allowance mailed on 11 January 2016, issued in connection with U.S. Patent Application No. 14/565544, filed on 09 December 2014, 5 pages	
	41	Notice of Allowance mailed on 12 August 2015, issued in connection with U.S. Patent Application No. 13/435739, filed on 30 March 2012, 27 pages	
	42	Notice of Allowance mailed on 13 December 2016, issued in connection with U.S. Patent Application No. 15/080591, filed on 25 March 2016, 9 pages.	
	43	Notice of Allowance mailed on 13 July 2015, issued in connection with U.S. Patent Application No. 14/184526, filed on 19 February 2014, 22 pages	
	44	Notice of Allowance mailed on 13 November 2013, issued in connection with U.S. Patent Application No. 13/724048, filed 21 December 2012, 7 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	45	Notice of Allowance mailed on 13 October 2015, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 7 pages.	
	46	Notice of Allowance mailed on 14 December 2016, issued in connection with U.S. Patent Application No. 15/088906, filed on 01 April 2016, 9 pages.	
	47	Notice of Allowance mailed on 14 June 2012, issued in connection with U.S. Patent Application No. 12/035112, filed on 21 February 2008, 9 pages.	
	48	Notice of Allowance mailed on 15 July 2015, issued in connection with U.S. Patent Application No. 13/705174, filed on 05 December 2012, 18 pages	
	49	Notice of Allowance mailed on 15 March 2017, issued in connection with U.S. Patent Application No. 15/080716, filed on 25 March 2016, 7 pages.	
	50	Notice of Allowance mailed on 16 June 2009, issued in connection with U.S. Patent Application No. 10/861653, filed on 05 June 2004, 11 pages.	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-04-26
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	1	Non-Final Office Action mailed 19 March 2013, issued in connection with U.S. Patent Application No. 13/724048, filed 21 December 2012, 9 pages	
	2	Non-Final Office Action mailed 21 June 2011, issued in connection with U.S. Patent Application No. 10/816217, filed 01 April 2004, 13 pages	
	3	Non-Final Office Action mailed 22 January 2009, issued in connection with U.S. Patent Application No. 10/816217, filed 01 April 2004, 18 pages	
	4	Non-Final Office Action mailed 25 July 2014, issued in connection with U.S. Patent Application No. 14/184526, filed 19 February 2014, 9 pages	
	5	Non-Final Office Action mailed 25 July 2014, issued in connection with U.S. Patent Application No. 14/184935, filed 20 February 2014, 11 pages	
	6	Non-Final Office Action mailed 25 June 2010, issued in connection with U.S. Patent Application No. 10/816217, filed 01 April 2004, 17 pages	
	7	Non-Final Office Action mailed 25 November 2013, issued in connection with U.S. Patent Application No. 13/533105, filed 26 June 2012, 19 pages	
	8	Non-Final Office Action mailed 27 May 2014, issued in connection with U.S. Patent Application No. 14/186850, filed 21 February 2014, 13 pages	
	9	Non-Final Office Action mailed 29 February 2012, issued in connection with U.S. Patent Application No. 13/297000, filed on 15 November 2011, 10 pages	
	10	Non-Final Office Action mailed 29 November 2010, issued in connection with U.S. Patent Application No. 11/801468, filed on 09 May 2007, 17 pages	
	11	Non-Final Office Action mailed 30 July 2013 issued in connection with U.S. Patent Application No. 13/724048, filed on 21 December 2012, 7 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	12	Non-Final Office Action mailed 31 July 2014, issued in connection with U.S. Patent Application No.13/533105, filed on 26 June 2012, 31 pages	
	13	Non-Final Office Action mailed on 01 December 2014, issued in connection with U.S. Patent Application No. 14/516867, filed on 17 October 2014, 11 pages	
	14	Non-Final Office Action mailed on 01 June 2016, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 21 pages	
	15	Non-Final Office Action mailed on 03 January 2017, issued in connection with U.S. Patent Application No. 14/808875, filed on 24 July 2015, 10 pages	
	16	Non-Final Office Action mailed on 03 June 2015, issued in connection with U.S. Patent Application No. 14/564544, filed on 09 December 2014, 7 pages.	
	17	Non-Final Office Action mailed on 03 November 2016, issued in connection with U.S. Patent Application No. 14/184528, filed on 19 February 2014, 17 pages	
	18	Non-Final Office Action mailed on 04 June 2015, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 16 pages.	
	19	Non-Final Office Action mailed on 04 March 2015, issued in connection with U.S. Patent Application No. 13/435776, filed on 30 March 2012, 16 pages.	
	20	Non-Final Office Action mailed on 04 October 2016, issued in connection with U.S. Patent Application No. 15/089758, filed on 04 April 2016, 9 pages	
	21	Non-Final Office Action mailed on 05 October 2016, issued in connection with U.S. Patent Application No. 13/864250, filed on 17 April 2013, 10 pages	
	22	Non-Final Office Action mailed on 05 October 2016, issued in connection with U.S. Patent Application No. 13/864252, filed on 17 April 2013, 11 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	23	Non-Final Office Action mailed on 06 October 2016, issued in connection with U.S. Patent Application No. 15/088678, filed on 01 April 2016, 9 pages	
	24	Non-Final Office Action mailed on 07 October 2016, issued in connection with U.S. Patent Application No. 15/156392, filed on 17 May 2016, 8 pages	
	25	Non-Final Office Action mailed on 08 March 2016, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 13 pages	
	26	Non-Final Office Action mailed on 09 August 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 31 pages	
	27	Non-Final Office Action mailed on 10 March 2011, issued in connection with U.S. Patent Application No. 12/035112, filed on 21 February 2008, 12 pages.	
	28	Non-Final Office Action mailed on 10 May 2016, issued in connection with U.S. Patent Application No. 14/504812, filed 02 October 2014, 22 pages	
	29	Non-Final Office Action mailed on 10 November 2016, issued in connection with U.S. Patent Application No. 15/243355, filed on 22 August 2016, 11 pages	
	30	Non-Final Office Action mailed on 12 January 2017, issued in connection with U.S. Patent Application No. 13/895076, filed on 15 May 2013, 10 pages	
	31	Non-Final Office Action mailed on 12 June 2015, issued in connection with U.S. Patent Application No. 13/848932, filed on 22 March 2013, 16 pages	
	32	Non-Final Office Action mailed on 12 March 2015, issued in connection with U.S. Patent Application No. 13/705174, filed on 05 December 2012, 13 pages.	
	33	Non-Final Office Action mailed on 13 January 2016, issued in connection with U.S. Patent Application No. 14/184528, filed on 19 February 2014, 14 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	34	Non-Final Office Action mailed on 13 March 2015, issued in connection with U.S. Patent Application No. 13/705177, filed 05 December 2012, 15 pages.	
	35	Non-Final Office Action mailed on 16 November 2016, issued in connection with U.S. Patent Application No. 15/228639, filed on 04 August 2016, 15 pages	
	36	Non-Final Office Action mailed on 17 November 2014, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 11 pages	
	37	Non-Final Office Action mailed on 18 February 2009, issued in connection with U.S. Patent Application No. 10/861653, filed on 05 June 2004, 18 pages.	
	38	Non-Final Office Action mailed on 18 November 2014, issued in connection with U.S. Patent Application No. 13/435739, filed on 30 March 2012, 10 pages	
	39	Non-Final Office Action mailed on 19 June 2015, issued in connection with U.S. Patent Application No. 13/533105 filed on 26 June 2012, 38 pages.	
	40	Non-Final Office Action mailed on 19 November 2014, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 9 pages	
	41	Non-Final Office Action mailed on 20 August 2009, issued in connection with U.S. Patent Application No. 11/906702, filed on 02 October 2007, 27 pages	
	42	Non-Final Office Action mailed on 21 September 2016, issued in connection with U.S. Patent Application No. 15/080591, filed on 25 March 2016, 9 pages	
	43	Non-Final Office Action mailed on 21 September 2016, issued in connection with U.S. Patent Application No. 15/080716, filed on 25 March 2016, 8 pages	
	44	Non-Final Office Action mailed on 21 September 2016, issued in connection with U.S. Patent Application No. 15/088283, filed on 01 April 2016, 9 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	45	Non-Final Office Action mailed on 21 September 2016, issued in connection with U.S. Patent Application No. 15/088532, filed on 01 April 2016, 9 pages	
	46	Non-Final Office Action mailed on 22 September 2016, issued in connection with U.S. Patent Application No. 15/088906, filed on 01 April 2016, 9 pages	
	47	Non-Final Office Action mailed on 22 September 2016, issued in connection with U.S. Patent Application No. 15/155149, filed on 16 May 2016, 7 pages	
	48	Non-Final Office Action mailed on 23 June 2015, issued in connection with U.S. Patent Application No. 13/705176, filed on 05 December 2012, 30 pages	
	49	Non-Final Office Action mailed on 23 October 2014, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 11 pages	
	50	Non-Final Office Action mailed on 23 October 2014, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 11 pages	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-04-25
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	90013882
Filing Date	2016-12-27
First Named Inventor	
Art Unit	3992
Examiner Name	STEELMAN, Mary J.
Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	RE41608		2010-08-31	BLAIR; Christopher Douglas et al.	
	2	D260764	S	1981-09-15	CASTAGNA; John F. et al.	
	3	D279779	S	1985-07-23	TAYLOR; Terrance N.	
	4	D293671	S	1988-01-12	BEAUMONT; Thomas G.	
	5	D301037	S	1989-05-09	MATSUDA; Hari	
	6	D304443	S	1989-11-07	GRINYER; Clive A. et al.	
	7	D313023	S	1990-12-18	KOLENDA; David F. et al.	
	8	D313398	S	1991-01-01	GILCHRIST; Thomas L.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	9	D313600	S	1991-01-08	WEBER; Edward W.	
	10	D320598	S	1991-10-08	AUERBACH; Marc et al.	
	11	D322609	S	1991-12-24	PATTON; Douglas M.	
	12	D326450	S	1992-05-26	WATANABE; Katsuhito	
	13	D327060	S	1992-06-16	WACHOB; David E. et al.	
	14	D331388	S	1992-12-01	DAHNERT; Dean L. et al.	
	15	D333135	S	1993-02-09	WACHOB; David E. et al.	
	16	D350531	S	1994-09-13	TSUJI; Masao	
	17	D350962	S	1994-09-27	REARDON; John D. et al.	
	18	D354059	S	1995-01-03	HENDRICKS; John S.	
	19	D354751	S	1995-01-24	HERSH; Joseph B. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	20	D356093	S	1995-03-07	MCCAULEY; Gilbert L. et al.	
	21	D356312	S	1995-03-14	ALTHANS; Richard K.	
	22	D357024	S	1995-04-04	TOKIYAMA; Masaru et al.	
	23	D362446	S	1995-09-19	GASIOREK; John G. et al.	
	24	D363933	S	1995-11-07	STARCK; Philippe	
	25	D364877	S	1995-12-05	TOKIYAMA; Masaru et al.	
	26	D364878	S	1995-12-05	GREEN; Dewayne E. et al.	
	27	D365102	S	1995-12-12	GIOSCIA; Richard	
	28	D366044	S	1996-01-09	HARA; Masayuki et al.	
	29	D372716	S	1996-08-13	THORNE; Edwin	
	30	D377651	S	1997-01-28	BIASOTTI; Mark et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	31	D379816	S	1997-06-10	LAITURI; David W. et al.	
	32	D380752	S	1997-07-08	HANSON; Bruce D.	
	33	D382271	S	1997-08-12	AKWIWU; Ndukwe	
	34	D384940	S	1997-10-14	KONO; Kenichiro et al.	
	35	D387352	S	1997-12-09	KANEKO; Steven T. et al.	
	36	D388792	S	1998-01-06	NYKERK; Michael	
	37	D389143	S	1998-01-13	WICKS; James E.	
	38	D392641	S	1998-03-24	FENNER; Knut T.	
	39	D393628	S	1998-04-21	LEDBETTER; Carl J. et al.	
	40	D394659	S	1998-05-26	BIASOTTI; Mark et al.	
	41	D395889	S	1998-07-07	GERBA; George et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	42	D397996	S	1998-09-08	SMITH; Michael A.	
	43	D401587	S	1998-11-24	RUDOLPH; Daniel L.	
	44	D404741	S	1999-01-26	SCHUMAKER; Nevenka et al.	
	45	D405071	S	1999-02-02	GAMBARO; Thomas L.	
	46	D406847	S	1999-03-16	GERBA; George et al.	
	47	D407071	S	1999-03-23	KEATING; Virginia Walker	
	48	D410927	S	1999-06-15	YAMAGISHI; Yoshinobu	
	49	D412337	S	1999-07-27	HAMANO; Masataka	
	50	D415496	S	1999-10-19	GERBA; George et al.	
	51	D416021	S	1999-11-02	GODETTE; Robert G. et al.	
	52	D420006	S	2000-02-01	TONINO; Eduardus Josephus Anna Maria	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	53	D429246	S	2000-08-08	HOLMA; Tapani	
	54	D430143	S	2000-08-29	RENK; Thomas Edward	
	55	D431552	S	2000-10-03	BACKS; Jochen Philipp et al.	
	56	D432525	S	2000-10-24	BEECROFT; Troy C.	
	57	D444475		2001-07-03	LEVEY; Keith P. et al.	
	58	D444475		2001-07-03	LEVEY; Keith P. et al.	
	59	D452520		2001-12-25	GOTHAM; David R. et al.	
	60	D462339		2002-09-03	ALLEN; Paul G. et al.	
	61	D462340		2002-09-03	ALLEN; Paul G. et al.	
	62	D462945		2002-09-17	SKULLEY; Gerald W.	
	63	D466108		2002-11-26	GLODAVA; Derrick A. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	64	D468297		2003-01-07	IKEDA; Tetsuya	
	65	D474763		2003-05-20	TOZAKI; Ray et al.	
	66	D475993		2003-06-17	MEYER; Robert K.	
	67	D476643		2003-07-01	YAMAGISHI; Masayuki	
	68	D477310		2003-07-15	MORANSAIS; Charles	
	69	D478051		2003-08-05	SAGAWA; So	
	70	D478069		2003-08-05	BECK; Benjamin et al.	
	71	D478896		2003-08-26	SUMMERS; Kim Renee	
	72	D479520		2003-09-09	DE; Saulles Stephen	
	73	D481056		2003-10-21	KAWASAKI; Mugio et al.	
	74	D486145		2004-02-03	KAMINSKI; Dariusz S. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	75	D491925		2004-06-22	GRIESAU; Gene W. et al.	
	76	D493148		2004-07-20	SHIBATA; Kumiko et al.	
	77	D495333		2004-08-31	BORSBOOM; Antonious M.	
	78	D496003		2004-09-14	SPIRA; Joel S.	
	79	D496005		2004-09-14	WANG; Carter	
	80	D496335		2004-09-21	SPIRA; Joel S.	
	81	D497363		2004-10-19	OLSON; Mark H. et al.	
	82	D499086		2004-11-30	POLITO; Fred	
	83	D499395		2004-12-07	HSU; Gary	
	84	D499718		2004-12-14	CHEN; Alex	
	85	D500015		2004-12-21	GUBBE; Bernd	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	86	D501477		2005-02-01	HALL; David	
	87	D504872		2005-05-10	UEHARA; Mitsuhiro et al.	
	88	D504885		2005-05-10	ZHANG; Jinsong et al.	
	89	D506463		2005-06-21	DANIELS; Wilfried Johan Paul Ferdinand	
	90	D515072		2006-02-14	LEE; Nikolas Ian	
	91	D515557		2006-02-21	OKULEY; James M.	
	92	D518475		2006-04-04	YANG; Yu-Ching et al.	
	93	D524296		2006-07-04	KITA; Toshiyuki	
	94	D527375		2006-08-29	FLORA; William T. et al.	
	95	3956591		1976-05-11	GATES Jr.; ,William A.	
	96	4105974		1978-08-08	ROGERS; Edwin F.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	97	4296278		1981-10-20	CULLISON; Steven B. et al.	
	98	4306114		1981-12-15	CALLAHAN; Jeffery C.	
	99	4509211		1985-04-02	ROBBINS; Michael S.	
	100	4530091		1985-07-16	CROCKETT; Gary B.	
	101	4696037		1987-09-22	FIERENS; Gustaaf E. M.	
	102	4701629		1987-10-20	CITROEN; Maxime H.	
	103	4712105		1987-12-08	KOEHLER; Hans E. P.	
	104	4731814		1988-03-15	BECKER; William R. et al.	
	105	4816989		1989-03-28	FINN; Alan M. et al.	
	106	4824059		1989-04-25	BUTLER; Les I.	
	107	4845751		1989-07-04	SCHWAB; Brian H.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	108	4994908		1991-02-19	KUBAN; Curt M. et al.	
	109	5086385		1992-02-04	LAUNEY; Reuel O. et al.	
	110	5151922		1992-09-29	WEISS; Karl R.	
	111	5153579		1992-10-06	FISCH; Kenneth D. et al.	
	112	5182552		1993-01-26	PAYNTING; Richard J.	
	113	5185680		1993-02-09	KAKUBO; Yuji	
	114	5198603		1993-03-30	NISHIKAWA; Masashi et al.	
	115	5237327		1993-08-17	SAITOH; Mitsumasa et al.	
	116	5272757		1993-12-21	SCOFIELD; William C. et al.	
	117	5299266		1994-03-29	LUMSDEN; John L.	
	118	5361381		1994-11-01	SHORT; William R.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	119	5372441		1994-12-13	LOUIS; William M.	
	120	5406634		1995-04-11	ANDERSON; Charles W. et al.	
	121	5430485		1995-07-04	LANKFORD; Douglas E. et al.	
	122	5440644		1995-08-08	FARINELLI; Robert et al.	
	123	5457448		1995-10-10	TOTSUKA; Keiichi et al.	
	124	5467342		1995-11-14	LOGSTON; Gary L. et al.	
	125	5481251		1996-01-02	BUYS; Menno et al.	
	126	5491839		1996-02-13	SCHOTZ; Larry	
	127	5515345		1996-05-07	BARREIRA; Jeane K. et al.	
	128	5533021		1996-07-02	BRANSTAD; Mark W. et al.	
	129	5553147		1996-09-03	PINEAU; Joseph E. M.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	130	5553222		1996-09-03	MILNE; Steve H. et al.	
	131	5553314		1996-09-03	GRUBE; Gary W. et al.	
	132	5596696		1997-01-21	TINDELL; James M. et al.	
	133	5602992		1997-02-11	DANNEELS; Gunner	
	134	5623483		1997-04-22	AGRAWAL; Prathima et al.	
	135	5625350		1997-04-29	FUKATSU; Hitoshi et al.	
	136	5633871		1997-05-27	BLOKS; Rudolf H. J.	
	137	5640388		1997-06-17	WOODHEAD; Douglas F. et al.	
	138	5652749		1997-07-29	DAVENPORT; David William et al.	
	139	5661665		1997-08-26	GLASS; Adam et al.	
	140	5661728		1997-08-26	FINOTELLO; Andrea et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	141	5668884		1997-09-16	CLAIR Jr.; Roy Barry et al.	
	142	5673323		1997-09-30	SCHOTZ; Larry et al.	
	143	5696896		1997-12-09	BADOVINATZ; Peter Richard et al.	
	144	5726989		1998-03-10	DOKIC; Miroslav V.	
	145	5740235		1998-04-14	LESTER; James William et al.	
	146	5742623		1998-04-21	NUBER; Ray et al.	
	147	5761320		1998-06-02	FARINELLI; Robert et al.	
	148	5774016		1998-06-30	KETTERER; Ernest R.	
	149	5787249		1998-07-28	BADOVINATZ; Peter Richard et al.	
	150	5790543		1998-08-04	CLOUTIER; Leo	
	151	5808662		1998-09-15	KINNEY; Daniel Reid et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	152	5812201		1998-09-22	YOO; Ki Ryung	
	153	5815689		1998-09-29	SHAW; George H. J. et al.	
	154	5818948		1998-10-06	GULICK; Dale E.	
	155	5832024		1998-11-03	SCHOTZ; Larry et al.	
	156	5848152		1998-12-08	SLIPY; Michael J. et al.	
	157	5852722		1998-12-22	HAMILTON; Graham	
	158	5867691		1999-02-02	SHIRAISHI; Hajime	
	159	5875233		1999-02-23	COX; Daniel R.	
	160	5875354		1999-02-23	CHARLTON; Paul et al.	
	161	5887143		1999-03-23	SAITO; Masahiko et al.	
	162	5905768		1999-05-18	MATURI; Greg et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	163	5917830		1999-06-29	CHEN; David et al.	
	164	5923869		1999-07-13	KASHIWAGI; Yoshiichiro et al.	
	165	5923902		1999-07-13	INAGAKI; Yoshihiro	
	166	5946343		1999-08-31	SCHOTZ; Larry et al.	
	167	5956025		1999-09-21	GOULDEN; Lorna et al.	
	168	5956088		1999-09-21	SHEN; Paul et al.	
	169	5960006		1999-09-28	MATURI; Greg et al.	
	170	5984512		1999-11-16	JONES; Anthony Mark et al.	
	171	5987611		1999-11-16	FREUND; Gregor	
	172	5990884		1999-11-23	DOUMA; Peter et al.	
	173	5991307		1999-11-23	KOMURO; Teruyoshi et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	174	5999906		1999-12-07	MERCS; Laura et al.	
	175	6009457		1999-12-28	MOLLER; Matthew Donaldson	
	176	6018376		2000-01-25	NAKATANI; Shintarou	
	177	6026150		2000-02-15	FRANK; Edward H. et al.	
	178	6029196		2000-02-22	LENZ; Michael A.	
	179	6031818		2000-02-29	LO; W. Steven et al.	
	180	6032202		2000-02-29	LEA; Rodger J. et al.	
	181	6038614		2000-03-14	CHAN; Rix S. et al.	
	182	6046550		2000-04-04	FERENCE; Jonathan H. et al.	
	183	6061457		2000-05-09	STOCKHAMER; Lee	
	184	6078725		2000-06-20	TANAKA; Mitsumasa	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	185	6081266		2000-06-27	SCIAMMARELLA; Eduardo	
	186	6088063		2000-07-11	SHIBA; Kosuke	
	187	6101195		2000-08-08	LYONS; Paul Wallace et al.	
	188	6108485		2000-08-22	KIM; Jeong-Kyu	
	189	6108686		2000-08-22	WILLIAMS Jr.; ,Henry R.	
	190	6122668		2000-09-19	TENG; Peter Y. et al.	
	191	6127941		2000-10-03	VAN RYZIN; John M.	
	192	6128318		2000-10-03	SATO; Takashi	
	193	6148205		2000-11-14	COTTON; Timothy R.	
	194	6154772		2000-11-28	DUNN; Bryan W. et al.	
	195	6157957		2000-12-05	BERTHAUD; Jean-Marc	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	196	6163647		2000-12-19	TERASHIMA; Masaru et al.	
	197	6169725		2001-01-02	GIBBS; Simon J. et al.	
	198	6175872		2001-01-16	NEUMANN; Eric K. et al.	
	199	6181383		2001-01-30	FOX; Edward C. et al.	
	200	6185737		2001-02-06	NORTHCUTT; J. Duane et al.	
	201	6195435		2001-02-27	KITAMURA; John S.	
	202	6195436		2001-02-27	SCIBORA; Marco et al.	
	203	6199169		2001-03-06	VOTH; Duane J.	
	204	6212282		2001-04-03	MERSHON; Stuart	
	205	6246701		2001-06-12	SLATTERY; William	
	206	6253293		2001-06-26	RAO; Raghunath et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	207	6255961		2001-07-03	VAN RYZIN; John M. et al.	
	208	6256554		2001-07-03	DILORENZO; Mark	
	209	6269406		2001-07-31	DUTCHER; David Paul et al.	
	210	6301012		2001-10-09	WHITE; Craig R. et al.	
	211	6308207		2001-10-23	TSENG; Weinan William et al.	
	212	6310652		2001-10-30	LI; Stephen et al.	
	213	6313879		2001-11-06	KUBO; Hiroaki et al.	
	214	6321252		2001-11-20	BHOLA; Sumeer et al.	
	215	6324586		2001-11-27	JOHNSON; Aric R.	
	216	6332147		2001-12-18	MORAN; Thomas P. et al.	
	217	6343028		2002-01-29	KUWAOKA; Toshiharu	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	218	6349285		2002-02-19	LIU; Pu et al.	
	219	6349339		2002-02-19	WILLIAMS; Henry R.	
	220	6351821		2002-02-26	VOTH; Duane J.	
	221	6353172		2002-03-05	FAY; Todor C. et al.	
	222	6356871		2002-03-12	HEMKUMAR; Nariankadu Datatreya et al.	
	223	6404811		2002-06-11	CVETKO; John F. et al.	
	224	6418150		2002-07-09	STAATS; Erik P.	
	225	6430353		2002-08-06	HONDA; Susumu et al.	
	226	6442443		2002-08-27	FUJII; Kazuo et al.	
	227	6449642		2002-09-10	BOURKE-DUNPHY; Erin Marie et al.	
	228	6449653		2002-09-10	KLEMETS; Anders Edgar et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	229	6456783		2002-09-24	ANDO; Hideo et al.	
	230	6463474		2002-10-08	FUH; Tzong-Fen et al.	
	231	6466832		2002-10-15	ZUQERT; Benjamin et al.	
	232	6469633		2002-10-22	WACHTER; Martin Richard	
	233	6487296		2002-11-26	ALLEN; Steven W. et al.	
	234	6493832		2002-12-10	ITAKURA; Eisaburo et al.	
	235	6522886		2003-02-18	YOUNGS; Edward A. et al.	
	236	6526325		2003-02-25	SUSSMAN; Robert et al.	
	237	6535121		2003-03-18	MATHNEY; Richard K. et al.	
	238	6587127		2003-07-01	LEEKE; Steven D. et al.	
	239	6598172		2003-07-22	VANDEUSEN; Mark P. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	240	6611537		2003-08-26	EDENS; Glenn T. et al.	
	241	6631410		2003-10-07	KOWALSKI; John Michael et al.	
	242	6636269		2003-10-21	BALDWIN; James A.	
	243	6653899		2003-11-25	ORGANVIDEZ; Juan H. et al.	
	244	6654720		2003-11-25	GRAHAM; Stephen Glen et al.	
	245	6654956		2003-11-25	TRINH; Vincent et al.	
	246	6658091		2003-12-02	NAIDOO; Surendra N. et al.	
	247	6674803		2004-01-06	KESSELRING; William David	
	248	6684060		2004-01-27	CURTIN; Steven D.	
	249	6687664		2004-02-03	SUSSMAN; Robert et al.	
	250	6704421		2004-03-09	KITAMURA; John S.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	251	6741961		2004-05-25	LIM; Chae-Duck	
	252	6757517		2004-06-29	CHANG; Chin-Chi	
	253	6763274		2004-07-13	GILBERT; Erik J.	
	254	6778073		2004-08-17	LUTTER; Robert Pierce et al.	
	255	6778493		2004-08-17	ISHII; Atsushi	
	256	6778869		2004-08-17	CHAMPION; Mark	
	257	6803964		2004-10-12	POST; Lauren Lee et al.	
	258	6809635		2004-10-26	KAARESOJA; Topi	
	259	6816510		2004-11-09	BANERJEE; Subrata	
	260	6816818		2004-11-09	WOLF; Michael Jaochim et al.	
	261	6823225		2004-11-23	SASS; Jonathan	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	262	6826283		2004-11-30	WHEELER; Thomas M. et al.	
	263	6836788		2004-12-28	KIM; Sang-Gil et al.	
	264	6839752		2005-01-04	MILLER; Robert et al.	
	265	6859460		2005-02-22	CHEN; Michael C.	
	266	6859538		2005-02-22	VOLTZ; Christopher	
	267	6873862		2005-03-29	RESHEFSKY; Marc Alan	
	268	6882335		2005-04-19	SAARINEN; Pertti	
	269	6898642		2005-05-24	CHAFLE; Girish Bhimrao et al.	
	270	6901439		2005-05-31	BONASIA; Gaetano et al.	
	271	6907458		2005-06-14	TOMASSETTI; Stephen Robert et al.	
	272	6912610		2005-06-28	SPENCER; Thomas Vincent	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	273	6915347		2005-07-05	HANKO; James G. et al.	
	274	6917592		2005-07-12	RAMANKUTTY; Rajesh et al.	
	275	6919771		2005-07-19	NAKAJIMA; Kouji	
	276	6920373		2005-07-19	XI; Ning et al.	
	277	6931557		2005-08-16	TOGAWA; Yoshifusa	
	278	6934766		2005-08-23	RUSSELL; Paul J.	
	279	6937988		2005-08-30	HEMKUMAR; Nariankadu Datatreya et al.	
	280	6970482		2005-11-29	KIM; Sung-Tae	
	281	6985694		2006-01-10	DE BONET; Jeremy S. et al.	
	282	6987767		2006-01-17	SAITO; Tatsunori	
	283	7007106		2006-02-28	FLOOD; Mark et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	284	7020791		2006-03-28	AWEYA; James et al.	
	285	7043477		2006-05-09	MERCER; Ian Cameron et al.	
	286	7043651		2006-05-09	AWEYA; James et al.	
	287	7046677		2006-05-16	MONTA; Peter et al.	
	288	7047308		2006-05-16	DESHPANDE; Sachin G.	
	289	7054888		2006-05-30	LACHAPELLE; Kevin Leigh et al.	
	290	7058889		2006-06-06	TROVATO; Karen I. et al.	
	291	7068596		2006-06-27	MOU; Hensen	
	292	7092528		2006-08-15	PATRICK; Kyle N. et al.	
	293	7092694		2006-08-15	GRIEP; Pieter Dingenis et al.	
	294	7096169		2006-08-22	CRUTCHFIELD; William G. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	295	7113999		2006-09-26	PESTONI; Florian et al.	
	296	7115017		2006-10-03	LAURSEN; Thomas et al.	
	297	7120168		2006-10-10	ZIMMERMANN; Klaus	
	298	7130316		2006-10-31	KOVACEVIC; Branko D.	
	299	7130368		2006-10-31	AWEYA; James et al.	
	300	7130608		2006-10-31	HOLLSTROM; Magnus et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	1	2320451	CA	A1	2001-03-23	BONNEVILLE MARC ETIENNE [CA]		
	2	101292500	CN	A	2008-10-22	SONY ERICSSON MOBILE COMM AB.		
	3	1598767	CN	A	2005-03-23	XIAO XUEWEN.		
	4	0251584	EP	A2	1988-01-07	NORTHERN TELECOM LTD.		
	5	0672985	EP	A1	1995-09-20	INTERNATIONAL BUSINESS MACHINES.		
	6	0742674	EP	B1	2014-04-09	TOSHIBA KK [JP]		
	7	0772374	EP	A2	1997-05-07	BANG & OLUFSEN AS.		
	8	0895427	EP	A3	2006-01-18	SONY ELECTRONICS INC.		
	9	1111527	EP	A2	2001-06-27	KABUSHIKI KAISHA TOSHIBA.		
	10	1122931	EP	A2	2001-08-08	SHARP KABUSHIKI KAISHA.		
	11	1312188	EP	A1	2003-05-21	BRITISH TELECOMM [GB]		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	12	1389853	EP	A1	2004-02-18	SONY INT EUROPE GMBH.		
	13	1410686	EP		2008-03-26	DOLBY LAB LICENSING CORPORATION.		
	14	1416687	EP	B1	2006-08-02	AVID TECHNOLOGY, INC.		
	15	1517464	EP	A2	2005-03-23	PHOENIX GOLD INTERNATIONAL INC.		
	16	2043381	EP	A2	2009-04-01	BANG & OLUFSEN AS.		
	17	2161950	EP	A2	2010-03-10	BANG & OLUFSEN AS.		
	18	2591617	EP	B1	2014-06-18	BANG & OLUFSEN AS.		
	19	2713281	EP		2004-04-02	SONOS, INC.		
	20	2284327	GB	A	1995-05-31	INTEL CORPORATION.		
	21	2338374	GB		1999-12-15	MOTOROLA LTD.		
	22	2379533	GB	A	2003-03-12	REQUEST MULTIMEDIA [US]		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	23	2486183	GB		2012-06-13	CAMBRIDGE SILICON RADIO LIMITED.		
	24	07-210129	JP		1995-08-11	INTERNAT'L BUSINESS MACH CORP (IBM)		
	25	2000149391	JP	A	2000-05-30	VICTOR COMPANY OF JAPAN.		
	26	2001034951	JP		2001-02-09	SANYO ELECTRIC CO.		
	27	2002111817	JP		2002-04-12	NEC CORP.		
	28	2002123267	JP	A	2002-04-26	SONY CORP.		
	29	2002358241	JP	A	2002-12-13	VICTOR COMPANY OF JAPAN.		
	30	2003037585	JP		2003-02-07	SONY CORP.		
	31	2003101958	JP		2003-04-04	TOSHIBA CORP.		
	32	2003169089	JP	A	2003-06-13	ANCL INC., et al.		
	33	2003506765	JP	A	2003-02-18	CHUNG; Randall M.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	34	2005108427	JP		2005-04-21	RICOH KK.		
	35	2005136457	JP		2005-05-26	SANYO ELECTRIC CO. LTD.		
	36	2007241652	JP	A	2007-09-20	CORE COLORS INC.		
	37	2009075540	JP	A	2009-04-09	TOUCHTUNES MUSIC CORP.		
	38	2009135750	JP		2009-06-18	KYOCERA CORP.		
	39	2009506603	JP	A	2009-02-12	SONY ERICSSON MOBILE COMMUNICATIONS AB.		
	40	2009535708	JP		2009-10-01	MICROSOFT CORPORATION.		
	41	2009538006	JP	A	2009-10-29	SONY ERICSSON MOBILE COMMUNICATIONS AB.		
	42	2011130496	JP		2011-06-30	TOSHIBA CORP.		
	43	63269633	JP		1988-11-07	UNKNOWN.		
	44	439027	TW		2001-06-07	MITAC TECHNOLOGY CORP.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	45	0019693	WO	A1	2000-04-06	WIRELESS SYSTEM TECHNOLOGIES I [CA], et al.		
	46	0110125	WO	A1	2001-02-08	CHUNG, RANDALL M.		
	47	02073851	WO		2002-09-19	PULSE-LINK, INC.		
	48	03093950	WO	A2	2003-11-13	GOLDBERG et al.		
	49	199525313	WO		1995-09-21	INTERNATIONAL BUSINESS MACHINE CORPORATION.		
	50	1999023560	WO		1999-05-14	COLLABORATION PROPERTIES, INC.		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-04-25
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	90013882
Filing Date	2016-12-27
First Named Inventor	
Art Unit	3992
Examiner Name	STEELMAN, Mary J.
Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7130616		2006-10-31	JANIK; Craig M.	
	2	7136934		2006-11-14	CARTER; Harry Nick et al.	
	3	7139981		2006-11-21	MAYER; Theodore et al.	
	4	7143141		2006-11-28	MORGAN; Jeffrey A. et al.	
	5	7143939		2006-12-05	HENZERLING; David P.	
	6	7146260		2006-12-05	PRESTON; Dan Alan et al.	
	7	7158488		2007-01-02	FUJIMORI; Junichi	
	8	7161939		2007-01-09	ISRAEL; David et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	9	7162315		2007-01-09	GILBERT; Erik J.	
	10	7185090		2007-02-27	KOWALSKI; John Michael et al.	
	11	7187947		2007-03-06	WHITE; Russell W. et al.	
	12	7188353		2007-03-06	CRINON; Regis J.	
	13	7197148		2007-03-27	NOURSE; James D. et al.	
	14	7206367		2007-04-17	MOORE; Daniel L.	
	15	7206618		2007-04-17	LATTO; Antonio T. et al.	
	16	7206967		2007-04-17	MARTI; Philippe et al.	
	17	7209795		2007-04-24	SULLIVAN; Gary E. et al.	
	18	7236739		2007-06-26	CHANG; Chin-Chi	
	19	7236773		2007-06-26	THOMAS; Graham	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	20	7257398		2007-08-14	UKITA; Yoshitaka et al.	
	21	7260616		2007-08-21	COOK; Fred S.	
	22	7263110		2007-08-28	FUJISHIRO; Yoshiya	
	23	7277547		2007-10-02	DELKER; Jason R. et al.	
	24	7286652		2007-10-23	AZRIEL; Gad et al.	
	25	7289631		2007-10-30	ISHIDOSHIRO; Takashi	
	26	7293060		2007-11-06	KOMSI; Asko	
	27	7295548		2007-11-13	BLANK; William Thomas et al.	
	28	7305694		2007-12-04	COMMONS; Christopher et al.	
	29	7308188		2007-12-11	NAMATAME; Kazushi	
	30	7310334		2007-12-18	FITZGERALD; Cary et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	31	7312785		2007-12-25	TSUK; Robert W. et al.	
	32	7313593		2007-12-25	PULITO; Brian et al.	
	33	7319764		2008-01-15	REID; Glenn et al.	
	34	7324857		2008-01-29	GODDARD; Mark D.	
	35	7330875		2008-02-12	PARASNIS; Shashank Mohan et al.	
	36	7333519		2008-02-19	SULLIVAN; Gary E. et al.	
	37	7356011		2008-04-08	WATERS; Christopher J. F. et al.	
	38	7359006		2008-04-15	XIANG; Shuhua et al.	
	39	7366206		2008-04-29	LOCKRIDGE; Terry Wayne et al.	
	40	7372846		2008-05-13	ZWACK; Eduard	
	41	7391791		2008-06-24	BALASSANIAN; Edward et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	42	7392102		2008-06-24	SULLIVAN; Gary E. et al.	
	43	7392481		2008-06-24	GEWICKEY; Greg et al.	
	44	7400644		2008-07-15	SAKAMOTO; Ichiro et al.	
	45	7412499		2008-08-12	CHANG; Chun-Shi et al.	
	46	7428310		2008-09-23	PARK; Jeong-Hyun	
	47	7430181		2008-09-30	HONG; Jay Wu	
	48	7457948		2008-11-25	BILICKSA; Carl et al.	
	49	7472058		2008-12-30	TSENG; Wei-Hsin et al.	
	50	7474677		2009-01-06	TROTT; Christian A.	
	51	7483538		2009-01-27	MCCARTY; William A. et al.	
	52	7483540		2009-01-27	RABINOWITZ; William M. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	53	7483958		2009-01-27	ELABBADY; Tarek Z. et al.	
	54	7492912		2009-02-17	CHUNG; Yun M. et al.	
	55	7505889		2009-03-17	SALMONSEN; Daniel R. et al.	
	56	7509181		2009-03-24	CHAMPION; Mark	
	57	7519667		2009-04-14	CAPPS; Stephen P.	
	58	7548744		2009-06-16	OESTERLING; Christopher L. et al.	
	59	7548851		2009-06-16	LAU; Jack et al.	
	60	7558224		2009-07-07	SURAZSKI; Luke K. et al.	
	61	7558635		2009-07-07	THIEL; Steffen et al.	
	62	7571014		2009-08-04	LAMBOURNE; Robert A. et al.	
	63	7574274		2009-08-11	HOLMES; Stephen G.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	64	7599685		2009-10-06	GOLDBERG; David et al.	
	65	7606174		2009-10-20	OCHI; Mitsunori et al.	
	66	7627825		2009-12-01	KAKUDA; Hiroshi	
	67	7630501		2009-12-08	BLANK; William T. et al.	
	68	7631119		2009-12-08	MOORE; Jeffrey C. et al.	
	69	7643894		2010-01-05	BRAITHWAITE; Michael et al.	
	70	7653344		2010-01-26	FELDMAN; Theodore Philip et al.	
	71	7657224		2010-02-02	GOLDBERG; David et al.	
	72	7657644		2010-02-02	ZHENG; Qinghua	
	73	7657910		2010-02-02	MCAULAY; Roger et al.	
	74	7665115		2010-02-16	GALLO; Kevin T. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	75	7668990		2010-02-23	KRZYZANOWSKI; Paul et al.	
	76	7669113		2010-02-23	MOORE; Jeff et al.	
	77	7669219		2010-02-23	SCOTT; Samuel T.III.	
	78	7672470		2010-03-02	LEE; Jae-Hoon	
	79	7675943		2010-03-09	MOSIG; Rudiger et al.	
	80	7676044		2010-03-09	SASAKI; Toru et al.	
	81	7676142		2010-03-09	HUNG; Andy Chao	
	82	7688306		2010-03-30	WEHRENBERG; Paul J. et al.	
	83	7689304		2010-03-30	SASAKI; Yoshio	
	84	7689305		2010-03-30	KREIFELDT; Richard A. et al.	
	85	7702279		2010-04-20	KO; Steve et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	86	7702403		2010-04-20	GLADWIN; Stephen Christopher et al.	
	87	7710941		2010-05-04	RIETSCHEL; Johannes et al.	
	88	7711774		2010-05-04	ROTHSCHILD; Leigh M.	
	89	7720096		2010-05-18	KLEMETS; Anders E.	
	90	7721032		2010-05-18	BUSHELL; John Samuel et al.	
	91	7742740		2010-06-22	GOLDBERG; David et al.	
	92	7743009		2010-06-22	HANGARTNER; Rick et al.	
	93	7746906		2010-06-29	JINZAKI; Akira et al.	
	94	7761176		2010-07-20	BEN-YAACOV; Yaacov et al.	
	95	7765315		2010-07-27	BATSON; James D. et al.	
	96	7793206		2010-09-07	LIM; Seh E. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	97	7827259		2010-11-02	HELLER; David et al.	
	98	7831054		2010-11-09	BALL; Steven J. et al.	
	99	7835689		2010-11-16	GOLDBERG; David et al.	
	100	7853341		2010-12-14	MCCARTY; William A. et al.	
	101	7865137		2011-01-04	GOLDBERG; David et al.	
	102	7882234		2011-02-01	WATANABE; Mitsuhiro et al.	
	103	7885622		2011-02-08	KRAMPF; Steven S. et al.	
	104	7907819		2011-03-15	ANDO; Hideo et al.	
	105	7916877		2011-03-29	GOLDBERG; David et al.	
	106	7917082		2011-03-29	GOLDBERG; David et al.	
	107	7933418		2011-04-26	MORISHIMA; Morito	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	108	7934239		2011-04-26	DAGMAN; Vadim	
	109	7945143		2011-05-17	YAHATA; Hiroshi et al.	
	110	7945636		2011-05-17	NELSON; Hortense Kathleen et al.	
	111	7945708		2011-05-17	OHKITA; Hideki	
	112	7958441		2011-06-07	HELLER; David et al.	
	113	7966388		2011-06-21	PUGACZEWSKI; John T. et al.	
	114	7987294		2011-07-26	BRYCE; Stuart et al.	
	115	7995732		2011-08-09	KOCH; Robert et al.	
	116	7996566		2011-08-09	SYLVAIN; Dany et al.	
	117	7996588		2011-08-09	SUBBIAH; Baranitharan et al.	
	118	8014423		2011-09-06	THALER; Thomas et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	119	8015306		2011-09-06	BOWMAN; Timothy D.	
	120	8020023		2011-09-13	MILLINGTON; Nicholas A.J. et al.	
	121	8023663		2011-09-20	GOLDBERG; David	
	122	8028038		2011-09-27	WEEL; Martin	
	123	8028323		2011-09-27	WEEL; Martin	
	124	8041062		2011-10-18	COHEN; Ephram et al.	
	125	8045721		2011-10-25	BURGAN; John M. et al.	
	126	8045952		2011-10-25	QURESHEY; Safi et al.	
	127	8050203		2011-11-01	JACOBSEN; Phillip et al.	
	128	8050652		2011-11-01	QURESHEY; Safi et al.	
	129	8055364		2011-11-08	CHAMPION; Mark	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	130	8074253		2011-12-06	NATHAN; Guy	
	131	8086752		2011-12-27	MILLINGTON; Nicholas A.J. et al.	
	132	8090317		2012-01-03	BURGE; Benjamin D. et al.	
	133	8103009		2012-01-24	MCCARTY; William A. et al.	
	134	8111132		2012-02-07	ALLEN; William A. et al.	
	135	8112032		2012-02-07	KO; Steve et al.	
	136	8116476		2012-02-14	INOHARA; Yuichi	
	137	8126172		2012-02-28	HORBACH; Ulrich et al.	
	138	8131390		2012-03-06	BRAITHWAITE; Michael et al.	
	139	8144883		2012-03-27	PDERSEN; Jan A. et al.	
	140	8148622		2012-04-03	ROTHKOPF; Fletcher R. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	141	8150079		2012-04-03	MAEDA; Kazuhiro et al.	
	142	8169938		2012-05-01	DUCHSCHER; Rob et al.	
	143	8170222		2012-05-01	DUNKO; Gregory A.	
	144	8170260		2012-05-01	REINING; Friedrich et al.	
	145	8175297		2012-05-08	HO; Harvey et al.	
	146	8185674		2012-05-22	MOORE; Jeffrey C. et al.	
	147	8194874		2012-06-05	STAROBIN; Bradley M. et al.	
	148	8204890		2012-06-19	GOGAN; Brian	
	149	8208653		2012-06-26	EO; Kil-Su et al.	
	150	8214447		2012-07-03	DESLIPPE; Mark H. et al.	
	151	8214740		2012-07-03	JOHNSON; Timothy	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	152	8214873		2012-07-03	WEEL; Martin	
	153	8218790		2012-07-10	BULL; William et al.	
	154	8230099		2012-07-24	WEEL; Martin	
	155	8233029		2012-07-31	YOSHIDA; Junji et al.	
	156	8233648		2012-07-31	SOREK; Noam et al.	
	157	8234395		2012-07-31	MILLINGTON; Nicholas A.J. et al.	
	158	8239748		2012-08-07	MOORE; Jeff et al.	
	159	8279709		2012-10-02	CHOISEL; Sylvain et al.	
	160	8281001		2012-10-02	BUSAM; Vincent R. et al.	
	161	8285404		2012-10-09	KEKKI; Samuli T.	
	162	8290603		2012-10-16	LAMBOURNE; Robert A.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	163	8300845		2012-10-30	ZUREK; Robert et al.	
	164	8311226		2012-11-13	LORGEOUX; Mickael et al.	
	165	8315555		2012-11-20	KO; Steve et al.	
	166	8316147		2012-11-20	BATSON; James D. et al.	
	167	8325931		2012-12-04	HOWARD; Damian et al.	
	168	8340330		2012-12-25	YOON; Eung-Sik et al.	
	169	8345709		2013-01-01	NITZPON; Hans-Juergen et al.	
	170	8364295		2013-01-29	BECKMANN; Paul E. et al.	
	171	8370678		2013-02-05	MILLINGTON; Nicholas A. J. et al.	
	172	8374595		2013-02-12	CHIEN; Chih-Ling et al.	
	173	8407623		2013-03-26	KERR; Duncan et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	174	8411883		2013-04-02	MATSUMOTO; Keishi	
	175	8423659		2013-04-16	MILLINGTON; Nicholas A. J.	
	176	8423893		2013-04-16	RAMSAY; Max Gordon et al.	
	177	8432851		2013-04-30	XU; Guijin et al.	
	178	8433076		2013-04-30	ZUREK; Robert et al.	
	179	8442239		2013-05-14	BRUELLE-DREWS; Christian et al.	
	180	8457334		2013-06-04	YOON; Eung-Sik et al.	
	181	8463184		2013-06-11	DUA; Robin	
	182	8463875		2013-06-11	KATZ; Hagay et al.	
	183	8473844		2013-06-25	KREIFELDT; Richard A. et al.	
	184	8477958		2013-07-02	MOELLER; Klaus R. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	185	8483853		2013-07-09	LAMBOURNE; Robert A.	
	186	8509211		2013-08-13	TROTTER; John et al.	
	187	8520870		2013-08-27	SATO; Katsuyuki et al.	
	188	8565455		2013-10-22	WORRELL; Devon et al.	
	189	8577048		2013-11-05	CHAIKIN; Peter et al.	
	190	8588949		2013-11-19	LAMBOURNE; Robert A. et al.	
	191	8600084		2013-12-03	GARRETT; James E.	
	192	8611559		2013-12-17	SANDERS; Christopher	
	193	8615091		2013-12-24	TERWAL; Remco	
	194	8639830		2014-01-28	BOWMAN; Timothy D.	
	195	8654995		2014-02-18	SILBER; Michael W. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	196	8672744		2014-03-18	GRONKOWSKI; Timothy T. et al.	
	197	8683009		2014-03-25	NG; Stanley et al.	
	198	8731206		2014-05-20	PARK; Keun Young	
	199	8750282		2014-06-10	GELTER; Aaron et al.	
	200	8751026		2014-06-10	SATO; Teppei et al.	
	201	8762565		2014-06-24	TOGASHI; Ryuichiro et al.	
	202	8775546		2014-07-08	MILLINGTON; Nicholas A. J.	
	203	8818538		2014-08-26	SAKATA; Junichiro	
	204	8819554		2014-08-26	BASSO; Andrea et al.	
	205	8843586		2014-09-23	PANTOS; Roger et al.	
	206	8861739		2014-10-14	OJANPERA; Juha P.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	207	8885851		2014-11-11	WESTENBROEK; Marcel	
	208	8904066		2014-12-02	MOORE; Jeffrey C. et al.	
	209	8917877		2014-12-23	HAAFF; Olle et al.	
	210	8930006		2015-01-06	HAATAINEN; Niko	
	211	8934647		2015-01-13	JOYCE; John et al.	
	212	8934655		2015-01-13	BREEN; John J. et al.	
	213	8942252		2015-01-27	BALASSANIAN; Edward et al.	
	214	8942395		2015-01-27	LISSAMAN; Geoff et al.	
	215	8954177		2015-02-10	SANDERS; Christopher John	
	216	8965544		2015-02-24	RAMSAY; Max Gordon	
	217	8966394		2015-02-24	GATES; Patrick et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	218	9042556		2015-05-26	KALLAI; Christopher et al.	
	219	9137602		2015-09-15	MAYMAN; Avrum G. et al.	
	220	9160965		2015-10-13	REDMANN; William Gibbens et al.	
	221	9456243		2016-09-27	HUGHES; Gary et al.	
	222	9507780		2016-11-29	ROTHKOPF; Fletcher R. et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20010001160		2001-05-10	SHOFF; Daniel J. et al.	
	2	20010009604		2001-07-26	ANDO; Hideo et al.	
	3	20010022823		2001-09-20	RENAUD; Pierre	
	4	20010027498		2001-10-04	VAN DE MEULENHOF; Dennis et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	5	20010032188		2001-10-18	MIYABE; Yoshiyuki et al.	
	6	20010042107		2001-11-15	PALM; Stephen R.	
	7	20010043456		2001-11-22	ATKINSON; Lee	
	8	20010046235		2001-11-29	TREVITT; Stephen et al.	
	9	20010047377		2001-11-29	SINCAGLIA; Nicholas William et al.	
	10	20010050991		2001-12-13	EVES; David A.	
	11	20020002039		2002-01-03	QURESHEY; Safi et al.	
	12	20020002562		2002-01-03	MORAN; Thomas P. et al.	
	13	20020002565		2002-01-03	OHYAMA; Akira	
	14	20020003548		2002-01-10	KRUSCHE; Arnd et al.	
	15	20020022453		2002-02-21	BALOG; Horia et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	16	20020026442		2002-02-28	LIPSCOMB; Kenneth O. et al.	
	17	20020034374		2002-03-21	BARTON; James M.	
	18	20020042844		2002-04-11	CHIAZZESE; Giovanni	
	19	20020049843		2002-04-25	BARONE; Samuel T. et al.	
	20	20020062406		2002-05-23	CHANG; William Ho et al.	
	21	20020065926		2002-05-30	HACKNEY; Michael L.J. et al.	
	22	20020067909		2002-06-06	IIVONEN; Jukka-Pekka	
	23	20020072816		2002-06-13	SHDEMA; Yoav et al.	
	24	20020072817		2002-06-13	CHAMPION; Mark	
	25	20020073228		2002-06-13	COGNET; Yves et al.	
	26	20020078293		2002-06-20	KOU; Sho et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	27	20020080783		2002-06-27	FUJIMORI; Junichi	
	28	20020090914		2002-07-11	KANG; Hyun-Sook et al.	
	29	20020093478		2002-07-18	YEH; Chun Lin	
	30	20020095460		2002-07-18	BENSON; Michael	
	31	20020098878		2002-07-25	MOONEY; Philip D. et al.	
	32	20020101357		2002-08-01	GHARAPETIAN; Ara H.	
	33	20020103635		2002-08-01	MESAROVIC; Vladimir Z. et al.	
	34	20020109710		2002-08-15	HOLTZ; Alex et al.	
	35	20020112244		2002-08-15	LIOU; Shih-Ping et al.	
	36	20020114354		2002-08-22	SINHA; Pranesh et al.	
	37	20020114359		2002-08-22	IBARAKI; Susumu et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	38	20020124182		2002-09-05	BACSO; Stephen R. et al.	
	39	20020129156		2002-09-12	YOSHIKAWA; Masato	
	40	20020131398		2002-09-19	TAYLOR; James L.	
	41	20020131761		2002-09-19	KAWASAKI; Kojiro et al.	
	42	20020136335		2002-09-26	LIOU; Shih-Ping et al.	
	43	20020137505		2002-09-26	EICHE; Steven A. et al.	
	44	20020143998		2002-10-03	RAJAGOPAL; Priya et al.	
	45	20020159596		2002-10-31	DURAND; Julian et al.	
	46	20020163361		2002-11-07	PARKIN; Michael W.	
	47	20020165721		2002-11-07	CHANG; Kenneth H.P. et al.	
	48	20020165921		2002-11-07	SAPIEYEVSKI; Jerzy	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	49	20020168938		2002-11-14	CHANG; Chin-Chi	
	50	20020173273		2002-11-21	SPURGAT; Jeffrey Jonathan et al.	
	51	20020177411		2002-11-28	YAJIMA; Kiyoshi et al.	
	52	20020181355		2002-12-05	SHIKUNAMI; Juichi et al.	
	53	20020184310		2002-12-05	TRAVERSAT; Bernard A. et al.	
	54	20020194309		2002-12-19	CARTER; Harry Nick et al.	
	55	20030002609		2003-01-02	FALLER; Christof et al.	
	56	20030008616		2003-01-09	ANDERSON; Lelan S.	
	57	20030014486		2003-01-16	MAY; Gregory J.	
	58	20030018797		2003-01-23	DUNNING; Ted E. et al.	
	59	20030020763		2003-01-30	MAYER; Theodore et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	60	20030023741		2003-01-30	TOMASSETTI; Stephen Robert et al.	
	61	20030035072		2003-02-20	HAGG; Wilhelm	
	62	20030035444		2003-02-20	ZWACK; Eduard	
	63	20030041173		2003-02-27	HOYLE; Stephen L.	
	64	20030041174		2003-02-27	WEN; Sayling et al.	
	65	20030043856		2003-03-06	LAKANIEMI; Ari et al.	
	66	20030043924		2003-03-06	HADDAD; Semir S. et al.	
	67	20030055892		2003-03-20	HUITEMA; Christian et al.	
	68	20030061428		2003-03-27	GARNEY; John I. et al.	
	69	20030063528		2003-04-03	OGIKUBO; Takahiko	
	70	20030063755		2003-04-03	NOURSE; James D. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	71	20030066094		2003-04-03	VAN DER SCHAAR; Auke Sjoerd et al.	
	72	20030067437		2003-04-10	MCCLINTOCK; Dale Thomas et al.	
	73	20030073432		2003-04-17	MEADE; William K.	
	74	20030097478		2003-05-22	KING; James Reynell	
	75	20030099212		2003-05-29	ANJUM; Farooq et al.	
	76	20030099221		2003-05-29	RHEE; Sokwoo	
	77	20030101253		2003-05-29	SAITO; Takayuki et al.	
	78	20030103088		2003-06-05	DRESTI; Mauro et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

NON-PATENT LITERATURE DOCUMENTS Remove			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	CEN et al., "A Distributed Real-Time MPEG Video Audio Player," Department of Computer Science and Engineering, Oregon Graduate Institute of Science and Technology, 1995, 12 pages.	
	2	CHAKRABARTI et al., "A Remotely Controlled Bluetooth Enabled Environment," IEEE, 2004, pp. 77-81.	
	3	Change Notification: Agere Systems WaveLan Multimode Reference Design (D2 to D3), AVAGO0042, Agere Systems, November 2004, 2 pages.	
	4	CHINESE OFFICE ACTION, Office Action mailed on 20 December 2016, issued in connection with Chinese Application No. 201380044446.8, 16 pages.	
	5	CHINESE PATENT OFFICE, Office Action mailed on 05 July 2016, issued in connection with Chinese Patent Application No. 201380044380.2, 25 pages.	
	6	Connection Manager: 1 Service Template Version 1.01 For UPnP, Version 1.0 (June 25, 2002) (25 pages)	
	7	ContentDirectory:1 Service Template Version 1.01 For UPnP, Version 1.0 (June 25, 2002) (89 pages)	
	8	Corrected Notice of Allowance mailed on 19 August 2015, issued in connection with U.S. Patent Application No. 13/907666, filed on 31 May 2013, 2 pages.	
	9	Creative, "Connecting Bluetooth Devices with Creative D200," http://support.creative.com/kb/ShowArticle.aspx?url=http://ask.creative.com:80/SRVS/CGI-BIN/WEBCGI.EXE/,/?St=106,E=0000000000396859016,K=9377,Sxi=8,VARSET=ws:http://us.creative.com,case=63350>, available on 11/28/2011, 2 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	10	Crown PIP Manual available for sale at least 2004, 68 pages	
	11	DANNENBERG et al., "A. System Supporting Flexible Distributed Real-Time Music Processing," Proceedings of the 2001 International Computer Music Conference, 2001, 4 pages.	
	12	DANNENBERG, Roger B., "Remote Access to Interactive Media," Proceedings of the SPIE 1785, 1993, pp. 230-237.	
	13	DAY, Rebecca, "Going Elan!" Primedia Inc., 2003, 4 pages	
	14	Deep-Sleep Implementation in WL60011 for IEEE 802.11b Applications, AVAGO0020, Agere Systems, July 2004, 22 pages.	
	15	Dell, Inc. "Dell Digital Audio Receiver: Reference Guide," June 2000, 70 pages	
	16	Dell, Inc. "Start Here," June 2000, 2 pages	
	17	"Denon 2003-2004 Product Catalog," Denon, 2003-2004, 44 pages	
	18	Denon AV Surround Receiver AVR-1604/684 User's Manual, 2004, 128 pages.	
	19	Denon AV Surround Receiver AVR-5800 Operating Instructions, Copyright 2000,67 pages.	
	20	Designing a UPnP AV MediaServer, Nelson Kidd (2003) (SONDM000115062-116) (55 pages)	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	21	"DP-0206 Digital Signal Processor," TOA Electronics, Inc., 2001, pp. 1-12	
	22	EUROPEAN PATENT OFFICE, European Extended Search Report mailed 07 March 2016, issued in connection with EP Application No. 13810340.3, 9 pages	
	23	EUROPEAN PATENT OFFICE, European Extended Search Report mailed on 28 February 2014, issued in connection with EP Application No. 13184747.7, 8 pages	
	24	EUROPEAN PATENT OFFICE, European Extended Search Report mailed on 31 March 2015, issued in connection with EP Application No. 14181454.1, 9 pages.	
	25	EUROPEAN PATENT OFFICE, Examination Report mailed on 22 March 2016, issued in connection with European Patent Application No. EP14181454.1, 6 pages	
	26	EUROPEAN PATENT OFFICE, Examination Report mailed on 24 October 2016, issued in connection with European Patent Application No. 13808623.6, 4 pages.	
	27	EUROPEAN PATENT OFFICE, Office Action mailed 25 November 2016, issued in connection with EP Application No. 13810340.3, 5 pages.	
	28	FALCONE, John, "Sonos BU150 Digital Music System review," CNET, CNET [online] 2009.07.27 [retrieved on 2016.03.16], 11 pages Retrieved from the Internet: URL:http://www.cnet.com/products/sonos-bu150-digital-music-system/	
	29	FALLER, Christof, "Coding of Spatial Audio Compatible with Different Playback Formats," Audio Engineering Society Convention Paper (Presented at the 117th Convention), October 28-31, 2004, 12 pages.	
	30	Final Office Action mailed 05 June 2014, issued in connection with U.S. Patent Application No. 13/907666, filed on 31 May 2013, 12 pages	
	31	Final Office Action mailed 13 July 2009, issued in connection with U.S. Patent Application No. 10/816217, filed on 01 April 2004, 16 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	32	Final Office Action mailed 13 September 2012, issued in connection with U.S. Patent Application No. 13/297000, filed on 15 November 2011, 17 pages	
	33	Final Office Action mailed 18 November 2015, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 56 pages.	
	34	Final Office Action mailed 21 October 2011, issued in connection with U.S. Patent Application No. 10/816217, filed on 01 April 2004, 19 pages	
	35	Final Office Action mailed 27 March 2014, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 29 pages	
	36	Final Office Action mailed 28 January 2011, issued in connection with U.S. Patent Application No. 10/816217, filed on 01 April 2004, 21 pages	
	37	Final Office Action mailed 30 June 2008, issued in connection with U.S. Patent Application No. 10/816217, filed on 01 April 2004, 30 pages	
	38	Final Office Action mailed on 03 August 2015, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 13 pages	
	39	Final Office Action mailed on 03 December 2014, issued in connection with U.S. Patent Application No. 14/184528, filed on 19 February 2014, 12 pages	
	40	Final Office Action mailed on 03 July 2012, issued in connection with U.S. Patent Application No. 13/298090, filed on 16 November 2011, 46 pages	
	41	Final Office Action mailed on 03 June 2016, issued in connection with U.S. Patent Application No. 13/705176, filed on 05 December 2012, 24 pages	
	42	Final Office Action mailed on 03 March 2015, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 13 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	43	Final Office Action mailed on 04 March 2015, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 16 pages.	
	44	Final Office Action mailed on 05 March 2015, issued in connection with U.S. Patent Application No. 13/888203, filed on 06 May 2013, 13 pages.	
	45	Final Office Action mailed on 07 January 2015, issued in connection with U.S. Patent Application Serial No. 13/848932, filed on 22 March 2013, 14 pages	
	46	Final Office Action mailed on 09 March 2015, issued in connection with U.S. Patent Application No. 14/516867, filed on 17 October 2014, 14 pages.	
	47	Final Office Action mailed on 10 August 2015, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 26 pages.	
	48	Final Office Action mailed on 11 August 2015, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 15 pages	
	49	Final Office Action mailed on 11 February 2015, issued in connection with U.S. Patent Application No. 14/184526, filed on 19 February 2014, 13 pages	
	50	Final Office Action mailed on 11 February 2015, issued in connection with U.S. Patent Application No. 14/184,935, filed on 20 February 2014, 17 pages	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-27
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-04-25
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	90013882
Filing Date	2016-12-21
First Named Inventor	
Art Unit	3992
Examiner Name	STEELMAN, Mary J.
Attorney Docket Number	04-0601-REEXAM

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030110329		2003-06-12	HIGAKI; Nobuo et al.	
	2	20030123853		2003-07-03	IWAHARA; Yuji et al.	
	3	20030126211		2003-07-03	ANTTILA; Akseli et al.	
	4	20030135822		2003-07-17	EVANS; Glenn F.	
	5	20030157951		2003-08-21	HASTY; William V.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	6	20030167335		2003-09-04	ALEXANDER; Bruce	
	7	20030172123		2003-09-11	POLAN; Jeffrey S. et al.	
	8	20030179780		2003-09-25	WALKER; Anthony et al.	
	9	20030185400		2003-10-02	YOSHIZAWA; Kazuhiko et al.	
	10	20030195964		2003-10-16	MANE; Pravin D.	
	11	20030198254		2003-10-23	SULLIVAN; Gary E. et al.	
	12	20030198255		2003-10-23	SULLIVAN; Gary E. et al.	
	13	20030198257		2003-10-23	SULLIVAN; Gary E. et al.	
	14	20030200001		2003-10-23	GODDARD; Mark D.	
	15	20030204273		2003-10-30	DINKER; Darpan et al.	
	16	20030204509		2003-10-30	DINKER; Darpan et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	17	20030210796		2003-11-13	MCCARTY; William A. et al.	
	18	20030212802		2003-11-13	RECTOR; Dusty D. et al.	
	19	20030219007		2003-11-27	BARRACK; Craig et al.	
	20	20030227478		2003-12-11	CHATFIELD; Keith M.	
	21	20030229900		2003-12-11	REISMAN; Richard	
	22	20030231208		2003-12-18	HANON; Kris et al.	
	23	20030231871		2003-12-18	USHIMARU; Chikara	
	24	20030235304		2003-12-25	EVANS; Glenn F. et al.	
	25	20040001106		2004-01-01	DEUTSCHER; John et al.	
	26	20040001484		2004-01-01	OZGUNER; Tolga	
	27	20040001591		2004-01-01	MANI; Murali et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	28	20040008852		2004-01-15	ALSO; Masaru et al.	
	29	20040010727		2004-01-15	FUJINAMI; Yasushi	
	30	20040012620		2004-01-22	BUHLER; Rene et al.	
	31	20040014426		2004-01-22	MOORE; Richard A.	
	32	20040015252		2004-01-22	AISO; Masaru et al.	
	33	20040019497		2004-01-29	VOLK; Andrew R. et al.	
	34	20040019807		2004-01-29	FREUND; Gregor P. et al.	
	35	20040019911		2004-01-29	GATES; Matthijs A. et al.	
	36	20040023697		2004-02-05	KOMURA; Tatsumi	
	37	20040024478		2004-02-05	HANS; Mathieu Claude et al.	
	38	20040024925		2004-02-05	CYPHER; Robert E. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	39	20040027166		2004-02-12	MANGUM; Wayne G. et al.	
	40	20040032348		2004-02-19	LAI; Angela C. W. et al.	
	41	20040032421		2004-02-19	WILLIAMSON; Charles G. et al.	
	42	20040037433		2004-02-26	CHEN; Heng-Chien	
	43	20040041836		2004-03-04	ZANER; Melora et al.	
	44	20040042629		2004-03-04	MELLONE; Charles M. et al.	
	45	20040044742		2004-03-04	EVRON; Roni et al.	
	46	20040048569		2004-03-11	KAWAMURA; Harumi	
	47	20040059842		2004-03-25	HANSON; Mark L. et al.	
	48	20040059965		2004-03-25	MARSHALL; Kenneth R. et al.	
	49	20040066736		2004-04-08	KROEGER; Brian William	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	50	20040075767		2004-04-22	NEUMAN; Darren et al.	
	51	20040078383		2004-04-22	MERCER; Ian Cameron et al.	
	52	20040080671		2004-04-29	SIEMENS; Duane et al.	
	53	20040093096		2004-05-13	HUANG; Steve Lan-Ping et al.	
	54	20040098754		2004-05-20	VELLA; Zane et al.	
	55	20040111473		2004-06-10	LYSENKO; Anton et al.	
	56	20040117462		2004-06-17	BODIN; William Kress et al.	
	57	20040117840		2004-06-17	BOUDREAU; Paul A. et al.	
	58	20040117858		2004-06-17	BOUDREAU; Paul A. et al.	
	59	20040128701		2004-07-01	KANEKO; Toshimitsu et al.	
	60	20040131192		2004-07-08	METCALF; Randall B.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	61	20040133689		2004-07-08	VASISHT; Samrat	
	62	20040143368		2004-07-22	MAY; Robert E. et al.	
	63	20040143852		2004-07-22	MEYERS; Philip G.	
	64	20040148237		2004-07-29	BITTMANN; Ran et al.	
	65	20040168081		2004-08-26	LADAS; Corey M. et al.	
	66	20040170383		2004-09-02	MAZUR; Leszek	
	67	20040171346		2004-09-02	LIN; John	
	68	20040177167		2004-09-09	IWAMURA; Ryuichi et al.	
	69	20040179554		2004-09-16	TSAO; Hsi-Kang	
	70	20040183827		2004-09-23	PUTTERMAN; Daniel et al.	
	71	20040185773		2004-09-23	GERBER; Louis et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	72	20040203378		2004-10-14	POWERS; Simon	
	73	20040203590		2004-10-14	SHTEYN; Eugene	
	74	20040208158		2004-10-21	FELLMAN; Ronald D. et al.	
	75	20040213230		2004-10-28	DOUSKALIS; William et al.	
	76	20040223622		2004-11-11	LINDEMANN; Eric Lee et al.	
	77	20040224638		2004-11-11	FADELL; Anthony M. et al.	
	78	20040228367		2004-11-18	MOSIG; Rudiger et al.	
	79	20040248601		2004-12-09	CHANG; Chin-Chi	
	80	20040249490		2004-12-09	SAKAI; Kenji	
	81	20040249965		2004-12-09	HUGGINS; Guy Dwayne et al.	
	82	20040249982		2004-12-09	ARNOLD; Johann et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	83	20040252400		2004-12-16	BLANK; William Thomas et al.	
	84	20040253969		2004-12-16	NGUYEN; Vu X. et al.	
	85	20050010691		2005-01-13	OYADOMARI; Randy et al.	
	86	20050011388		2005-01-20	KOUZNETSOV; Alex A.	
	87	20050013394		2005-01-20	RAUSCH; Mathias et al.	
	88	20050015551		2005-01-20	EAMES; Russell Mark et al.	
	89	20050021590		2005-01-27	DEBIQUE; Kirt A. et al.	
	90	20050027821		2005-02-03	ALEXANDER; Justin et al.	
	91	20050058149		2005-03-17	HOWE; Wayne Richard	
	92	20050060435		2005-03-17	XUE; Xin et al.	
	93	20050062637		2005-03-24	EL ZABADANI; Hicham Mahmoud et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	94	20050081213		2005-04-14	SUZUOKI; Masakazu et al.	
	95	20050105052		2005-05-19	MCCORMICK; Tom et al.	
	96	20050114538		2005-05-26	ROSE; Steven W.	
	97	20050120128		2005-06-02	WILLES; W. P. et al.	
	98	20050125222		2005-06-09	BROWN; Michael Wayne et al.	
	99	20050125357		2005-06-09	SAADAT; Abbas S. et al.	
	100	20050131558		2005-06-16	BRAITHWAITE; Michael et al.	
	101	20050154766		2005-07-14	HUANG; Wei-Hung et al.	
	102	20050159833		2005-07-21	GIAIMO; Edward C. et al.	
	103	20050160270		2005-07-21	GOLDBERG; David et al.	
	104	20050166135		2005-07-28	BURKE; David G. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	105	20050168630		2005-08-04	YAMADA; Norihiko et al.	
	106	20050177643		2005-08-11	XU; Shugong	
	107	20050181348		2005-08-18	CAREY; Tadhg M. et al.	
	108	20050195205		2005-09-08	ABRAMS; Thomas A.Jr	
	109	20050195823		2005-09-08	CHEN; Jian-Rong et al.	
	110	20050197725		2005-09-08	ALEXANDER; Jim et al.	
	111	20050198574		2005-09-08	LAMKIN; Allan B. et al.	
	112	20050201549		2005-09-15	DEDIEU; Stephane et al.	
	113	20050216556		2005-09-29	MANION; Todd R. et al.	
	114	20050262217		2005-11-24	NONAKA; Masao et al.	
	115	20050281255		2005-12-22	DAVIES; Trevor et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	116	20050283820		2005-12-22	RICHARDS; Martin J. et al.	
	117	20050288805		2005-12-29	MOORE; Jeffrey C. et al.	
	118	20050289224		2005-12-29	DESLIPPE; Mark H. et al.	
	119	20060041639		2006-02-23	LAMKIN; Allan B. et al.	
	120	20060072489		2006-04-06	TOYOSHIMA; Akihiko	
	121	20060095516		2006-05-04	WIJERATNE; Viranga L.	
	122	20060098936		2006-05-11	IKEDA; Wataru et al.	
	123	20060119497		2006-06-08	MILLER; Kevin L. et al.	
	124	20060143236		2006-06-29	WU; Michael	
	125	20060155721		2006-07-13	GRUNWALD; David et al.	
	126	20060161742		2006-07-20	SUGIMOTO; Kayo et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	127	20060173844		2006-08-03	ZHANG; Junbiao et al.	
	128	20060193454		2006-08-31	ABOU-CHAKRA, RABIH. et al.	
	129	20060222186		2006-10-05	PAIGE; Robert F. et al.	
	130	20060227985		2006-10-12	KAWANAMI; Kenichiro	
	131	20060259649		2006-11-16	HSIEH; Kuan-Hong et al.	
	132	20060270395		2006-11-30	DHAWAN; Anil K. et al.	
	133	20070003067		2007-01-04	GIERL; Stefan et al.	
	134	20070022207		2007-01-25	MILLINGTON; Nicholas A. et al.	
	135	20070043847		2007-02-22	CARTER; Harry N. et al.	
	136	20070047712		2007-03-01	GROSS; Kevin P. et al.	
	137	20070048713		2007-03-01	PLASTINA; Daniel et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	138	20070054680		2007-03-08	MO; Shaomin S. et al.	
	139	20070087686		2007-04-19	HOLM; Jukka et al.	
	140	20070142022		2007-06-21	MADONNA; Robert P. et al.	
	141	20070142944		2007-06-21	GOLDBERG; David et al.	
	142	20070143493		2007-06-21	MULLIG; Richard M. et al.	
	143	20070169115		2007-07-19	KO; Steve et al.	
	144	20070180137		2007-08-02	RAJAPAKSE; Ravi	
	145	20070192156		2007-08-16	GAUGER; Derek K.	
	146	20070249295		2007-10-25	UKITA; Yoshitaka et al.	
	147	20070265031		2007-11-15	KOIZUMI; Michiaki et al.	
	148	20070271388		2007-11-22	BOWRA; Todd et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	149	20070299778		2007-12-27	HAVESON; Ryan A. et al.	
	150	20080002836		2008-01-03	MOELLER; Niklas et al.	
	151	20080007649		2008-01-10	BENNETT; James D.	
	152	20080007650		2008-01-10	BENNETT; James D.	
	153	20080007651		2008-01-10	BENNETT; James D.	
	154	20080018785		2008-01-24	BENNETT; James D.	
	155	20080022320		2008-01-24	VER STEEG; William C.	
	156	20080025535		2008-01-31	RAJAPAKSE; Ravi	
	157	20080072816		2008-03-27	RIESS; Walter H. et al.	
	158	20080075295		2008-03-27	MAYMAN; Avrum G. et al.	
	159	20080077619		2008-03-27	GILLEY; Glenn Gregory et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	160	20080077620		2008-03-27	GILLEY; Glenn Gregory et al.	
	161	20080086318		2008-04-10	GILLEY; Glenn Gregory et al.	
	162	20080091771		2008-04-17	ALLEN; Jeffrey L. et al.	
	163	20080120429		2008-05-22	MILLINGTON; Nicholas A.J. et al.	
	164	20080126943		2008-05-29	PARASNIS; Shashank Mohan et al.	
	165	20080144861		2008-06-19	MELANSON; John L. et al.	
	166	20080144864		2008-06-19	HUON; Graeme John	
	167	20080146289		2008-06-19	KORNELUK; Jose E. et al.	
	168	20080189272		2008-08-07	POWERS; Michael et al.	
	169	20080205070		2008-08-28	OSADA; Yasuo	
	170	20080212786		2008-09-04	PARK; Hae-Kwang	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	171	20080215169		2008-09-04	DEBETTENCOURT; Lisa et al.	
	172	20080263010		2008-10-23	ROYCHOUDHURI; Subrata et al.	
	173	20080303947		2008-12-11	OHNISHI; Sunao et al.	
	174	20090011798		2009-01-08	YAMADA; Hiroshi	
	175	20090017868		2009-01-15	UEDA; Joji et al.	
	176	20090031336		2009-01-29	CHAVEZ; Timothy R. et al.	
	177	20090070434		2009-03-12	HIMMELSTEIN; Richard B.	
	178	20090089327		2009-04-02	KALABOUKIS; Chris et al.	
	179	20090100189		2009-04-16	BAHREN; Frank et al.	
	180	20090124289		2009-05-14	NISHIDA; Osamu	
	181	20090157905		2009-06-18	DAVIS; Bradford C.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	182	20090164655		2009-06-25	PETTERSSON; Mattias et al.	
	183	20090193345		2009-07-30	WENSLEY; Paul et al.	
	184	20090222115		2009-09-03	MALCOLM; David et al.	
	185	20090228919		2009-09-10	ZOTT; Joseph A. et al.	
	186	20090251604		2009-10-08	IYER; Suraj C.	
	187	20100004983		2010-01-07	DICKERSON; Stephanie et al.	
	188	20100031366		2010-02-04	KNIGHT; Mark Stephen et al.	
	189	20100049835		2010-02-25	KO; Steve et al.	
	190	20100087089		2010-04-08	STRUTHERS; Scott et al.	
	191	20100228740		2010-09-09	CANNISTRARO; Alan et al.	
	192	20100284389		2010-11-11	RAMSAY; Max et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	193	20100299639		2010-11-25	RAMSAY; Max Gordon et al.	
	194	20110001632		2011-01-06	HOHORST; Andrew Gordon	
	195	20110002487		2011-01-06	PANTHER; Heiko et al.	
	196	20110066943		2011-03-17	BRILLON; Francois et al.	
	197	20110228944		2011-09-22	CROGHAN; Frank et al.	
	198	20110316768		2011-12-29	MCRAE; Matthew Blake	
	199	20120029671		2012-02-02	MILLINGTON; Nicholas A. J. et al.	
	200	20120030366		2012-02-02	COLLART; Todd et al.	
	201	20120051567		2012-03-01	CASTOR-PERRY; Kendall	
	202	20120060046		2012-03-08	MILLINGTON; Nicholas A. J.	
	203	20120129446		2012-05-24	KO; Steve et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	204	20120148075		2012-06-14	GOH; Aik Hee Daniel et al.	
	205	20120185771		2012-07-19	ROTHKOPF; Fletcher R. et al.	
	206	20120192071		2012-07-26	MILLINGTON; Nicholas A. J.	
	207	20120207290		2012-08-16	MOYERS; Josh et al.	
	208	20120237054		2012-09-20	EO; Kil-Su et al.	
	209	20120281058		2012-11-08	LANEY; Alan et al.	
	210	20120290621		2012-11-15	HEITZ III; Geremy A. et al.	
	211	20130018960		2013-01-17	KNYSZ; Matthew S. et al.	
	212	20130031475		2013-01-31	MAOR; Yehonatan Rafael et al.	
	213	20130038726		2013-02-14	KIM; Jin-Hyong	
	214	20130041954		2013-02-14	KIM; Laeyoung et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	215	20130047084		2013-02-21	SANDERS; Christopher John et al.	
	216	20130052940		2013-02-28	BRILLHART; David C. et al.	
	217	20130070093		2013-03-21	RIVERA; Ed et al.	
	218	20130080599		2013-03-28	KO; Steve et al.	
	219	20130094670		2013-04-18	MILLINGTON; Nicholas A.J.	
	220	20130124664		2013-05-16	FONSECA Jr.; Benedito J. et al.	
	221	20130129122		2013-05-23	JOHNSON; Martin E. et al.	
	222	20130132837		2013-05-23	MEAD; Jonathan Selwyn et al.	
	223	20130159126		2013-06-20	ELKADY; Amr	
	224	20130167029		2013-06-27	FRIESEN; Sharon E. et al.	
	225	20130174100		2013-07-04	SEYMOUR; Eric T. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	226	20130174223		2013-07-04	DYKEMAN; Kim R. et al.	
	227	20130179163		2013-07-11	HERBIG; Tobias et al.	
	228	20130191454		2013-07-25	OLIVER; Michael R. et al.	
	229	20130197682		2013-08-01	MILLINGTON; Nicholas A. J.	
	230	20130208911		2013-08-15	MILLINGTON; Nicholas A. J.	
	231	20130208921		2013-08-15	MILLINGTON; Nicholas A.J.	
	232	20130226323		2013-08-29	MILLINGTON; Nicholas A. J.	
	233	20130230175		2013-09-05	BECH; Soeren et al.	
	234	20130232416		2013-09-05	MILLINGTON; Nicholas A. J.	
	235	20130253934		2013-09-26	PAREKH; Jateen P. et al.	
	236	20130279706		2013-10-24	MARTI; Stefan J.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	237	20130287186		2013-10-31	QUADY; Curtis E.	
	238	20130290504		2013-10-31	QUADY; Curtis E.	
	239	20140006483		2014-01-02	GARMARK; Sten et al.	
	240	20140037097		2014-02-06	LABOSCO; Mark	
	241	20140064501		2014-03-06	OLSEN; Martin et al.	
	242	20140075308		2014-03-13	SANDERS; Christopher John et al.	
	243	20140075311		2014-03-13	BOETTCHER; Jesse William et al.	
	244	20140079242		2014-03-20	NGUYEN; Nam et al.	
	245	20140108929		2014-04-17	GARMARK; Sten et al.	
	246	20140123005		2014-05-01	FORSTALL; Scott J. et al.	
	247	20140140530		2014-05-22	GOMES-CASSERES; Glenn et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	248	20140161265		2014-06-12	CHAIKIN; Peter et al.	
	249	20140181569		2014-06-26	MILLINGTON; Nicholas A.J. et al.	
	250	20140242913		2014-08-28	PANG; Hawk Yin	
	251	20140256260		2014-09-11	UEDA; Joji et al.	
	252	20140267148		2014-09-18	LUNA; Michael Edward Smith et al.	
	253	20140270202		2014-09-18	IVANOV; Plamen A. et al.	
	254	20140273859		2014-09-18	LUNA; Michael Edward Smith et al.	
	255	20140279889		2014-09-18	LUNA; Michael Edward Smith	
	256	20140285313		2014-09-25	LUNA; Michael Edward Smith et al.	
	257	20140286496		2014-09-25	LUNA; Michael Edward Smith et al.	
	258	20140298174		2014-10-02	IKONOMOV; Artashes Valeryevich	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	259	20140323036		2014-10-30	DALEY; Michael J. et al.	
	260	20140344689		2014-11-20	SCOTT; Mark David et al.	
	261	20140378056		2014-12-25	LIU; Peter T.	
	262	20150019670		2015-01-15	REDMANN; William Gibbens	
	263	20150026613		2015-01-22	KWON; Yunmi et al.	
	264	20150032844		2015-01-29	TARR; Morton et al.	
	265	20150043736		2015-02-12	OLSEN; Martin et al.	
	266	20150049248		2015-02-19	WANG; Min et al.	
	267	20150074527		2015-03-12	SEVIGNY; Jonathan Christopher et al.	
	268	20150074528		2015-03-12	SAKALOWSKY; John Michael et al.	
	269	20150098576		2015-04-09	SUNDARESAN; Rameshwar et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	270	20150139210		2015-05-21	MARIN; Janne et al.	
	271	20150256954		2015-09-10	CARLSSON; Gregory Peter et al.	
	272	20150304288		2015-10-22	BALASAYGUN; Mehmet et al.	
	273	20150365987		2015-12-17	WEEL; Martin	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Final Office Action mailed on 12 February 2015, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 20 pages	
	2	Final Office Action mailed on 12 January 2017, issued in connection with U.S. Patent Application No. 14/504812, filed on 02 October 2014, 25 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	3	Final Office Action mailed on 13 December 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 41 pages	
	4	Final Office Action mailed on 13 October 2011, issued in connection with U.S. Patent Application No. 12/035112, filed on 21 February 2008, 10 pages.	
	5	Final Office Action mailed on 15 July, 2015, issued in connection with U.S. Patent Application No. 14/504812, filed on 02 October 2014, 18 pages	
	6	Final Office Action mailed on 15 June 2015, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 25 pages	
	7	Final Office Action mailed on 17 December 2014, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 36 pages	
	8	Final Office Action mailed on 19 October 2016, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 14 pages	
	9	Final Office Action mailed on 21 January 2010, issued in connection with U.S. Patent Application No. 11/906702, filed on 02 October 2007, 27 pages	
	10	Final Office Action mailed on 22 October 2014, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 12 pages	
	11	Final Office Action mailed on 23 October 2014, issued in conection with U.S. Patent Application No. 13/705176, filed on 05 December 2012, 23 pages	
	12	Final Office Action mailed on 24 February 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 28 pages	
	13	Final Office Action mailed on 25 May 2016, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 33 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	14	Final Office Action mailed on 28 April 2015, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 20 pages	
	15	Final Office Action mailed on 30 November 2015, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 26 pages.	
	16	Fireball DVD and Music Manager DVDM-100 Installation and User's Guide, Copyright 2003, 185 pages	
	17	Fireball MP-200 User's Manual, Copyright 2006, 93 pages	
	18	Fireball Remote Control Guide WD006-1-1, Copyright 2003, 19 pages	
	19	Fireball SE-D1 User's Manual, Copyright 2005, 90 pages	
	20	First Action Interview Office Action Summary mailed on 15 April 2015, issued in connection with U.S. Patent Application No. 14/505027, filed on 02 October 2014, 6 pages	
	21	FOBER et al., "Clock Skew Compensation over a High Latency Network," Proceedings of the ICMC, 2002, pp. 548-552	
	22	FULTON et al., "The Network Audio System: Make Your Application Sing (As Well As Dance)!" The X Resource, 1994, 14 pages.	
	23	GASTON et al., "Methods for Sharing Stereo and Multichannel Recordings Among Planetariums," Audio Engineering Society Convention Paper 7474, 2008, 15 pages	
	24	General Event Notification Architecture Base: Client to Arbiter (April 2000) (23 pages)	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	25	HANS et al., "Interacting with Audio Streams for Entertainment and Communication," Proceedings of the Eleventh ACM International Conference on Multimedia, ACM, 2003, 7 pages	
	26	HERRE et al., "The Reference Model Architecture for MPEG Spatial Audio Coding," Audio Engineering Society Convention Paper (Presented at the 118th Convention), May 28-31, 2005, 13 pages	
	27	Home Networking with Universal Plug and Play, IEEE Communications Magazine, Vol. 39 No. 12 (December 2001) (D +M_0402025-40) (16 pages)	
	28	'Home Theater Control Systems," Cinema Source, 2002, 19 pages	
	29	HORWITZ, Jeremy, "Logic3 i-Station25," retrieved from the internet: http://www.ilounge.com/index.php/reviews/entry/ ogic3-i-station25/, last visited December 17, 2013, 5 pages.	
	30	HUANG C.M., et al., "A Synchronization Infrastructure for Multicast Multimedia at the Presentation Layer," IEEE Transactions on Consumer Electronics, 1997, pp. 370-380, Vol. 43, No. 3.	
	31	IBM Home Director Installation and Service Manual, Copyright1998, 124 pages	
	32	IBM Home Director Owner's Manual, Copyright 1999, 67 pages	
	33	Implicit, LLC v. Sonos, Inc. (No. 14-1330-RGA), Defendant's Original Complaint (Mar. 3, 2017) (15 pages)	
	34	Integra Audio Network Receiver NAC 2.3 Instruction Manual, 68 pages	
	35	Integra Audio Network Server NAS 2.3 Instruction Manual, pp. 1-32	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	36	Integra Service Manual, Audio Network Receiver Model NAC-2.3, December 2002, 44 pages.	
	37	Intel Designing a UPnP AV Media Renderer, v. 1.0 ("Intel AV Media Renderer") (May 20, 2003) (SONDM000115117-62) (46 pages)	
	38	Intel Media Renderer Device Interface ("Intel Media Renderer") (September 6, 2002) (62 pages)	
	39	Intel SDK for UPnP Devices Programming Guide, Version 1.2.1, (November 2002) (30 pages)	
	40	INTERNATIONAL BUREAU, International Preliminary Report on Patentability mailed on 08 January 2015, issued in connection with International Application No. PCT/US2013/046372, filed on 18 June 2013, 6 pages	
	41	INTERNATIONAL BUREAU, International Preliminary Report on Patentability, mailed on 08 January 2015, issued in connection with International Application No. PCT/US2013/046386, filed on 18 June 2013, 8 pages	
	42	INTERNATIONAL BUREAU, International Preliminary Report on Patentability mailed on 30 January 2014, issued in connection with International Application No. PCT/US2012/045894, filed on 09 July 2012, 6 pages	
	43	INTERNATIONAL SEARCHING AUTHORITY, International Search Report mailed on 01 August 2008, in connection with International Application No. PCT/US2004/023102, 5 pages	
	44	INTERNATIONAL SEARCHING AUTHORITY, International Search Report mailed on 26 August 2013, issued in connection with International Application No. PCT/US2013/046372, filed on 18 June 2013, 3 pages	
	45	INTERNATIONAL SEARCHING AUTHORITY, International Search Report mailed on 26 December 2012, issued in connection with International Application No. PCT/US2012/045894, filed on 09 July 2012, 3 pages	
	46	INTERNATIONAL SEARCHING AUTHORITY, International Search Report mailed on 30 September 2013, issued in connection with International Application No. PCT/US2013/046386, filed on 18 June 2013, 3 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

	47	INTERNATIONAL SEARCHING AUTHORITY, Written Opinion mailed on 26 August 2013, issued in connection with International Application No. PCT/US2013/046372, filed on 18 June 2013, 4 pages	
	48	INTERNATIONAL SEARCHING AUTHORITY, Written Opinion mailed on 26 December 2012, issued in connection with International Application No. PCT/US2012/045894, filed on 09 July 2012, 4 pages.	
	49	INTERNATIONAL SEARCHING AUTHORITY, Written Opinion mailed on 30 September 2013, issued in connection with International Application No. PCT/US2013/046386, filed on 18 June 2013, 6 pages.	
	50	ISHIBASHI et al., "A Comparison of Media Synchronization Quality Among Reactive Control Schemes," IEEE Infocom, 2001, pp. 77-84	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013882
	Filing Date	2016-12-21
	First Named Inventor	
	Art Unit	3992
	Examiner Name	STEELMAN, Mary J.
	Attorney Docket Number	04-0601-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Neilesh R. Patel/	Date (YYYY-MM-DD)	2017-04-25
Name/Print	Neilesh R. Patel	Registration Number	50918

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,882	12/27/2016	7571014	04-0601-REEXAM (15-536)	8704

107361 7590 04/20/2017

McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

EXAMINER
STEELMAN, MARY J

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
04/20/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

DO NOT USE IN PALM PRINTER

(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

Christopher J. Rourk
Jackson Walker LLP
2323 Ross Avenue, Suite 600
Dallas, TX 75201

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/013,882*.

PATENT NO. *7571014*.

ART UNIT *3992*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

/Mary Steelman/

Primary Examiner

PTOL-465 (Rev.07-04)

Office Action in Ex Parte Reexamination	Control No. 90/013,882	Patent Under Reexamination 7571014	
	Examiner MARY STEELMAN	Art Unit 3992	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a. ☒ Responsive to the communication(s) filed on *12/21/2016, 12/27/2016* .
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

b. ☐ This action is made FINAL.

c. ☐ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire *3* month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☒ Claims *1,8,16,18,21,25 and 38* are subject to reexamination.
1b. ☒ Claims *2-7,9-15,17,19,20,22-24,26-37 and 39-44* are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _____ are patentable and/or confirmed.
4. ☒ Claims *1,8,16,18,21,25 and 38* are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a) ☐ approved (7b) ☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the certified copies have
   1 ☐ been received.
   2 ☐ not been received.
   3 ☐ been filed in Application No. _____ .
   4 ☐ been filed in reexamination Control No. _____.
   5 ☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

The present application is being examined under the pre-AIA first to invent provisions.

***Ex Parte* Reexamination Non Final Office Action,**

The Third Party Request (Request file date 12/21/2016, superseded by Request file date 12/27/2016 to include the reexamination of claim 25) for *ex parte* reexamination of claims 1, 8, 16, 18, 21, 25, and 38 of USPN 7,571,014 to Robert A. Lambourne and Nicholas A. J. Millington is acknowledged. A substantial new question of patentability affecting claims 1, 8, 16, 18, 21, 25, and 38 of USPN 7,571,014 (hereinafter "'014") has been determined in the Order Granting *Ex Partes* Reexamination (hereafter the "Order") mailed 01/26/2017. The Request and Appendices A, B, and C, received 12/27/2016, are incorporated by reference. The reexamination control number is 90/013882.

The earliest priority afforded to US 7,571,014 is 04/01/2004.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "a Patent Applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extension of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Ongoing Duty to Disclose

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent under reexamination throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly appraise the Office of any such activity or proceeding throughout the course of this reexamination proceeding.

Litigation

Litigation was found by the office: Sonos Inc. v. D&M Holdings Inc. et al. 1:14cv1330.

Prior Art References Relied Upon in the Request

A substantial new question of patentability affecting claims 1, 8, 16, 18, 21, 25, and 38 of the '014 patent is raised by the request for *ex parte* reexamination. A total of six references (**Isely, UPnP Standard collection of documents, Microsoft UPnP and NexSys, Berezowski, and Tomassetti**) have been asserted in the Request as providing teachings relevant to the claims of the '014 patent:

In view of the Order, the one or more of the references raise a reasonable likelihood that the requester will prevail with respect to at least one of the patent claims challenged in the request. The following proposed rejections are the main issues to be discussed.

1. The UPnP Standard, a collection of documents: Universal Plug and Play ("UPnP") AV Architecture:1 For UPnP™ Version 1.0, June 25, 2002 ("**UPnP AV**"); RenderingControl:1

Service Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("**UPnP Rendering Control**"); MediaServer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("**UPnP Media Server**"); Universal Plug and Play Device Architecture V. 1.0, June 8, 2000 ("**UPnP Architecture**"); MediaRenderer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("**UPnP Media Renderer**"). All documents are prior art to the '014 patent under reexamination. See Request 12/27/2016, pp. 26-34, incorporated by reference.

The UPnP Standard has not been previously applied to rejections made in the prosecution of '014.

2. Universal Plug and Play (UPnP) MS UPnP (August 2001, Tom Fount, 18 pages), (hereinafter "**MS UPnP**" or "**Microsoft UPnP**"). Microsoft UPnP is prior art to the '014 patent under reexamination. See Request 12/27/2016, pp. 26-34, incorporated by reference.

MS UPnP has not been previously applied to rejections made in the prosecution of '014.

3. US Patent Application 2002/0124097 to Isely (hereinafter "Isely"); file date 12/29/2000. Isely is prior art to the '014 patent under reexamination. The Request 12/27/2016, pp. 34-40 is incorporated by reference.

Isely was previously used in the prosecution of US 7,571,014, but presents a substantial new question of patentability in a new light ([0041], the "characteristics" of Isely that could be

controlled and adjusted included the average volume of a group of players and because the various standards that are disclosed in Isely, such as the UPnP Standard, disclose the claimed functionality). Isely is presented with a new combination of prior art in the rejection of requested claims.

Portions of Isely were not cited or discussed on the record during prior prosecution, and would be considered important to a reasonable examiner. The relevant portions of Isely disclose the adjustment of an average volume level of multiple devices and Isely is not limited to the portions that only disclose the display of "volume." Isely disclosed control of "characteristics," where a characteristic can include a volume that is adjusted as part of a group from a minimum setting at startup, and the adjustment results in a synchronous change in the average volume level of the players. Additionally, various standards that are disclosed in Isely, such as the UPnP Standard, disclose the claimed functionality.

4**. NexSys Computer Controlled Audio Systems**, version 3.0, Software Manual (hereinafter "**NexSys**") (August 1997), 76 pages. NexSys is prior art to the '014 patent under reexamination. See Request 12/27/2016, pp. 42-44, incorporated by reference.

NexSys has not been previously applied to rejections made in the prosecution of '014.

5. US 7,218,708 to Berezowski et al., (hereinafter "**Berezowski**"); (file date 03/12/2004). Berezowski is prior art to the '014 patent under reexamination. See Request 12/27/2016, pp. 13 & 23-24.

Berezowski was previously used in the prosecution of US 7,571,014, but presents a substantial new question of patentability here in a new light, using a new combination of prior art references.

6. US Patent Application 2002/0188762 to Tomassetti, (hereinafter "**Tomassetti**"); (file date 05/04/2001). Tomassetti is prior art to the '014 patent under reexamination. See Request 12/27/2016, pp. 14-15 & 42-44, incorporated by reference.

Tomassetti was previously used in the prosecution of US 7,571,014, but presents a substantial new question of patentability here in a new light, using a new combination of prior art references.

Rejections Proposed by the Requester

Issue 1: Requester has proposed that the **UPnP Standard in combination with MS UPnP**, raises a substantial new question of patentability as to claims 1, 8, 16, 18, 21, 25, and 38 of the '014 patent. Claims 1, 8, 16, 18, 21, 25, and 38 should be rejected as obvious over UPnP in combination with MS UPnP. See Request 90/013,882, 12/27/2016, pp. 26-34 and Appendix A, both incorporated by reference. The proposed rejection will be entered.

Issue 2: Requester has proposed that Isely in combination with the **UPnP Standard, MS UPnP, and NexSys** raises a substantial new question of patentability as to claims 1, 8, 16, 18, 21, 25, and 38 of the '014 patent. Claims 1, 8, 16, 18, 21, 25, and 38 should be rejected as obvious over Isely in combination with the UPnP Standard, MS UPnP, and NexSys. See Request 90/013,882, 12/27/2016, pp. 34-40 and Appendix B, both incorporated by reference. The proposed rejection will be entered.

Issue 3: Requester has proposed that **Berezowski in combination with Tomassetti, Isely, the UPnP Standard, MS UPnP, and NexSys** raises a substantial new question of patentability as to claims 1, 8, 16, 18, 21, 25, and 38 of the '014 patent. Claims 1, 8, 16, 18, 21, 25, and 38 should be rejected as obvious over Berezowski in combination with Tomassetti, Isely, the UPnP Standard, MS UPnP, and NexSys. See Request 90/013,882, 12/27/2016, pp. 34-44 and Appendix C, both incorporated by reference. The proposed rejection will be entered.

Rejections

35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 8, 16, 18, 21, 25, and 38 are rejected under 35 USC 103(a) as obvious over Universal Plug and Play ("UPnP") AV Architecture:1 For UPnP™ Version 1.0, June 25, 2002 ("UPnP AV"); RenderingControl:1 Service Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Rendering Control"); MediaServer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Media Server"); Universal Plug and Play Device Architecture V. 1.0, June 8, 2000 ("UPnP Architecture"); MediaRenderer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Media Renderer"), (collectively referred to as "the UPnP Standard") in combination with Microsoft, Universal Plug and Play (UPnP) Client Support (8/2001) (hereinafter "Microsoft UPnP" or "MS UPnP"). (See Request pp. 2 & 26-34 and Appendix A (12/27/2016), incorporated by reference.)

The UPnP standard was developed by the industry to provide a generic user interface for media rendering devices. See, e.g. UPnP Media Server at page 7 ("MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc.) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network."); UPnP Rendering Control at page 6 ("audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports."). The UPnP Standard explicitly discloses the control of multi-channel audio, and Control Points for user control and adjustment of any rendering attribute that a device

supports (see UPnP Rendering Control, page 1), including control of channel spatial positions, such as Left Front, Right Front and so forth (see UPnP Rendering Control, page 16). The UPnP Standard also explicitly discloses that multiple media Tenderers can be controlled by a single media server. For example, UPnP Av discloses at page 7 that "[multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time.". In accordance with this disclosure, a combined UPnP Media Server and UPnP Control Point with multiple virtual instances of the AV Transport service can support multiple other UPnP Media Renderer devices in a zone group, such as by providing audio and controls…the UPnP Standard explicitly discloses a standardized format for use in creating user interface devices, such as controllers 140 and 142, for controlling media rendering devices, such as zone players 102, 104 and 106, to interface with media servers, such as audio sources 110 and 112.

MS UPnP (p. 2) teaches that Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system and serve as a platform for building and running control point applications to control UPnP connected devices and services. The Internet Connection Sharing (ICS) service uses UPnP to announce the availability of the service to other computers on the network, which are running UPnP clients.

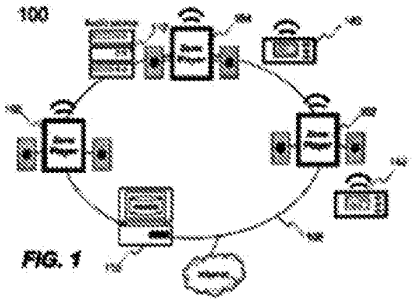
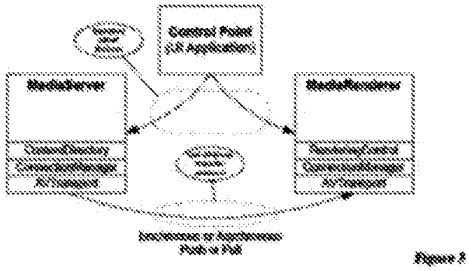
1. **A method for controlling a plurality of players, the method comprising:**

displaying on a screen a first list showing at least available players;

(Request, pp. 25-26) **UPnP AV**, p. 5: system architecture controlling devices 140 and 142 (maps to UPnP Control Point), audio source 110 & 112 (maps to UPnP Media Server), and the zone players 102, 104 and 106 (maps to UPnP Media Renderer).

Microsoft UPnP, p. 2, "Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system. Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services. The Internet Connection Sharing (ICS) service uses UPnP to announce the availability of the service to other computers on the network, which are running UPnP clients."

Appendix A

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
1. A method for controlling a plurality of players, the method comprising:	The UPnP Standard discloses a method for controlling a plurality of players (UPnP Media Renderers, which can also be combined with a UPnP Media Server in a single device, referred to herein as a "UPnP Combined Device"). The UPnP Standard was known to the inventors of the '014 Patent but was not disclosed to the Patent Office during the prosecution of the '014 Patent. An example of the manner in which Sonos copied the UPnP Standard can be seen from comparing Figure 1 of the '014 Patent with the system architecture diagram at UPnP AV, pg. 5:  '014 Patent, Fig. 1  UpnP AV, pg. 5 **UPnP Control Point = '014 Controllers 140 and 142** As can be seen above, the UPnP Standard discloses a control point that is equivalent to controllers 140 and 142 in the '014 Patent, a UPnP Media Server that is equivalent to audio source 110 and 112, and a UPnP Media Renderer that is equivalent to zone players 102, 104 and 106. The UPnP Control Point of the UPnP Standard can be implemented as an application operating on a "a wireless PDA-like device with a small display" (IP1), as well as an application operation on a person computer, tablet computer with a touch screen interface or other similar devices, and was provided for the purpose of controlling a plurality of UPnP Media Servers and UPnP Media Renderers. The UPnP Control Point can operate on a personal computer in conjunction with an operating system, such as Windows XP, which provided UPnP support. (IP4)

1

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	UPnP Media Server = '014 Audio Sources 110 and 112 and Zone Players 102, 104 and 106 Examples of a UPnP Media Server include a "VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." (1P2). The UPnP Media Server can also be combined with the UPnP Media Renderer (and with the UPnP Control Point, if desired), as was done with the zone players 102, 104 and 106 of the '014 Patent. (1P3) **UPnP Media Renderer = '014 Zone Players 102, 104 and 106** Examples of a UPnP Media Renderer include a "stereo" and "network enabled speakers." (1P1). In other words, '014 zone players 102, 104 and 106 provide a UPnP Combined Device, and can support multiple instantiations of those UPnP Media Servers and UPnP Media Renderers. The '014 controllers 140 and 142 are configured to act as UPnP Control Points, which can configure one of the zone players 102, 104 or 106 to be a UPnP Media Server, and to provide content to the others of zone players 102, 104 and 106 that are configured to be UPnP Media Renderers (the zone player that is the UPnP Media Server can also have a combined UPnP Media Renderer and can play local or remote content). 1P1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 1P2. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. IP3. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. IP4. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2.

3

displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;

(Request, 12/27/2016, p. 26) **UPnP AV,** p. 9, "Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations 1. Discover

AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered."

Thus, the UPnP Standard discloses displaying on a screen a first list showing at least available players (media servers); and displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head (media renderers).

Appendix A

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
1A) displaying on a screen a first list showing at least available players;	The UPnP Standard discloses that UPnP Control Points display UPnP presentation pages, and that UPnP presentation pages are written in HTML version 3.0 or higher. (1A15). HTML includes list display mechanisms. The UPnP Standard also discloses a discovery service for locating devices that are players (such as devices that are combined UPnP Media Servers and UPnP Media Renderers) on the network and a user interface for displaying the discovered players at a UPnP Control Point in a manner that requires lists or other common display mechanisms. (1A1, 1A5, 1A6, 1A9, 1A11, 1A12) The UPnP Control Point display of discovered players (UPnP Media Renderers) in HTML could include lists, and the UPnP Standards disclose allowing users to select from available UPnP Media Servers and UPnP Media Renderers (1A4) using a UPnP Control Point, which also requires those devices to be listed on a display of the UPnP Control Point. Operating systems such as Windows XP also provided tools for UPnP Control Points to display a list of available UPnP Media servers (content sources) and UPnP Media Renderers (players) on a screen, such as in the form of icons, and Windows allows the user to configure icons as lists. (1A18, 1A19) Sonos has accused groups of icons on a screen as meeting the limitation of a list in the concurrent litigation. When there are multiple independent sets of rendering hardware associated with a UPnP Media Renderer device, such as separate speakers, the UPnP Standard instructs that the UPnP Control Point presents those as multiple instantiations of the UPnP Media Renderer device, each with its own rendering control and connection manager, which would require a list of those devices. (1A2, 1A3) Users interact with the UPnP Control Point through a user interface, which commonly uses a list for multiple items, such as a list of player URLs that can each be selected to allow a user to access player-specific controls for services. (1A7, 1A8) The UPnP Media Renderers (players) can be assigned "user friendly names," such as living room, kitchen, etc. (1A10). 1A1. "Most rendering devices contain a number of dynamically configurable attributes that affect how the current content is rendered. For example, video rendering devices, such as TVs, allow user control of display characteristics such as brightness and contrast, whereas audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl:1 service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports. The RenderingControl:1 service enables a Control Point to: • Discover the set of attributes supported by the device. • Retrieve the current setting of any supported attribute • Change the setting of (e.g. control) any modifiable attribute • Restore the settings defined by a named Preset." UPnP Rendering Control, pg. 6.

4

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	1A2. "Note that a single physical device may include multiple logical devices. Multiple logical devices can be modeled as a single root device with embedded devices (and services) or as multiple root devices (perhaps with no embedded devices). In the former case, there is one UPnP device description for the root device, and that device description contains a description for all embedded devices. In the latter case, there are multiple UPnP device descriptions, one for each root device. A UPnP device description is written by a UPnP vendor. The description is in XML syntax and is usually based on a standard UPnP Device Template. A UPnP Device Template is produced by a UPnP Forum working committee; they derive the template from the UPnP Template Language, which was derived from standard constructions in XML. This section explains the format for a UPnP device description, UPnP Device Templates, and the part of the UPnP Template Language that covers devices." UPnP Architecture, pg. 14 1A3. "As described in the Media Renderer device template, a rendering device that contains multiple, independent rendering hardware (e.g. two independent display screen, or two independent sets of output speakers) shall be modeled as multiple instantiations of the MediaRenderer device, each with its own Rendering Control, Connection Manager, and (optional) AV Transport services. In other words, from an UPnP AV modeling point of view, each output on a physical rendering device is treated as a completely independent Media Rendering device. Refer to the Media Renderer device template for more information." UPnP Rendering Control, pg. 40. 1A4. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is

5

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 1A5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 1A6. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the

6

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UpnP AV pgs. 9-10.

7

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	1A7. "In most cases, the choice of AVTransport actions that are actually invoked will likely be directed by the end-user as they interact with the Control Point's UI." UPnP Rendering Control pg. 8 1A8. "Step 5 in UPnP networking is presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device. The section on Presentation below explains the protocol for retrieving a presentation page." UPnP Architecture, pg. 3. 1A9. "Addressing is Step 0 of UPnP networking. Through addressing, devices get a network address. Addressing enables discovery (Step 1) where control points find interesting device(s), description (Step 2) where where control points learn about device capabilities, control (Step 3) where a control point sends commands to device(s), eventing (Step 4) where control points listen to state changes in device(s), and presentation (Step 5) where control points display a user interface for device(s)." UPnP Architecture, pg. 4. 1A10. "Once a device has a valid IP address for the network, it can be located and referenced on that network through that address. There may be situations where the end user needs to locate and identify a device. In these situations, a friendly name for the device is much easier for a human to use than an IP address." UPnP Architecture, pg. 5. 1A11. "friendlyName Required. Short description for end user. Should be localized (cf. ACCEPT-/CONTENT-LANGUAGE headers). Specified by UPnP vendor. String. Should be < 64 characters." UPnP Architecture, pg. 17. 1A12. "Presentation is Step 5 in UPnP networking. Presentation comes after addressing (Step 0) where devices get network addresses, after discovery (Step 1) where control points find interesting device(s), and after description (Step 2) where control points learn about device capabilities. Presentation exposes an HTML-based user interface for controlling and/or viewing device status. Presentation is complementary to control (Step 3) where control points send actions to devices, and eventing (Step 4) where control points listen to state changes in device(s). After a control point has (1) discovered a device and (2) retrieved a description of the device, the

8

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	control point is ready to begin presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device." UPnP Architecture, pg. 52. 1A13. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 1A14. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 1A15. "At the highest layer, the presentation page is specified by a UPnP vendor. Moving down the stack, the UPnP Device Architecture specifies that this page be written in HTML. The page is delivered via HTTP over TCP over IP. For reference, colors in [square brackets] are included for consistency with other sections in this document. To retrieve a presentation page, the control point issues an HTTP GET request to the presentation URL, and the device returns a presentation page. Unlike the UPnP Device and Service Templates, and standard device and service types, the capabilities of the presentation page are completely specified by the UPnP vendor. The presentation page is not under the auspices of a UPnP Forum working committee. The page must be an HTML page; it should be version HTML 3.0 or later. However, other design aspects are left to the vendor to specify. This includes, but is not limited to, all capabilities of the control point's browser, scripting language or browser plug-ins used, and means of interacting with the device. To implement a presentation page, a UPnP vendor may wish to use UPnP mechanisms for control and/or eventing, leveraging the device's existing capabilities but is not constrained to do so. Presentation pages should use mechanisms provided by HTML for localization (e.g., META tag with charset attribute). Control points should use the ACCEPT- / CONTENT-LANGUAGE feature of HTTP to try to retrieve a localized presentation page. Specifically, a control point may include a HTTP ACCEPT-LANGUAGE header in the request for a presentation page; if an ACCEPT-LANGUAGE header is present in the request, the response must include a CONTENT-LANGUAGE header to identify the page's language." UPnP AV, pg. 53.

9

1B. displaying, when at least one	The UPnP Standard discloses displaying, when at least one of the UPnP Combined Devices (players) (1B1, 1B4) is selected as a zone group head (such as one of the combined devices that is operating as a UPnP Media Server),

9

17313092v.1

Page 9

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;	on a screen of a UPnP Control Point, a second list showing at least some of the UPnP Combined Devices (players) that are eligible to be grouped with the zone group head (UPnP Media Server device), such as a list of icons or URLs of available players. (1B2, 1B3, 1B5) In the concurrent litigation, Sonos has accused the display of icons on a screen as meeting the limitations of the first list and second list. In addition, based on the construction of the term "player" proposed by Sonos in the concurrent litigation, a player can be either a UPnP Media Server or a UPnP Media Renderer. 1B1. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 1B2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 1B3. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 1B4. "As described above, the AV Architecture consists of three distinct components that perform well-defined roles. In some cases, these components will exist as separate, individual UPnP devices. However, this need not be the case. Device manufacturers are free to combine any of these logical entities into a single physical device. In such cases, the individual components of these combo devices may interact with each other using either the standard UPnP control protocols (e.g. SOAP over HTTP) or using some private communication mechanism. In

10

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	either case, the function of each logical entity remains unchanged. However, in the later case, since the communication between the logical entities is private, the individual components will not be able to communicate with other UPnP AV devices that do not implement the private protocol." UPnP AV, pg. 6. 1B5. "MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network. In general terms, the process begins with the Control Points discovering MediaServer and MediaRenderer devices within the home network. The Control Point interacts with a MediaServer(s) to locate a desired piece of content (e.g. a movie, a song, a playlist, a photo album, etc). After the content has been identified, the Control point needs to identify a common transfer protocol and data format that can be used to transfer the content from the MediaServer to the desired MediaRenderer. After these transfer parameters have been established, the Control Point controls the flow of the content (e.g. Play, Pause, Stop, Seek, etc.). (Depending on the selected transfer protocol, these flow control operations are sent either to the MediaServer or MediaRenderer, but not both). The actual transfer of the content is performed directly by the MediaServer and MediaRenderer. The content transfer happens independently from the Control Point and does not involve UPnP itself at all. The Control Point uses UPnP to setup the transfer of the content, but the transfer is performed using a transfer protocol other than UPnP." UPnP Media Server, pg. 7

11

forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

(Request, 12/27/2016, p. 27) **UPnP Media Server**, p. 7, "the Control Point uses the ConnectionManager::PrepareFor Connection() action on each device to inform the device that the specified protocol/format are about to be used. Depending on which transfer protocol was selected, the PrepareForConnection() action on either the MediaServer or MediaRenderer will return an AVTransport InstanceID to the Control Point."

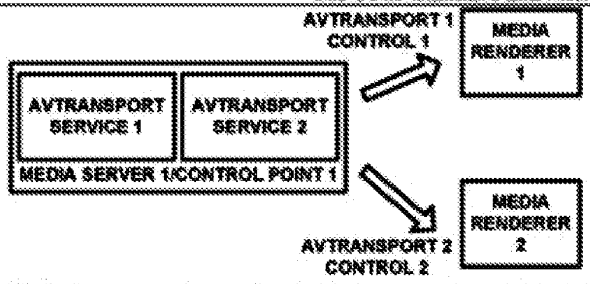
A UPnP Control Point can be used to establish a connection between a first device with a UPnP Media server and a Second Device with a UPnP Media Renderer, to create a "zone group."

Appendix A

1C. forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group, and	The UPnP Standard discloses a UPnP Connection Manager that forms a zone group started with the zone group head, such as a first combined UPnP Media Server/UPnP Media Renderer device that is acting as a UPnP Media Server, after one or more players (second or more combined UPnP Media Server/UPnP Media Renderer devices) from the at least some of the players are selected to join the zone group. (1C3, 1C4). As noted above, UPnP discloses the combination of a UPnP Media Server and UPnP Media Renderer into a single device. (1C1, 1C2). As described above, a UPnP Control Point can be used to perform these functions. (1C5, 1C6, 1C7). Combinations of UPnP Media Renderers can be used to provide stereo or surround sound through different speakers. (1C8). 1C1. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV

11

	can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 1C2. "As described above, the AV Architecture consists of three distinct components that perform well-defined roles. In some cases, these components will exist as separate, individual UPnP devices. However, this need not be the case. Device manufacturers are free to combine any of these logical entities into a single physical device. In such cases, the individual components of these combo devices may interact with each other using either the standard UPnP control protocols (e.g. SOAP over HTTP) or using some private communication mechanism. In either case, the function of each logical entity remains unchanged. However, in the later case, since the communication between the logical entities is private, the individual components will not be able to communicate with other UPnP AV devices that do not implement the private protocol." UPnP AV, pg. 6. 1C3. "5.1.2. ConnectionManager Service This service is used to manage the connections associated with a particular device. The primary action of this service (within the context of a MediaServer) is PrepareForConnection(). When implemented, this optional action is invoked by the Control Point to give the Server an opportunity to prepare itself for an upcoming transfer. Depending on the specified transfer protocol and data format, this action may return the InstanceID of an AVTransport service that the Control Point can use to control the flow of this content (e.g. Stop, Pause, Seek, etc). As described below, this InstanceID is used to distinguish multiple (virtual) instances of the AVTransport service, each of which is associated with a particular connection to Renderer. Multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time. When the Control Point wants to terminate this connection, it should invoke the MediaServer's ConnectionComplete() action (if implemented) to release the connection. If the PrepareForConnection() action is not implemented, the Control Point is only able to support a single Renderer at an given time. In this case, the Control Point should use InstanceID=0." UPnP AV, pg. 7.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	 Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that include the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 1C9, 1C10, 1C11 1C4. "5.2.2. ConnectionManagerService This service is used to manage the connections associated with a device. Within the context of a MediaRenderer, the primary action of this service is the GetProtocolInfo() action. This action allows a Control Point to enumerate the transfer protocols and data formats that are supported by the MediaRenderer. This information is used to predetermine if a MediaRenderer is capable of rendering a specific content item. A MediaRenderer may also implement the optional PrepareForConnection() action. This action is invoked by the Control Point to give the Render an opportunity to prepare itself for an upcoming transfer. Additionally, this action assigns a unique ConnectionID that can be used by a 3rdparty Control Point to obtain information about the connections that the MediaRenderer is using. Also, depending on the specified transfer protocol and data format being used, this action may return a unique AVTransport InstanceID that the Control Point can use to control the flow of the content (e.g. Stop, Pause, Seek, etc). (Refer to the AVTransport section below for additional details). Lastly, PrepareForConnection() also returns a unique Rendering Control InstanceID which can be used by the Control Point to control the rendering characteristics of the associated content as described above. When the Control Point wants to terminate a connection, it should invoke the Renderer's ConnectionComplete() action (if

13

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	implemented) to release the connection." UPnP AV, pg. 8. IC5. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory: Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager: GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager: PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or

14

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UPnP AV pgs. 9-10. 1C6. "2.2.1. Description of Device Requirements Each implementation of the MediaRenderer requires a Rendering Control and ConnectionManager service. The Rendering Control service allows Control Points to control the various rendering capabilities of the device. The Connection Manager is used to enumerate and select a particular transfer protocol and data format to be used for transferring the content. Additionally, the Connection Manager also allows Control Points, such as a home network management application, to discover useful information about the content transfers that the device is actively participating in. Such information could be useful to a Quality Of Service capability, which may be defined in the future." UPnP Media Renderer, pg. 5. 1C7. "2.2.2. Relationships Between Services The Connection Manager's PrepareForConnection() action provides the trigger point for creating new instances of the Rendering Control and AVTransport service. When a new connection is established (one that requires an instance of the AVTransport on the MediaRenderer, which is determined by the selected transfer protocol), the PrepareForConnection() action returns the InstanceId of the Rendering Control and AVTransport services that are bound to that connection. The Rendering Control instance is used by the Control Point to control how the content from that connection is rendered. The AVTransport instance is used by the Control Point to control the flow (e.g. Play, FF, REW, Seek, etc) of the content received via that connection. As described in the

15

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	RenderingControl and AVTransport specification, each instance of these services operates independently from all other instances." UPnP Media Renderer, pg. 6. IC8. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17.

16

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	IC9. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. IC10. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. IC11. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

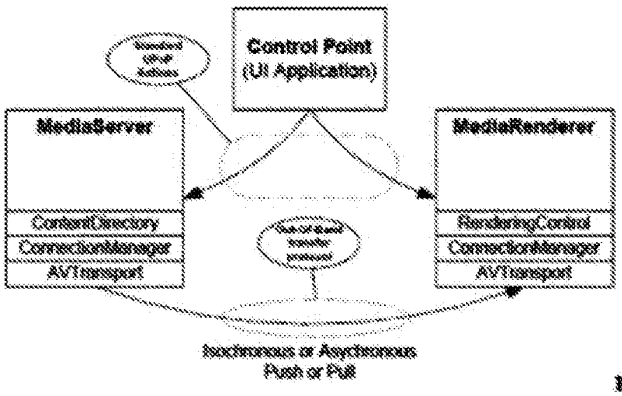
17

synchronizing all players in the zone group;

(Request, 12/27/2016, pp. 27-28) UPnP AV, p. 5 discloses the use of Isochronous- push Transfer Protocols (IEC 61883/IEEE 1394), stating that when "using an isochronous transfer protocol (e.g. IEC 61883/IEEE 1394), the underlying transfer mechanism provides realtime content transfer between the MediaServer and MediaRenderer. This ensures that individual packets of content are transferred within a certain (relatively small) period of time. This real-

time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer." Further details regarding this isochronous-push transfer embodiment is provided at **UPnP AV**, pp. 12, 13, 18, 21.

Appendix A

1D synchronizing all players in the zone group;	The UPnP Standard discloses synchronizing all zones in the zone group, such as by using the IEC61883/IEEE1394 isochronous transfer protocols to synchronize UPnP Media Servers and UPnP Media Renderers.  Figure 3 UPnP AV, pg. 5.

17

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	"6.1. Isochronous-Push Transfer Protocols (IEC61883 /IEEE1394) When using an isochronous transfer protocol (e.g.IEC61883/ IEEE1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual packets of content are transferred within a certain (relatively small) period of time. This real-time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer. Refer to the diagram below for details." UPnP AV, pgs. 12, 13, 18, 21.

18

adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

(Request, 12/27/2016, pp. 28-31) **UPnP Rendering Control**, p. 16: A_ARG_TYPE_Channel is a variable that "is used to identify a particular channel of an audio output stream," and that such channels include the normal stereo and surround channels ("A channel cluster is the collection of all channels, including the Master channel, within an audio stream. ... A single channel (mono) cluster has only one channel - the Master channel. A two-channel (stereo) cluster has three channels - the Master channel, the Left Front channel, and the Right Front channel.")

UPnP Rendering Control, p. 41 discloses that "audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole." Thus, separate devices can receive separate channels, and the channels can be controlled independently or as a whole.

At start up, a UPnP Control Point adjusts a volume meter for the master channel from a zero setting, which also represents an averaged value of audio volumes of the players in the group, which are also at the zero setting. Adjusting of the master volume meter includes changing a volume of each of the group of players in the channel group synchronously, in accordance with an adjustment made by a user. **The UPnP Standard** also explicitly discloses an example that involves the synchronized adjustment of an average volume level for a plurality of players. See **UPnP Rendering Control**, pp. 41-42, regarding setting the volume and other volume functions.

UPnP AV, pg. 6, ("The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a 17520541v.2 music controlled water fountain, etc."). The different channels of the audio can be played through network-enabled speakers.

(Request, 12/27/2016, p. 31) The UPnP standard was developed by the industry to provide a generic user interface for media rendering devices. See, e.g. **UPnP Media Server**, p. 7 ("MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc.) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network."); **UPnP Rendering Control,** p. 6 ("audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports.").

UPnP Rendering Control, pp. 1 & 16, the UPnP Standard explicitly discloses the control of multi-channel audio, and Control Points for user control and adjustment of any rendering attribute that a device supports, including control of channel spatial positions, such as Left Front, Right Front and so forth.

The UPnP Standard also explicitly discloses that multiple media Tenderers can be controlled by a single media server. For example, **UPnP Av,** p. 7 that "multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time." In accordance with this disclosure, a combined UPnP Media Server and UPnP Control Point with multiple virtual instances of the AV Transport service can support multiple other UPnP Media Renderer devices in a zone group, such as by providing audio and controls:

The two AV Transport Services can be started at the same time for the same source, resulting in synchronized playback. The two channels can include a master a left front channel and a right front channel that have an associated master channel, such that the master channel

volume control can be used to synchronously control the volume of the master and the left front channel and the right front channel.

Appendix A

1E. adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	The UPnP Standard discloses multiple audio channels (1E1) and a Rendering Control service that allows "Control Points to control each of these channels independently or as a whole" (1E2). Adjusting the volume of all of the channels as a whole is performed by adjusting a master volume meter represented by an averaged value of audio volumes of the players in the group. (1E3) The averaged value is at least represented when the associated channels, which can each be assigned to a different wireless network-enabled speakers, are first set to the lowest level and then increased by the master as a whole. 1E4, 1E5 Adjusting the master volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. (1E3). 1E1. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS)

18

U.S. 7,471,014	The UPnP Standard and Microsoft UPnP
	• Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17. 1E2. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole." UPnP Rendering Control, pg. 41. 1E3. "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Control, pg. 42. 1E4 "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42. 1E5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.

(Request 12/27/2016, p. 3), The UPnP Standard was developed by the Open Connectivity Foundation. (Request 12/27/2016, p. 32), The UPnP Standard explicitly discloses a standardized format for use in creating user interface devices, such as controllers 140 and 142, for controlling media rendering devices, such as zone players 102, 104 and 106, to interface with media servers, such as audio sources 110 and 112.

Microsoft UPnP states (Microsoft UPnP, p. 2), "Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine The UPnP Standard with common operating system functionality such as that disclosed in Microsoft UPnP to teach the claimed limitations because (Microsoft UPnP, p. 1), Universal Plug and Play and Windows using a common set of standards and protocols for communicating enables evolving capabilities such as remote control and monitoring, sharing of digital data, and converging data from multiple devices and locations.

8. **The method of claim 1, wherein said synchronizing of all players in the zone group comprises:**

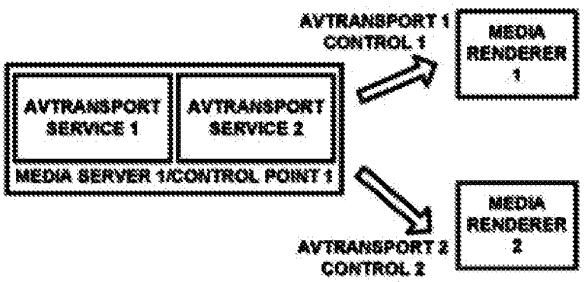
causing all players in the zone group to play an identical audio source; and

presenting the zone group in a manner that indicates a grouping.

Appendix A

8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:	

20

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
8A. causing all players in the zone group to play an identical audio source; and	The UPnP Standard discloses the use of multiple instances of the AVTransport service to allow a combined UPnP Media Server/UPnP Media Renderer device that is acting as UPnP Media Server to support multiple combined UPnP Media Server/UPnP Media Renderer devices that are action as Media Renderers at the same time, to cause all devices/players in a zone group (a group of UPnP Media Servers associated with a UPnP Media Renderer) to play an identical audio source (media server). (8A1) The claim limitation does not state that the players have to play the same content from the same source, just that they have to have an identical audio source, but UPnP discloses both scenarios. The claim limitation also does not state that the players have to play in synchrony, although as described above, the UPnP Standard discloses the use of isochronous Push Transfer Protocols (IEC61883 /IEEE1394) that results in synchrony. 8A1 "Multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time." UPnP AV, pg. 7.  Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that include the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 8A2, 8A3, 8A4 8A2. "Windows can also serve as a platform for building and running control point applications to control UPnP

21

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	connected devices and services." Microsoft UPnP, pg. 2. 8A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 8A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
8B. presenting the zone group in a manner that indicates a grouping.	The UPnP Standard represents the zone group in a manner that represents a grouping, such as by indicating speakers that play different channels for a multi-channel audio device. (8B1) This is referred to as a "channel cluster," and each of the separate speakers in the channel cluster can be a separate network-enabled speakers. (8B2) The channel cluster can also be displayed using the operating system, such as Microsoft Windows XP, which can display icons associated with each combined UPnP media Server/UPnP Media Renderer, with lists of associated services that include the devices that are receiving content from a server device. 8B3, 8B4, 8B5, 8B6, 8B7 8B1. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS)

22

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17. 8B2. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 8B3. "Devices are logical containers for a service or set of services, and possibly for other devices. Devices and services are identified partially by their type, which defines their minimum capabilities. Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system. Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services. The Internet Connection Sharing (ICS) service uses

23

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	UPnP to announce the availability of the service to other computers on the network, which are running UPnP clients." Microsoft UPnP, pg. 2. 8B4. "When the device tree was parsed and stored by the UPnP client implementation, the services were also enumerated and added to a list attached to the device. The client application can use the Services method on the device object to retrieve this list of services. This service collection can be parsed to locate a particular service and retrieve a service object." Microsoft UPnP, pg. 13. 8B5. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 8B6. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 8B7. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

24

16. **A method for controlling a plurality of players, the method comprising:**

Appendix A

16. A method for controlling a plurality of players, the method comprising:	The UPnP Standard discloses a method for controlling a plurality of players, which are combined UPnP Media Servers and UPnP Media Renderers, from a controller that is a UPnP Control Point, as discussed above.

24

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and

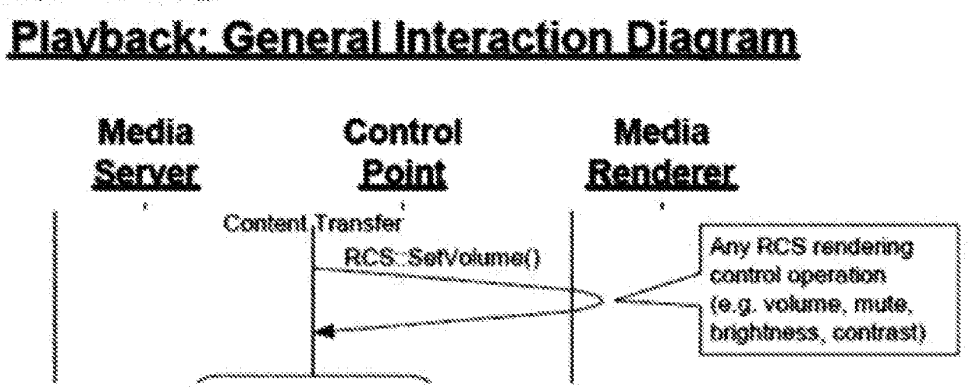
Appendix A

16A. displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an	As discussed above, the UPnP Standard discloses displaying on a screen of a Control Point (such as the screen of a wireless PDA device) a list showing a plurality of volume meters (such as separate volume meters for each device that is a combined UPnP Media Server and UPnP Media Renderer in a channel group that can include stereo or surround channels, and a volume meter for a master channel associated with the channel group), where the volume controls can display a relative volume setting or volume in decibels. (16A4). At least one of the volume meters representing an audio volume of one of the players (the UPnP Media Renderer's Rendering Control Service allows a user to control the volume setting, which requires a volume meter). (16A1). Another one of the volume meters (for the master) represents an audio volume of a group of players, when there is such a

24

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and	group (the master volume control represents an audio volume of the group of players, when there is such a group). (16A2). The media renderer's rendering control service of the UPnP Standard allowed a user to invoke any rendering control action, such as adjusting volume, which requires the use of a volume meter that represents the audio volume of the media renderer/player. (16A3). Microsoft UPnP functionality supported the creation of user interfaces from device presentation pages. 16A5, 16A6, 16A7 16A1. "8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc)." UPnP AV pg. 9. 16A2. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead]

25

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17." 16A3. UPnP AV pg. 11 (general interaction diagram showing control of media renderer/player from control point (RCS::SetVolume()):  16A4. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled.

26

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 16A5. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 16A6. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 16A7. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

27

adjusting one of the volume meters as desired after one of the volume meters from the list is selected,

wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and

Appendix A

16B. adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an	As discussed above, the UPnP Standard discloses adjusting one of the volume meters as desired after one of the volume meters from the list is selected. The list can be generated by an operating system such as Windows XP, which can generate icons or a list that represent URLs associated with devices that are combined UPnP Media Servers/UPnP Media Renderers. 16B1. Selection of the URL allows the user to access the volume meters associated with the device. 16B2. One of the volume meters is for the Master channel of the group of players, such as wireless speakers. 16B3, 16B4. The Master channel represents an averaged value of audio volumes of the players in the group when the players are all at the same level as the Master, such as by using the SetVolume control. 16B5. 16B1. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on

37

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
averaged value of audio volumes of the players in the group, and	the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 16B2. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 16B3. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control,

28

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	pgs. 16-17." 16B4. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a music controlled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), whereas other MediaRenderers may support a wide variety of content including video, audio, still images. The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 16B5. "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42.

29

said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix A

16C. said adjusting of the one of the volume meters includes changing a volume of each of	The UPnP Standard discloses that adjustments made to the master volume control are synchronously made by the UPnP Control Point (16C1) to the associated combined UPnP Media Server/UPnP Media Renderer devices, such as wireless network-enabled speakers (16C2) that are associated with each channel of the channel set for stereo or surround sound. (16C3). 16C1. "[T]he Control Point coordinates and synchronizes the behavior of both devices. . . ." UPnP AV, pg. 4.

29

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
the group of players synchronously in accordance with an adjustment made by a user.	16C2. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.

30

(Request 12/27/2016, p. 3), The UPnP Standard was developed by the Open Connectivity Foundation. (Request 12/27/2016, p. 32), The UPnP Standard explicitly discloses a standardized format for use in creating user interface devices, such as controllers 140 and 142, for controlling media rendering devices, such as zone players 102, 104 and 106, to interface with media servers, such as audio sources 110 and 112.

Microsoft UPnP states (Microsoft UPnP, p. 2), "Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine The UPnP Standard with common operating system functionality such as that disclosed in Microsoft UPnP to teach the claimed limitations because (Microsoft UPnP, p. 1), Universal Plug and Play and Windows using a common set of standards and protocols for communicating

enables evolving capabilities such as remote control and monitoring, sharing of digital data, and converging data from multiple devices and locations.

18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.

Appendix A

18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.	As discussed above, the UPnP Standard discloses adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time, such as the master volume group which actually adjusts the group of players at the same time. The UPnP Control Points can control each of the channels independently or as a whole, which requires a user interface that identifies the group of players that are being adjusted as a whole. 18A1 The user interface can be generated using Windows UPnP functions for generating presentation pages for listed devices. 18A2, 18A3, 18A4 18A1. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 18A2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 18A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 18A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

31

20. **The method of claim 16, further comprising playing an identical audio source in the group of players.**

Claim 20 is not requested for reexamination. Claim 21 is dependent on claim 20. Thus, the limitations of claim 20 are addressed.

Appendix A

20. The method of claim 16, further comprising playing an identical audio source in the group of players.	UPnP discloses that an identical audio source is played by the UPnP Media Server and the UPnP Media Renderer. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on a

31

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 1P3. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5.

32

21. **The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network**.

Appendix A

21. The method of claim 20, wherein the audio source is retrieved in form of audio data	UPnP discloses that the audio source is retrieved in form of audio data packets over the network, such as MP3 audio data. "When using an isochronous transfer protocol (e.g.IEC61883/ IEEE1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual

32

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
packets over the network.	packets of content are transferred within a certain (relatively small) period of time. This real-time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer. Refer to the diagram below for details." UPnP Av, pg. 12. "The AV Architecture allows devices to support different types of formats for the entertainment content (such as MPEG2, MPEG4, JPEG, MP3, Windows Media Architecture (WMA), bitmaps (BMP), NTSC, PAL, ATSC, etc.) and multiple types of transfer protocols (such as IEC-61883/IEEE-1394, HTTP GET, RTP, HTTP PUT/POST, TCP/IP, etc.)". UPnP AV, pg. 3.

33

25. **An apparatus for controlling a plurality of players, the apparatus comprising:**

Appendix A

25P. An apparatus for controlling a plurality of players, the apparatus comprising:	As discussed above, the UPnP Standard discloses an apparatus for controlling a plurality of players, such as a UPnP Control Point that is used for controlling devices that are combined UPnP Media Servers and UPnP Media Renderers.

33

a screen;

Appendix A

25A. a screen;	The UPnP Control Point includes a screen, such as a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 25A1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens. 25A2, 25A3, 25A4 25A1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's

33

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 25A2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 25A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

34

a screen driver commanding the screen;

Appendix A

25B. a screen driver commanding the screen;	The UPnP Control Point includes a screen driver commanding the screen, such as a screen driver of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 25B1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens that would require use of a screen driver. 25B2, 25B3, 25B4 25B1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.

34

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25B2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 25B3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25B4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

35

an input interface;

Appendix A

25C. an input interface;	The UPnP Control Point includes an input interface, such as an input interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the

	device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

a network interface;

Appendix A

25D. a network interface;	The UPnP Control Point includes a network interface, such as a network interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.

a memory for storing code for an application module;

Appendix A

25E. a memory for storing code for an application module;	The UPnP Control Point includes a memory for storing code for an application module, such as a memory of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the

36

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

37

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

Appendix A

25F. a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	The UPnP Control Point provides a UI for the user to interact with the system, which inherently requires a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, such as a processor of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device

37

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

38

displaying on a screen a first list showing at least available players;

Appendix A

25G. displaying on a screen a first list showing at least available players;	The UPnP Standard discloses that UPnP Control Points display UPnP presentation pages, and that UPnP presentation pages are written in HTML version 3.0 or higher. (25G15). HTML includes list display mechanisms. The UPnP Standard also discloses a discovery service for locating devices that are players (such as devices that are combined UPnP Media Servers and UPnP Media Renderers) on the network and a user interface for displaying the discovered players at a UPnP Control Point in a manner that requires lists or other common display mechanisms. (25G1, 25G5, 25G6, 265G9, 25G11, 25G12) The UPnP Control Point display of discovered players (UPnP Media Renderers) in HTML could include lists, and the UPnP Standards disclose allowing users to select from available UPnP Media Servers and UPnP Media Renderers (25G4) using a UPnP Control Point, which also requires those devices to be listed on a display of the UPnP Control Point. Operating systems such as Windows XP also provided tools for UPnP Control Points to display a list of available UPnP Media servers (content sources) and UPnP Media Renderers (players) on a screen, such as in the form of icons, and Windows allows the user to configure icons as lists. (25G18, 25G19) Sonos has accused groups of icons on a screen as meeting the limitation of a list in the concurrent litigation. When there are multiple independent sets of rendering hardware associated with a UPnP Media Renderer device, such as separate speakers, the UPnP Standard instructs that the UPnP Control Point presents those as multiple instantiations of the UPnP Media Renderer device, each with its own rendering control and connection manager, which would require a list of those devices. (25G2, 25G3) Users interact with the UPnP Control Point through a user interface, which commonly uses a list for multiple items, such as a list of player URLs that can each be selected to allow a user to access player-specific controls for services. (25G7, 25G8) The UPnP Media Renderers (players) can be assigned "user friendly names," such as living room, kitchen, etc. (25G10).

38

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25G1. "Most rendering devices contain a number of dynamically configurable attributes that affect how the current content is rendered. For example, video rendering devices, such as TVs, allow user control of display characteristics such as brightness and contrast, whereas audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl:1 service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports. The RenderingControl:1 service enables a Control Point to: • Discover the set of attributes supported by the device. • Retrieve the current setting of any supported attribute • Change the setting of (e.g. control) any modifiable attribute • Restore the settings defined by a named Preset," UPnP Rendering Control, pg. 6. 25G2. "Note that a single physical device may include multiple logical devices. Multiple logical devices can be modeled as a single root device with embedded devices (and services) or as multiple root devices (perhaps with no embedded devices). In the former case, there is one UPnP device description for the root device, and that device description contains a description for all embedded devices. In the latter case, there are multiple UPnP device descriptions, one for each root device. A UPnP device description is written by a UPnP vendor. The description is in XML syntax and is usually based on a standard UPnP Device Template. A UPnP Device Template is produced by a UPnP Forum working committee; they derive the template from the UPnP Template Language, which was derived from standard constructions in XML. This section explains the format for a UPnP device description, UPnP Device Templates, and the part of the UPnP Template Language that covers devices." UPnP Architecture, pg. 14 25G3. "As described in the Media Renderer device template, a rendering device that contains multiple, independent rendering hardware (e.g. two independent display screen, or two independent sets of output speakers) shall be modeled as multiple instantiations of the MediaRenderer device, each with its own Rendering Control, Connection Manager, and (optional) AV Transport services. In other words, from an UPnP AV modeling point of view, each output on a physical rendering device is treated as a completely independent Media Rendering device. Refer to the Media Renderer device template for more information." UPnP Rendering Control, pg. 40.

39

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25G4. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 25G5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 25G6. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user

40

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service,

41

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UpnP AV pgs. 9-10. 25G7. "In most cases, the choice of AVTransport actions that are actually invoked will likely be directed by the end-user as they interact with the Control Point's UI." UPnP Rendering Control pg. 8 25G8. "Step 5 in UPnP networking is presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device. The section on Presentation below explains the protocol for retrieving a presentation page." UPnP Architecture, pg. 3. 25G9. "Addressing is Step 0 of UPnP networking. Through addressing, devices get a network address. Addressing enables discovery (Step 1) where control points find interesting device(s), description (Step 2) where where control points learn about device capabilities, control (Step 3) where a control point sends commands to device(s), eventing (Step 4) where control points listen to state changes in device(s), and presentation (Step 5) where control points display a user interface for device(s)." UPnP Architecture, pg. 4. 25G10. "Once a device has a valid IP address for the network, it can be located and referenced on that network through that address. There may be situations where the end user needs to locate and identify a device. In these situations, a friendly name for the device is much easier for a human to use than an IP address." UPnP Architecture, pg. 5.

42

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25G11. "friendlyName Required. Short description for end user. Should be localized (cf. ACCEPT-/CONTENT-LANGUAGE headers). Specified by UPnP vendor. String. Should be < 64 characters." UPnP Architecture, pg. 17. 25G12. "Presentation is Step 5 in UPnP networking. Presentation comes after addressing (Step 0) where devices get network addresses, after discovery (Step 1) where control points find interesting device(s), and after description (Step 2) where control points learn about device capabilities. Presentation exposes an HTML-based user interface for controlling and/or viewing device status. Presentation is complementary to control (Step 3) where control points send actions to devices, and eventing (Step 4) where control points listen to state changes in device(s). After a control point has (1) discovered a device and (2) retrieved a description of the device, the control point is ready to begin presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device." UPnP Architecture, pg. 52. 25G13. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25G14. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 25G15. "At the highest layer, the presentation page is specified by a UPnP vendor. Moving down the stack, the UPnP Device Architecture specifies that this page be written in HTML. The page is delivered via HTTP over TCP over IP. For reference, colors in [square brackets] are included for consistency with other sections in this document. To retrieve a presentation page, the control point issues an HTTP GET request to the presentation URL, and the device returns a presentation page. Unlike the UPnP Device and Service Templates, and standard device and service types, the capabilities of the presentation page are completely specified by the UPnP vendor. The presentation page is not under the auspices of a UPnP Forum working committee. The page must be an HTML page; it should be version HTML 3.0 or later. However, other design aspects are left to the vendor to

43

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	specify. This includes, but is not limited to, all capabilities of the control point's browser, scripting language or browser plug-ins used, and means of interacting with the device. To implement a presentation page, a UPnP vendor may wish to use UPnP mechanisms for control and/or eventing, leveraging the device's existing capabilities but is not constrained to do so. Presentation pages should use mechanisms provided by HTML for localization (e.g., META tag with charset attribute). Control points should use the ACCEPT- / CONTENT-LANGUAGE feature of HTTP to try to retrieve a localized presentation page. Specifically, a control point may include a HTTP ACCEPT-LANGUAGE header in the request for a presentation page; if an ACCEPT-LANGUAGE header is present in the request, the response must include a CONTENT-LANGUAGE header to identify the page's language." UPnP AV, pg. 53.

44

displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;

Appendix A

25H. displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;	The UPnP Standard discloses displaying a zone group including players from the available players when at least two of the UPnP Combined Devices (players) (25H1, 25H4) are selected to form a zone group (such as one of the combined devices that is operating as a UPnP Media Server and a second such device operating as a UPnP Media Renderer), on a screen of a UPnP Control Point, wherein any one of the players in the group serves as a zone group head (all players are combined UPnP Media Servers and UPnP Media Renderers). As discussed below, UPnP discloses a second list showing at least some of the UPnP Combined Devices (players) that are eligible to be selected as or grouped with the zone group head (UPnP Media Server device), such as a list of icons or URLs of available players. (25H2, 25H3, 25H5) In the concurrent litigation, Sonos has accused the display of icons on a screen as meeting the limitations of the first list and second list. In addition, based on the construction of the term "player" proposed by Sonos in the concurrent litigation, a player can be either a UPnP Media Server or a UPnP Media Renderer. Common operating system functionality also provided display support. (25H12) The UPnP Standard discloses a UPnP Connection Manager that forms a zone group started with the zone group head, such as a first combined UPnP Media Server/UPnP Media Renderer device that is acting as a UPnP Media Server, after one or more players (second or more combined UPnP Media Server/UPnP Media Renderer devices) from the at least some of the players are selected to join the zone group. (25H6, 25H7). As noted above, UPnP discloses the combination of a UPnP Media Server and UPnP Media Renderer into a single device. (25H1, 25H4). As described above, a UPnP Control Point can be used to perform these functions. (25H8, 25H9, 25H10). Combinations of UPnP Media Renderers can be used to provide stereo or surround sound through different speakers. (25H11).

44

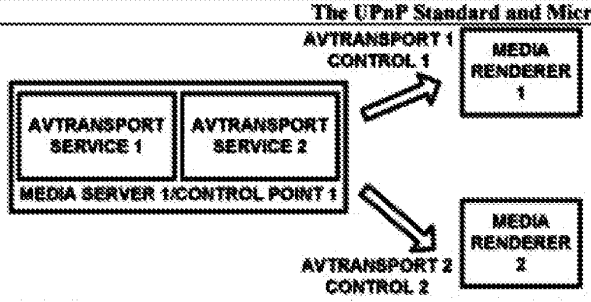
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25H1. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 25H2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25H3. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 25H4. "As described above, the AV Architecture consists of three distinct components that perform well-defined roles. In some cases, these components will exist as separate, individual UPnP devices. However, this need not be the case. Device manufacturers are free to combine any of these logical entities into a single physical device. In such cases, the individual components of these combo devices may interact with each other using either the standard UPnP control protocols (e.g. SOAP over HTTP) or using some private communication mechanism. In either case, the function of each logical entity remains unchanged. However, in the later case, since the communication between the logical entities is private, the individual components will not be able to communicate with other UPnP AV devices that do not implement the private protocol." UPnP AV, pg. 6. 25H5. "MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network. In general terms, the process

45

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	begins with the Control Points discovering MediaServer and MediaRenderer devices within the home network. The Control Point interacts with a MediaServer(s) to locate a desired piece of content (e.g. a movie, a song, a playlist, a photo album, etc). After the content has been identified, the Control point needs to identify a common transfer protocol and data format that can be used to transfer the content from the MediaServer to the desired MediaRenderer. After these transfer parameters have been established, the Control Point controls the flow of the content (e.g. Play, Pause, Stop, Seek, etc.). (Depending on the selected transfer protocol, these flow control operations are sent either to the MediaServer or MediaRenderer, but not both). The actual transfer of the content is performed directly by the MediaServer and MediaRenderer. The content transfer happens independently from the Control Point and does not involve UPnP itself at all. The Control Point uses UPnP to setup the transfer of the content, but the transfer is performed using a transfer protocol other than UPnP." UPnP Media Server, pg. 7 25H6. "5.1.2. ConnectionManager Service This service is used to manage the connections associated with a particular device. The primary action of this service (within the context of a MediaServer) is PrepareForConnection(). When implemented, this optional action is invoked by the Control Point to give the Server an opportunity to prepare itself for an upcoming transfer. Depending on the specified transfer protocol and data format, this action may return the InstanceID of an AVTransport service that the Control Point can use to control the flow of this content (e.g. Stop, Pause, Seek, etc). As described below, this InstanceID is used to distinguish multiple (virtual) instances of the AVTransport service, each of which is associated with a particular connection to Renderer. Multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time. When the Control Point wants to terminate this connection, it should invoke the MediaServer's ConnectionComplete() action (if implemented) to release the connection. If the PrepareForConnection() action is not implemented, the Control Point is only able to support a single Renderer at an given time. In this case, the Control Point should use InstanceID=0." UPnP AV, pg. 7.

46

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP



Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that include the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 1C9, 1C10, 1C11

2517. "5.2.2. ConnectionManagerService
This service is used to manage the connections associated with a device. Within the context of a MediaRenderer, the primary action of this service is the GetProtocolInfo() action. This action allows a Control Point to enumerate the transfer protocols and data formats that are supported by the MediaRenderer. This information is used to predetermine if a MediaRenderer is capable of rendering a specific content item. A MediaRenderer may also implement the optional PrepareForConnection() action. This action is invoked by the Control Point to give the Render an opportunity to prepare itself for an upcoming transfer. Additionally, this action assigns a unique ConnectionID that can be used by a 3rdparty Control Point to obtain information about the connections that the MediaRenderer is using. Also, depending on the specified transfer protocol and data format being used, this action may return a unique AVTransport InstanceID that the Control Point can use to control the flow of the content (e.g. Stop, Pause, Seek, etc). (Refer to the AVTransport section below for additional details). Lastly, PrepareForConnection() also returns a unique Rendering Control InstanceID which can be used by the Control Point to control the rendering characteristics of the associated content as described above. When the Control Point wants to terminate a connection, it should invoke the Renderer's ConnectionComplete() action (if

47

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	implemented) to release the connection." UPnP AV, pg. 8. 25H8. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [7]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or

48

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UPnP AV pgs. 9-10. 25H9. "2.2.1. Description of Device Requirements Each implementation of the MediaRenderer requires a Rendering Control and ConnectionManager service. The Rendering Control service allows Control Points to control the various rendering capabilities of the device. The Connection Manager is used to enumerate and select a particular transfer protocol and data format to be used for transferring the content. Additionally, the Connection Manager also allows Control Points, such as a home network management application, to discover useful information about the content transfers that the device is actively participating in. Such information could be useful to a Quality Of Service capability, which may be defined in the future." UPnP Media Renderer, pg. 5. 25H10. "2.2.2. Relationships Between Services The Connection Manager's PrepareForConnection() action provides the trigger point for creating new instances of the Rendering Control and AVTransport service. When a new connection is established (one that requires an instance of the AVTransport on the MediaRenderer, which is determined by the selected transfer protocol), the PrepareForConnection() action returns the InstanceId of the Rendering Control and AVTransport services that are bound to that connection. The Rendering Control instance is used by the Control Point to control how the content from that connection is rendered. The AVTransport instance is used by the Control Point to control the flow (e.g. Play, FF, REW, Seek, etc) of the content received via that connection. As described in the

49

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	RenderingControl and AVTransport specification, each instance of these services operates independently from all other instances." UPnP Media Renderer, pg. 6. 25H11. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17.

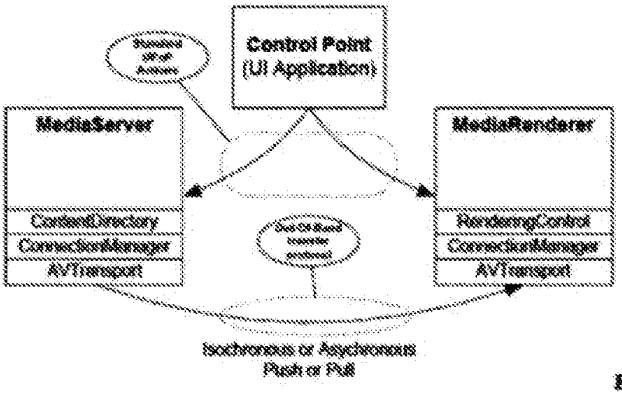
50

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25H12. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2.

51

synchronizing all players in the zone group in accordance with the zone group head; and

Appendix A

251. synchronizing all players in the zone group in accordance with the zone group head; and	The UPnP Standard discloses synchronizing all zones in the zone group, such as by using the IEC61883/IEEE1394 isochronous transfer protocols to synchronize UPnP Media Servers and UPnP Media Renderers.  Figure 3 UPnP AV, pg. 5. "6.1. Isochronous-Push Transfer Protocols (IEC61883 /IEEE1394) When using an isochronous transfer protocol (e.g.IEC61883/ IEEE1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual packets of content are transferred within a certain (relatively small) period of time. This real-time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow

51

	of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer. Refer to the diagram below for details." UPnP AV, pgs. 12, 13, 18, 21.

52

adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix A

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer. Refer to the diagram below for details." UPnP AV, pgs. 12, 13, 18, 21.
25J. adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	The UPnP Standard discloses multiple audio channels (25J1) and a Rendering Control service that allows "Control Points to control each of these channels independently or as a whole" (25J2). Adjusting the volume of all of the channels as a whole is performed by adjusting a master volume meter represented by an averaged value of audio volumes of the players in the group. (25J3) The averaged value is at least represented when the associated channels, which can each be assigned to a different wireless network-enabled speakers, are first set to the lowest level and then increased by the master as a whole. (25J4, 25J5) Adjusting the master volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. (25J3). 25J1. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall]

52

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17. 2532. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole." UPnP Rendering Control, pg, 41. 2533. "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering Control, pg, 42. 2534 "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting

53

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42. 2535. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.

54

(Request 12/27/2016, p. 3), The UPnP Standard was developed by the Open Connectivity Foundation. (Request 12/27/2016, p. 32), The UPnP Standard explicitly discloses a standardized format for use in creating user interface devices, such as controllers 140 and 142, for controlling media rendering devices, such as zone players 102, 104 and 106, to interface with media servers, such as audio sources 110 and 112.

Microsoft UPnP states (Microsoft UPnP, p. 2), "Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine The UPnP Standard with common operating system functionality such as that disclosed in Microsoft UPnP to teach the claimed limitations because (Microsoft UPnP, p. 1), Universal Plug and Play and Windows using a common set of standards and protocols for communicating enables evolving capabilities such as remote control and monitoring, sharing of digital data, and converging data from multiple devices and locations.

38. **An apparatus for manipulating a plurality of players, the apparatus comprising:**

a screen;

Appendix A

38. An apparatus for manipulating a plurality of players, the apparatus comprising:	As discussed above, the UPnP Standard discloses an apparatus for manipulating a plurality of players, such as a UPnP Control Point that is used for manipulating devices that are combined UPnP Media Servers and UPnP Media Renderers.
38A. a screen;	The UPnP Control Point includes a screen, such as a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 38A1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens. 38A2, 38A3, 38A4 38A1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer

54

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 38A2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 38A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 38A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

55

a screen driver commanding the screen;

Appendix A

38B. a screen driver commanding the screen;	The UPnP Control Point includes a screen driver commanding the screen, such as a screen driver of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 38B1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens that would require use of a screen driver. 38B2, 38B3, 38B4 "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images),

55

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 38B2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 38B3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 38B4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

56

an input interface; a network interface;

Appendix A

38C. an input interface;	The UPnP Control Point includes an input interface, such as an input interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some

56

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
38D. a network interface;	The UPnP Control Point includes a network interface, such as a network interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.

57

a memory for storing code for an application module;

Appendix A

38E. a memory for storing code for an application module;	The UPnP Control Point includes a memory for storing code for an application module, such as a memory of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems.

57

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	"The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

58

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

Appendix A

38F. a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code	The UPnP Control Point provides a UI for the user to interact with the system, which inherently requires a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, such as a processor of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data

58

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
in the memory to cause the application module and the screen driver to perform operations of:	formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.

59

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

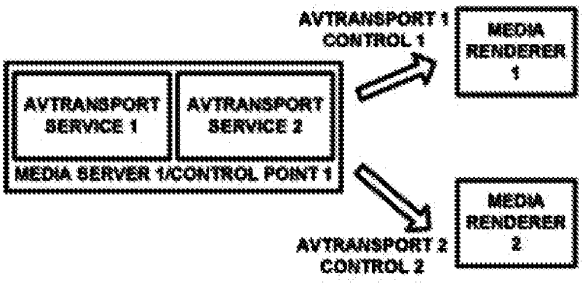
Appendix A

38G. displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters	The UPnP Control Point displays a list on a screen showing a plurality of volume meters, such as by using a UPnP Control Point that receive HTML for each device that includes the volume setting for the device, and a master volume level for a master channel associated with the devices. 38G1 The volume meter/control for one of the devices represents an audio volume of one of the players, and the volume meter/control for the Master represents an audio volume of a group of players associated with the master. 38G2, 38G3 38G1. "At the highest layer, the presentation page is specified by a UPnP vendor. Moving down the stack, the UPnP Device Architecture specifies that this page be written in HTML. The page is delivered via HTTP over TCP over IP. For reference, colors in [square brackets] are included for consistency with other sections in this document. To retrieve a presentation page, the control point issues an HTTP GET request to the presentation URL, and the device returns a presentation page. Unlike the UPnP Device and Service Templates, and standard device and service types, the capabilities of the presentation page are completely specified by the UPnP vendor.

59

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
representing an audio volume of a group of players, if there is such a group; and	The presentation page is not under the auspices of a UPnP Forum working committee. The page must be an HTML page; it should be version HTML 3.0 or later. However, other design aspects are left to the vendor to specify. This includes, but is not limited to, all capabilities of the control point's browser, scripting language or browser plug-ins used, and means of interacting with the device. To implement a presentation page, a UPnP vendor may wish to use UPnP mechanisms for control and/or eventing, leveraging the device's existing capabilities but is not constrained to do so. Presentation pages should use mechanisms provided by HTML for localization (e.g., META tag with charset attribute). Control points should use the ACCEPT- / CONTENT-LANGUAGE feature of HTTP to try to retrieve a localized presentation page. Specifically, a control point may include a HTTP ACCEPT-LANGUAGE header in the request for a presentation page; if an ACCEPT-LANGUAGE header is present in the request, the response must include a CONTENT-LANGUAGE header to identify the page's language." UPnP AV, pg. 53. 38G2. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 38G3. "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the

60

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering Control, pg. 42.  Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that includes a list that has the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 38G4, 38G5, 38G6 38G4. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 38G5. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 38G6. "After checking the local cache for any cached entries matching the search request, the devices returned

61

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	are added to a list of the found devices." Microsoft UPnP, pg. 11.

62

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and

Appendix A

38H. adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group,	The user of the UPnP Control Point can adjust one of the volume meters as desired after one of the volume meters from the list is selected, such as the Master channel for a channel group, wherein the volume meter/control for the Master is for the group of players associated with the channels assigned to the Master channel. The volume meter/control is represented by an averaged value of audio volumes of the players in the group, at least when all players are starting from the same minimum level with the Master. Adjusting the Master volume meter/control includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering

62

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Control, pg. 42.

63

said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix A

381. and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	The UPnP Control Point changes a volume of each of the group of players synchronously in accordance with an adjustment made by a user, such as by invoking the SetVolume() action with the Channel parameter set to "Master" and the Desired Volume parameter set to 1, which sets the volume levels at all associated devices that are assigned to different channels to 1. Subsequent SetVolume() actions for the Channel parameter set to Master result in the devices associated with the Master channel being synchronously adjusted. "[T]he Control Point coordinates and synchronizes the behavior of both devices. . . ." UPnP AV, pg. 4. "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42.

63

(Request 12/27/2016, p. 3), The UPnP Standard was developed by the Open Connectivity Foundation. (Request 12/27/2016, p. 32), The UPnP Standard explicitly discloses a standardized format for use in creating user interface devices, such as controllers 140 and 142, for controlling media rendering devices, such as zone players 102, 104 and 106, to interface with media servers, such as audio sources 110 and 112.

Microsoft UPnP states (Microsoft UPnP, p. 2), "Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine The UPnP Standard with common operating system functionality such as that disclosed in Microsoft UPnP to teach the claimed limitations because (Microsoft UPnP, p. 1), Universal Plug and Play and Windows using a common set of standards and protocols for communicating enables evolving capabilities such as remote control and monitoring, sharing of digital data, and converging data from multiple devices and locations.

2. Claims 1, 8, 16, 18, 21, 25, and 38 are rejected under 35 USC 103(a) as obvious over Isely in view of UPnP, MS UPnP and NexSys. See Request pp. 38-40 and Appendix B (12/27/2016), incorporated by reference.)

Isely discloses systems and methods for dynamic distribution of audio signals at a site based on defined zones within the site. (Abstract)

Isely discloses [0015] "the relationship between a characteristic of the audio signal for a reference audio device and ones of the addressable audio devices is a relative relationship. The relative relationship between the reference audio device and ones of the addressable audio devices may be a proportional relationship and the relative relationship between the reference audio device and another of the addressable audio devices may be a static relationship." Thus, where the reference audio device and all of the addressable audio devices are set at the same average volume level, such as at start up, and the volume for the reference audio device is

adjusted, that average volume level for all of the associated addressable audio devices would also synchronously change.

Isely at [0020] states that a "relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic." An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input. The audio signal may be received as a digital audio stream and may be distributed over a local network of the zoned environment." The audio signal is not just displayed but is controlled and adjusted, such as where all addressable audio devices start from the same average zero level and the average is increased or decreased synchronously with "a control input associated with the characteristic."
Isely at [0040] discloses grouping of playback devices for multicasting ("However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889.").

Isely discloses [0044], The audio device 205 has a network interface, performs decoding of encoded stereo data, equalization, left and right channelization and other common functions

associated with MP3 decoders, and can function as either a UPnP Media Server or a UPnP Media Renderer. The presence of a network interface 240 in network device 205 means that network device 205 was synchronized with other network devices on network 120.

Isely also discloses a controller 125 that "tells the network audio devices 105 a 'channel' to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation." [0039], channels are for multi-channel sound, where "a pair of channels is used to drive the left and right stereo channels for a pair of speakers, resulting in support for up to six zones with a 12 channel system." [0005], each "of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at site may, for example, each be associated with a different room in a residence." These audio devices can include a Digital Signal Processor 215, firmware 235, a microcontroller 230, line level control 250 and a network interface 240, where the network can utilize the UDP Inter protocol over an Ethernet network or other common data networks that require networked devices to request transmission of data packets, such as a Transport Control Protocol (TCP). [0061], In addition to the use of UDP, Ethernet and TCP, Isely also discloses the audio devices 105 are compliant with the UPnP Standard and Jini [0041] and Real-time Transport Protocol (RTP) [0040], each of which are standards that were developed specifically to allow networked devices to autonomously interact with each other.

Isely further discloses at [0062] that a "relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein," and further at [0063] that an "update to the control input specifying the characteristic(s) may be periodically received from a user (block 640)." Thus, Isely discloses that a complex, proportional or static control relationship between volumes for a plurality of devices can be defined and adjusted by a user. This disclosure encompasses the common use case where all players in a zone and the reference audio device all start at the same average zero volume level, and where the control is used to increase the average volume level of all players.

NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an adjustment made by a user, and presents the zone group in a manner that indicates a grouping.

1. **A method for controlling a plurality of players, the method comprising:**

displaying on a screen a first list showing at least available players;

(Request 12/27/2016, p. 33), **Isely** discloses systems and methods for dynamic distribution of audio signals at a site based on defined zones within the site. Isely, Abstract. The audio device 205 discussed at [0044] of **Isely** has a network interface, performs decoding of encoded

stereo data, equalization, left and right channelization and other common functions associated with MP3 decoders, and can function as either a UPnP Media Server or a UPnP Media Renderer (Figure 2)

The presence of a network interface 240 in network device 205 means that network device 205 was synchronized with other network devices on network 120.

Isely discloses that audio devices 105 can use UPnP protocols, such as those disclosed in the UPnP Standard. As discussed above, the UPnP Standard discloses every feature of the claims of the '014 Patent, and combined with the design of the audio devices 105/205/305/405, network interface 100, user interface device 130, digital audio source 330 and audio server 455/zone manager 415 of Isely, there is nothing left in the claims of the '014 Patent that is not explicitly or inherently disclosed in Isely, either alone or in combination with the UPnP Standard and Microsoft UPnP.

Isely also discloses a controller 125 that "tells the network audio devices 105 the 'channel' to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation.". [0039], The channels are for multi-channel sound, where "a pair of channels is used to drive the left and right stereo channels for a pair of speakers, resulting in support for up to six zones with a 12 channel system.". [0005], As such, each "of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence." These audio devices can include a Digital Signal Processor 215, firmware 235, a microcontroller 230, line out level

control 250 and a network interface 240, where the network can utilize the UDP Internet protocol over an Ethernet network or other common data networks that require networked devices to request transmission of data packets, such as a Transport Control Protocol (TCP). [0061], In addition to the use of UDP, Ethernet and TCP, Isely also discloses the audio devices 105 are compliant with the **UPnP Standard**[1] and Jini [0041] and Real-time Transport Protocol (RTP) [0040], each of which are standards that were developed specifically to allow networked devices to autonomously interact with each other.

Grouping of playback devices for multicasting is explicitly disclosed at [0040] of **Isely** ("However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889.")

Isely at [0020] states that a "relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic". The volume level of Isely was a display relationship with a zone.

For example, Isely discloses at [0015] that "the relationship between a characteristic of the audio signal for a reference audio device and ones of the addressable audio devices is a relative relationship. The relative relationship between the reference audio device and ones of the

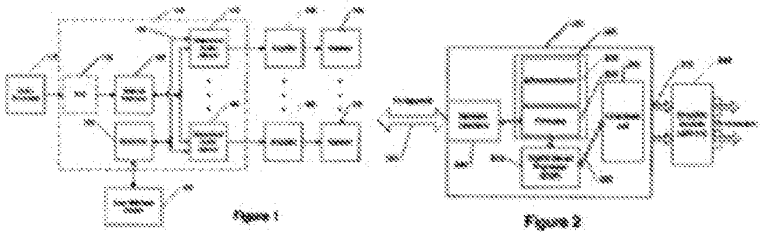
addressable audio devices may be a proportional relationship and the relative relationship between the reference audio device and another of the addressable audio devices may be a static relationship". Thus, where the reference audio device and all of the addressable audio devices are set at the same average volume level, such as at start up, and the volume for the reference audio device is adjusted, that average volume level for all of the associated addressable audio devices would also synchronously change, in accordance with the disclosure of Isely.

Isely next discloses at [0020] that an "audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input. The audio signal may be received as a digital audio stream and may be distributed over a local network of the zoned environment". Again, Isely discloses that the audio signal is not just displayed but is controlled and adjusted, such as where all addressable audio devices start from the same average zero level and the average is increased or decreased synchronously with "a control input associated with the characteristic."

Isely further discloses at [0062] that a "relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein," and further at [0063] that an "update to the control input specifying the characteristic(s) may be periodically received from a user (block 640)." Thus, Isely discloses that a complex, proportional or

static control relationship between volumes for a plurality of devices can be defined and adjusted by a user. This disclosure encompasses the common use case where all players in a zone and the reference audio device all start at the same average zero volume level, and where the control is used to increase the average volume level of all players.

Appendix B

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
1. A method for controlling a plurality of players, the method comprising:	An example of a player is provided in Fig. 1 of Isely, which shows a networked audio device 105, and in Fig. 2 of Isely, which discloses that the networked audio device 205 includes a network interface 240, a microcontroller 230 and firmware 235, a digital signal processor 215 and an amplifier module 245 for speakers. Isley also discloses audio devices 305 and 405, which are equivalent to audio devices 105 and 205. Isely discloses that UPnP can be used for a salutation protocol, which is another term for a service discovery protocol that requires the use of UPnP Media Servers, UPnP Media Renderers, and UPnP Controls points, such as those disclosed and discussed in Exhibit A, which is hereby incorporated by reference. Isely thus discloses that audio sources 110/33/460, audio devices 105/205/305/405 and user interface devices 130/340/430 should be compliant with UPnP Media Servers, UPnP Media Renderers, and UPnP Control Points, and one of ordinary skill in the art would use the UPnP Standard to implement Isely in accordance with this disclosure.  Figure 1 Figure 2 Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." The chart of Appendix A is hereby incorporated by reference for each element, as further discussed below.

2

1A. displaying on a screen a first list showing at least available players;	Isely discloses a user interface device 130 (and user interface devices 340 and 430), which provides a user interface to receive user designations of aggregations of audio equipment, including audio sources 110 (and audio sources 330 and 460), to provide dynamic zone aggregation. [0039] The user interface can be implemented using a computer and HTML. [0057] The broadest reasonable construction of player includes audio sources 110, and Sonos has proposed a construction for the term "player" in the concurrent litigation of a "data network device configured to process and output audio" (Sonos Opening Claim Construction Brief, page 3), and has opposed a construction that would require an audio player to output sound, which would encompass audio sources 110/330/460. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose that UPnP Media Servers and UPnP Media Renderers can be displayed in a list. Isely, [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145, 150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while

2

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."

3

displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;

NexSys Manual discloses a group control that allows separate channels to be grouped together for common control.

Appendix B

displaying, when at least one of the players is selected as a zone group	Isely discloses displaying a second list on the screen showing at least some of the players that are eligible to be grouped with the zone group head, such as audio devices 105/205/305/405,

3

head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;	when at least one of the players is selected as a zone group head, such as one of audio sources 110/330/460. In other words, a user of Isely selects an audio source 110/330/460 to be the zone group head and the audio devices 105/205/305/405 to be grouped with the zone group head. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose displaying lists of UPnP Media Renderers to be grouped with a UPnP Media Server. Isely, [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely, [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP

4

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the

5

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely, [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 330 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."

6

forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

Appendix B

forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and	Isely discloses forming a zone group started with the zone group head (audio sources 110/330/460), after one or more players from the at least some of the players (audio devices 105/205/305/405) are selected to join the zone group. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard discloses how to form a zone group by grouping a UPnP Media Server with one or more UPnP Media Renderers. Isely, [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site

6

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely, [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to

7

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely, [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically

8

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."

9

synchronizing all players in the zone group; adjusting a volume meter represented by an averaged value of audio volumes of the players in the group,

(Request 12/27/2016, p. 40) NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an

adjustment made by a user, and presents the zone group in a manner that indicates a grouping. (Request, pp. 41) **NexSys** (p. 7.4) discloses a group control that allows separate channels to be grouped together for common control.

The NexSys, p. 9.3 discloses group control that "the fader ranges from +83dB to -83dB..a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount…." The exemplary embodiment shown in the figure from the NexSys manual shows that all three channels are at the same average level to the accuracy shown on the meter (21, 22 and 21), such that any change in the group level will result in a change to the average level. In addition, the channels are shown in a manner that indicates a grouping. The NexSys Manual thus shows group volume meters functionality.

Appendix B

synchronizing all players in the zone group;	Isely discloses synchronizing all players (audio sources 110/330/460 and players 105/205/305/405) in the zone group through the use of the Real Time Protocol and multicasting, and that an audio source 110/330/460 and group of players 105/205/305/405 provide the same audio channels at the same time, which requires synchronization. Isley also discloses the use of time stamped packets, which would only be needed for playing synchronous content. [0018], [0040], [0061]. Isely also references the use of RFC 1889/RTP, which discloses a synchronization source that is used to synchronize playback at multiple devices. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard discloses synchronization of UPnP Media Servers and UPnP Media Renderers through IEC61883/IEEE1394 isochronous transfer protocols, or that other common synchronization protocols can be used. Isely, [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a solutation protocol to announce their presence to the controller over the local network.

9

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0061] "Dynamic designation may be provided to the audio devices over the local network. The digital audio streams may be provided over the local network based on UDP or based on Transport Control Protocol (TCP). Furthermore, RTP may be used to provide the digital audio streams using time-stamped packets over UDP. Furthermore, the designations provided at block 525 may be provided over the local network using the salutation protocol

10

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	used by the respective audio devices to announce their presence at block 515." RFC 1889, pg. 7 "Synchronization source (SSRC): The source of a stream of RTP packets, identified by a 32-bit numeric SSRC identifier carried in the RTP header so as not to be dependent upon the network address. All packets from a synchronization source form part of the same timing and sequence number space, so a receiver groups packets by synchronization source for playback. Examples of synchronization sources include the sender of a stream of packets derived from a signal source such as a microphone or a camera, or an RTP mixer (see below). A synchronization source may change its data format, e.g., audio encoding, over time. The SSRC identifier is a randomly chosen value meant to be globally unique within a particular RTP session (see Section 8). A participant need not use the same SSRC identifier for all the RTP sessions in a multimedia session; the binding of the SSRC identifiers is provided through RTCP (see Section 6.4.1). If a participant generates multiple streams in one RTP session, for example from separate video cameras, each must be identified as a different SSRC." 11

wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix B

adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses adjusting a control characteristic of a reference audio device 105/205/305/405 that includes a volume meter/control, which can have a complex, proportional, or static relationship to audio volumes of other audio devices 105/205/305/405 in a zone. Adjusting the volume meter/control of the reference audio devices includes changing a volume of each of the other audio devices synchronously in accordance with an adjustment made by a user. All volume changes are synchronized to the change of control level, such as by RFC 1889. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard provides extensive details on adjustment of a volume control that represents an averaged value of audio volumes of players in a group, such as when the volume is increased at startup from a minimum setting using the master channel volume to control all channels. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a

11

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input."

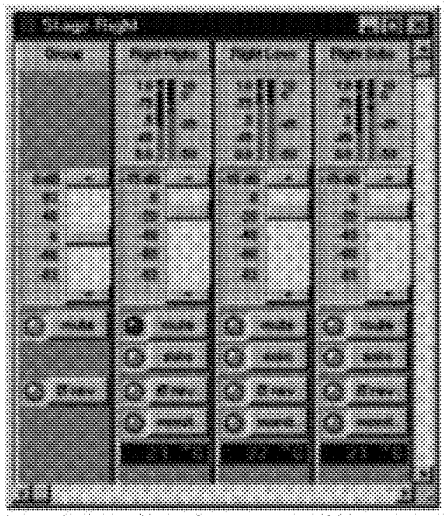
12

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely, [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely, [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally

13

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." Isely, [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the zone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." To the extent that Isely is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

14

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the Isely, because Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls.

15

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

16

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the UPnP Standard and MS UPnP with the teachings of Isely because Isely explicitly discloses audio devices that are compliant with the UPnP Standard.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a common user interface for representing a master volume with associated separate channels of a zone group, as taught by NexSys, because they were commonly used on mixing boards in related applications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further combine Isely, UPnP Standard and MS UPnP with the teachings of the NexSys Manual (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone.

8. **The method of claim 1, wherein said synchronizing of all players in the zone group comprises: causing all players in the zone group to play an identical audio source; and**

Appendix B

8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:	
causing all players in the zone group	Isely discloses causing all players 105/205/305/405 in the zone group to play an identical

16

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
to play an identical audio source; and	audio source 110/330/460, such as by assigning each player 105/205/305/405 in a group to the same audio source 110/330/460. For example, a user can merge audio devices to form a single party zone. [0052] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that a UPnP Media Server can provide an identical source to multiple UPnP Media Renderers. Isely [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this

17

Claim	Isely, the UPnP Standard, Microsoft UPnP and NetSys
	protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." 18

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely [0052] "The virtual zone aspects of the present invention will now be further described by way of example where each audio device is associated with a room in a residence. To create a Party virtual zone, a user might merge the living room, kitchen, deck, and main floor bathroom audio devices. By default, built-in virtual effects, like "Concert Hall" could be used with the Party virtual zone, which could cause all rooms to switch to their individual "Concert Hall" effects. The virtual effects could have different equalization and processing settings as characteristics of the audio signal for each room, but as a virtual effect, "Concert Hall" could be controlled as if it were a single effect. In addition, the user could define a virtual effect called "Party" which could be associated with the Party virtual zone. The Party virtual effect could in turn define a "Concert Hall" virtual effect for the living room, a "Low Key" virtual effect for the kitchen, a low-volume "Rock" virtual effect for the deck, and a "Muzak®" virtual effect for the bathroom." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment

19

	associated with the addressable audio devices (block 535)."

20

presenting the zone group in a manner that indicates a grouping.

Appendix B

presenting the zone group in a manner that indicates a grouping.	Isely discloses presenting the zone group in a manner that indicates a grouping. For example, Isely discloses a "defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone," where "a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen." [0049] A user device 130 allows a user to group players 105/205/305/405 and to control the grouping. [0039], [0057] This is a "manner that indicates a grouping." Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard and Microsoft UPnP discloses presenting a zone group in a manner that indicates a grouping, such as surround sound channels or stereo channels. NexSys also presents the zone group channels in a manner that indicates a grouping (such as where the channel bands shown above are replaced by the separate channels in the UPnP channel group). Isely [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of

20

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to

21

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio

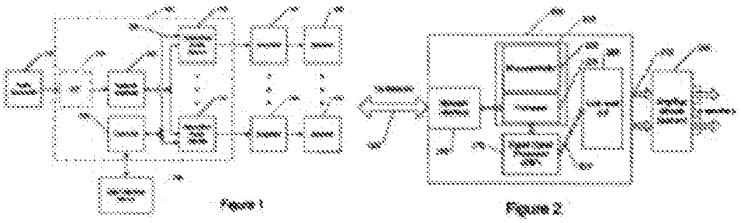
22

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."

23

16. **A method for controlling a plurality of players, the method comprising:**

Appendix B

16. A method for controlling a plurality of players, the method comprising:	Isely discloses a method for controlling a plurality of players 105/205/305/405. 

23

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and

Appendix B

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters	Isely discloses displaying on a screen, such as using HTML in conjunction with user interface device 130/340/430 a list showing a plurality of volume meters. [0057]. At least one of the volume meters represents an audio volume of one of the players (a zone can include one or a

23

representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group, and	plurality of players 105/205/305/405 [0045], [0047]), and another one of the volume meters represents an audio volume of a group of players, when there is such a group. [0039] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard and Microsoft UPnP discloses displaying on a screen a list showing a plurality of volume meters, such as a master volume control and separate channel volume controls. At least one of the channel volume meters in that configuration represents an audio volume of one of the players, and the master volume meters represents an audio volume of a group of players. Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0045] "A plurality of these audio devices 105, 205, such as six or more, may be bundled in a single component, to provide a Network Architectural Preamplifier (NetPreAmp). The NetPreAmp may include a single network interface and a network switch which routes network traffic to the proper self-contained audio device. One or more network audio streams can be directed to one or more of the contained audio devices, providing the

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	basic architectural amplifier structure." Isely [0047] "The zone manager 315 defines a plurality of zones for the site. The zones may include one or a plurality of the individual addressable audio devices included in the illustrated block of network audio devices 305. For ease of understanding in connection with the remainder of the description of FIG. 3, references to audio devices 305 refer to individual ones of the plurality of networked audio devices unless specified otherwise. The zone manager 315 defines a relationship between a characteristic of an audio signal being distributed for a reference audio device and for ones of the addressable audio devices 305 in respective zones. For example, the reference audio device may be an individual one of the provided addressable audio devices 305 associated with a specific room and a relationship may be provided between the characteristics for the audio signal in that room and other rooms included in a common zone with the base audio device room." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input."

25

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely [0033] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely [0036] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally

26

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining

27

	a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein."

28

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix B

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses adjusting a control characteristic of one of the volume meters/controls as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players (such as the reference audio device), represented by an averaged value of audio volumes of the players in the group (such as when there is a complex, proportional or static relationship with the other audio devices). Adjusting the volume meter/control of the reference audio device changes a volume of each of the group of players synchronously in accordance with an adjustment (complex, proportional or static) made by a user. For example, Isely discloses that relative relationship between devices can be provided, where a change in volume for one device results in a different change in volume for the other device. [0053] The relationship between volume levels of different players 105/205/305/405 in a zone can be "complex, proportional, or static," which covers every possible manner of adjusting and representing volume levels, and which explicitly discloses changing each of the volume of the group of players synchronously in accordance with an adjustment made by a user. [0062] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that one of the volume meters can be adjusted as desired with a UPnP Control Point after one of the volume meters from the list is selected, wherein the one of the volume meters is the master channel for the group of players. The master volume represents an averaged value of audio volumes of the players in the group at startup, when all volume settings are at the lowest level and when the master increases all volume levels by the same amount. Adjusting the master channel volume of adjusts the volume of each of the group of players synchronously in accordance with the adjustment

28

	made by a user. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may

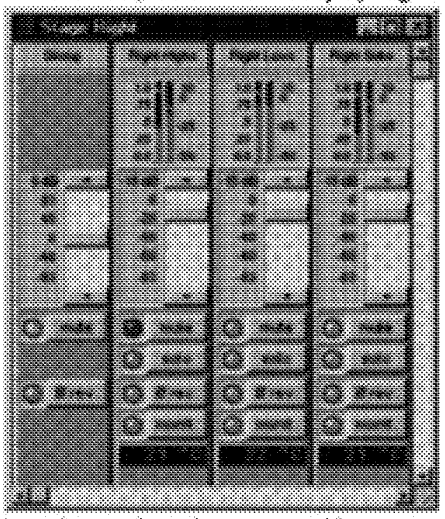
29

Claim	Isely, the UPnP Standard, Microsoft UPnP and NetSys
	result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for

30

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." To the extent that Isely is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any

31

	increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:  As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with Isely. Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such

32

	controls. NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

33

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the UPnP Standard and MS UPnP with the teachings of Isely because Isely explicitly discloses audio devices that are compliant with the UPnP Standard.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a common user interface for representing a master volume with associated separate channels of a zone group, as taught by NexSys, because they were commonly used on mixing boards in related applications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further combine Isely, UPnP Standard and MS UPnP with the teachings of the NexSys Manual (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone.

18. **The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.**

Appendix B

18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players	Isely discloses adjusting the one of the volume meters for the group of players/audio devices 105/205/306/405 in a predetermined manner that appears that the group of players are being adjusted at the same time, such as in a "complex, proportional, or static" manner. [0062] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that the master channel is adjusted in a predetermined

33

are being adjusted at the same time.	manner that both appears and actually causes the volume of the group of associated channels (which can each have separate UPnP Media Renderers or audio device 105/205/305/405) to be adjusted at the same time. Isely [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to

34

	their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." lately [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."

35

20**. The method of claim 16, further comprising playing an identical audio source in the group of players.**

Claim 20 is not requested for reexamination. The limitations of claim 20 are provided to support the rejection of 21/20.

Appendix B

20. The method of claim 16, further comprising playing an identical audio source in the group of players.	lately discloses playing an identical audio source in the group of players 105/205/305/405, such as from one of sources 110, 340 or 460, where "individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network

38

	attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence." [0039] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that a UPnP Media Server can provide an identical audio source to multiple UPnP Media Renderers. Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), first from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the zone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the

36

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein."

37

21. **The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.**

Appendix B

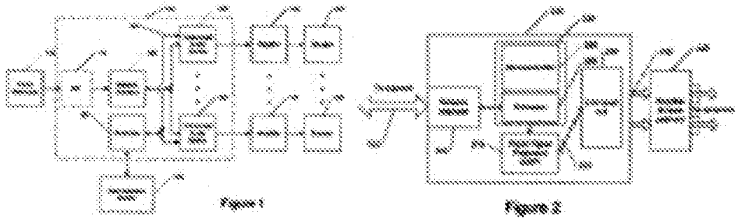
21. The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.	Isely discloses the audio source is retrieved in form of audio data packets over the network. [0018] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of networked audio data. Isely [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

"

25. **An apparatus for controlling a plurality of players, the apparatus comprising:**

a screen;

Appendix B

25. An apparatus for controlling a plurality of players, the apparatus comprising:	Isely discloses an apparatus (user interfaces 130, 340, 430) for controlling a plurality of players 105/205/305/405.  Figure 1 Figure 2
a screen;	Isely discloses that user interfaces 130/340/430 can be implemented using a PC, which would inherently include a screen. [0031, 0039, 0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses a user interface that requires a screen and is implemented in HTML. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly

18

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145, 150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430

39

	provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."

40

a screen driver commanding the screen;

Appendix B

a screen driver commanding the screen;	Isely discloses a screen driver commanding the screen, which is inherent in the disclosure of a PC or other device with a screen as shown above. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML, which requires a screen and screen driver. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." [Isely 0041] "When the audio devices 105 are powered they may use a salutation protocol

40

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	(such as Universal Plug and Play (UPnP), first from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups."

41

an input interface;

Appendix B

an input interface;	Isely discloses an input interface, such as one that can be implemented in HTML, to provide the user interface screens shown above. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML as an input interface. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

41

	remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."

42

a network interface;

Appendix B

a network interface;	Isely discloses a network interface 240 for each networked audio device player 105/205/305/405, plus a network interface 100 for the interface to audio sources. [0035], [0043] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses networked data communications between the UPnP Control Point, the UPnP Media Server and the UPnP Media Renderer. Isely [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely [0035] "The present invention will now be described with reference to the embodiments illustrated in the figures. Referring first to FIG. 1, embodiments of site based dynamic distribution systems according to the present invention will be further described. As shown in FIG. 1, a site based dynamic distribution system for distributing an audio signal over a local network for the site includes a network interface 100 coupled to a plurality of network attached audio devices 105. An audio signal is received by the network interface 100 from an audio source 110. The audio source 110 may be a digital audio stream source such as, for example, a digital audio stream from the Internet or an outside device providing a digital audio stream in a format, for example, MP3. The audio source 110 may also be an analog audio source, in which case, an analog to digital converter 115 may convert a received analog signal to a digital audio stream and pass the digital audio stream to the network interface 100. A plurality of different types of audio sources 110 may be coupled by the network interface 100 to the local network 120 at the site." Isely [0038] "The network interface 100 receives digital audio streams and outputs the digital audio streams on the local network 120 using an address based protocol with each of the digital audio streams having a different associated identifier. The plurality of network attached audio devices 105 are configured to receive a selected one of the digital audio streams over the network 120 based on a designated one of the associated identifiers. The network attached audio devices 105 are further configured to output the received digital audio stream to the audio equipment 145, 150." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0043] "As shown in the embodiments of FIG. 2, the audio device 205 includes a digital signal processor (DSP) 215 which converts the incoming digital audio stream to a line-level output 220. The DSP 215 may further include equalization functions and/or audio mixing function circuitry. The DSP 215 operates in cooperation with a control device 225 which includes a microcontroller 229 and firmware 235. The control device 225 provides protocol support for obtaining the digital audio stream from the local network 120 through a network interface 240 and providing the audio signal to the DSP 215 for further processing. The output signal from the DSP 215 is provided through the line-level output circuit 250 to the amplifier module 245." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment
	44
	associated with the addressable audio devices (block 535)."

45

a memory for storing code for an application module;

Appendix B

a memory for storing code for an application module;	Isely inherently discloses a memory for storing code for an application module, because the operations disclosed in Isely can be carried out using computer program code [0031] on a computer [0057]. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses numerous application modules that inherently require memory. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio

45

	network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML, or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."

46

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

Appendix B

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	Isely inherently discloses a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, because of the disclosure of user interface devices 130/340/430 that are implemented on a computer. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses processor-driven UPnP Control Points, UPnP Media Renderers and UPnP Media Servers. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to

46

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."

47

displaying on a screen a first list showing at least available players;

Appendix B

displaying on a screen a first list showing at least available players;	Isely discloses a user interface device 130 (and user interface devices 340 and 430), which provides a user interface to receive user designations of aggregations of audio equipment, including audio sources 110 (and audio sources 330 and 460), to provide dynamic zone aggregation. [0039] The user interface can be implemented using a computer and HTML. [0057] The broadest reasonable construction of player includes audio sources 110, and Sonos has proposed a construction for the term "player" in the concurrent litigation of a "data

47

	network device configured to process and output audio" (Sonos Opening Claim Construction Brief, page 3), and has opposed a construction that would require an audio player to output sound, which would encompass audio sources 110/330/460. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose that UPnP Media Servers and UPnP Media Renderers can be displayed in a list. Isely, [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145, 150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

48

	remotely configured using the same salutation protocol to add them to network groups." Isely, [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."

49

displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;

Appendix B

displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;	Isely discloses displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head, such as audio devices 105/205/305/405 and sources 110/330/460, where any one of the players can be selected as a zone group head. In other words, a user of Isely selects an audio source 110/330/460 or one of audio devices 105/205/305/405 to be the zone group head, because "zone group head" is a statement of intended use and does not have any structural significance. Isely also discloses forming a zone group started with the zone group head (such as audio devices 105/205/305/405 or audio sources 110/330/460), after one or more players from the at least some of the players are selected to join the zone group. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose displaying lists of UPnP Media Renderers to be grouped with a UPnP Media Server. Isely, [0037] "Each of the network attached audio devices 105 is associated with a group of

49

	audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely, [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol

50

	(such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely, [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio

51

	equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."

52

synchronizing all players in the zone group in accordance with the zone group head; and

Appendix B

synchronizing all players in the zone group in accordance with the zone group head; and	Isely discloses synchronizing all players (audio sources 110/330/460 and players 105/205/305/405) in "accordance with the zone group head" (which is a statement of intended use and which only requires the zone group to be synchronized in some manner) through the use of the Real Time Protocol and multicasting, and that an audio source 110/330/460 and group of players 105/205/305/405 provide the same audio channels at the same time, which requires synchronization. Isley also discloses the use of time stamped packets, which would only be needed for playing synchronous content. [0018], [0040], [0061]. Isely also references the use of RFC 1889/RTP, which discloses a synchronization source that is used to synchronize playback at multiple devices. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard discloses synchronization of UPnP Media Servers and UPnP Media Renderers through IEC61883/IEEE1394 isochronous transfer protocols, or that other common synchronization protocols can be used. Isely, [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets

52

	using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0061] "Dynamic designation may be provided to the audio devices over the local network. The digital audio streams may be provided over the local network based on UDP or based on Transport Control Protocol (TCP). Furthermore, RTP may be used to provide the

53

	digital audio streams using time-stamped packets over UDP. Furthermore, the designations provided at block 525 may be provided over the local network using the salutation protocol used by the respective audio devices to announce their presence at block 515." RFC 1889, pg. 7 "Synchronization source (SSRC): The source of a stream of RTP packets, identified by a 32-bit numeric SSRC identifier carried in the RTP header so as not to be dependent upon the network address. All packets from a synchronization source form part of the same timing and sequence number space, so a receiver groups packets by synchronization source for playback. Examples of synchronization sources include the sender of a stream of packets derived from a signal source such as a microphone or a camera, or an RTP mixer (see below). A synchronization source may change its data format, e.g., audio encoding, over time. The SSRC identifier is a randomly chosen value meant to be globally unique within a particular RTP session (see Section 8). A participant need not use the same SSRC identifier for all the RTP sessions in a multimedia session; the binding of the SSRC identifiers is provided through RTCP (see Section 6.4.1). If a participant generates multiple streams in one RTP session, for example from separate video cameras, each must be identified as a different SSRC."

54

adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix B

adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses adjusting a control characteristic of a reference audio device 105/205/305/405 that includes a volume meter/control, which can have a complex, proportional, or static relationship to audio volumes of other audio devices 105/205/305/405 in a zone. Adjusting the volume meter/control of the reference audio devices includes changing a volume of each of the other audio devices synchronously in accordance with an adjustment made by a user. All volume changes are synchronized to the change of control level, such as by RFC 1889. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard provides extensive details on adjustment of a volume control that represents an averaged value of audio volumes of players in a group, such as when the volume is increased at startup from a minimum setting using the master channel volume to control all

54

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	channels. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may

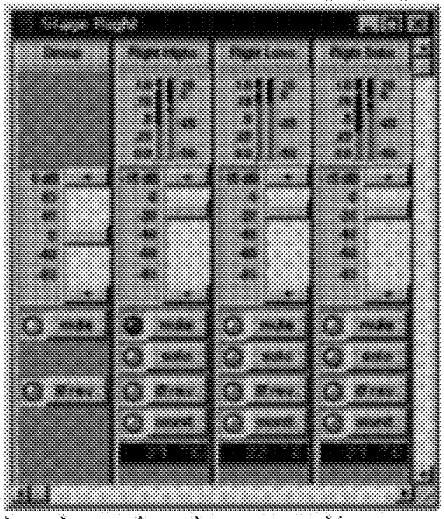
55

	result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Italy, [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Italy, [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for

58

	example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." lastly, [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." To the extent that lastly is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any

87

	increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:  As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the Isely, because Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for

58

	providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls. NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

59

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the UPnP Standard and MS UPnP with the teachings of Isely because **Isely** explicitly discloses audio devices that are compliant with **the UPnP Standard.**

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a common user interface for representing a master volume with associated separate channels of a zone group, as taught by **NexSys**, because they were commonly used on mixing boards in related applications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further combine Isely, UPnP Standard and MS UPnP with the teachings of the **NexSys** Manual (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone.

38. **An apparatus for manipulating a plurality of players, the apparatus comprising:**

a screen; a screen driver commanding the screen; an input interface; a network interface; a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

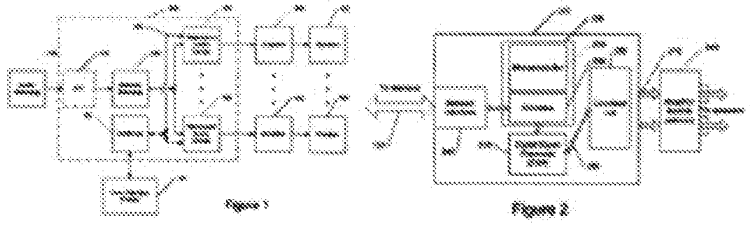
adjusting one of the volume meters as desired after one of the volume meters from the list is selected,

wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix B

38. An apparatus for manipulating a plurality of players, the apparatus comprising:	Isely discloses an apparatus (user interfaces 130, 340, 430) for manipulating a plurality of players 105/205/305/405.

59

	
a screen;	Isely discloses that user interfaces 130/340/430 can be implemented using a PC, which would inherently include a screen. [0031, 0039, 0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses a user interface that requires a screen and is implemented in HTML. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145.

60

	150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." lastly [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." lastly [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected.

61

	The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a screen driver commanding the screen;	Isely discloses a screen driver commanding the screen, which is inherent in the disclosure of a PC or other device with a screen as shown above. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML, which requires a screen and screen driver. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." [Isely 0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 108, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups."

62

an input interface;	Isely discloses an input interface, such as one that can be implemented in HTML, to provide the user interface screens shown above. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML as an input interface. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML, or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect

63

	can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a network interface;	Isely discloses a network interface 240 for each networked audio device player 105/205/305/405, plus a network interface 100 for the interface to audio sources. [0035], [0043] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses networked data communications between the UPnP Control Point, the UPnP Media Server and the UPnP Media Renderer. Isely [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely [0035] "The present invention will now be described with reference to the embodiments illustrated in the figures. Referring first to FIG. 1, embodiments of site based dynamic distribution systems according to the present invention will be further described. As shown in FIG. 1, a site based dynamic distribution system for distributing an audio signal over a local

64

	network for the site includes a network interface 100 coupled to a plurality of network attached audio devices 105. An audio signal is received by the network interface 100 from an audio source 110. The audio source 110 may be a digital audio stream source such as, for example, a digital audio stream from the Internet or an outside device providing a digital audio stream in a format, for example, MP3. The audio source 110 may also be an analog audio source, in which case, an analog to digital converter 115 may convert a received analog signal to a digital audio stream and pass the digital audio stream to the network interface 100. A plurality of different types of audio sources 110 may be coupled by the network interface 100 to the local network 120 at the site." Isely [0038] "The network interface 100 receives digital audio streams and outputs the digital audio streams on the local network 120 using an address based protocol with each of the digital audio streams having a different associated identifier. The plurality of network attached audio devices 105 are configured to receive a selected one of the digital audio streams over the network 120 based on a designated one of the associated identifiers. The network attached audio devices 105 are further configured to output the received digital audio stream to the audio equipment 145, 150." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0043] "As shown in the embodiments of FIG. 2, the audio device 205 includes a digital signal processor (DSP) 215 which converts the incoming digital audio stream to a line-level output 220. The DSP 215 may further include equalization functions and/or audio mixing function circuitry. The DSP 215 operates in cooperation with a control device 225 which

65

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	includes a microcontroller 220 and firmware 235. The control device 225 provides protocol support for obtaining the digital audio stream from the local network 120 through a network interface 240 and providing the audio signal to the DSP 215 for further processing. The output signal from the DSP 215 is provided through the line-level output circuit 230 to the amplifier module 245." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."
a memory for storing code for an application module,	Isely inherently discloses a memory for storing code for an application module, because the operations disclosed in Isely can be carried out using computer program code [0031] on a computer [0057]. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses numerous application modules that

66

	inherently require memory. lastly [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." lastly [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." lastly [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using

67

	the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	Isely inherently discloses a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, because of the disclosure of user interface devices 130/340/430 that are implemented on a computer. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses processor-driven UPnP Control Points, UPnP Media Renderers and UPnP Media Servers. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

68

	remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and	Isely discloses displaying on a screen, such as using HTML in conjunction with user interface device 130/340/430 a list showing a plurality of volume meters. [0057]. At least one of the volume meters represents an audio volume of one of the players (a zone can include one or a plurality of players 105/205/305/405 [0045], [0047]), and another one of the volume meters represents an audio volume of a group of players, when there is such a group. [0039] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard and Microsoft UPnP discloses displaying on a screen a list showing a plurality of volume meters, such as a master volume control and separate channel volume controls. At least one of the channel volume meters in that configuration represents an audio volume of one of the players, and the master volume meters represents an audio volume of a group of players. Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to

69

	multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Italy [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Italy [0045] "A plurality of these audio devices 105, 205, such as six or more, may be bundled in a single component, to provide a Network Architectural Preamplifier (NetPreAmp). The NetPreAmp may include a single network interface and a network switch which routes network traffic to the proper self-contained audio device. One or more network audio streams can be directed to one or more of the contained audio devices, providing the basic architectural amplifier structure." Italy [0047] "The zone manager 315 defines a plurality of zones for the site. The zones may include one or a plurality of the individual addressable audio devices included in the illustrated block of network audio devices 305. For ease of understanding in connection with the remainder of the description of FIG. 3, references to audio devices 305 refer to individual ones of the plurality of networked audio devices unless specified otherwise. The zone manager 315 defines a relationship between a characteristic of an audio signal being distributed for a reference audio device and for ones of the addressable audio devices 305 in respective zones. For example, the reference audio device may be an individual one of the provided addressable audio devices 305 associated with a specific room and a relationship

70

	may be provided between the characteristics for the audio signal in that room and other rooms included in a common zone with the base audio device room." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not

71

	want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Italy [0036] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." 72

	Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein."
adjusting one of the volume meters as desired after one of the volume meters from the list is selected,	Isely discloses adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said

73

wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. For example, Isely discloses that relative relationship between devices can be provided, where a change in volume for one device results in a different change in volume for the other device. [0053] The relationship between volume levels of different players 105/205/305/405 in a zone can be "complex, proportional, or static," which covers every possible manner of adjusting and representing volume levels, and which explicitly discloses changing each of the volume of the group of players synchronously in accordance with an adjustment made by a user. [0062] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that one of the volume meters can be adjusted as desired with a UPnP Control Point after one of the volume meters from the list is selected, wherein the one of the volume meters is the master channel for the group of players. The master volume represents an averaged value of audio volumes of the players in the group at startup, when all volume settings are at the lowest level and when the master increases all volume levels by the same amount. Adjusting the master channel volume of adjusts the volume of each of the group of players synchronously in accordance with the adjustment made by a user. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use

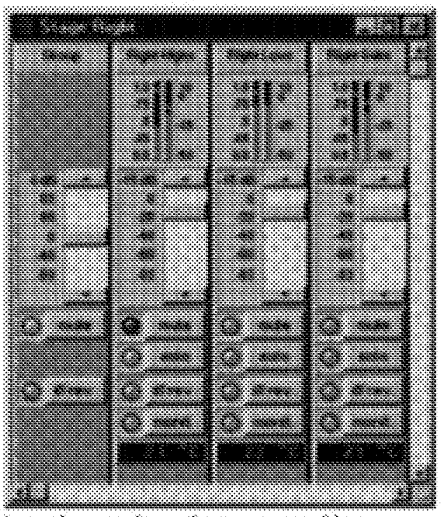
74

	the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not

	want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Italy [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." 76

	Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the zone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." To the extent that Isely is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

77

	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with Isely, because Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls.

78

	NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

79

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the UPnP Standard and MS UPnP with the teachings of Isely because Isely explicitly discloses audio devices that are compliant with the UPnP Standard.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a common user interface for representing a master volume with associated separate channels of a zone group, as taught by NexSys, because they were commonly used on mixing boards in related applications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further combine Isely, UPnP Standard and MS UPnP with the teachings of the NexSys Manual (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone.

3. Claims 1, 8, 16, 18, 21, 25, and 38 are rejected under 35 USC 103(a) as obvious over Berezowski in view of Tomassetti, Isely, UPnP, MS UPnP, and NexSys. See Request 12/27/2016, pp. 40-44, and Appendix C (12/27/2016), incorporated by reference.

1. **A method for controlling a plurality of players, the method comprising:**

displaying on a screen a first list showing at least available players;

displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;

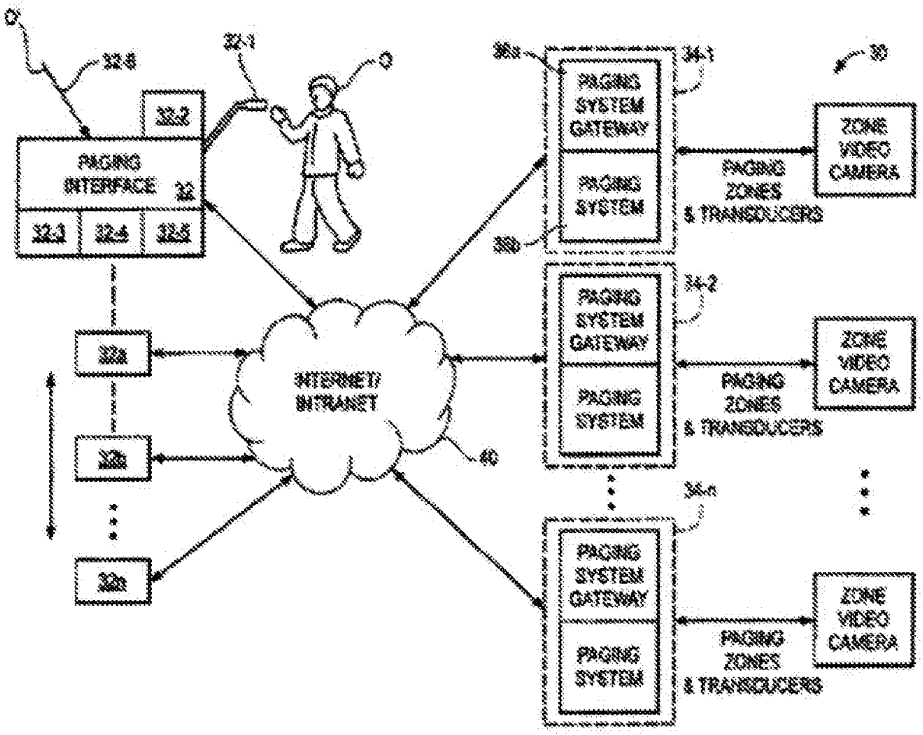
forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

synchronizing all players in the zone group; adjusting a volume meter represented by an averaged value of audio volumes of the players in the group,

wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Berezowski discloses an Internet facilitated emergency and general paging system that includes network connected paging systems 34 that can be wirelessly connected, and a paging interface 32 that is used to control the paging systems 34, as shown in Fig. 2 of Berezowski:

FIG. 2



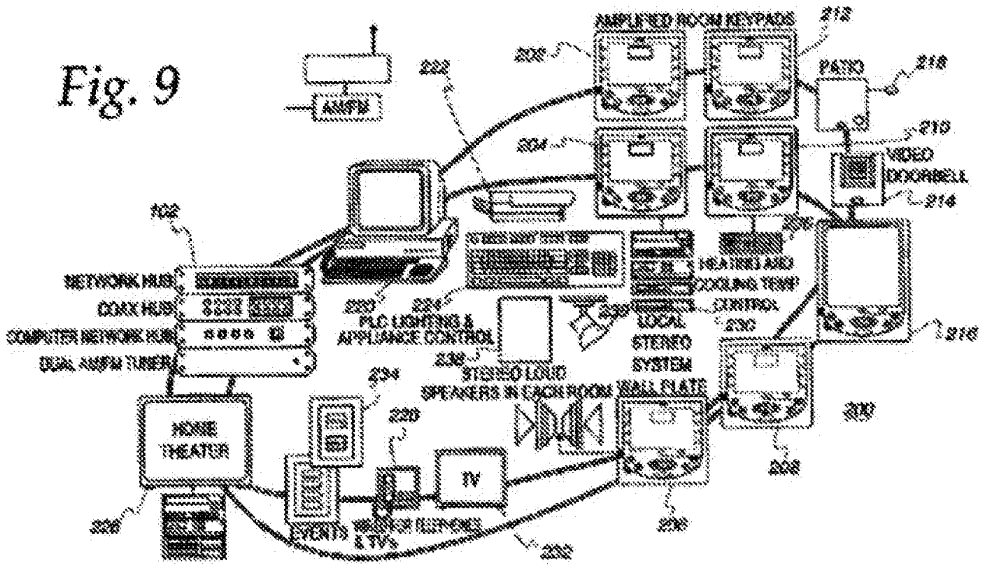
Berezowski discloses many of the claim limitations, including displaying on a screen a first list showing at least available players (5:57 - 6:13), displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players

that are eligible to be grouped with the zone group head, forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group and synchronizing all players in the zone group. Office action dated February 28, 2009 at pg. 3.

Berezowski teaches a zone group started with the source node, after one or more players from at least some of the destinations, or players, are selected to join the zone group (5: 66 – 6: 13 implies a zone is created by at least one player being added as a destination). Berezowski teaches (4:28-31) that "interface 32 enables operator O to select one or more remote paging systems and zone(s) therein to transmit live audio, via transducer 32-1 to the select zone(s) in real-time."

Tomassetti discloses a paging system that includes augmented audiovisual functionality. Tomassetti teaches a multi-zone entertainment network (Abstract). Tomassetti teaches that any node can become a source or a destination [0019], and synchronization of audio within a zone at [0005], [0009]-[0012] and [0016]-[0019]. Tomassetti discloses a paging system that includes augmented audiovisual functionality. Tomassetti, Figure 9:

Fig. 9



Berezowski recognized (1: 32-40) an ongoing need to be able to remotely access one or more paging systems, perhaps simultaneously, to be able to broadcast audio, in real time, from one or more common control units to remote zones via locally installed paging systems, preferably without having to install an additional communications system.

Tomassetti recognized [0010] a need for a multimedia system wherein a program source in one zone or room can stream multimedia data that is passed to one or more other zones or rooms where it may be independently controlled and played in synchronization with what is being played in other rooms and noise free. Further, there is a need to devise a scheme to ensure the information passing through the system is synchronized so that the audio data can be processed uniformly and synchronously by devices connected to the system.

UPnP and MS UPnP disclose industry standards that were known at the time.

NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an adjustment made by a user, and presents the zone group in a manner that indicates a grouping.

Appendix C

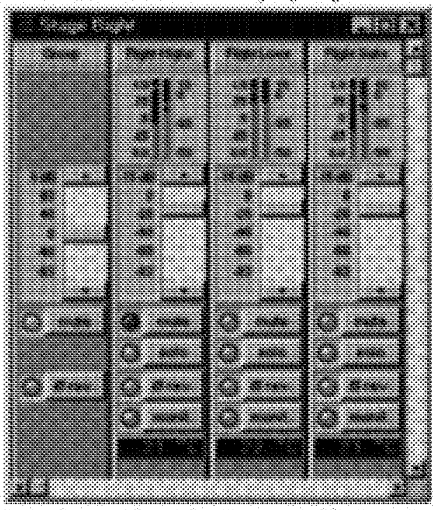
1. A method for controlling a plurality of players, the method comprising:	The arguments and exemplary citations from Appendices A and B are hereby incorporated for each corresponding element of this chart, as further described below.
displaying on a screen a first list showing at least available players;	Office Action from U.S. patent application 10/861,653, mailed February 18, 2009 ("OA"), page 3 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players (see column 5, line 57 - column 6, line 13 teaches a screen displaying a list of available players previously entered). . . ."
displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;	OA, page 3 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: . . . displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head . . ." OA, page 3 – "Berezowski teaches a source node to communicate to a group or zone (see column 2, line 49 - column 3, line 7, column 3, lines 44-49, and column 4, lines 7-43). Berezowski teaches a paging system employing different groups or zones, wherein at least some of the destinations (i.e. players) that are eligible to be grouped with a source node (i.e. zone group head) can be selected on a display (see column 6, lines 5-13 and figures 8-9)."
forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and	OA, page 3 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: . . . forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group . . ." OA, page 3-4 – "Berezowski teaches a zone group started with the source node, after one or more players from at least some of the destinations, or players, are selected to join the zone group (see column 5, line 66 - column 6, line 13 implies that a zone is created by at least one player being added as a destination)."
synchronizing all players in the zone group;	OA, pages 3-4 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: . . . synchronizing all players in the zone group. . . . Berezowski does not appear to teach the selection of a zone group head or synchronization. Tomassetti teaches a multi-zone entertainment network (see abstract). Specifically, Tomassetti teaches that any node can become a source or a destination (see ¶ 0019). Therefore, it would have been obvious for one of ordinary skill at

	the time to select one of the players as a zone group head. Tomassetti also teaches synchronization of an audio within a zone (see ¶ 0005, 0009-0012, and 0016-0019), so it would have been obvious to synchronize all the players in a zone group. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski and Tomassetti for the purpose of reducing echoes. It is obvious to one of ordinary skill in the art that the same audio stream played in adjacent rooms, or rooms that are not acoustically separate, can create a slightly disturbing echo when the audio is not synchronized."
adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased. The invalidity chart of Appendix B is hereby incorporated by reference for each element of this claim chart. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by

2

reference for each element of this claim chart.

To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a Windows-based group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:



As can be seen above, the group control increases or decreases the separate channels (right highs, right

3

	lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update

4

	to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42. "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

5

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Berezowski's teachings of audio broadcast to remote zones with the teachings of

Tomassetti [0009] to synchronize audio data reduce random delay and noise in the output. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Berezowski / Tomassetti with the teachings of the UPnP standards and MS UPnP to simplify connections between devices. It would have been obvious to further modify using the teachings of NexSys (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of **Berezowski, Tomassetti, Isely and the UPnP Standard**, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications. The **NexSys Manual** thus shows group volume meters functionality and it would be obvious to combine the group volume meters of the NexSys Manual to implement the master volume control and channel volume control functions of the **UPnP Standard, Isely, Berezowski and/or Tomassetti**, because one of ordinary skill would provide controls like the ones shown in the NexSys Manual to control multiple channels of audio in the same zone, as further discussed in Appendices B and C.

8. **The method of claim 1, wherein said synchronizing of all players in the zone group comprises:**

causing all players in the zone group to play an identical audio source; and

presenting the zone group in a manner that indicates a grouping.

Appendix C

8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:	
causing all players in the zone group to play an identical audio source, and	OA, page 6 "Regarding claim 8, see the preceding argument with respect to claim 1. The combination teaches the method of claim 1, wherein said synchronizing all players in the zone group comprises: causing all players in the zone group to play an identical audio source (see Tomassetti, ¶ 0067, wherein "The home theater system 226 may be capable ... of sending ... audio files ... to individual room stations 202-212 .... " and ¶ 0074, wherein " ... each remote station itself can broadcast or receive independent of and simultaneous with other remote stations."); and presenting the zone group in a manner that indicates a grouping (see Berezowski, figures 8- 10 and column 6, lines 5-13)."
presenting the zone group in a manner that indicates a grouping.	OA, page 6 "Regarding claim 8, see the preceding argument with respect to claim 1. The combination teaches the method of claim 1, wherein said synchronizing all players in the zone group comprises: causing all players in the zone group to play an identical audio source (see Tomassetti, ¶ 0067, wherein "The home theater system 226 may be capable ... of sending ... audio files ... to individual room stations 202-212 .... " and ¶ 0074, wherein " ... each remote station itself can broadcast or receive independent of and simultaneous with other remote stations."); and presenting the zone group in a manner that indicates a grouping (see Berezowski, figures 8- 10 and column 6, lines 5-13)."

6

16. **A method for controlling a plurality of players, the method comprising:**

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected,

wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix C

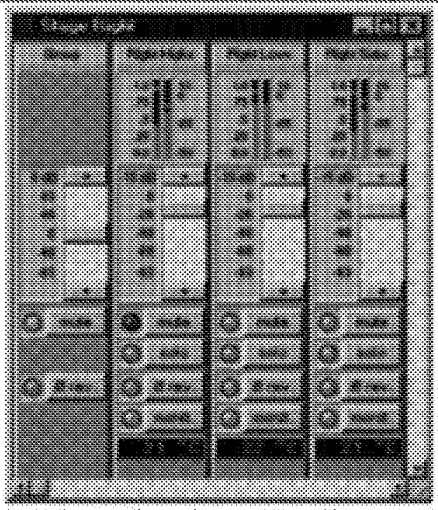
16. A method for controlling a plurality of players, the method comprising:	OA, pages 10 – "Regarding claim 16, see the preceding argument with respect to claim 1. The combination of Berezowski and Tomassetti teaches a method for controlling a plurality of players, the method comprising: displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and adjusting one of the volume meters as desired after one of the volume meters from the list is selected (see Tomassetti, ¶ 0004 and 0068)."
displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and	OA, pages 10-11 – "Regarding claim 16, see the preceding argument with respect to claim 1. The combination of Berezowski and Tomassetti teaches a method for controlling a plurality of players, the method comprising: displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group . . . (see Tomassetti, ¶ 0004 and 0068). The prior combination of Berezowski and Tomassetti teaches the features shown above, wherein Tomassetti makes it obvious to control the audio for each individual player in a group. However, it does not appear to teach a display listing a plurality of volume meters, where one volume level represents a group of players. Isely teaches a zone audio player (see abstract). Specifically, Isely teaches a volume level to represent each player in a designated zone (see ¶ 0011-0012). Isely also teaches volume levels with unique relationships associated with a zone (see ¶ 0047-0049, 0053, 0056, and 0057). It would have been obvious to display on a screen (such as the LCD taught by Tomassetti) the volume meters representing one of the unique relationships in the zone for the purpose of providing better

	ambiance. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski, Tomassetti, and Isely for the purpose of providing better ambiance."
adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and	OA, pages 10-11 – "Regarding claim 16, see the preceding argument with respect to claim 1. The combination of Berezowski and Tomassetti teaches a method for controlling a plurality of players, the method comprising: . . . adjusting one of the volume meters as desired after one of the volume meters from the list is selected (see Tomassetti, ¶ 0004 and 0068). The prior combination of Berezowski and Tomassetti teaches the features shown above, wherein Tomassetti makes it obvious to control the audio for each individual player in a group. However, it does not appear to teach a display listing a plurality of volume meters, where one volume level represents a group of players. Isely teaches a zone audio player (see abstract). Specifically, Isely teaches a volume level to represent each player in a designated zone (see ¶ 0011-0012). Isely also teaches volume levels with unique relationships associated with a zone (see ¶ 0047-0049, 0053, 0056, and 0057). It would have been obvious to display on a screen (such as the LCD taught by Tomassetti) the volume meters representing one of the unique relationships in the zone for the purpose of providing better ambiance. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski, Tomassetti, and Isely for the purpose of providing better ambiance." OA, page 4 - "Tomassetti also teaches synchronization of an audio within a zone (see ¶ 0005, 0009-0012, and 0016-0019), so it would have been obvious to synchronize all the players in a zone group."
said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	OA, page 4 - "Tomassetti also teaches synchronization of an audio within a zone (see ¶ 0005, 0009-0012, and 0016-0019), so it would have been obvious to synchronize all the players in a zone group." Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased, and the change would be synchronous in accordance with an adjustment made by the

?

	user. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '914 Patent are provided in Appendix A, which is hereby incorporated by reference for all purposes. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

8



As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by

9

	using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the

10

	group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting: • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

11

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Berezowski's teachings of audio broadcast to remote zones with the teachings of Tomassetti [0009] to synchronize audio data reduce random delay and noise in the output. It would have been obvious to one of ordinary skill in the art at the time of the invention to further

modify Berezowski / Tomassetti with the teachings of the UPnP standards and MS UPnP to simplify connections between devices. It would have been obvious to further modify using the teachings of NexSys (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of **Berezowski, Tomassetti, Isely and the UPnP Standard**, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications. The **NexSys Manual** thus shows group volume meters functionality and it would be obvious to combine the group volume meters of the NexSys Manual to implement the master volume control and channel volume control functions of the **UPnP Standard, Isely, Berezowski and/or Tomassetti**, because one of ordinary skill would provide controls like the ones shown in the NexSys Manual to control multiple channels of audio in the same zone, as further discussed in Appendices B and C.

18. **The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.**

Appendix C

18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.	Claim 18 was originally presented as claim 19 during prosecution. OA, page 11 – "Regarding claim 18, see the preceding argument with respect to claim 16. The combination teaches the method of claim 16, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes: changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user (see Tomassetti, ¶ 0004, 0005, 0009-0012, 0016-0019, and 0068, and Isely, ¶ 0053). It would have been obvious to synchronize the change in volume due to linking the volume changes according to the unique relationships defined in Isely. **Regarding claim 19**, see the preceding argument with respect to claim 18. The combination teaches the method of claim 18, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players is being adjusted at the same time." (emphasis added)

11

20. **The method of claim 16, further comprising playing an identical audio source in the group of players.**

Claim 20 is not requested for reexamination. However, the limitations of 21/20 requires rejections of claim 20 limitations.

Appendix C

20. The method of claim 16, further comprising playing an identical audio source in the group of	Claim 20 was originally presented as claim 22. OA, pages 11-12 – "Regarding claim 22, see the preceding argument with respect to claim 16. The combination teaches the method of claim 16, further comprising playing an identical audio source in the

11

players.	group of players (see Tomassetti, ¶ 0067, wherein "The home theater system 226 may be capable ... of sending ... audio files ... to individual room stations 202-212 ... " and ¶ 0074, wherein " ... each remote station itself can broadcast or receive independent of and simultaneous with other remote stations.")."

12

21. **The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.**

Appendix C

21. The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.	Claim 21 was originally presented as claim 23 OA, page 12 – "Regarding claim 23, see the preceding argument with respect to claim 22. The combination teaches the method of claim 22, wherein the audio source is retrieved in form of audio data packets over the network (see Tomassetti, ¶ 0016)."

12

25. **An apparatus for controlling a plurality of players, the apparatus comprising:**

a screen; a screen driver commanding the screen; an input interface; a network interface; a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a first list showing at least available players;

displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group,

wherein any one of the players in the group serves as a zone group head;

synchronizing all players in the zone group in accordance with the zone group head; and

adjusting a volume meter represented by an averaged value of audio volumes of the players in the group,

wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix C

25. An apparatus for controlling a plurality of players, the apparatus comprising:	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . The combination of claim 1, teaches the features above, wherein it is inherent there must be a screen driver to display an output and a processor to execute the software."
a screen;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: a screen (see Berezowski, figure 8 and column 5, lines 57-59) . . ."
a screen driver commanding the screen;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a screen driver commanding the screen (inherent) . . ."
an input interface;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . an input interface (id., column 5, lines 59-65) . . ."
a network interface;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a network interface (id., column 4, lines 7-22) . . ."
a memory for storing code for an application module;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a memory for storing code for an application module (id., column 2, line 49 - column 3, line 7) . . ."
a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver (inherent) to perform operations of . . ."

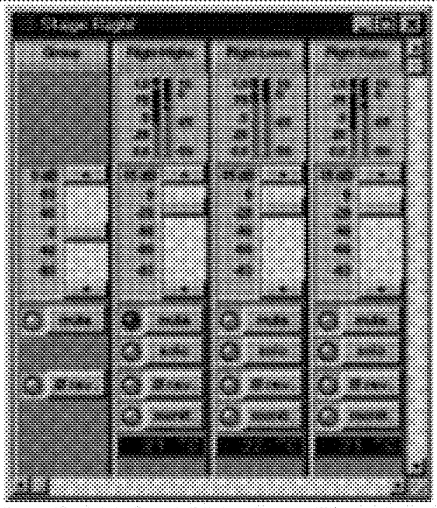
12

cause the application module and the screen driver to perform operations of	
displaying on a screen a first list showing at least available players;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . displaying on a screen a first list showing at least available players (id., column 5, line 57 - column 6, line 13 and figures 8-10) . . ."
displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head (id., column 5, line 66 - column 6, line 13 in view of Tomassetti, ¶ 0074) . . ."
synchronizing all players in the zone group in accordance with the zone group head; and	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . synchronizing all players in the zone group in accordance with the zone group head (see Tomassetti, ¶ 0005, 0009-0012, and 0018-0019)."
adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in	Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased. The invalidity chart of Appendix B is hereby incorporated by reference for each element of this claim chart. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which

13

accordance with an adjustment made by a user.	would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by reference for each element of this claim chart. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a Windows-based group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

14



As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left

§5

	stereo and right stereo channel, either by using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the

16

	group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting: • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

17

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Berezowski's teachings of audio broadcast to remote zones with the teachings of Tomassetti [0009] to synchronize audio data reduce random delay and noise in the output. It

would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Berezowski / Tomassetti with the teachings of the UPnP standards and MS UPnP to simplify connections between devices. It would have been obvious to further modify using the teachings of NexSys (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of **Berezowski, Tomassetti, Isely and the UPnP Standard**, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications. The **NexSys Manual** thus shows group volume meters functionality and it would be obvious to combine the group volume meters of the NexSys Manual to implement the master volume control and channel volume control functions of the **UPnP Standard, Isely, Berezowski and/or Tomassetti**, because one of ordinary skill would provide controls like the ones shown in the NexSys Manual to control multiple channels of audio in the same zone, as further discussed in Appendices B and C.

38. An apparatus for manipulating a plurality of players, the apparatus comprising:

a screen; a screen driver commanding the screen; an input interface; a network interface; a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

Appendix C

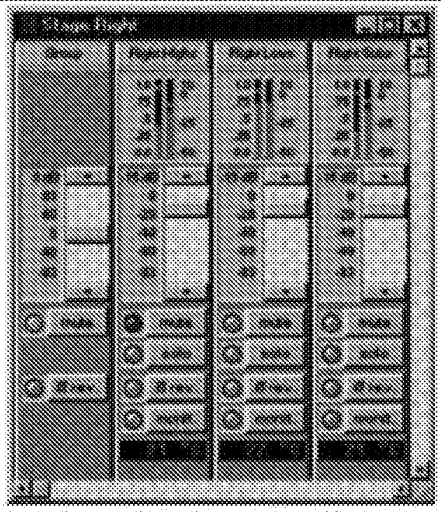
38. An apparatus for manipulating a plurality of players, the apparatus comprising:	Claim 38 was originally presented as claim 40. OA, page 13 "Regarding claim 40, see the preceding argument with respect to claims 16 and 27. The combination teaches these features like the method of claim 16, wherein it is performed on an apparatus with the features of claim 27."
a screen;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: a screen (see Berezowski, figure 8 and column 5, lines 57-59)"
a screen driver commanding the screen;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a screen driver commanding the screen (inherent)"
an input interface;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a input interface (id., column 5, lines 59-65)"
a network interface;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a network interface (id., column 4, lines 7-22)"
a memory for storing code for an application module;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a memory for storing code for an application module (id., column 2, line 49 - column 3, line 7)"

17

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver (inherent) to perform operations of:"
displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . displaying on a screen a first list showing at least available players (id., column 5, line 57 - column 6, line 13 and figures 8-1 O); displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head (id., column 5, line 66 - column 6, line 13 in view of Tomassetti, ¶ 0074); and synchronizing all players in the zone group in accordance with the zone group head (see Tomassetti, ¶ 0005, 0009-0012, and 0016-0019). The combination of claim 1, teaches the features above, wherein it is inherent there must be a screen driver to display an output and a processor to execute the software."
adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an	Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices that provides for adjusting one volume meter/control as desired after one of the volume meters/controls from the list is selected, wherein the one of the volume meters/controls is for the group of players, represented by an averaged value of audio volumes of the players in the group. The controllable characteristic of Isely includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the

18

averaged value of audio volumes of the players in the group, and	average volume level at the addressable audio device as the volume level for the reference device is increased, and the change would be synchronous in accordance with an adjustment made by the user. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '914 Patent are provided in Appendix A, which is hereby incorporated by reference for all purposes. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels. The group volume meter/control represents an averaged value of audio volumes of the players in the group when all players in the group start from the same volume, such as at start-up. This is shown in the exemplary diagram below from page 7.4 of NexSys:



As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). The group volume control thus represents "an averaged value of audio volumes of the players in the group," where the audio volumes are the changes to the current audio volume settings. The claim does not require a specific averaged value of specific audio volumes, so a representation of an average change value of audio volumes" satisfies the claim limitation. It would be obvious to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly

20

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the

21

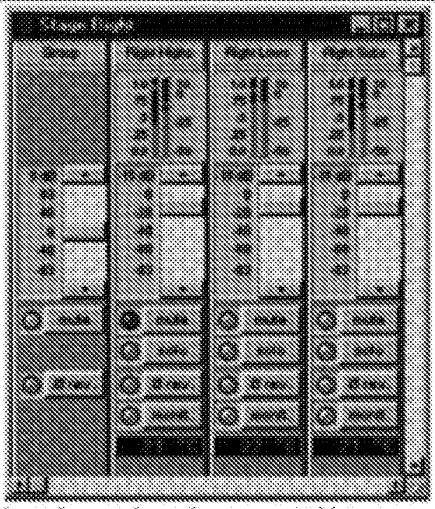
	local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	OA, pages 7-8 - "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . synchronizing all players in the zone group in accordance with the zone group head (see Tomassetti, ¶ 0005, 0009-0012, and 0016-0019)." Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased, and the change would be synchronous in accordance with an adjustment made by the user.

»

22

	To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by reference for all purposes. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

23



As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by

24

	using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. lastly, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." lastly, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." lastly, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the

25

	group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 "notches/steps" higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to "Master". As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

26

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Berezowski's teachings of audio broadcast to remote zones with the teachings of

Tomassetti [0009] to synchronize audio data reduce random delay and noise in the output. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Berezowski / Tomassetti with the teachings of the UPnP standards and MS UPnP to simplify connections between devices. It would have been obvious to further modify using the teachings of NexSys (p. 1.1) to implement the master volume control and channel volume control functions of NexSys controls because the graphical interface presenting functionality of the group volume meters is a practical and intuitive way to control multiple channels of audio in the same zone. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of **Berezowski, Tomassetti, Isely and the UPnP Standard**, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications. The **NexSys Manual** thus shows group volume meters functionality and it would be obvious to combine the group volume meters of the NexSys Manual to implement the master volume control and channel volume control functions of the **UPnP Standard, Isely, Berezowski and/or Tomassetti**, because one of ordinary skill would provide controls like the ones shown in the NexSys Manual to control multiple channels of audio in the same zone, as further discussed in Appendices B and C.

Patent Owner Amendment

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).

Submissions

In order to insure full consideration of any amendments, affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and by 37 CFR 41.33 after appeal, which will be strictly enforced.

Conclusion

Claims 1, 8, 16, 18, 21, 25, and 38 of USPN 7,571,014 to Lambourne et al. are under *ex parte* reexamination. Claims 1, 8, 16, 18, 21, 25, and 38 are rejected.

Any paper filed with the USPTO, i.e., any submission made, by either the Patent Owner or the Third Party Requester must be served on every other party in the reexamination proceeding, including any other third party requester that is part of the proceeding due to merger of the reexamination proceedings. As proof of service, the party submitting the paper to the Office must attach a Certificate of Service to the paper, which sets forth the name and address of the party

served and the method of service. Papers filed without the required Certificate of Service may be denied consideration. 37 CFR 1.903; MPEP 2666.06.

After the filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. See 37 CFR 1.550 (f).

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By Mail to: Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

EFS-Web: https://efs.uspto.gov/efile/myportal/efs-registered

Any inquiry concerning this communication should be directed to Examiner Steelman at 571-272-3704 or to Central Reexamination Unit Customer Service 571-272-7705.

/Mary Steelman/ Conferees: /RSD/ /WHC/

Reexamination Specialist

Central Reexamination Unit 3992

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,882	12/27/2016	7571014	04-0601-REEXAM (15-536)	8704

107361 7590 02/15/2017

McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

EXAMINER	
STEELMAN, MARY J	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
02/15/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patents and Trademark Office
P.O.Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS
JACKSON WALKER LLP
2323 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

Date: MAILED

FEB 15

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013882
PATENT NO. : 7571014
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

MAILED

FEB 15 2017

CENTRAL REEXAMINATION UNIT

McDonnell Boehnen Hulbert & Berghoff LLP : (Patent Owner)
Sonos, Inc. :
300 South Wacker Drive :
Chicago, IL 60606 :

Jackson Walker LLP : (Third Party Requester)
2323 Ross Avenue :
Suite 600 :
Dallas, TX 75201 :

In re Lambourne *et al.* : DECISION
Reexamination Control No. 90/013,882 : EXPUNGING
Filed: December 21, 2016 : IMPROPER PAPERS
U.S. patent number 7,571,014 B1 :

Entitled: METHOD AND APPARATUS FOR CONTROLLING MULTIMEDIA PLAYERS IN A MULTI-ZONE SYSTEM

This is a decision expunging improper papers filed by Third Party Requester on February 9, 2017.

PROCEDURAL HISTORY

1. On August 4, 2009, the Office issued U.S. patent number 7,571,014 B1 (the '014 patent).

2. On December 27, 2016, a compliant request for *ex parte* reexamination of claims 1, 8, 16, 18, 21, 25 and 38 of the '014 patent was filed by Third Party Requester. The request was assigned control number 90/013,882 (the '882 reexamination proceeding).

3. On January 26, 2017, the Office issued an Order granting the request for reexamination of claims 1, 8, 16, 18, 21, 25 and 38 of the '014 patent.

4. On February 9, 2017, Third Party Requester filed a paper via EFS-Web into the '882 reexamination proceeding captioned as "Petition to invoke the supervisory authority of the Director and from an action of an examiner in *ex parte* reexamination under 37 CFR 1.181. The filing included the petition and a letter.

5. Currently the '882 reexamination proceeding is pending before the Office.

RELEVANT REGULATIONS AND AUTHORITY

37 C.F.R. 1.515(c) provides:

> (c) The requester may seek review by a petition to the Director under § 1.181 within one month of the mailing date of the examiner's determination refusing ex parte reexamination. Any such petition must comply with § 1.181(b). If no petition is timely filed or if the decision on petition affirms that no substantial new question of patentability has been raised, the determination shall be final and non-appealable.

37 C.F.R. 1.535 provides:

> A reply to the patent owner's statement under § 1.530 may be filed by the *ex parte* reexamination requester within two months from the date of service of the patent owner's statement. Any reply by the *ex parte* requester must be served upon the patent owner in accordance with § 1.248. If the patent owner does not file a statement under § 1.530, no reply or other submission from the *ex parte* reexamination requester will be considered.

MPEP 502.05(I)(B)(2)(4) states:

> Any third party inquiries, petitions or papers unless **specifically** authorized by the EFS-Web Legal Framework (e.g., citation of prior art and written statements in patent files under 37 CFR 1.501) and/or **provided for via dedicated EFS-Web interface** (e.g., Third Party Pre-issuance Submissions under 37CFR 1.290) is improper. See subsection B.1., above. The Office considers inappropriate any third-party inquiry or submission in an application that is not provided for in 37 CFR 1.290 or 37 CFR 1.292. Some examples of third party papers include inquiries into the timing of future actions on an application, disputes over inventorship in an application, and demands that the Office withdrawn application from issue under 37 CFR 1.313 on the basis of unpatentability of a claim. [Emphasis added]

DECISION

A review of the record of this proceeding indicates that on January 26, 2017, the Office issued an Order granting *ex parte* reexamination of the '014 patent in response to a compliant request for *ex parte* reexamination filed by Third Party Requester on December 27, 2016. On February 9, 2017, Third Party Requester filed a paper entitled "PETITION UNDER 37 CFR 1.181 TO INVOKE THE SUPERVIORY AUTHORITY OF THE DIRECTOR, AND FORM AN ACTION OF AN EXAMINER IN EX PARTE REEXAMINATION" and a letter dated January 23, 2017 (hereinafter, letter). The submission of these papers directly into the reexamination file is not authorized under the rules and is an improper submission by third party requester.

37 C.F.R. 1.515(c) provides that a requester may seek review by a petition to the Director under § 1.181 within one month of the mailing date of the examiner's determination refusing *ex parte* reexamination. Additionally, 37 C.F.R. 1.535 provides that a reply to the patent owner's statement under 1.530 may be filed by the *ex parte* reexamination requester within two months from the date of service of the patent owner's statement.

Accordingly, subsequent to filing the request, a third party requester in an *ex parte* reexamination may not file papers in the reexamination file, except to a reply to a proper patent owner statement under 37 CFR 1.530 or a notice of concurrent proceedings as described in MPEP 2282 (See 37 CFR §§1.535 and 1.550(g)).

In the present case, the request for reexamination resulted in reexamination being ordered and Patent Owner did not file a statement under 1.530. Accordingly, the papers filed February 9, 2017, do not fall into either of the provisions of 37 C.F.R. 1.515(c) or 1.535 and is an improper submission by third party requester.

In addition, as set forth in MPEP 502.05(I)(B)(2)(4) the direct electronic filing of papers into an *ex parte* proceeding before the Office by a third party that is outside the EFS-Web Legal Framework is an improper filing. The third party requester has directly filed papers electronically using EFS-Web into the '882 reexamination proceeding. This direct electronic

filing via EFS-Web bypassed Office review[1] and coding procedures, resulting in the submissions being visible in the '882 reexamination proceeding's image file wrapper without first receiving the requisite Office review to determine whether the third party papers were proper for entry into the record of an *ex parte* reexamination proceeding. If requester intended the February 9, 2017, petition to be treated as a protest under 37 C.F.R. 1.291, such submission needs to be filed in paper to trigger Office screening procedures to ensure that only compliant protest submissions are entered into the file and are accurately coded as such. As reflected by the February 9, 2017 EFS-Web Electronic Acknowledgement Receipt, requester directly filed the February 9, 2017 submission in the '882 reexamination proceeding. While the EFS-Web Electronic Acknowledgement Receipt reflects that the submission is a petition, it does not reflect that it is a third party petition, as there is not third party petition submission option in EFS-Web for *ex parte* proceedings. Furthermore, the direct EFS-Web filing of papers in an *ex parte* proceeding without appropriate authorization is contrary to the Public Key Infrastructure Subscriber Agreement.[2] Therefore, the February 9, 2017 third party petition and letter are improper papers as they are unauthorized filings from a third party in an *ex parte* proceeding.

Accordingly, the February 9, 2017, petition and letter submitted by third party requester directly into the '882 reexamination file are hereby expunged. The Office has expunged these improper papers in the '882 reexamination proceeding by closing the papers and marking them as non-public.

Any inquiries with respect to this decision may be addressed to the undersigned at 571-272-3744

/Alexander Kosowski/

Alexander Kosowski
Supervisory Patent Reexamination Specialist
Central Reexamination Unit

[1] 37 CFR 1.291 and MPEP 1901

[2] Paragraph 3 of the agreement entitled "Acceptable Use or Reliance/Designation of Supervised Employee" states:

> I will use my USPTO certificates only for electronic communication with the USPTO (e.g., Private Patent Application Information Retrieval (Private PAIR) status inquiry, electronic filing, etc.) in compliance with the rules and policies of the USPTO (e.g., EFS-Web Legal Framework), **for applications for which I am authorized** to access. I understand that any other use is strictly prohibited. I will use or rely on USPTO certificates only for securing communication with the USPTO, and will not encourage or permit anyone to use or rely on the certificates (other than the USPTO). [Emphasis added]

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,882	12/27/2016	7571014	04-0601-REEXAM (15-536)	8704

107361 7590 01/26/2017

McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

EXAMINER
STEELMAN, MARY J

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
01/26/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

DO NOT USE IN PALM PRINTER

(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

Jackson Walker LLP
2323 Ross Avenue
Suite 600
Dallas, TX 75201

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/013,882*.

PATENT NO. *7571014*.

ART UNIT *3992*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

/Mary Steelman/, Primary Examiner, Art Unit: 3992

PTOL-465 (Rev.07-04)

The present application is being examined under the pre-AIA first to invent provisions.

Response to Request for Ex Parte Reexamination

The Third Party Request (request file date 12/21/2016 and amended 12/27/2016 to include the reexamination of claim 25) for *ex parte* reexamination of claims 1, 8, 16, 18, 21, 25, and 38 of US 7,571,014 to Lambourne et al. is acknowledged. The Request 12/27/2016 (46 page document), including claim charts, is incorporated by reference.

Information Disclosure Statement

IDS received 12/21/2016 (three IDS received on the same date) has been entered into the record. "With respect to the Information Disclosure Statements (PTO/SB/08A and 08B or its equivalent) considered with this action, the information cited has been considered as described in the MPEP. Note that MPEP 2256 and 2656 indicate that degree of consideration to be given to such information will be normally limited by the degree to which the party filing the information citation has explained the content and relevance of the information. Undated references are lined through and not considered.

Ongoing Duty to Disclose

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent under *ex parte* reexamination throughout the course of this reexamination proceeding. See MPEP 2207, 2282 and 2286. The third party requester is also reminded of the ability to similarly

appraise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP 2207, 2282 and 2286.

Litigation was found by the office: Sonos Inc. v. D&M Holdings Inc. et al. 1:14cv1330.

Reexams are governed by statute. Requester's question regarding patent validity are improper in an *ex parte* reexamination request, and will not be further discussed.

Scope of Reexamination

On November 2, 2002, Public Law 107-273 was enacted. Title III, Subtitle A, Section 13105, part (a) of the Act revised the reexamination statute by adding the following new last sentence to 35 U.S.C. 303(a) and 312(a):

The existence of a substantial new question of patentability is not precluded by the fact that a patent or printed publication was previously cited by or to the Office or considered by the Office.

For any reexamination ordered on or after November 2, 2002, the effective date of the statutory revision, reliance on previously cited/considered art, i.e., "old art," does not necessarily preclude the existence of a substantial new question of patentability (SNQ) that is based exclusively on that old art. Rather, determinations on whether a SNQ exists in such an instance shall be based upon a fact-specific inquiry done on a case-by-case basis.

In the present instance, an SNQ appears to exist based on prior art that was not before the examiner at the time of the original examination, in combinations with previously considered prior art, to present teachings in a new light.

37 C.F.R. 1.510 Request for ex parte reexamination.

A submission under **37 CFR 1.501** is limited to patents, printed publications, or patent owner written claim scope statements, additional information and an explanation of the pertinency and applicability of them. This may include an explanation by the patent owner as to how the claims differ from the prior art patents or printed publications or written claim scope statement and additional information. It may also include affidavits and declarations. The submission cannot include any issue which is not directed to patents, printed publications or written claim scope statements and additional information. Thus, for example, a submission cannot include a statement as to the claims violating **35 U.S.C. 112**, a statement as to the public use of the claimed invention, or a statement as to the conduct of the patent owner. The submission must be directed to patents, printed publications and/or written claim scope statements and additional information and cannot discuss what the patent owner did, or failed to do, with respect to submitting and/or describing patents and printed publications during examination, because that would be a statement as to the conduct of the patent owner. The submission also should not contain argument and discussion of references previously treated in the prosecution of the application which matured into the patent or references previously treated in a reexamination proceeding as to the patent.

Substantial New Question of Patentability (SNQ) Raised By the Request

For "a substantial new question of patentability" to be present, it is only necessary that:

A. The prior art patents and/or printed publications raise a substantial question of patentability regarding at least one claim i.e. the prior art teaching is such that there is a substantial likelihood that a reasonable examiner would consider the teaching to be important in deciding whether or not the claim is patentable; and it is not necessary that the prior art establish a prima facie case of unpatentability and;

B. The same question of patentability as to the claim has not been decided by the Office in a previous examination or pending reexamination of the patent or in a final holding of invalidity by the Federal Courts in a decision on the merits involving the claim. See MPEP 2242.

For a reexamination that was ordered on or after November 2, 2002 (the date of enactment of Public Law 107-273; see Section 13105, of the Patent and Trademark Office Authorization Act of 2002), reliance *solely* on old art (as the basis for a rejection) does not necessarily preclude the existence of a substantial new question of patentability (SNQ) that is based exclusively on that old art. Determinations on whether a SNQ exists in such an instance shall be based upon a fact-specific inquiry done on a case-by-case basis. For example, a SNQ may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier concluded examination(s), in view of a material new argument or interpretation presented in the request. MPEP 2258.01.

Priority Date of US 7,571,014

The application that issued as the '014 patent (patent under reexamination) was filed before the effective date of the Leahy-Smith America Invents Act, Pub. L. 112-29, 125 Stat. 284, and is subject to examination under pre-AIA 35 U.S.C. §§ 102 and 103. The earliest possible priority date claimed by the '014 patent, based on a continuation in part of 10/816,216 is 04/01/2004. '014 patent content not found in the earlier '216 application has a priority date to 06/05/2004.

Summary of US 7,571,014

The patent teaches displaying a list of available players, i.e. audio players, on an LCD screen, and displaying another list of players eligible to be grouped with a zone group head, on the screen when one of the players is selected as the head. All players are synchronized in a zone group, after the players are selected to join the zone group. A volume meter represented by an ageraged value of audio volume of the players in the group is adjusted, and changing the volume of each group of players synchronously in accordance with an adjustment made by a user.

Prior Art Applied in Reexamination

UPnP Standard Documents ("UPnP Documents") comprising:

Universal Plug and Play ("UPnP AV") AV Architecture:1 For UPnP™ Version 1.0, June 25, 2002

RenderingControl:1 Service Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002

MediaServer: 1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002

Universal Plug and Play Device Architecture V. 1.0, June 8, 2000

MediaRenderer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002

Microsoft, Universal Plug and Play (UPnP) Client Support, August 2001

The UPnP combination of documents describe specifications in the industry. The UPnP standard provides a standards-based architecture for peer to peer network connectivity, enabling device-to-device interoperability in a scalable networked environment.

A UPnP Control Point can be used to establish a connection between a first device with a UPnP Media server and a Second Device with a UPnP Media Renderer. Media Server discloses a Control Point ConnectionManager::PrepareFor Connection() action to inform the device of specified protocol/format to be used. A PrepareForConnection() action on either the MediaServer or MediaRenderer will return an AVTransport InstancelD to the Control Point." UPnP AV discloses the use of Isochronous-Push Transfer Protocols (IEC 61883/IEEE 1394) where underlying transfer mechanism provide realtime content transfer between the MediaServer and MediaRenderer. Real-time behavior allows the MediaRenderer to provide smooth-flowing rendering of content without implementing a read-ahead buffer.

US Patent Application 2002/0124097 to Isely et al., ("Isely"); priority date 12/29/2000

Isely has a priority date of 12/29/2000 and is prior art to US 7,571,014, the patent under reexamination.

Systems and methods are provided for dynamic distribution of audio signals at a site based on defined zones within the site. A plurality of addressable audio devices are coupled to a local

network for the site which are configured to receive a designated digital audio stream over the local network and to output the received digital audio stream to audio equipment located at the site. A zone manager defines a plurality of zones for the site which may include a plurality of the addressable audio devices. The zone manager defines a relationship between a characteristic of the audio signal for a reference audio device and for the addressable audio devices in the zones. An audio interface receives digital audio streams and outputs the digital audio streams on the local network addressed to selected ones of the audio devices based on the defined zones, the defined relationship between a characteristic of the audio signal for a reference audio device and for the addressable audio devices and a control input associated with the characteristic. A user interface is provided which is configured to receive a user designation of the control input. Systems and methods for dynamic aggregation of audio equipment in zones are also provided.

Crest Audio, NexSys version 3.0, Software Manual, August 14, 1997 ("NexSys")

NexSys is prior art to the '014 Patent under 35 U.S.C. 102(b).

NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an adjustment made by a user, and presents the zone group in a manner that indicates a grouping.

US 7,218,708 to Berezowski et al, ("Berezowski"), priority date 03/12/2004

Berezowski (priority date 03/12/2004) qualifies as prior art against the patent under reexamination, US 7,571,014.

Berezowski discloses an Internet facilitated emergency and general paging system that includes network connected paging systems 34 that can be wirelessly connected, a paging interface 32 that is used to control the paging systems 34. See Fig. 2. Berezowski also discloses displaying on a screen a first list showing at least available players (5: 57-6:13, displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head, forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group and synchronizing all players in the zone group).

US Patent Application 2002/0188762 to Tomassetti ("Tomassetti"); file date 05/04/2001

Tomassetti (priority date 05/04/2001) qualifies as prior art against the patent under reexamination, US 7,571,014.

Tomassetti discloses a paging system that includes augmented audiovisual functionality. Tomassetti discloses that any node in the network of Tomassetti can be configured as a source or destination at [0019]. Tomassetti teaches synchronization of audio within a zone.

Crest Audio, NexSys Version 3.0 Software Manual ("NexSys"), August 13, 1997.

NexSys qualifies as prior art against the patent under reexamination, US 7,571,014.

NexSys Software allows users to control Crest Audio amplifiers with a personal computer. NexSys discloses a common user interface for representing a master volume with associated separate channels of a group, where the master control changes a volume of each of the group of channels/players synchronously in accordance with an adjustment made by a user, and presents the group in a manner that indicates a grouping.

Issues Raised by Request

Issue 1: The requester alleges (pp. 26-34): A substantial new question of patentability as to claims 1, 8, 16, 21, 25, and 38 of US 7,571,014 is raised by the combination of "**UPnP Documents**" alone or in combination with other prior art.

The collective UPnP Documents are new prior art references, not previously considered in the prosecution of the '653 application.

The combination of UPnP Documents appear to disclose the features found to be lacking in the original examination.

The UPnP Documents are applied in 103(a) rejections, as a single grouping, or in combination with additional prior art.

Issue 2: The requester alleges (pp. 34-40): A substantial new question of patentability as to claims 1, 8, 16, 21, 25, and 38 of US 7,571,014 is raised by **Isely** in combination with additional prior art.

Isely was previously used in the prosecution of the application that issued as US 7,571,014, but is presented in combination with other prior art, in a new light, in this request for reexamination.

Isely in combination with other prior art appears to disclose the features found to be lacking in the original examination. The documents are applied in 103(a) rejections, in combination with additional prior art.

Issue 3: The requester alleges (pp. 40-42): A substantial new question of patentability as to claims 1, 8, 16, 21, 25, and 38 of US 7,571,014 is raised by the combination of **Berezowski and Tomassetti**, in combination with other prior art.

Berezowski was previously applied in the prosecution of the application that issued as US 7,571,014, but is presented in this Request, in a new light, in combination with other prior art. Tomassetti was previously applied in the prosecution of the application that issued as US 7,571,014, but is presented in the Request in a new light, in combination with other prior art.

Berezowski and Tomassetti, in combination with other prior art, appear to disclose the features found to be lacking in the original examination.

The documents are applied in 103(a) rejections, in combination with additional prior art.

Analysis

Issue 1

The request indicates that Requester considers that claims 1, 8, 16, 21, 25, and 38 are obvious over the prior art collection of UPnP Documents.

The UPnP Documents were not previously applied to prosecution of US 7,571,014. The significant new question of patentability raised by the prior art collection of UPnP Documents has not been decided in a previous examination of the '680 Patent.

It is agreed that the prior art collection of UPnP Documents raises a substantial new question of patentability of claims 1, 8, 16, 21, 25, and 38 of US 7,571,014.

Further, there is a substantial likelihood that a reasonable Examiner would consider these teachings important in deciding whether or not claims 1, 8, 16, 21, 25, and 38 are patentable.

Issue 2:

The request indicates that Requester considers that claims 1, 8, 16, 21, 25, and 38 are obvious over the Isely in combination with other prior art.

Isely has been previously applied in the prosecution of the application that issued as US 7,571014. However, reexamination regarding claims 1, 8, 16, 21, 25, and 38, Isely in combination with other prior art is presented in a new light. The significant new question of patentability raised by Isely in combination with other prior art has not been decided in a previous examination of the '680 Patent.

It is agreed that the Isely in combination with other prior art raises a substantial new question of patentability of claims 1, 8, 16, 21, 25, and 38 of US 7,571,014.

Further, there is a substantial likelihood that a reasonable Examiner would consider these teachings important in deciding whether or not claims 1, 8, 16, 21, 25, and 38 are patentable.

Issue 3

The request indicates that Requester considers that claims 1, 8, 16, 21, 25, and 38 are obvious over the Berezowski and Tomassetti, in combination with other prior art.

Both Berezowski and Tomassetti have been previously applied in the prosecution of the application that issued as US 7,571,014. However, reexamination regarding claims 1, 8, 16, 21, 25, and 38, Berezowski and Tomassetti, in combination with other prior art, is presented in a new light. The significant new question of patentability raised by Berezowski and Tomassetti in combination with other prior art has not been decided in a previous examination of the '680 Patent.

It is agreed that Berezowski and Tomassetti, in combination with other prior art is considered to raise a substantial new question of patentability as to claims 1, 8, 16, 21, 25, and 38 of the '014 patent.

Further, there is a substantial likelihood that a reasonable Examiner would consider these teachings important in deciding whether or not claims 1, 8, 16, 21, 25, and 38 are patentable.

Prosecution History

Ex Parte Reissue Application 90/013882 requests an *ex parte* reexamination of claims 1, 8, 16, 21, 25, and 38 of US 7,571,014 (10/861,653).

A non final office action mailed 06/27/2008 rejecting claims 1-15 and 27-39 under 35 U.S.C. § 103(a) as obvious over **Millington**, US 2007/0038999, in view of **Berezowski** et al., US 7,218,708. Claims 16, 18, 19, 22-24, 40, 42, and 43 were rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Millington and Berezowski** and further in view of **Suzuki**, US 5,239,458 A. Claims 17 and 41were rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Millington, Berezowski, and Suzuki** and further in view of **Lumsden**, US 5,299,266 A. Claims 20, 25, 26, 44, 46, and 47 were rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Millington, Berezowski, and Suzuki** and further in view of **Also** et al., US 2004/0008852 A1 (hereinafter Also).

The following prior art was noted in prosecution, but not applied in a rejection:
Holtz et al., US 2002/0109710 A1(teaches a mixer device with volume controls (see H 0111 - 0122); **Anttila** et al., US 2003/0126211 A1 (teaches a list of clients to send audio to, see 0065-0066 and figure 9).; and **Blank** et al., US 2004/0252400 Al (teaches computer media synchronization across a network. see figure 2 and 7 and 0034-0037 and 0066-0067).

A second non final office action mailed 02/18/2009 rejecting claims 1-15 and 27-39 under 35 U.S.C. 103(a) as being unpatentable over **Berezowski** et al. (hereinafter Berezowski, and previously cited), US 7,218,708 B2, in view of **Tomassetti** et al. (hereinafter Tomassetti), US 2002/0188762 Al. Claims 16, 18-20, 22-26, 40, 42-44, 46, and 47 were rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Berezowski and Tomassetti** and further in view of **Isely** et al. (hereinafter Isely), US 2002/0124097 Al. Claims 17 and 41 were rejected under 35 USC 103(a) as unpatentable over **Berezowski, Tomassetti, and Isely, in view of Lumsden**, US 5,299,266. Claims 21 and 45 were indicated as allowable subject matter if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

The Applicant amended (03/28/2009) claim language as suggested by the Examiner. The Examiner further amended claim 16 in an Examiner's Amendment to include language similar to amended claim 1 ("wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.")

A Notice of Allowance mailed 06/16/2009. The reason for allowance was given:

> "…the prior art does not teach or reasonably suggest an average volume level to represent volumes of the players in the group, wherein an average volume level of a player is analogous to the volume gain of a player."

Extensions of Time

Extensions of time under 37 CFR 1.136 (a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to an applicant and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that ex parte reexamination proceedings "will be concluded with special dispatch" (37 CFR 1.555(a)). Extensions of time in ex parte reexamination proceedings are provided for in 37 CFR 1.550(c).

Patent Owner Amendment

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).
In a reexamination proceeding, Patent Owner may waive the right under 37 C.F.R. 1.530 to file a Patent Owner Statement. The document needs to contain a statement that Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement and proof of service in the manner provided by 37 C.F.R. 1.248, if the request for reexamination was made by a third party requester, see 37 C.F.R 1.550(f). The Patent Owner may consider using the following statement in a document waiving the right to file a Patent Owner Statement: Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement.

Conclusion

Claims 1, 8, 16, 18, 21, 25, and 38 of US 7,571,014 are ordered for *ex parte* reexamination.

Any paper filed with the USPTO, i.e., any submission made, by either the Patent Owner or the Third Party Requester must be served on every other party in the reexamination proceeding, including any other third party requester that is part of the proceeding due to merger of the reexamination proceedings. As proof of service, the party submitting the paper to the Office must attach a Certificate of Service to the paper, which sets forth the name and address of the party served and the method of service. Papers filed without the required Certificate of Service may be denied consideration. 37 CFR 1.903; MPEP 2666.06.

Please mail any communications to:

Attn: Mail Stop "Ex Parte Reexam"
Central Reexamination Unit
Commissioner for Patents
P. O. Box 1450
Alexandria VA 22313-1450

Please FAX any communications to:
(571) 273-9900
Central Reexamination Unit

Please hand-deliver any communications to:
Customer Service Window
Attn: Central Reexamination Unit
Randolph Building, Lobby Level
401 Dulany Street
Alexandria, VA 22314

Registered users of EFS-Web may alternatively submit such correspondence via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered

Any inquiry concerning this communication or earlier communications from the examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at

telephone number (571) 272-7705.

/Mary Steelman/

Primary Examiner, Central Reexamination Unit

AU 3992

/WILLIAM H WOOD/

Primary Examiner, Art Unit 3992

/ALEXANDER KOSOWSKI/

Supervisory Patent Examiner, Art Unit 3992

Order Granting Request For Ex Parte Reexamination	Control No. 90/013,882	Patent Under Reexamination 7571014
	Examiner MARY STEELMAN	Art Unit 3992

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed *27 December 2016* has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☒ PTO/SB/08, c)☐ Other: _____

1. ☒ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

		/Mary Steelman/ Primary Examiner, Art Unit 3992

cc:Requester (if third party requester)

Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

37 CFR 1.501
INFORMATION DISCLOSURE CITATION IN A PATENT
(Sheet 3 of 3)

Docket Number (Optional)	Patent Number
131131.00049.004	7,571,014
Applicant: Sonos, Inc.	
Issue Date: August 4, 2009	Art Unit: 2614

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

/M.J.S/		UPnP and Sonos Questions Sonos Community, December 2006

EXAMINER	DATE CONSIDERED
/MARY J STEELMAN/ (01/11/2017)	01/11/2017

This collection of information is required by 37 CFR 1.501. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

37 CFR 1.501
INFORMATION DISCLOSURE CITATION IN A PATENT
(Sheet 1 of 3)

Docket Number (Optional)	Patent Number
131131.00049.004	7,571,014
Applicant: Sonos, Inc.	
Issue Date: August 4, 2009	Art Unit: 2614

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2002/0124097	2002/0	Isely et al.			
	7,218,708	2007/0	Berezowski et al.			
	2002/0188762	2002/1	Tomassetti et al.			
	2007/0038999	2007/0	Millington			
	5,239,458	1993/0	Suzuki			
	5,751,819	1998/0	Dorrough			
	2005/0047605	2005/0	Lee et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		Universal Plug and Play ("UPnP") AV Architecture:1 For UPnP™ Version 1.0, June 25, 2002
		RenderingControl:1 Service Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002
		MediaServer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002
		Universal Plug and Play Device Architecture V. 1.0, June 8, 2000
		MediaRenderer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002
		Microsoft, Universal Plug and Play (UPnP) Client Support, August 2001 at pg. 11

EXAMINER	DATE CONSIDERED
/MARY J STEELMAN/ (01/11/2017)	01/11/2017

This collection of information is required by 37 CFR 1.501. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.J.S/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.J.S/

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

37 CFR 1.501
INFORMATION DISCLOSURE CITATION IN A PATENT
(Sheet 2 of 3)

Docket Number (Optional)	Patent Number
131131.00049.004	7,571,014
Applicant: Sonos, Inc.	
Issue Date: August 4, 2009	Art Unit: 2614

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		Crest Audio, NexSys version 3.0 Software Manual, August 13, 1997
		Schulzrinne et al., RTP: A Transport Protocol for Real-Time Applications, January 1996
		XILINX, Wireless Home Networks, March 21, 2001
		PLAINTIFF SONOS, INC.'S OPENING CLAIM CONSTRUCTION BRIEF, September 9, 2016
		Linux SDK for UPnP Devices vl.2, January 17, 2003
		Pascoe, Salutation Architectures and the newly defined service discovery protocols from Microsoft ; June 6, 1999

EXAMINER	DATE CONSIDERED
/MARY J STEELMAN/ (01/11/2017)	01/11/2017

This collection of information is required by 37 CFR 1.501. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.J.S/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.J.S/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,882	12/27/2016	7571014	04-0601-REEXAM (15-536)	8704

107361 7590 01/19/2017

McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

EXAMINER	
STEELMAN, MARY J	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
01/19/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patents and Trademark Office
P.O.Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

JACKSON WALKER LLP
2323 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

Date: 01/19/2017

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013882
PATENT NO. : 7571014
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	Control No. 90/013,882	Patent Under Reexamination is Requested 7,571,014
	Examiner Steelman, Mary	Art Unit 3992

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) McDonnell Boehnen Hulbert & Berghoff LLP (3)

(2) Renee Preston, CRU Paralegal (4)

Date of Telephonic Interview:01/09/2017.

A. The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☐ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

☒ USPTO personnel were unable to reach the patent owner.**

B. The Patent Owner of record telephoned the Office and indicated they would like to participate in the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The Patent owner of record telephoned the Office and **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings*, 75 *Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

**The patent owner may contact the USPTO personnel at (571) 272-7705 or at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/Renee Preston/ (571) 272-7705
Signature and telephone number of the USPTO official, who contacted, was contacted by, or attempted to contact the patent owner.

cc: Requester (if third party requester)

Litigation Search Report CRU 3999

Reexam Control No. 90/013,882

To: Mary Steelman Location: CRU Art Unit: 3992 Date: 01/10/2017	From: Renee Preston Location: CRU 3999 MDE 4B15 Phone: (571) 272-1607 Renee.preston@uspto.gov

Search Notes

U.S. Patent No. 7,571,014

1) I performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.

2) I performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.

3) I performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.

4) I performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.

5) I performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Litigation found

Status	Description	Docket	Court
Open	Sonos Inc. v. D&M Holdings Inc. et al	US-DIS-DED	1:14cv1330

References Cited Items (12)

Title	Date	Type
1. LEVEL METER FOR DIGITALLY-ENCODED AUDIO Out Of Plan US PAT 5751819	Jul 24, 1995	Patents
2. MULTI MACHINE MONITOR FOR TV POST PRODUCTION Out Of Plan US PAT 5299266	Mar 20, 1992	Patents
3. INTERNET FACILITATED EMERGENCY AND GENERAL PAGING SYSTEM Out Of Plan US PAT 7218708	Mar 12, 2004	Patents
4. COMPUTER MEDIA SYNCHRONIZATION PLAYER Out Of Plan US PAT APP 20040252400	Jun 13, 2003	Patents
5. REAL TIME VIDEO PRODUCTION SYSTEM AND METHOD Out Of Plan US PAT APP 20020109710	Apr 15, 2002	Patents
6. AUDIO POWER MONITORING SYSTEM Out Of Plan US PAT APP 20050047605	Sep 03, 2003	Patents
7. LEVEL ADJUSTMENT APPARATUS Out Of Plan US PAT APP 20040008852	Jul 09, 2003	Patents
8. SYNCHRONOUS MEDIA PLAYBACK AND MESSAGING SYSTEM Out Of Plan US PAT APP 20030126211	Dec 12, 2001	Patents
9. SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Plan US PAT APP 20070038999	Apr 01, 2004	Patents
10. DATA STRUCTURE FOR AN ENTERTAINMENT AND COMMUNICATIONS NETWORK Out Of Plan US PAT APP 20020188762	May 04, 2001	Patents
11. METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR ZONE BASED DISTRIBUTION OF AUDIO SIGNALS Out Of Plan US PAT APP 20020124097	Dec 29, 2000	Patents
12. FADER DEVICE HAVING A FINE ADJUSTMENT OF THE SIGNAL LEVEL Out Of Plan US PAT 5239458	Jul 20, 1990	Patents

WESTLAW © 2017 Thomson Reuters. No claim to original U.S. Government Works.

Citing References (257)

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	1. Second Amendedcomplaint for Patent Infringement Out Of Plan SONOS, INC., Plaintiff, v. D&M HOLDINGS INC. d/b/a the D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants. 2015 WL 5398693, *1+ , D.Del. (Trial Pleading)	Mar. 09, 2015	Petition		—
Examined by	2. First Amended Complaint for Patent Infringement Out Of Plan SONOS, INC., Plaintiff, v. D&M HOLDINGS INC. d/b/a the D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants. 2014 WL 10394226, *1+ , D.Del. (Trial Pleading)	Dec. 17, 2014	Petition		—
Cited by	3. Multi-channel pairing in a media system LitAlert P2014-43-64	Oct. 21, 2014	Lit Alert		—
Cited by	4. Patent Owner Preliminary Response Pursuant to 37 C.F.R. s 42.107 Out Of Plan UNIFIED PATENTS INC., Petitioner, v. QURIO HOLDINGS, INC., Patent Owner. 2016 WL 696517, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Jan. 07, 2016	Administrative Filing		—
Cited by	5. Petition for Inter Partes Review of U.S. Patent 7,787,904 Out Of Plan UNIFIED PATENTS INC., Petitioner, v. QURIO HOLDINGS, INC., Patent Owner. 2015 WL 5782138, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 28, 2015	Administrative Filing		—
Cited by	6. Defendants' Response in Opposition to Plaintiff's Motion to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) Out Of Plan SONOS, INC., Plaintiff, v. D&M HOLDINGS INC. d/b/a the D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants. 2016 WL 4771470, *1 , D.Del. (Trial Motion, Memorandum and Affidavit)	May 09, 2016	Motion		—
—	7. NETWORK DIGITAL AUDIO SYSTEM HAS ONE TASK SOURCE PROCESSOR AND SEVERAL MEMBER PROCESSORS, SUCH THAT EACH MEMBER PROCESSOR DETERMINES ITS TASK EXECUTION TIME BASED ON CURRENT TIME VALUE INDICATED BY SOURCE PROCESSOR Out Of Plan DWPI 2005-172844+	July 28, 2003	DWPI	—	—
—	8. VOLUME CONTROL SYSTEM, CONTROLLER, AND AMPLIFYING APPARATUS Out Of Plan US PAT 8571236 , U.S. PTO Utility	Oct. 29, 2013	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**9.** MULTI-CHANNEL BROADCASTING SYSTEM USING DIGITAL MATRIX AMPLIFIER AND METHOD OF CONTROLLING THE SAME Out Of Plan US PAT 8553902 , U.S. PTO Utility	Oct. 08, 2013	Patents	—	—
—	**10.** REMOTE AUDIO AMPLIFIER MONITORING SYSTEM Out Of Plan US PAT 8554347 , U.S. PTO Utility	Oct. 08, 2013	Patents	—	—
—	**11.** SYSTEM AND METHODS FOR ADJUSTING GRAPHICAL REPRESENTATIONS OF MEDIA FILES BASED ON PREVIOUS USAGE Out Of Plan US PAT 8527876 , U.S. PTO Utility	Sep. 03, 2013	Patents	—	—
—	**12.** AUDIO RELATED SYSTEM LINK MANAGEMENT Out Of Plan US PAT 8473844 , U.S. PTO Utility	June 25, 2013	Patents	—	—
—	**13.** SYNCHRONIZED PLAYBACK OF MEDIA PLAYERS Out Of Plan US PAT 8463875 , U.S. PTO Utility	June 11, 2013	Patents	—	—
—	**14.** SYSTEM AND METHOD FOR SHARING PLAYLISTS Out Of Plan US PAT 8458356 , U.S. PTO Utility	June 04, 2013	Patents	—	—
—	**15.** CONTROL DEVICE, CONTROL METHOD, AND CONTROL SYSTEM Out Of Plan US PAT 8458594 , U.S. PTO Utility	June 04, 2013	Patents	—	—
—	**16.** USER INTERFACE FOR MANAGING THE OPERATION OF NETWORKED MEDIA PLAYBACK DEVICES Out Of Plan US PAT 8423893 , U.S. PTO Utility	Apr. 16, 2013	Patents	—	—
—	**17.** PRE-PROGRAMMED MULTIMEDIA CONTROLLER FOR E.G. REMOTELY CONTROLLING MPEG-1 AUDIO LAYER 3 PLAYERS, HAS PROCESSOR CONTROLLING OPERATION OF PARTS IN ZONE PLAYER, WHERE ZONE SCENE CONFIGURATION INCLUDES ACTIVATION OF GROUP AUTOMATICALLY AT TIME Out Of Plan DWPI 2012-N21945	June 05, 2004	DWPI	—	—
—	**18.** MULTIMEDIA PLAYER I.E. AUDIO PLAYER, CONTROL METHOD FOR MULTI-ZONE MULTI MEDIA SYSTEM, INVOLVES CHANGING VOLUME OF EACH GROUP OF PLAYERS SYNCHRONOUSLY IN ACCORDANCE WITH ADJUSTMENT MADE BY USER Out Of Plan DWPI 2009-M16194	Apr. 01, 2004	DWPI	—	—
—	**19.** RF 038329/0253 Out Of Plan	Apr. 01, 2016	Assignments	—	—
—	**20.** RF 037112/0014 Out Of Plan	Nov. 15, 2015	Assignments	—	—
—	**21.** RF 028345/0881 Out Of Plan	June 08, 2012	Assignments	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	22. RF 023998/0778 Out Of Plan	Feb. 26, 2010	Assignments	—	—
—	23. RF 017664/0836 Out Of Plan	May 24, 2006	Assignments	—	—
—	24. RF 015443/0654 Out Of Plan	June 05, 2004	Assignments	—	—
—	25. USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT APP 20130288802 , U.S. PTO Application	Oct. 31, 2013	Patents	—	—
—	26. VOLUME CONTROL SYSTEM, CONTROLLER PROGRAM OF THE VOLUME CONTROL SYSTEM, AND AUDIO OUTPUT DEVICE OF THE VOLUME CONTROL SYSTEM Out Of Plan US PAT APP 20130148825 , U.S. PTO Application	June 13, 2013	Patents	—	—
—	27. PatStat 7571014	Apr. 09, 2013	Patent Status Files	—	—
—	29. The program of the controller of a sound volume control system and a sound volume control system, and the audio/voice output apparatus of a sound volume control system Out Of Plan JP PAT APP 2013123154 A (MAT)	June 20, 2013	Patents	—	—
—	30. DISPLAY SCREEN OR PORTION THEREOF WITH GRAPHICAL USER INTERFACE Out Of Plan US PAT D775632 , U.S. PTO Design	Jan. 03, 2017	Patents	—	—
—	31. APPLICATION LAUNCH Out Of Plan US PAT 9535986 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—
—	32. ANTENNA SELECTION Out Of Plan US PAT 9537213 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—
—	33. FACILITATING THE RESOLUTION OF ADDRESS CONFLICTS IN A NETWORKED MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9537819 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—
—	34. CLOUD QUEUE ACCESS CONTROL Out Of Plan US PAT 9537852 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—
—	35. REPLACING MEDIA ITEM Out Of Plan US PAT 9537915 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—
—	36. SYSTEMS AND METHODS FOR NETWORKED MUSIC PLAYBACK Out Of Plan US PAT 9538236 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—
—	37. AUDIO SYNCHRONIZATION AMONG PLAYBACK DEVICES USING OFFSET INFORMATION Out Of Plan US PAT 9538300 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**38.** CALIBRATION ERROR CONDITIONS Out Of Plan US PAT 9538305 , U.S. PTO Utility	Jan. 03, 2017	Patents	—	—
—	**39.** LOW-LATENCY AUDIO NETWORKING Out Of Plan US PAT 9529906 , U.S. PTO Utility	Dec. 27, 2016	Patents	—	—
—	**40.** METHODS AND SYSTEMS FOR SUBWOOFER CALIBRATION Out Of Plan US PAT 9524098 , U.S. PTO Utility	Dec. 20, 2016	Patents	—	—
—	**41.** PLAYBACK OF MEDIA CONTENT ACCORDING TO MEDIA PREFERENCES Out Of Plan US PAT 9524338 , U.S. PTO Utility	Dec. 20, 2016	Patents	—	—
—	**42.** CONTEXTUAL INDEXING OF MEDIA ITEMS Out Of Plan US PAT 9524339 , U.S. PTO Utility	Dec. 20, 2016	Patents	—	—
—	**43.** PLAYBACK BASED ON RECEIVED SOUND WAVES Out Of Plan US PAT 9525931 , U.S. PTO Utility	Dec. 20, 2016	Patents	—	—
—	**44.** LOCK SCREEN MEDIA PLAYBACK CONTROL Out Of Plan US PAT 9519413 , U.S. PTO Utility	Dec. 13, 2016	Patents	—	—
—	**45.** METHODS AND APPARATUS FOR DIRECT ROUTING BETWEEN NODES OF NETWORKS Out Of Plan US PAT 9521074 , U.S. PTO Utility	Dec. 13, 2016	Patents	—	—
—	**46.** SERVICE PROVIDER USER ACCOUNTS Out Of Plan US PAT 9521212 , U.S. PTO Utility	Dec. 13, 2016	Patents	—	—
—	**47.** ASSOCIATING PLAYBACK DEVICES WITH PLAYBACK QUEUES Out Of Plan US PAT 9521454 , U.S. PTO Utility	Dec. 13, 2016	Patents	—	—
—	**48.** CALIBRATION ADJUSTMENT BASED ON BARRIER Out Of Plan US PAT 9521487 , U.S. PTO Utility	Dec. 13, 2016	Patents	—	—
—	**49.** PLAYBACK DEVICE SETTING BASED ON DISTORTION Out Of Plan US PAT 9521488 , U.S. PTO Utility	Dec. 13, 2016	Patents	—	—
—	**50.** OPERATION USING POSITIONING INFORMATION Out Of Plan US PAT 9521489 , U.S. PTO Utility	Dec. 13, 2016	Patents	—	—
—	**51.** DEVICE BASE Out Of Plan US PAT 9512954 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**52.** MICROPHONE CALIBRATION Out Of Plan US PAT 9513865 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**53.** SOFTWARE APPLICATION AND ZONES Out Of Plan US PAT 9513868 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**54.** METHOD, DEVICE, AND SYSTEM FOR DIRECTING A WIRELESS SPEAKER FROM A MOBILE PHONE TO RECEIVE AND RENDER A PLAYLIST FROM A CONTENT SERVER ON THE INTERNET Out Of Plan US PAT 9516370 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**55.** PLAYBACK DEVICE SETTING ACCORDING TO THRESHOLD(S) Out Of Plan US PAT 9516419 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**56.** PROVIDING A MULTI-CHANNEL AND A MULTI- ZONE AUDIO ENVIRONMENT Out Of Plan US PAT 9516440 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**57.** INTELLIGENT AMPLIFIER ACTIVATION Out Of Plan US PAT 9516441 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**58.** MEDIA CONTENT BASED ON PLAYBACK ZONE AWARENESS Out Of Plan US PAT 9516445 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**59.** DISPLAY SCREEN OR PORTION THEREOF WITH GRAPHICAL USER INTERFACE Out Of Plan US PAT D772918 , U.S. PTO Design	Nov. 29, 2016	Patents	—	—
—	**60.** DEVICE PLAYBACK FAILURE RECOVERY AND REDISTRIBUTION Out Of Plan US PAT 9507560 , U.S. PTO Utility	Nov. 29, 2016	Patents	—	—
—	**61.** SYSTEM AND METHOD FOR A MEDIA EXPERIENCE SOCIAL INTERFACE Out Of Plan US PAT 9510055 , U.S. PTO Utility	Nov. 29, 2016	Patents	—	—
—	**62.** PRIVATE QUEUE FOR A MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9501533 , U.S. PTO Utility	Nov. 22, 2016	Patents	—	—
—	**63.** PLAYLIST MODIFICATION Out Of Plan US PAT 9495076 , U.S. PTO Utility	Nov. 15, 2016	Patents	—	—
—	**64.** CLOUD QUEUE ACCESS CONTROL Out Of Plan US PAT 9497182 , U.S. PTO Utility	Nov. 15, 2016	Patents	—	—
—	**65.** USER INTERFACES FOR REMOTE MANAGEMENT AND CONTROL OF NETWORK-CONNECTED THERMOSTATS Out Of Plan US PAT 9489062 , U.S. PTO Utility	Nov. 08, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
---	**66.** SYSTEM AND METHOD FOR PLAYBACK OF MEDIA CONTENT WITH AUDIO TOUCH MENU FUNCTIONALITY Out Of Plan US PAT 9489113 , U.S. PTO Utility	Nov. 08, 2016	Patents	---	---
---	**67.** SYSTEM AND METHOD FOR PLAYBACK OF MEDIA CONTENT WITH SUPPORT FOR AUDIO TOUCH CACHING Out Of Plan US PAT 9483166 , U.S. PTO Utility	Nov. 01, 2016	Patents	---	---
---	**68.** WEARABLE DEVICE ZONE GROUP CONTROL Out Of Plan US PAT 9483230 , U.S. PTO Utility	Nov. 01, 2016	Patents	---	---
---	**69.** INCONSISTENT QUEUES Out Of Plan US PAT 9485545 , U.S. PTO Utility	Nov. 01, 2016	Patents	---	---
---	**70.** HIGH-SPEED WAN TO WIRELESS LAN GATEWAY Out Of Plan US PAT 9485804 , U.S. PTO Utility	Nov. 01, 2016	Patents	---	---
---	**71.** DISPLAY SCREEN OR PORTION THEREOF WITH SEQUENTIAL GRAPHICAL USER INTERFACE Out Of Plan US PAT D769897 , U.S. PTO Design	Oct. 25, 2016	Patents	---	---
---	**72.** DYNAMIC DEVICE-ASSOCIATED FEEDBACK INDICATIVE OF RESPONSIBLE DEVICE USAGE Out Of Plan US PAT 9476606 , U.S. PTO Utility	Oct. 25, 2016	Patents	---	---
---	**73.** CAPACITIVE PROXIMITY SENSOR CONFIGURATION INCLUDING A SPEAKER GRILLE Out Of Plan US PAT 9477440 , U.S. PTO Utility	Oct. 25, 2016	Patents	---	---
---	**74.** MANAGEMENT OF MEDIA CONTENT PLAYBACK Out Of Plan US PAT 9478247 , U.S. PTO Utility	Oct. 25, 2016	Patents	---	---
---	**75.** ZONE GROUP CONTROL Out Of Plan US PAT 9467737 , U.S. PTO Utility	Oct. 11, 2016	Patents	---	---
---	**76.** SYSTEMS AND METHODS FOR ENERGY-EFFICIENT CONTROL OF AN ENERGY-CONSUMING SYSTEM Out Of Plan US PAT 9459018 , U.S. PTO Utility	Oct. 04, 2016	Patents	---	---
---	**77.** SYSTEMS, METHODS, APPARATUS, AND ARTICLES OF MANUFACTURE FOR PLAYBACK DEMONSTRATION AT A POINT OF SALE DISPLAY Out Of Plan US PAT 9460631 , U.S. PTO Utility	Oct. 04, 2016	Patents	---	---
---	**78.** QUEUE IDENTIFICATION Out Of Plan US PAT 9460755 , U.S. PTO Utility	Oct. 04, 2016	Patents	---	---

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**79.** METHODS AND GRAPHICAL USER INTERFACES FOR REPORTING PERFORMANCE INFORMATION FOR AN HVAC SYSTEM CONTROLLED BY A SELF- PROGRAMMING NETWORK-CONNECTED THERMOSTAT Out Of Plan US PAT 9453655 , U.S. PTO Utility	Sep. 27, 2016	Patents	—	—
—	**80.** VOLUME INTERACTIONS FOR CONNECTED PLAYBACK DEVICES Out Of Plan US PAT 9455679 , U.S. PTO Utility	Sep. 27, 2016	Patents	—	—
—	**81.** IDENTIFYING A USEFUL WIRED CONNECTION Out Of Plan US PAT 9456037 , U.S. PTO Utility	Sep. 27, 2016	Patents	—	—
—	**82.** BRIDGE SYSTEM FOR AUXILIARY DISPLAY DEVICES Out Of Plan US PAT 9448814 , U.S. PTO Utility	Sep. 20, 2016	Patents	—	—
—	**83.** SATELLITE VOLUME CONTROL Out Of Plan US PAT 9438193 , U.S. PTO Utility	Sep. 06, 2016	Patents	—	—
—	**84.** PROXIMITY DETECTION USING AUDIO PULSE Out Of Plan US PAT 9439021 , U.S. PTO Utility	Sep. 06, 2016	Patents	—	—
—	**85.** PLAYBACK DEVICE SPEAKER CONFIGURATION BASED ON PROXIMITY DETECTION Out Of Plan US PAT 9439022 , U.S. PTO Utility	Sep. 06, 2016	Patents	—	—
—	**86.** STREAMING MUSIC USING AUTHENTICATION INFORMATION Out Of Plan US PAT 9432365 , U.S. PTO Utility	Aug. 30, 2016	Patents	—	—
—	**87.** SYSTEM AND METHOD FOR BYPASSING AN ACCESS POINT IN A LOCAL AREA NETWORK FOR P2P DATA TRANSFERS Out Of Plan US PAT 9433023 , U.S. PTO Utility	Aug. 30, 2016	Patents	—	—
—	**88.** SYSTEM AND METHOD FOR PLAYBACK OF MEDIA CONTENT WITH AUDIO SPINNER FUNCTIONALITY Out Of Plan US PAT 9423998 , U.S. PTO Utility	Aug. 23, 2016	Patents	—	—
—	**89.** AUDIO SETTINGS BASED ON ENVIRONMENT Out Of Plan US PAT 9419575 , U.S. PTO Utility	Aug. 16, 2016	Patents	—	—
—	**90.** PLAYBACK ZONE REPRESENTATIONS Out Of Plan US PAT 9408008 , U.S. PTO Utility	Aug. 02, 2016	Patents	—	—
—	**91.** PLAYBACK ACCORDING TO PLAYBACK RESPONSIBILITY IN STEREO PAIR Out Of Plan US PAT 9400632 , U.S. PTO Utility	July 26, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**92.** DETECTION AND CONTROL OF MULTIMEDIA APPLICATIONS Out Of Pat. US PAT 9395871 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**93.** GROUPING ZONES Out Of Pat. US PAT 9395877 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**94.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Pat. US PAT 9395878 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**95.** AUDIO CONTENT AUDITIONING Out Of Pat. US PAT 9395950 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**96.** AUDIO CONTENT AUDITIONING Out Of Pat. US PAT 9395951 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**97.** NETWORK-ENABLED AUDIO DEVICE Out Of Pat. US PAT 9397627 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**98.** UNGROUPING ZONES Out Of Pat. US PAT 9383896 , U.S. PTO Utility	July 05, 2016	Patents	—	—
—	**99.** VOLUME INTERACTIONS FOR CONNECTED PLAYBACK DEVICES Out Of Pat. US PAT 9379683 , U.S. PTO Utility	June 28, 2016	Patents	—	—
—	**100.** DISPLAY SCREEN PORTION WITH GRAPHICAL USER INTERFACE Out Of Pat. US PAT D759700 , U.S. PTO Design	June 21, 2016	Patents	—	—
—	**101.** MEDIA SYSTEM CONTROLLER INTERFACE Out Of Pat. US PAT 9372610 , U.S. PTO Utility	June 21, 2016	Patents	—	—
—	**102.** MEDIA PLAYBACK SYSTEM WITH GUEST ACCESS Out Of Pat. US PAT 9374607 , U.S. PTO Utility	June 21, 2016	Patents	—	—
—	**103.** AUDIO SYSTEM DISPLAY WITH GRAPHICAL USER INTERFACE Out Of Pat. US PAT D759069 , U.S. PTO Design	June 14, 2016	Patents	—	—
—	**104.** AUDIO SETTINGS Out Of Pat. US PAT 9367283 , U.S. PTO Utility	June 14, 2016	Patents	—	—
—	**105.** DETECTING IMPROPER POSITION OF A PLAYBACK DEVICE Out Of Pat. US PAT 9367611 , U.S. PTO Utility	June 14, 2016	Patents	—	—
—	**106.** AUDIO OUTPUT BALANCING Out Of Pat. US PAT 9369104 , U.S. PTO Utility	June 14, 2016	Patents	—	—
—	**107.** PLAYLIST UPDATE IN A MEDIA PLAYBACK SYSTEM Out Of Pat. US PAT 9361371 , U.S. PTO Utility	June 07, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**108.** CLOUD QUEUE ACCESS CONTROL Out Of Plan US PAT 9363254 , U.S. PTO Utility	June 07, 2016	Patents	—	—
—	**109.** CLOUD QUEUE PLAYHEAD Out Of Plan US PAT 9363255 , U.S. PTO Utility	June 07, 2016	Patents	—	—
—	**110.** AUDIO OUTPUT BALANCING Out Of Plan US PAT 9363601 , U.S. PTO Utility	June 07, 2016	Patents	—	—
—	**111.** METHOD AND APPARATUS FOR DYNAMIC CHANNELIZATION DEVICE SWITCHING IN A SYNCHRONY GROUP Out Of Plan US PAT 9354656 , U.S. PTO Utility	May 31, 2016	Patents	—	—
—	**112.** SYSTEM AND METHOD FOR ISSUING COMMANDS IN A MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9355555 , U.S. PTO Utility	May 31, 2016	Patents	—	—
—	**113.** SYSTEMS AND METHODS FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES WITHOUT A VOLTAGE CONTROLLED CRYSTAL OSCILLATOR Out Of Plan US PAT 9348354 , U.S. PTO Utility	May 24, 2016	Patents	—	—
—	**114.** DEVICE GROUP IDENTIFICATION Out Of Plan US PAT 9348824 , U.S. PTO Utility	May 24, 2016	Patents	—	—
—	**115.** METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 9344206 , U.S. PTO Utility	May 17, 2016	Patents	—	—
—	**116.** SYSTEMS AND METHODS FOR PLAYER SETUP ROOM NAMES Out Of Plan US PAT 9344292 , U.S. PTO Utility	May 17, 2016	Patents	—	—
—	**117.** INDICATION OF BARRIER DETECTION Out Of Plan US PAT 9344829 , U.S. PTO Utility	May 17, 2016	Patents	—	—
—	**118.** ACCOUNT AWARE MEDIA PREFERENCES Out Of Plan US PAT 9338514 , U.S. PTO Utility	May 10, 2016	Patents	—	—
—	**119.** PLAYBACK EXPANSION Out Of Plan US PAT 9329831 , U.S. PTO Utility	May 03, 2016	Patents	—	—
—	**120.** PLAYBACK EXPANSION Out Of Plan US PAT 9330096 , U.S. PTO Utility	May 03, 2016	Patents	—	—
—	**121.** AUDIO SYSTEMS AND RELATED DEVICES AND METHODS Out Of Plan US PAT 9330169 , U.S. PTO Utility	May 03, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**122.** MEDIA CONTENT REQUEST INCLUDING ZONE NAME Out Of Plan US PAT 9332348 , U.S. PTO Utility	May 03, 2016	Patents	—	—
—	**123.** CAPACITIVE PROXIMITY SENSOR CONFIGURATION INCLUDING AN ANTENNA GROUND PLANE Out Of Plan US PAT 9323404 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—
—	**124.** SYSTEM WITH SPEAKER, TRANSCEIVER AND RELATED DEVICES Out Of Plan US PAT 9326069 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—
—	**125.** MEDIA CONTENT BASED ON PLAYBACK ZONE AWARENESS Out Of Plan US PAT 9326070 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—
—	**126.** MEDIA CONTENT SUGGESTION BASED ON PLAYBACK ZONE AWARENESS Out Of Plan US PAT 9326071 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—
—	**127.** MOBILE SOURCE MEDIA CONTENT ACCESS Out Of Plan US PAT 9319153 , U.S. PTO Utility	Apr. 19, 2016	Patents	—	—
—	**128.** AUTOMATIC CONFIGURATION OF HOUSEHOLD PLAYBACK DEVICES Out Of Plan US PAT 9319409 , U.S. PTO Utility	Apr. 19, 2016	Patents	—	—
—	**129.** SYSTEMS AND METHODS FOR PRE-FETCHING MEDIA CONTENT Out Of Plan US PAT 9319445 , U.S. PTO Utility	Apr. 19, 2016	Patents	—	—
—	**130.** AUDIO SYNCHRONIZATION AMONG PLAYBACK DEVICES USING OFFSET INFORMATION Out Of Plan US PAT 9313591 , U.S. PTO Utility	Apr. 12, 2016	Patents	—	—
—	**131.** ENERGY EFFICIENCY PROMOTING SCHEDULE LEARNING ALGORITHMS FOR INTELLIGENT THERMOSTAT Out Of Plan US PAT 9298196 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**132.** COMMUNICATION ROUTES BASED ON LOW POWER OPERATION Out Of Plan US PAT 9298244 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**133.** SYSTEMS AND METHODS TO PROVIDE PLAY/PAUSE CONTENT Out Of Plan US PAT 9298415 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**134.** SOFTWARE APPLICATION AND ZONES Out Of Plan US PAT 9300647 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**135.** THERMOSTAT USER INTERFACE Out Of Plan US PAT 9291359 , U.S. PTO Utility	Mar. 22, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**136.** METHODS AND SYSTEMS TO SHARE MEDIA Out Of Plan US PAT 9286384 , U.S. PTO Utility	Mar. 15, 2016	Patents	—	—
—	**137.** COORDINATOR DEVICE FOR PAIRED OR CONSOLIDATED PLAYERS Out Of Plan US PAT 9288596 , U.S. PTO Utility	Mar. 15, 2016	Patents	—	—
—	**138.** VOLUME CONTROL SYSTEM, CONTROLLER PROGRAM OF THE VOLUME CONTROL SYSTEM, AND AUDIO OUTPUT DEVICE OF THE VOLUME CONTROL SYSTEM Out Of Plan US PAT 9270243 , U.S. PTO Utility	Feb. 23, 2016	Patents	—	—
—	**139.** PLAYBACK DEVICE CONFIGURATION BASED ON PROXIMITY DETECTION Out Of Plan US PAT 9264839 , U.S. PTO Utility	Feb. 16, 2016	Patents	—	—
—	**140.** POWER DECREASE BASED ON PACKET TYPE Out Of Plan US PAT 9252721 , U.S. PTO Utility	Feb. 02, 2016	Patents	—	—
—	**141.** MEDIA PLAYBACK SYSTEM USING STANDBY MODE IN A MESH NETWORK Out Of Plan US PAT 9244516 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**142.** POWER INCREASE BASED ON PACKET TYPE Out Of Plan US PAT 9246442 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**143.** SYSTEMS, METHODS, AND USER INTERFACES FOR PREVIEWING MEDIA CONTENT Out Of Plan US PAT 9246967 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**144.** PLAYBACK QUEUE TRANSFER IN A MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9247363 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**145.** SYSTEMS AND METHODS FOR MULTI-NETWORK AUDIO CONTROL Out Of Plan US PAT 9247492 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**146.** MEDIA SYSTEM ACCESS VIA CELLULAR NETWORK Out Of Plan US PAT 9241355 , U.S. PTO Utility	Jan. 19, 2016	Patents	—	—
—	**147.** AUTOMATIC CONFIGURATION OF HOUSEHOLD PLAYBACK DEVICES Out Of Plan US PAT 9237384 , U.S. PTO Utility	Jan. 12, 2016	Patents	—	—
—	**148.** VOLUME ENHANCEMENTS IN A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9231545 , U.S. PTO Utility	Jan. 05, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**149.** ASSOCIATING PLAYBACK DEVICES WITH PLAYBACK QUEUES Out Of Pten US PAT 9232277 , U.S. PTO Utility	Jan. 05, 2016	Patents	—	—
—	**150.** TOUCHSCREEN DEVICE USER INTERFACE FOR REMOTE CONTROL OF A THERMOSTAT Out Of Pten US PAT 9222693 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**151.** USER FRIENDLY INTERFACE FOR CONTROL UNIT Out Of Pten US PAT 9223323 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**152.** AMBIENT LIGHT PROXIMITY SENSING CONFIGURATION Out Of Pten US PAT 9223353 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**153.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Pten US PAT 9223490 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**154.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Pten US PAT 9223491 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**155.** REMOTE STORAGE AND PROVISIONING OF LOCAL- MEDIA INDEX Out Of Pten US PAT 9223862 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**156.** ENTERTAINMENT SYSTEM WITH SOURCELESS SELECTION OF NETWORKED AND NON-NETWORKED MEDIA CONTENT Out Of Pten US PAT 9225773 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**157.** MEDIA CONTENT BASED ON PLAYBACK ZONE AWARENESS Out Of Pten US PAT 9226072 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**158.** AUDIO OUTPUT BALANCING DURING SYNCHRONIZED PLAYBACK Out Of Pten US PAT 9226073 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**159.** AUDIO OUTPUT BALANCING DURING SYNCHRONIZED PLAYBACK Out Of Pten US PAT 9226087 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**160.** SYSTEMS AND METHODS FOR CONTROLLING MEDIA PLAYERS IN A SYNCHRONY GROUP Out Of Pten US PAT 9218017 , U.S. PTO Utility	Dec. 22, 2015	Patents	—	—
—	**161.** AUDIO SETTINGS BASED ON ENVIRONMENT Out Of Pten US PAT 9219460 , U.S. PTO Utility	Dec. 22, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**162.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Pate US PAT 9219959 , U.S. PTO Utility	Dec. 22, 2015	Patents	—	—
—	**163.** METHOD AND APPARATUS FOR SYNCHRONY GROUP CONTROL VIA ONE OR MORE INDEPENDENT CONTROLLERS Out Of Pate US PAT 9213356 , U.S. PTO Utility	Dec. 15, 2015	Patents	—	—
—	**164.** OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK Out Of Pate US PAT 9213357 , U.S. PTO Utility	Dec. 15, 2015	Patents	—	—
—	**165.** OPERATION USING POSITIONING INFORMATION Out Of Pate US PAT 9213762 , U.S. PTO Utility	Dec. 15, 2015	Patents	—	—
—	**166.** METHOD AND APPARATUS FOR PROVIDING SYNCHRONY GROUP STATUS INFORMATION Out Of Pate US PAT 9207905 , U.S. PTO Utility	Dec. 08, 2015	Patents	—	—
—	**167.** CONTROLLING AND GROUPING IN A MULTI-ZONE MEDIA SYSTEM Out Of Pate US PAT 9202509 , U.S. PTO Utility	Dec. 01, 2015	Patents	—	—
—	**168.** SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Pate US PAT 9195258 , U.S. PTO Utility	Nov. 24, 2015	Patents	—	—
—	**169.** METHOD AND APPARATUS TO RECEIVE, PLAY, AND PROVIDE AUDIO CONTENT IN A MULTI-ZONE SYSTEM Out Of Pate US PAT 9189010 , U.S. PTO Utility	Nov. 17, 2015	Patents	—	—
—	**170.** METHOD AND APPARATUS FOR PROVIDING AUDIO AND PLAYBACK TIMING INFORMATION TO A PLURALITY OF NETWORKED AUDIO DEVICES Out Of Pate US PAT 9189011 , U.S. PTO Utility	Nov. 17, 2015	Patents	—	—
—	**171.** SYSTEMS AND METHODS FOR CONNECTING AN AUDIO CONTROLLER TO A HIDDEN AUDIO NETWORK Out Of Pate US PAT 9191699 , U.S. PTO Utility	Nov. 17, 2015	Patents	—	—
—	**172.** SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Pate US PAT 9182777 , U.S. PTO Utility	Nov. 10, 2015	Patents	—	—
—	**173.** STREAMING MUSIC USING AUTHENTICATION INFORMATION Out Of Pate US PAT 9185103 , U.S. PTO Utility	Nov. 10, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**174.** THERMOSTAT USER INTERFACE Out Of Plan US PAT 9175871 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**175.** METHOD AND APPARATUS FOR CAUSING A DEVICE TO JOIN A SYNCHRONY GROUP Out Of Plan US PAT 9176519 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**176.** OBTAINING AND TRANSMITTING AUDIO Out Of Plan US PAT 9176520 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**177.** AUDIO SYSTEMS AND RELATED DEVICES AND METHODS Out Of Plan US PAT 9177052 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**178.** DEVICE DISCOVERY FOR DIGITAL ENTERTAINMENT NETWORK Out Of Plan US PAT 9178946 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**179.** METHODS AND APPARATUS FOR MULTICAST OPTIMIZATION Out Of Plan US PAT 9179197 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**180.** METHOD AND APPARATUS FOR PROVIDING SYNCHRONY GROUP STATUS INFORMATION Out Of Plan US PAT 9170600 , U.S. PTO Utility	Oct. 27, 2015	Patents	—	—
—	**181.** SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Plan US PAT 9164531 , U.S. PTO Utility	Oct. 20, 2015	Patents	—	—
—	**182.** METHOD AND APPARATUS FOR DISPLAYING ZONES IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 9164532 , U.S. PTO Utility	Oct. 20, 2015	Patents	—	—
—	**183.** METHOD AND APPARATUS FOR OBTAINING AUDIO CONTENT AND PROVIDING THE AUDIO CONTENT TO A PLURALITY OF AUDIO DEVICES IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 9164533 , U.S. PTO Utility	Oct. 20, 2015	Patents	—	—
—	**184.** AUDIO SYSTEM Out Of Plan US PAT D740787 , U.S. PTO Design	Oct. 13, 2015	Patents	—	—
—	**185.** METHOD AND APPARATUS FOR SKIPPING TRACKS IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 9158327 , U.S. PTO Utility	Oct. 13, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**186.** USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT 9141645+ , U.S. PTO Utility	Sep. 22, 2015	Patents	—	—
—	**187.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan US PAT 9143859 , U.S. PTO Utility	Sep. 22, 2015	Patents	—	—
—	**188.** SHIFT TO CORRESPONDING MEDIA IN A PLAYBACK QUEUE Out Of Plan US PAT 9137564 , U.S. PTO Utility	Sep. 15, 2015	Patents	—	—
—	**189.** SYSTEM WITH SPEAKER, TRANSCEIVER AND RELATED DEVICES Out Of Plan US PAT 9137602 , U.S. PTO Utility	Sep. 15, 2015	Patents	—	—
—	**190.** THERMOSTAT WITH RING-SHAPED CONTROL MEMBER Out Of Plan US PAT 9127853 , U.S. PTO Utility	Sep. 08, 2015	Patents	—	—
—	**191.** ESTABLISHING A SECURE WIRELESS NETWORK WITH A MINIMUM HUMAN INTERVENTION Out Of Plan US PAT 9130770 , U.S. PTO Utility	Sep. 08, 2015	Patents	—	—
—	**192.** ESTABLISHING A SECURE WIRELESS NETWORK WITH MINIMUM HUMAN INTERVENTION Out Of Plan US PAT 9130771 , U.S. PTO Utility	Sep. 08, 2015	Patents	—	—
—	**193.** CAPACITIVE PROXIMITY SENSOR CONFIGURATION INCLUDING A SPEAKER GRILLE Out Of Plan US PAT 9122451 , U.S. PTO Utility	Sep. 01, 2015	Patents	—	—
—	**194.** TEMPERATURE CONTROLLER WITH MODEL-BASED TIME TO TARGET CALCULATION AND DISPLAY Out Of Plan US PAT 9104211 , U.S. PTO Utility	Aug. 11, 2015	Patents	—	—
—	**195.** SYSTEM AND METHOD FOR DEVICE PLAYBACK CALIBRATION Out Of Plan US PAT 9106192 , U.S. PTO Utility	Aug. 11, 2015	Patents	—	—
—	**196.** HVAC CONTROLLER WITH USER-FRIENDLY INSTALLATION FEATURES WITH WIRE INSERTION DETECTION Out Of Plan US PAT 9092039 , U.S. PTO Utility	July 28, 2015	Patents	—	—
—	**197.** SYSTEMS AND METHODS FOR WIRELESS MUSIC PLAYBACK Out Of Plan US PAT 9094706 , U.S. PTO Utility	July 28, 2015	Patents	—	—
—	**198.** SOUND FIELD CALIBRATION USING LISTENER LOCALIZATION Out Of Plan US PAT 9084058 , U.S. PTO Utility	July 14, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**199.** AUDIO CONTENT PLAYBACK MANAGEMENT Out Of Plan US PAT 9078010 , U.S. PTO Utility	July 07, 2015	Patents	—	—
—	**200.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9052810 , U.S. PTO Utility	June 09, 2015	Patents	—	—
—	**201.** SHAPING SOUND RESPONSIVE TO SPEAKER ORIENTATION Out Of Plan US PAT 9042556 , U.S. PTO Utility	May 26, 2015	Patents	—	—
—	**202.** SMART AUDIO SETTINGS Out Of Plan US PAT 9031244 , U.S. PTO Utility	May 12, 2015	Patents	—	—
—	**203.** THERMOSTAT USER INTERFACE Out Of Plan US PAT 9026232 , U.S. PTO Utility	May 05, 2015	Patents	—	—
—	**204.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan US PAT 9014834 , U.S. PTO Utility	Apr. 21, 2015	Patents	—	—
—	**205.** CROSSOVER FREQUENCY ADJUSTMENTS FOR AUDIO SPEAKERS Out Of Plan US PAT 9008330 , U.S. PTO Utility	Apr. 14, 2015	Patents	—	—
—	**206.** ROUND THERMOSTAT WITH FLANGED ROTATABLE USER INPUT MEMBER AND WALL-FACING OPTICAL SENSOR THAT SENSES ROTATION Out Of Plan US PAT 8998102 , U.S. PTO Utility	Apr. 07, 2015	Patents	—	—
—	**207.** PLAYBACK USING POSITIONING INFORMATION Out Of Plan US PAT 8995240 , U.S. PTO Utility	Mar. 31, 2015	Patents	—	—
—	**208.** VOLUME INTERACTIONS FOR CONNECTED PLAYBACK DEVICES Out Of Plan US PAT 8995687 , U.S. PTO Utility	Mar. 31, 2015	Patents	—	—
—	**209.** ACOUSTIC OPTIMIZATION Out Of Plan US PAT 8965033 , U.S. PTO Utility	Feb. 24, 2015	Patents	—	—
—	**210.** SYSTEMS AND METHODS FOR PROVIDING ZONE FUNCTIONALITY IN NETWORKED MEDIA SYSTEMS Out Of Plan US PAT 8965544 , U.S. PTO Utility	Feb. 24, 2015	Patents	—	—
—	**211.** SOUND OUTPUT SETTING APPARATUS, METHOD, AND COMPUTER-EXECUTABLE PROGRAM Out Of Plan US PAT 8966365 , U.S. PTO Utility	Feb. 24, 2015	Patents	—	—
—	**212.** DISPLAY SCREEN PORTION WITH GRAPHICAL USER INTERFACE Out Of Plan US PAT D722614 , U.S. PTO Design	Feb. 17, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**213.** REMOTE CONTROL Out Of Plan US PAT D722306 , U.S. PTO Design	Feb. 10, 2015	Patents	—	—
—	**214.** SYSTEMS AND METHODS FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES WITHOUT A VOLTAGE CONTROLLED CRYSTAL OSCILLATOR Out Of Plan US PAT 8938637 , U.S. PTO Utility	Jan. 20, 2015	Patents	—	—
—	**215.** CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT 8934997 , U.S. PTO Utility	Jan. 13, 2015	Patents	—	—
—	**216.** ACOUSTIC SIGNATURES IN A PLAYBACK SYSTEM Out Of Plan US PAT 8930005 , U.S. PTO Utility	Jan. 06, 2015	Patents	—	—
—	**217.** METHOD AND APPARATUS FOR ADJUSTING A SPEAKER SYSTEM Out Of Plan US PAT 8923997 , U.S. PTO Utility	Dec. 30, 2014	Patents	—	—
—	**218.** USER FRIENDLY INTERFACE FOR CONTROL UNIT Out Of Plan US PAT 8918219 , U.S. PTO Utility	Dec. 23, 2014	Patents	—	—
—	**219.** ASSISTED REGISTRATION OF AUDIO SOURCES Out Of Plan US PAT 8910265 , U.S. PTO Utility	Dec. 09, 2014	Patents	—	—
—	**220.** METHOD AND APPARATUS FOR SELECTING A PLAYBACK QUEUE IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 8886347 , U.S. PTO Utility	Nov. 11, 2014	Patents	—	—
—	**221.** DYNAMIC DEVICE-ASSOCIATED FEEDBACK INDICATIVE OF RESPONSIBLE DEVICE USAGE Out Of Plan US PAT 8850348 , U.S. PTO Utility	Sep. 30, 2014	Patents	—	—
—	**222.** METHOD AND APPARATUS FOR ACCESSING MEDIA CONTENT VIA METADATA Out Of Plan US PAT 8843092 , U.S. PTO Utility	Sep. 23, 2014	Patents	—	—
—	**223.** METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 8843228 , U.S. PTO Utility	Sep. 23, 2014	Patents	—	—
—	**224.** SYSTEM AND METHOD FOR PLAYING MEDIA Out Of Plan US PAT 8819554 , U.S. PTO Utility	Aug. 26, 2014	Patents	—	—
—	**225.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan US PAT 8788080 , U.S. PTO Utility	July 22, 2014	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**226.** SYSTEM AND METHOD FOR INTEGRATING SENSORS IN THERMOSTATS Out Of Plan US PAT 8727611 , U.S. PTO Utility	May 20, 2014	Patents	—	—
—	**227.** MULTI-MODE MEDIA DEVICE USING METADATA TO ACCESS MEDIA CONTENT Out Of Plan US PAT 8725063 , U.S. PTO Utility	May 13, 2014	Patents	—	—
—	**228.** ACTIVE PLAYLIST HAVING DYNAMIC MEDIA ITEM GROUPS Out Of Plan US PAT 8725740 , U.S. PTO Utility	May 13, 2014	Patents	—	—
—	**229.** THERMOSTAT USER INTERFACE Out Of Plan US PAT 8706270 , U.S. PTO Utility	Apr. 22, 2014	Patents	—	—
—	**230.** SYSTEM AND METHOD FOR MONITORING/ CONTROLLING A SOUND MASKING SYSTEM FROM AN ELECTRONIC FLOORPLAN Out Of Plan US PAT 8666086 , U.S. PTO Utility	Mar. 04, 2014	Patents	—	—
—	**231.** ENTERTAINMENT SYSTEM WITH SOURCELESS SELECTION INCLUDING PLAYLISTS Out Of Plan US PAT 8655303 , U.S. PTO Utility	Feb. 18, 2014	Patents	—	—
—	**232.** DISPLAY SCREEN OR PORTION THEREOF WITH A GRAPHICAL USER INTERFACE Out Of Plan US PAT D696677 , U.S. PTO Design	Dec. 31, 2013	Patents	—	—
—	**233.** METHOD AND APPARATUS FOR ADJUSTING VOLUME LEVELS IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 8588949+ , U.S. PTO Utility	Nov. 19, 2013	Patents	—	—
—	**234.** ELECTRICAL AND MECHANICAL CONNECTOR ADAPTOR SYSTEM FOR MEDIA DEVICES Out Of Plan US PAT 8355690 , U.S. PTO Utility	Jan. 15, 2013	Patents	—	—
—	**235.** AUDIO SIGNAL PROCESSING SYSTEM Out Of Plan US PAT 8352053 , U.S. PTO Utility	Jan. 08, 2013	Patents	—	—
—	**236.** USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT 8290603+ , U.S. PTO Utility	Oct. 16, 2012	Patents	—	—
—	**237.** AUDIO RELATED SYSTEM COMMUNICATION PROTOCOL Out Of Plan US PAT 8249071 , U.S. PTO Utility	Aug. 21, 2012	Patents	—	—
—	**238.** SYSTEM AND METHOD FOR SHARING PLAYLISTS Out Of Plan US PAT 8230099 , U.S. PTO Utility	July 24, 2012	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**239.** ENTERTAINMENT SYSTEM WITH BANDLESS CONTENT SELECTION Out Of Plan US PAT 8195114 , U.S. PTO Utility	June 05, 2012	Patents	—	—
—	**240.** DISPLAY SCREEN PORTION WITH USER INTERFACE Out Of Plan US PAT D660313 , U.S. PTO Design	May 22, 2012	Patents	—	—
—	**241.** ENTERTAINMENT SYSTEM WITH UNIFIED CONTENT SELECTION Out Of Plan US PAT 8090309 , U.S. PTO Utility	Jan. 03, 2012	Patents	—	—
—	**242.** SYSTEM FOR NODE STRUCTURE DISCOVERY IN AN AUDIO-RELATED SYSTEM Out Of Plan US PAT 8078298 , U.S. PTO Utility	Dec. 13, 2011	Patents	—	—
—	**243.** APPARATUS AND METHOD TO FACILITATE UNIVERSAL REMOTE CONTROL Out Of Plan US PAT 8054211 , U.S. PTO Utility	Nov. 08, 2011	Patents	—	—
—	**244.** OBTAINING A PLAYLIST BASED ON USER PROFILE MATCHING Out Of Plan US PAT 8028038 , U.S. PTO Utility	Sep. 27, 2011	Patents	—	—
—	**245.** METHOD AND SYSTEM FOR EMPLOYING A FIRST DEVICE TO DIRECT A NETWORKED AUDIO DEVICE TO OBTAIN A MEDIA ITEM Out Of Plan US PAT 8028323 , U.S. PTO Utility	Sep. 27, 2011	Patents	—	—
—	**246.** SYSTEM FOR AUDIO RELATED EQUIPMENT MANAGEMENT Out Of Plan US PAT 7742606 , U.S. PTO Utility	June 22, 2010	Patents	—	—
—	**247.** AUDIO-RELATED SYSTEM NODE INSTANTIATION Out Of Plan US PAT 7725826 , U.S. PTO Utility	May 25, 2010	Patents	—	—
—	**248.** SYSTEM FOR AUDIO-RELATED DEVICE COMMUNICATION Out Of Plan US PAT 7689305 , U.S. PTO Utility	Mar. 30, 2010	Patents	—	—
—	**249.** ADJUSTING VOLUME LEVELS Out Of Plan US PAT APP 20160357502+ , U.S. PTO Application	Dec. 08, 2016	Patents	—	—
—	**250.** PLAYBACK DEVICE GROUPING Out Of Plan US PAT APP 20160241983+ , U.S. PTO Application	Aug. 18, 2016	Patents	—	—
—	**251.** GROUP VOLUME CONTROL Out Of Plan US PAT APP 20160021479+ , U.S. PTO Application	Jan. 21, 2016	Patents	—	—
—	**252.** CONTROLLING AND DISPLAYING ZONES IN A MULTI-ZONE SYSTEM Out Of Plan US PAT APP 20140181658 , U.S. PTO Application	June 26, 2014	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**253.** USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT APP 20130014015 , U.S. PTO Application	Jan. 10, 2013	Patents	—	—
—	**254.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan EP PAT 2695400 B1	June 08, 2016	Patents	—	—
—	**255.** The program of the controller of a sound volume control system and a sound volume control system, and the audio|voice output apparatus of a sound volume control system Out Of Plan JP PAT 5505402 B2 (MAT)	May 28, 2014	Patents	—	—
—	**256.** A computer-readable program and a volume level operating device Out Of Plan JP PAT APP 2016111554 A (MAT)	June 20, 2016	Patents	—	—
—	**257.** Content relay apparatus Out Of Plan JP PAT APP 2014096737 A (MAT)	May 22, 2014	Patents	—	—
—	**258.** Digital audio device Out Of Plan GB PAT APP 2491159 A	Nov. 28, 2012	Patents	—	—

US District Court Civil Docket

U.S. District - Delaware
(Wilmington)

1:14cv1330

Sonos Inc. v. D&M Holdings Inc. et al

This case was retrieved from the court on Tuesday, January 10, 2017

Date Filed:	**10/21/2014**		
Assigned To:	**Judge Richard G. Andrews**	Class Code:	**OPEN**
Referred To:		Closed:	
Nature of suit:	**Patent (830)**	Statute:	**35:271**
Cause:	**Patent Infringement**	Jury Demand:	**Plaintiff**
Lead Docket:	**None**	Demand Amount:	**$0**
Other Docket:	**1:16cv00141**	NOS Description:	**Patent**
Jurisdiction:	**Federal Question**		

Litigants	Attorneys
Sonos Inc. Plaintiff	Philip A. Rovner LEAD ATTORNEY;ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA (302) 984-6000 Email:Provner@potteranderson.Com George I. Lee PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Lee@ls3ip.Com John D. Smith , III PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Smith@ls3ip.Com Jonathan A. Choa ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA 302-984-6189 Email:Jchoa@potteranderson.Com

	Michael P. Boyea PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Boyea@ls3ip.Com Rory P. Shea PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Shea@ls3ip.Com Sean M. Sullivan PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Sullivan@ls3ip.Com
D&M Holdings Inc. doing business as D+M Group Defendant	Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
D&M Holdings U.S. Inc. Defendant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Blake T. Dietrich PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Bdietrich@jw.Com John M. Jackson PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Jjackson@jw.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
Denon Electronics (Usa) Llc Defendant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP

	1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
D&M Holdings U.S. Inc. Counter Claimant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Blake T. Dietrich ATTORNEY TO BE NOTICED Email:Bdietrich@jw.Com John M. Jackson ATTORNEY TO BE NOTICED Email:Jjackson@jw.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
D&M Holdings Inc. Counter Claimant	Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com

Denon Electronics (Usa) Llc Counter Claimant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
Sonos Inc. Counter Defendant	Philip A. Rovner LEAD ATTORNEY;ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA (302) 984-6000 Email:Provner@potteranderson.Com George I. Lee PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Lee@ls3ip.Com John D. Smith , III PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Smith@ls3ip.Com Jonathan A. Choa ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA 302-984-6189 Email:Jchoa@potteranderson.Com Michael P. Boyea ATTORNEY TO BE NOTICED Email:Boyea@ls3ip.Com Rory P. Shea PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Shea@ls3ip.Com

Sean M. Sullivan
PRO HAC VICE;ATTORNEY TO BE NOTICED

Email:Sullivan@ls3ip.Com

Date	#	Proceeding Text	Source
10/21/2014	1	COMPLAINT FOR PATENT INFRINGEMENT - filed with Jury Demand against D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC - Magistrate Consent Notice to Pltf. (Filing fee $ 400.00, receipt number 0311-1611477.) - filed by Sonos Inc.. (Attachments: # 1 Exhibits A-D, # 2 Exhibits E-F, # 3 Exhibit G, # 4 Exhibits H-K, # 5 Exhibit L, # 6 Exhibits M-O, # 7 Exhibits P-R, # 8 Civil Cover Sheet)(etg,) (Entered: 10/21/2014)	
10/21/2014	2	Notice, Consent and Referral forms re: U.S. Magistrate Judge jurisdiction. (etg,) (Entered: 10/21/2014)	
10/21/2014	3	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) U.S. 8,788,080 B1; U.S. 7,571,014 B1; U.S. 8,588,949 B2; U.S. D559,197 S. (etg,) (Entered: 10/21/2014)	
10/21/2014	4	Disclosure Statement pursuant to Rule 7.1: No Parents or Affiliates Listed filed by Sonos Inc. (etg,) (Entered: 10/21/2014)	
10/21/2014		No Summons Issued. (etg,) (Entered: 10/21/2014)	
10/29/2014		Case Assigned to Judge Richard G. Andrews. Please include the initials of the Judge (RGA) after the case number on all documents filed. (rjb) (Entered: 10/29/2014)	
11/19/2014	5	NOTICE of withdrawal of McDonnell Boehnen Hulbert & Berghoff LLP as counsel for plaintiff by Sonos Inc. re 1 Complaint, (Rovner, Philip) (Entered: 11/19/2014)	
12/17/2014		Summons Issued with Magistrate Consent Notice attached as to D&M Holdings U.S. Inc. on 12/17/2014; Denon Electronics (USA) LLC on 12/17/2014. (rbe) (Entered: 12/17/2014)	
12/17/2014	6	FIRST Amended Complaint For Patent Infringement against All Defendants - filed by Sonos Inc.. (Attachments: # 1 Exhibits A-D, # 2 Exhibits E-F, # 3 Exhibit G, # 4 Exhibits H-K, # 5 Exhibit L, # 6 Exhibits M-O, # 7 Exhibits P-R, # 8 Exhibit S, # 9 Exhibit T)(Rovner, Philip) Modified on 12/18/2014 (nms). (Entered: 12/17/2014)	
12/17/2014	7	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) US 7,792,311 B1; US 7,805,682 B1; . (Rovner, Philip) (Entered: 12/17/2014)	
12/18/2014	8	SUMMONS Returned Executed by Sonos Inc.. Denon Electronics (USA) LLC served on 12/18/2014, answer due 1/8/2015. (Rovner, Philip) (Entered: 12/18/2014)	
12/18/2014	9	SUMMONS Returned Executed by Sonos Inc.. D&M Holdings U.S. Inc. served on 12/18/2014, answer due 1/8/2015. (Rovner, Philip) (Entered: 12/18/2014)	
12/22/2014		Summons Issued with Magistrate Consent Notice attached as to D&M Holdings Inc. on 12/22/2014. (rwc) (Entered: 12/22/2014)	
12/22/2014	10	PRAECIPE filed by Philip A. Rovner on behalf of Sonos Inc. requesting Clerk to issue Rule 4(f)(2)(C)(ii) service for D&M Holdings Inc. d/b/a The D+M Group. (Rovner, Philip) Modified on 12/23/2014 (nms). (Entered: 12/22/2014)	
12/22/2014	11	AFFIDAVIT of Philip A. Rovner re 10 Praecipe re service on D&M Holdings Inc. d/b/a The D+M Group, filed by Sonos Inc.. (Rovner, Philip) Modified on 12/22/2014 (nms). (Entered: 12/22/2014)	

12/23/2014	12	Postal Receipt(s) for the mailing of process to D&M Holdings Inc. (aah) (Entered: 12/23/2014)
12/24/2014	13	MOTION for Pro Hac Vice Appearance of Attorney John M. Jackson of Jackson Walker, LLP - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) Modified on 1/4/2015 (nms). (Entered: 12/24/2014)
01/02/2015	14	STIPULATION TO EXTEND TIME for Defendants D&M Holdings U.S. Inc. and Denon Electronics (USA), LLC to Respond to Complaint to February 9, 2015 - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 01/02/2015)
01/04/2015		SO ORDERED, re 13 MOTION for Pro Hac Vice Appearance of Attorney John M. Jackson of JACKSON WALKER, LLP filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.. Signed by Judge Richard G. Andrews on 1/4/2015. (nms) (Entered: 01/04/2015)
01/05/2015		SO ORDERED, re 14 STIPULATION TO EXTEND TIME for Defendants D&M Holdings U.S. Inc. and Denon Electronics (USA), LLC to Respond to Complaint to February 9, 2015, filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.(Reset Answer Deadlines: D&M Holdings U.S. Inc. answer due 2/9/2015; Denon Electronics (USA) LLC answer due 2/9/2015). Signed by Judge Richard G. Andrews on 1/5/2015. (nms) (Entered: 01/05/2015)
01/06/2015		Pro Hac Vice Attorney John M. Jackson for D&M Holdings U.S. Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (rbe) (Entered: 01/06/2015)
01/26/2015	15	MOTION for Pro Hac Vice Appearance of Attorney George I. Lee, Esq., Sean M. Sullivan, Esq., Rory P. Shea, Esq., John Dan Smith, III, Esq. - filed by Sonos Inc.. (Rovner, Philip) (Entered: 01/26/2015)
01/26/2015		SO ORDERED, re 15 MOTION for Pro Hac Vice Appearance of Attorney George I. Lee, Esq., Sean M. Sullivan, Esq., Rory P. Shea, Esq., John Dan Smith, III, Esq. filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 1/26/2015. (nms) (Entered: 01/26/2015)
01/29/2015		Pro Hac Vice Attorney George I. Lee,Sean M. Sullivan,Rory P. Shea,John D. Smith, III for Sonos Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (dmp,) (Entered: 01/29/2015)
02/09/2015	16	MOTION to Dismiss - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 02/09/2015)
02/09/2015	17	OPENING BRIEF in Support re 16 MOTION to Dismiss, filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 2/26/2015. (Blumenfeld, Jack) Modified on 2/9/2015 (nms). (Entered: 02/09/2015)
02/09/2015	18	Disclosure Statement pursuant to Rule 7.1: identifying Corporate Parent D&M Holdings Inc. for D&M Holdings U.S. Inc., Denon Electronics (USA) LLC filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 02/09/2015)
02/13/2015	19	MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 2/13/2015 (nms). (Entered: 02/13/2015)
02/13/2015	20	[SEALED] OPENING BRIEF in Support re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering

		Brief/Response due date per Local Rules is 3/2/2015. (Flynn, Michael) (Entered: 02/13/2015)
02/13/2015	21	[SEALED] DECLARATION re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A & B)(Flynn, Michael) (Entered: 02/13/2015)
02/13/2015	22	DECLARATION re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A - E)(Flynn, Michael) (Entered: 02/13/2015)
02/13/2015	23	[SEALED] DECLARATION re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A) (Flynn, Michael) (Entered: 02/13/2015)
02/17/2015	24	REDACTED VERSION of 20 Opening Brief in Support, by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 2/18/2015 (nms). (Entered: 02/17/2015)
02/17/2015	25	REDACTED VERSION of 21 Declaration of Blake DeSimone, by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-B)(Flynn, Michael) Modified on 2/18/2015 (nms). (Entered: 02/17/2015)
02/17/2015	26	REDACTED VERSION of 23 Declaration of David Meisels, by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A)(Flynn, Michael) Modified on 2/18/2015 (nms). (Entered: 02/17/2015)
02/23/2015	27	STIPULATION TO EXTEND TIME time to file opposition to Motion to Disqualify and time for defendants to file reply brief to motion to disqualify (D.I. 19) to March 16, 2015 and April 2, 2015 - filed by Sonos Inc.. (Rovner, Philip) Modified on 2/24/2015 (nms). (Entered: 02/23/2015)
02/24/2015		SO ORDERED, re 27 STIPULATION TO EXTEND TIME time for plaintiff to file opposition to Motion to Disqualify and time for defendants to file reply brief to Motion to Disqualify (D.I. 19) to March 16, 2015, and April 2, 2015, filed by Sonos Inc. (Reset Briefing Schedule: re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto. Answering Brief due 3/16/2015, Reply Brief due 4/2/2015). Signed by Judge Richard G. Andrews on 2/24/2015. (nms) (Entered: 02/24/2015)
02/26/2015	28	ANSWERING BRIEF in Opposition re 16 MOTION to Dismiss, filed by Sonos Inc..Reply Brief due date per Local Rules is 3/9/2015. (Rovner, Philip) Modified on 3/3/2015 (nms). (Entered: 02/26/2015)
02/27/2015	29	MOTION to Amend 6 Amended Complaint - filed by Sonos Inc.. (Attachments: # 1 Exhibit A - Second Amended Complaint, # 2 Exhibits A-D, # 3 Exhibits E-F, # 4 Exhibit G, # 5 Exhibits H-K, # 6 Exhibit L, # 7 Exhibits M-O, # 8 Exhibits P-R, # 9 Exhibit S, # 10 Exhibit T, # 11 Exhibit U, # 12 Exhibit V, # 13 Exhibit W, # 14 Exhibit X, # 15 Exhibit Y, # 16 Exhibit Z, # 17 Exhibit - Redline Version)(Rovner, Philip) Modified on 3/3/2015 (nms). (Entered: 02/27/2015)
02/27/2015		Set Answering Brief Deadline re 29 MOTION to Amend 6 Amended Complaint. Answering Brief/Response due date per Local Rules is 3/16/2015. (nms) (Entered: 03/03/2015)
03/09/2015	30	STIPULATION and Order regarding Second Amended Complaint, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics

		(USA) LLC. (Blumenfeld, Jack) Modified on 3/9/2015 (nms). (Entered: 03/09/2015)
03/09/2015		SO ORDERED, re 30 Stipulation and Order regarding Amended Complaint, filed by Denon Electronics (USA) LLC, D&M Holdings Inc., D&M Holdings U.S. Inc. (Reset Answer Deadlines: D&M Holdings Inc. answer due 4/30/2015; D&M Holdings U.S. Inc. answer due 4/30/2015; Denon Electronics (USA) LLC answer due 4/30/2015). Signed by Judge Richard G. Andrews on 3/9/2015. (nms) (Entered: 03/09/2015)
03/09/2015	31	SECOND AMENDED COMPLAINT for Patent Infringement against D&M Holdings Inc., D&M Holdings U.S. Inc., and Denon Electronics (USA) LLC- filed by Sonos Inc.. (Attachments: # 1 Exhibits A-D, # 2 Exhibits E-F, # 3 Exhibit G, # 4 Exhibits H-K, # 5 Exhibit L, # 6 Exhibits M-O, # 7 Exhibits P-R, # 8 Exhibit S, # 9 Exhibit T, # 10 Exhibit U, # 11 Exhibit V, # 12 Exhibit W, # 13 Exhibit X, # 14 Exhibit Y, # 15 Exhibit Z)(nms) (Entered: 03/09/2015)
03/16/2015	32	[SEALED] ANSWERING BRIEF in Opposition re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto filed by Sonos Inc..Reply Brief due date per Local Rules is 3/26/2015. (Rovner, Philip) (Entered: 03/16/2015)
03/16/2015	33	[SEALED] DECLARATION of George I. Lee re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	34	[SEALED] DECLARATION of Rory P. Shea re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	35	[SEALED] DECLARATION of John Dan Smith III re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	36	[SEALED] DECLARATION of Sean M. Sullivan re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	37	[SEALED] DECLARATION of Mark Triplett re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	38	DECLARATION of Philip A. Rovner re 32 Answering Brief in Opposition, by Sonos Inc.. (Attachments: # 1 Exhibits A-C, # 2 Exhibits D-F, # 3 Exhibits G-I, # 4 Exhibits J-M)(Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/18/2015	39	REDACTED VERSION of 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	40	REDACTED VERSION of 33 Declaration of George I. Lee, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	41	REDACTED VERSION of 34 Declaration of Rory P. Shea, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	42	REDACTED VERSION of 35 Declaration of John Dan Smith III, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	43	REDACTED VERSION of 37 Declaration of Mark Triplett, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	44	REDACTED VERSION of 36 Declaration of Sean M. Sullivan, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
04/02/2015	45	REPLY BRIEF re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of

		Privileged Documents Relevant Thereto filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 04/02/2015)
04/14/2015	46	ORAL ORDER: The Court will hear oral argument on the MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff (D.I. 19) on 6/19/2015 at 1:00 PM in Courtroom 6A before Judge Richard G. Andrews. Ordered by Judge Richard G. Andrews on 4/14/2015. (nms) (Entered: 04/14/2015)
04/22/2015	47	MOTION for Pro Hac Vice Appearance of Attorney Kurt A. Schwarz of JACKSON WALKER, LLP - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 04/22/2015)
04/23/2015		SO ORDERED, re 47 MOTION for Pro Hac Vice Appearance of Attorney Kurt A. Schwarz of JACKSON WALKER, LLP filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.. Signed by Judge Richard G. Andrews on 4/23/2015. (nms) (Entered: 04/23/2015)
04/30/2015	48	ANSWER to 31 Amended Complaint, with Jury Demand, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 5/5/2015 (nms). (Entered: 04/30/2015)
04/30/2015	49	Disclosure Statement pursuant to Rule 7.1: identifying Other Affiliate Morgan Stanley, Other Affiliate Goldman Sachs Group Inc. for D&M Holdings Inc. filed by D&M Holdings Inc.. (Flynn, Michael) (Entered: 04/30/2015)
06/19/2015		Minute Entry for proceedings held before Judge Richard G. Andrews - Oral Argument held on 6/19/2015. (Court Reporter Leonard Dibbs.) (ksr,) (Entered: 06/19/2015)
06/23/2015	50	Official Transcript of Motion to Disqualify held on 06-19-15 before Judge Richard G. Andrews. Court Reporter/Transcriber Leonard A. Dibbs. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 7/14/2015. Redacted Transcript Deadline set for 7/24/2015. Release of Transcript Restriction set for 9/21/2015. (lad) (Entered: 06/23/2015)
06/29/2015	51	Order Setting Rule 16(b) Conference: A Scheduling Conference is set for 8/18/2015, at 3:00 PM in Chambers before Judge Richard G. Andrews (see Order for further details). Signed by Judge Richard G. Andrews on 6/29/2015. (nms) (Entered: 06/29/2015)
07/17/2015	52	NOTICE OF SERVICE of Plaintiff Sonos Inc.'s First Set of Interrogatories to Defendants and Plaintiff Sonos, Inc.'s First Set of Requests for the Production of Documents and Things to Defendants filed by Sonos Inc.. (Rovner, Philip) (Entered: 07/17/2015)
07/29/2015	53	NOTICE OF SERVICE of (1) Defendants' First Set of Common Requests for Production of Documents to Plaintiff; and (2) Defendant D&M Holdings Inc.'s First Set of Interrogatories to Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 07/29/2015)
08/13/2015	54	Letter to The Honorable Richard G. Andrews from Jack B. Blumenfeld regarding scheduling conference. (Blumenfeld, Jack) (Entered: 08/13/2015)
08/13/2015	55	Letter to The Honorable Richard G. Andrews from Philip A. Rovner, Esq. responding to defendants' letter of earlier today re scheduling conference. (Rovner, Philip) Modified on 8/17/2015 (nms). (Entered: 08/13/2015)
08/14/2015	56	PROPOSED Scheduling Order, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Letter)(Blumenfeld, Jack) Modified on 8/17/2015 (nms). (Entered: 08/14/2015)

08/14/2015	57	PROPOSED Scheduling Order, by Sonos Inc.. (Attachments: # 1 Letter) (Rovner, Philip) Modified on 8/17/2015 (nms). (Entered: 08/14/2015)
08/17/2015	58	ORAL ORDER: Defendants' request (D.I. 54) is DENIED. Defendants' request (D.I. 56) is also DENIED. Scheduling conference will be based on D.I. 57 . Ordered by Judge Richard G. Andrews on 8/17/2015. (nms) (Entered: 08/17/2015)
08/17/2015	59	NOTICE OF SERVICE of (1) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Requests for Production of Documents and Things; and (2) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 08/17/2015)
08/18/2015	60	Joint PROPOSED revised scheduling order, by Sonos Inc.. (Attachments: # 1 Letter)(Rovner, Philip) Modified on 8/18/2015 (nms). (Entered: 08/18/2015)
08/18/2015		Minute Entry for proceedings held before Judge Richard G. Andrews - Scheduling Conference held on 8/18/2015. (Court Reporter Leonard Dibbs.) (nms) (Entered: 08/18/2015)
08/19/2015	61	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) US 8,024,055 B1; US 8,843,224 B2; US 8,923,997 B2; US 8,370,678 B2; US 8,689,036 B2; US 8,938,637 B2; . (Rovner, Philip) (Entered: 08/19/2015)
08/20/2015	62	Official Transcript of Scheduling Conference held on 08-18-15 before Judge Richard G. Andrews. Court Reporter/Transcriber Leonard A. Dibbs. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 9/10/2015. Redacted Transcript Deadline set for 9/21/2015. Release of Transcript Restriction set for 11/18/2015. (lad) (Entered: 08/20/2015)
08/24/2015	63	MOTION for Pro Hac Vice Appearance of Attorney Blake T. Dietrich of Jackson Walker, LLP - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 08/24/2015)
08/25/2015		SO ORDERED, re 63 MOTION for Pro Hac Vice Appearance of Attorney Blake T. Dietrich of Jackson Walker, LLP filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.. Signed by Judge Richard G. Andrews on 8/25/2015. (nms) (Entered: 08/25/2015)
08/25/2015	64	PROPOSED Scheduling Order, by Sonos Inc.. (Attachments: # 1 Letter) (Rovner, Philip) Modified on 8/25/2015 (nms). (Entered: 08/25/2015)
08/25/2015		Pro Hac Vice Attorney Blake T. Dietrich for D&M Holdings U.S. Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (dmp,) (Entered: 08/25/2015)
08/25/2015	65	SCHEDULING ORDER: Case referred to the Magistrate Judge for the purpose of exploring ADR. Joinder of Parties due by 1/29/2016. Amended Pleadings due by 1/29/2016. Discovery due by 11/18/2016. Dispositive Motions due by 4/27/2017. Answering Brief due 5/18/2017. Reply Brief due 6/8/2017. Joint Claim Construction Brief due by 9/23/2016. A Markman Hearing is set for 10/13/2016, at 9:00 AM in Courtroom 6A before Judge Richard G. Andrews. A Pretrial Conference is set for 9/22/2017, at 9:00 AM in Courtroom 6A before Judge Richard G. Andrews. A 5 day Jury Trial is set for 10/2/2017, at 9:30 AM in Courtroom 6A before Judge Richard G. Andrews (see Order for further details). Signed by Judge Richard G. Andrews on 8/25/2015. (nms) (Entered: 08/25/2015)
08/28/2015	66	NOTICE OF SERVICE of Sonos Inc.'s Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff; Plaintiff

		Sonos, Inc.'s Objections and Responses to Defendants' First Set of Common Requests for Production of Documents re 53 Notice of Service, filed by Sonos Inc..(Rovner, Philip) (Entered: 08/28/2015)
09/01/2015		CASE REFERRED to Judge Thynge for Mediation. (cak) (Entered: 09/01/2015)
09/03/2015	67	ORDER Setting Teleconference: Plaintiff's counsel to initiate the call. A Telephone Conference is set for 9/16/2015 at 11:00 AM Eastern Time before Judge Mary Pat Thynge to discuss ADR. Signed by Judge Mary Pat Thynge on 9/3/15. (cak) (Entered: 09/03/2015)
09/04/2015	68	PROPOSED Protective Order, by Sonos Inc.. (Rovner, Philip) Modified on 9/8/2015 (nms). (Entered: 09/04/2015)
09/08/2015	69	SO ORDERED Granting 68 Proposed Stipulated Protective Order. Signed by Judge Richard G. Andrews on 9/8/2015. (nms) (Entered: 09/08/2015)
09/09/2015	70	MEMORANDUM OPINION regarding MOTION to Disqualify Counsel (D.I. 19). Signed by Judge Richard G. Andrews on 9/9/2015. (nms) (Entered: 09/09/2015)
09/09/2015	71	ORDER Denying 19 MOTION to Disqualify Counsel. Signed by Judge Richard G. Andrews on 9/9/2015. (nms) (Entered: 09/09/2015)
09/23/2015	72	ORDER Setting Mediation Conferences: A Telephone Conference is set for 4/11/2016 at 10:00 AM Eastern Time before Judge Mary Pat Thynge. A Mediation Conference is set for 5/12/2016 at 10:00 AM in Courtroom 2B before Judge Mary Pat Thynge. SEE ORDER FOR DETAILS. Signed by Judge Mary Pat Thynge on 9/23/15. (cak) (Entered: 09/23/2015)
10/08/2015	73	NOTICE of Change of Address (Jackson Walker, L.L.P. - Dallas) by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Flynn, Michael) (Entered: 10/08/2015)
10/08/2015	74	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Initial Disclosures Pursuant to Section 2(B) of the Scheduling Order; Plaintiff Sonos, Inc.'s Initial Disclosures Pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure and Section 3 of the District of Delaware's Default Standard For Discovery re 65 Scheduling Order,, filed by Sonos Inc..(Rovner, Philip) (Entered: 10/08/2015)
10/08/2015	75	NOTICE OF SERVICE of (1) Defendants' Initial Disclosures; and (2) Defendants' Disclosures Pursuant to Paragraph 3 of the Delaware Default Standard for Discovery filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/08/2015)
10/15/2015	76	MOTION for Pro Hac Vice Appearance of Attorney Michael P. Boyea, Esq. - filed by Sonos Inc.. (Rovner, Philip) (Entered: 10/15/2015)
10/15/2015	77	NOTICE of change of address for Lee Sullivan Shea & Smith LLP, by Sonos Inc.. (Rovner, Philip) Modified on 10/16/2015 (nms). (Entered: 10/15/2015)
10/16/2015		SO ORDERED, re 76 MOTION for Pro Hac Vice Appearance of Attorney Michael P. Boyea, Esq., filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 10/16/2015. (nms) (Entered: 10/16/2015)
10/16/2015		Pro Hac Vice Attorney Michael P. Boyea for Sonos Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (dmp,) (Entered: 10/16/2015)
10/16/2015	78	NOTICE OF SERVICE of Defendants' First Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/16/2015)
11/03/2015	79	

		NOTICE to Take Deposition of 30 (b)(6) notice of deposition of D&M Holdings Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC on November 17, 2015 filed by Sonos Inc.. (Rovner, Philip) (Entered: 11/03/2015)
11/05/2015	80	NOTICE OF SERVICE of Defendants' First Amended Disclosures Pursuant to Paragraph 3 of the Delaware Default Standard for Discovery filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/05/2015)
11/30/2015	81	[SEALED] Motion for Leave to Amend Answer to Assert Counterclaims - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibits A-I to Amended Answer, # 4 Exhibit J to Amended Answer, Part 1, # 5 Exhibit J to Amended Answer, Part 2, # 6 Exhibit 3)(Flynn, Michael) Modified on 12/1/2015 (nms). (Attachment 6 replaced on 12/1/2015) (nms). (Entered: 11/30/2015)
11/30/2015		Set Answering Brief Deadline re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims. Answering Brief/Response due date per Local Rules is 12/17/2015. (nms) (Entered: 12/01/2015)
12/01/2015		CORRECTING ENTRY: Exhibit 3 to D.I. 81 has been replaced per counsel's request. The reference to "Exhibit B" in the Order has been changed to read "Exhibit 2." (nms) (Entered: 12/01/2015)
12/04/2015	82	STIPULATION TO EXTEND TIME time for plaintiff to file its opposition to defendants' motion for leave to amend their answer to assert oounterclaims to January 4, 2016 - filed by Sonos Inc.. (Rovner, Philip) Modified on 12/4/2015 (nms). (Entered: 12/04/2015)
12/04/2015		SO ORDERED, re 82 STIPULATION TO EXTEND TIME to file opposition to motion for leave to amend answer to assert counterclaims to January 4, 2016, filed by Sonos Inc. (Reset Briefing Schedule: re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims. Answering Brief due 1/4/2016). Signed by Judge Richard G. Andrews on 12/4/2015. (nms) (Entered: 12/04/2015)
12/08/2015	83	REDACTED VERSION of 81 MOTION for Leave to Amend Answer to Assert Counterclaims, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibits A-I to Amended Answer, # 4 Exhibit J to Amended Answer, Part 1, # 5 Exhibit J to Amended Answer, Part 2, # 6 Exhibit 3)(Flynn, Michael) Modified on 12/8/2015 (nms). (Entered: 12/08/2015)
12/10/2015	84	NOTICE OF SERVICE of subpoenas on AL Infinity d/b/a Altec Lansing filed by Sonos Inc.. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Rovner, Philip) (Entered: 12/10/2015)
12/11/2015	85	NOTICE OF SERVICE of Defendants' Core Technical Document Production filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 12/11/2015)
12/28/2015	86	NOTICE OF SERVICE of Defendants' Second Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 12/28/2015)
12/29/2015	87	NOTICE OF SERVICE of subpoenas on Tymphany Corporation filed by Sonos Inc.. (Attachments: # 1 Exhibit A-B)(Rovner, Philip) (Entered: 12/29/2015)
01/04/2016	88	ANSWERING BRIEF in Opposition re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims filed by Sonos Inc..Reply Brief due date per Local Rules is 1/14/2016. (Attachments: # 1 Exhibit A-E)(Rovner, Philip) (Entered: 01/04/2016)
01/14/2016	89	REPLY BRIEF re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims filed by D&M Holdings Inc., D&M Holdings U.S.

		Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-D)(Flynn, Michael) (Entered: 01/14/2016)
01/15/2016	90	REQUEST for Oral Argument by Sonos Inc. re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims. (Rovner, Philip) (Entered: 01/15/2016)
01/20/2016	91	MOTION for Leave to File a Sur-Reply in Opposition to Motion for Leave to Amend Their Answer to Assert Counterclaims - filed by Sonos Inc.. (Attachments: # 1 Sur-Reply)(Rovner, Philip) Modified on 1/21/2016 (nms). (Entered: 01/20/2016)
01/20/2016		Set Answering Brief Deadline re 91 MOTION for Leave to File a Sur-Reply in Opposition to Motion for Leave to Amend Their Answer to Assert Counterclaims. Answering Brief/Response due date per Local Rules is 2/8/2016. (nms) (Entered: 01/21/2016)
01/29/2016	92	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Initial Claim Charts filed by Sonos Inc..(Rovner, Philip) (Entered: 01/29/2016)
01/29/2016	93	[SEALED] MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I - filed by Sonos Inc.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 1 (A-F), # 3 Exhibit 1 (G-L), # 4 Exhibit 1 (M-N), # 5 Exhibit 1 (O-U))(Rovner, Philip) Modified on 2/1/2016 (nms). (Entered: 01/29/2016)
01/29/2016	94	[SEALED] MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, VOL. II - filed by Sonos Inc.. (Attachments: # 1 Exhibit 1 (V-Z), # 2 Exhibit 1 (AA-CC), # 3 Exhibit 2, # 4 Exhibit 3)(Rovner, Philip) Modified on 2/1/2016 (nms). (Entered: 01/29/2016)
01/29/2016		Set Answering Brief Deadline re 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I. Answering Brief/Response due date per Local Rules is 2/16/2016. (nms) (Entered: 02/01/2016)
02/08/2016	95	ANSWERING BRIEF in Opposition re 91 MOTION for Leave to File a Sur-Reply in Opposition to Motion for Leave to Amend Their Answer to Assert Counterclaims, filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Reply Brief due date per Local Rules is 2/19/2016. (Attachments: # 1 Exhibits A-C)(Flynn, Michael) (Attachment 1 replaced on 2/9/2016) (nms). Modified on 2/9/2016 (nms). (Entered: 02/08/2016)
02/09/2016		CORRECTING ENTRY: The pdf for the exhibits attached to D.I. 95 has been replaced per counsel's request. Exhibit D has been removed. (nms) (Entered: 02/09/2016)
02/09/2016		REDACTION NOTICE: In accordance with section G of the Administrative Procedures Governing Filing and Service by Electronic Means, redacted versions of sealed documents shall be filed electronically within 7 days of the filing of the sealed document. The records of this case do not reflect the filing of redacted versions of DI # 93 and 94 . (nms) (Entered: 02/09/2016)
02/10/2016	96	REDACTED VERSION of 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I, by Sonos Inc.. (Attachments: # 1 Exhibit 1)(Rovner, Philip) Modified on 2/10/2016 (nms). (Entered: 02/10/2016)
02/10/2016	97	REDACTED VERSION of 94 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, VOL. II, by Sonos Inc.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3)(Rovner, Philip) Modified on 2/10/2016 (nms). (Entered: 02/10/2016)
02/16/2016	98	RESPONSE to 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, filed by D&M

		Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 2/17/2016 (nms). (Entered: 02/16/2016)
02/26/2016	99	REPLY BRIEF re 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I filed by Sonos Inc.. (Rovner, Philip) (Entered: 02/26/2016)
03/07/2016	100	ORDER Granting Motion for Leave to Amend (D.I. 81). The Motion for Leave to File a Sur-Reply (D.I. 91) is Dismissed as moot. The Motion for Leave to Amend Complaint (D.I. 93) is Granted. Defendants counterclaims for patent infringement are, pursuant to Fed. R. Civ. P. 42 (b), and consistent with the Courts practice, SEVERED for a separate trial. The counterclaims are to be docketed with a new civil action number. The parties should meet and confer and submit by March 14, 2016, a Rule 16 scheduling order for the counterclaims. If the parties do not agree on a schedule, they should promptly call Chambers to get a date and time for a scheduling conference. Signed by Judge Richard G. Andrews on 3/4/2016. (nms) Modified on 3/7/2016 (nms). (Entered: 03/07/2016)
03/07/2016	101	[SEALED] AMENDED ANSWER, Defenses, and Counterclaims for Patent Infringement to 31 Amended Complaint, by D&M Holdings U.S. Inc., D&M Holdings Inc., Denon Electronics (USA) LLC. (nms) (Additional attachment(s) added on 3/7/2016: # 1 Exhibits A-I, # 2 Exhibit J - part 1, # 3 Exhibit J - part 2) (nms). (Entered: 03/07/2016)
03/07/2016	102	THIRD AMENDED COMPLAINT For Patent Infringement against D&M Holdings Inc., D&M Holdings U.S. Inc., and Denon Electronics (USA) LLC- filed by Sonos Inc.. (Attachments: # 1 Exhibits A-F, # 2 Exhibits G-L, # 3 Exhibits M-N, # 4 Exhibits O-U)(nms) (Entered: 03/07/2016)
03/07/2016		Remark: Per the Order (D.I. 100), the Counterclaims filed at D.I. 101 have been severed and have been filed in the new case found at Civil Action 16-141-RGA. (nms) (Entered: 03/07/2016)
03/08/2016	103	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) D559, 197 S; 7,571,014 B1; 8,588,949 B2; 8,843,224 B2; 8,938,637 B2; 8,938,312 B2; 9,042,556 B2 9,130,771 B2, 9,195,258 B2, 9,213,357 B2, 9,202,509 B2, 9,219,959 B2. (Rovner, Philip) (Entered: 03/08/2016)
03/15/2016	104	STIPULATION TO EXTEND TIME to answer, move or otherwise respond to the Third Amended Complaint (D.I. 102) to March 28, 2016 - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 03/15/2016)
03/16/2016		SO ORDERED, re 104 STIPULATION TO EXTEND TIME to answer, move or otherwise respond to the Third Amended Complaint to March 28, 2016, filed by Denon Electronics (USA) LLC, D&M Holdings Inc., D&M Holdings U.S. Inc. (Reset Answer Deadlines: D&M Holdings Inc. answer due 3/28/2016; D&M Holdings U.S. Inc. answer due 3/28/2016; Denon Electronics (USA) LLC answer due 3/28/2016). Signed by Judge Richard G. Andrews on 3/16/2016. (nms) (Entered: 03/16/2016)
03/18/2016	105	NOTICE of Third Party Subpoenas by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Attachments: # 1 Part 2)(Flynn, Michael) (Entered: 03/18/2016)
03/28/2016	106	ANSWER to 102 Amended Complaint, with Jury Demand, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 3/29/2016 (nms). (Entered: 03/28/2016)
04/11/2016	107	ORAL ORDER: The mediation scheduled for 5/12/16 at 10:00 AM with Judge Thynge and the submission due date of 4/28/16 are cancelled. Ordered by Judge Mary Pat Thynge on 4/11/16. (cak) (Entered: 04/11/2016)
04/12/2016	108	ORAL ORDER: A teleconference with Judge Thynge has been scheduled for 8/11/16 at 9:30 AM Eastern Time to be initiated by defense counsel. The

		mediation with Judge Thynge has been rescheduled for 8/31/16 at 10:00 AM. Submissions of the parties shall now be due on or before 8/19/16 by no later than 12:00 Noon. All other provisions of the Court's 9/23/15 Order remain in full force and effect. Ordered by Judge Mary Pat Thynge on 4/12/16. (cak) (Entered: 04/12/2016)
04/15/2016	109	NOTICE OF SERVICE of Defendants' Initial Invalidity Contentions filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 04/15/2016)
04/18/2016	110	ORDER Setting Mediation Conferences: A Telephone Conference is set for 8/11/2016 at 9:30 AM before Judge Mary Pat Thynge to be initiated by defense counsel. The Mediation Conference is set for 8/31/2016 at 10:00 AM in Courtroom 2B before Judge Mary Pat Thynge. SEE ORDER FOR DETAILS. Signed by Judge Mary Pat Thynge on 4/18/16. Associated Cases: 1:14-cv-01330-RGA, 1:16-cv-00141-RGA(cak) (Entered: 04/18/2016)
04/21/2016	111	MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) - filed by Sonos Inc.. (Rovner, Philip) Modified on 4/22/2016 (nms). (Entered: 04/21/2016)
04/21/2016	112	OPENING BRIEF in Support re 111 MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f), filed by Sonos Inc..Answering Brief/Response due date per Local Rules is 5/9/2016. (Rovner, Philip) Modified on 4/22/2016 (nms). (Entered: 04/21/2016)
04/29/2016	113	NOTICE OF SERVICE of Sonos, Inc.'s Supplemental Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff and Plaintiff Sonos, Inc.'s First Supplemental Initial Disclosures Pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure and Section 3 of The District of Delaware's Default Standard filed by Sonos Inc..(Rovner, Philip) (Entered: 04/29/2016)
04/29/2016	114	NOTICE OF SERVICE of (1) Defendants' Third Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories; and (2) Defendants' First Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Requests for the Production of Documents and Things filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 04/29/2016)
05/03/2016	115	NOTICE OF SERVICE of Plaintiff Sonos Inc.'s Second Set of Interrogatories to Defendants filed by Sonos Inc..(Rovner, Philip) (Entered: 05/03/2016)
05/06/2016	116	MOTION for Judgment on the Pleadings - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 5/10/2016 (nms). (Entered: 05/06/2016)
05/06/2016	117	OPENING BRIEF in Support re 116 MOTION for Judgment on the Pleadings filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 5/23/2016. (Flynn, Michael) (Entered: 05/06/2016)
05/06/2016	118	DECLARATION of John M. Jackson re 116 MOTION for Judgment on the Pleadings, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A)(Flynn, Michael) Modified on 5/10/2016 (nms). (Entered: 05/06/2016)
05/09/2016	119	ANSWERING BRIEF in Opposition re 111 MOTION to Strike, Inc.s Motion to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Reply Brief due date per Local Rules is 5/19/2016. (Flynn, Michael) (Entered: 05/09/2016)
05/11/2016	120	STIPULATION to extend time to file opposition to Motion for Judgment on the Pleadings to May 27, 2016 and time for Defendants to file a reply brief extended to June 10, 2016, by Sonos Inc.. (Rovner, Philip) Modified on 5/11/2016 (nms). (Entered: 05/11/2016)

05/11/2016	121	Letter to The Honorable Richard G. Andrews from Michael Flynn regarding Request for Oral Argument. (Flynn, Michael) Modified on 5/11/2016 (nms). (Entered: 05/11/2016)
05/11/2016		SO ORDERED, re 120 Stipulation to Extend Time, filed by Sonos Inc. (Reset Briefing Schedule: re 116 MOTION for Judgment on the Pleadings. (Answering Brief due 5/27/2016, Reply Brief due 6/10/2016). Signed by Judge Richard G. Andrews on 5/11/2016. (nms) (Entered: 05/11/2016)
05/12/2016	122	Letter to The Honorable Richard G. Andrews from Philip A. Rovner regarding D&M's Request for Oral Argument. (Rovner, Philip) Modified on 5/12/2016 (nms). (Entered: 05/12/2016)
05/17/2016	123	NOTICE OF SERVICE of Defendants' Second Set of Interrogatories to Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 05/17/2016)
05/19/2016	124	REPLY BRIEF re 111 MOTION to Strike, Inc.s Motion to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) filed by Sonos Inc.. (Attachments: # 1 Exhibit A-B)(Rovner, Philip) (Entered: 05/19/2016)
05/27/2016	125	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Second Set of Requests for the Production of Documents and Things to Defendants filed by Sonos Inc..(Rovner, Philip) (Entered: 05/27/2016)
05/27/2016	126	ANSWERING BRIEF in Opposition re 116 MOTION for Judgment on the Pleadings filed by Sonos Inc..Reply Brief due date per Local Rules is 6/6/2016. (Attachments: # 1 Exhibit A-G, # 2 Exhibit H-K)(Rovner, Philip) (Main Document 126 replaced on 5/31/2016) (nms). (Entered: 05/27/2016)
05/31/2016		CORRECTING ENTRY: The main document pdf for D.I. 126 has been replaced with an amended version per counsel's request. Formatting issues were corrected. (nms) (Entered: 05/31/2016)
06/02/2016	127	NOTICE OF SERVICE of Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Second Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 06/02/2016)
06/06/2016	128	NOTICE OF SERVICE of Defendants' List of Proposed Constructions for Terms Proposed by Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 06/06/2016)
06/09/2016	129	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Preliminary Proposed Claim Constructions filed by Sonos Inc..(Rovner, Philip) (Entered: 06/09/2016)
06/10/2016	130	REPLY BRIEF re 116 MOTION for Judgment on the Pleadings filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 06/10/2016)
06/17/2016	131	ORAL ORDER: The parties have advised that a dispute has arisen requiring judicial attention. The Court will hold a discovery conference on 6/27/2016, at 10:00 AM in Chambers before Judge Richard G. Andrews to take up this issue. In preparation for this hearing the parties shall follow the Discovery Matters and Disputes procedure as set forth in the Scheduling Order. Ordered by Judge Richard G. Andrews on 6/17/2016. (nms) (Entered: 06/17/2016)
06/17/2016	132	Joint STIPULATION to amend Scheduling Order, by Sonos Inc.. (Rovner, Philip) Modified on 6/20/2016 (nms). (Entered: 06/17/2016)
06/20/2016	133	SO ORDERED Granting 132 Joint Stipulation to Amend Scheduling Order. Joint Claim Construction Brief due by 11/23/2016, and the Markman Hearing is now set for 12/14/2016, at 8:30 AM in Courtroom 6A before Judge Richard G. Andrews (see Stipulation for further details). Signed by Judge Richard G. Andrews on 6/20/2016. (nms) (Entered: 06/20/2016)
06/20/2016	134	

		NOTICE OF SERVICE of Sonos, Inc.'s Responses to Defendants' Second Set of Interrogatories (Nos. 12-13) to Plaintiff filed by Sonos Inc..(Rovner, Philip) (Entered: 06/20/2016)
06/23/2016	135	Letter to The Honorable Richard G. Andrews from Michael J. Flynn regarding June 27, 2016 discovery dispute conference. (Flynn, Michael) (Entered: 06/23/2016)
06/24/2016	136	Letter to The Honorable Richard G. Andrews from Philip A. Rovner regarding June 27, 2016 discovery dispute conference - re 135 Letter. (Rovner, Philip) (Entered: 06/24/2016)
06/27/2016	137	Official Transcript of Discovery Dispute held on 06-27-16 before Judge Richard G. Andrews. Court Reporter/Transcriber Leonard A. Dibbs. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 7/18/2016. Redacted Transcript Deadline set for 7/28/2016. Release of Transcript Restriction set for 9/26/2016. (lad) (Entered: 06/27/2016)
06/27/2016	138	NOTICE OF SERVICE of Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Second Set of Requests for Production of Documents and Things filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 06/27/2016)
06/27/2016		Minute Entry for proceedings held before Judge Richard G. Andrews - Discovery Conference held on 6/27/2016. Appearances: Shea, Smith, Choa for Plaintiff; Blumenfeld, Flynn, Jackson for Defendants. (Court Reporter Leonard Dibbs.) (ksr,) (Entered: 06/28/2016)
06/29/2016	139	ORAL ORDER: The MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) (D.I. 111) is referred to Chief Magistrate Judge Mary Pat Thynge. Ordered by Judge Richard G. Andrews on 6/29/2016. Motions referred to Mary Pat Thynge.(nms) (Entered: 06/29/2016)
07/15/2016	140	NOTICE OF SERVICE of Defendants' Updated List of Proposed Claim Terms and Phrases for Construction filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 07/15/2016)
08/01/2016	141	MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 8/6/2016 (nms). (Entered: 08/01/2016)
08/01/2016	142	OPENING BRIEF in Support re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct<, filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 8/18/2016. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Flynn, Michael) Modified on 8/6/2016 (nms). (Entered: 08/01/2016)
08/10/2016	143	REPORT AND RECOMMENDATIONS re 111 MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) filed by Sonos Inc. Please note that when filing Objections pursuant to Federal Rule of Civil Procedure 72(b)(2), briefing consists solely of the Objections (no longer than ten (10) pages) and the Response to the Objections (no longer than ten (10) pages). No further briefing shall be permitted with respect to objections without leave of the Court. Objections to R&R due by 8/29/2016. Signed by Judge Mary Pat Thynge on 8/10/16. (cak) (Entered: 08/10/2016)
08/11/2016	144	Joint STIPULATION to Amend Scheduling Order, by Sonos Inc.. (Rovner, Philip) Modified on 8/15/2016 (nms). (Entered: 08/11/2016)
08/12/2016		

		SO ORDERED, re 144 Stipulation filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 8/12/2016. (ksr,) (Entered: 08/12/2016)
08/12/2016	145	NOTICE OF SERVICE of Defendants' Fourth Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 08/12/2016)
08/16/2016	146	STIPULATION TO EXTEND TIME to file its opposition to Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct to August 26, 2016 - filed by Sonos Inc.. (Rovner, Philip) Modified on 8/17/2016 (nms). (Entered: 08/16/2016)
08/17/2016		SO ORDERED, re 146 STIPULATION TO EXTEND TIME to file opposition to Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct to August 26, 2016, filed by Sonos Inc. (Reset Briefing Schedule: re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct. Answering Brief due 8/26/2016). Signed by Judge Richard G. Andrews on 8/17/2016. (nms) (Entered: 08/17/2016)
08/17/2016	147	Joint Claim Construction Chart, Volume 1, by Sonos Inc.. (Attachments: # 1 Exhibit 1, # 2 Exhibit A, # 3 Exhibit B-D, # 4 Exhibit E, # 5 Exhibit F, # 6 Exhibits G-H)(Rovner, Philip) Modified on 8/18/2016 (nms). (Additional attachment(s) added on 8/18/2016: # 7 Exhibit I part 1, # 8 Exhibit I part 2, # 9 Exhibits J-K, # 10 Exhibits L-N, # 11 Exhibit O) (nms). (Main Document 147 replaced on 8/18/2016) (nms). (Entered: 08/17/2016)
08/17/2016	148	Joint Claim Construction Chart, Volume 2, by Sonos Inc.. (Attachments: # 1 Exhibits P-R)(Rovner, Philip) (Additional attachment(s) added on 8/18/2016: # 2 Exhibits S-U) (nms). Modified on 8/18/2016 (nms). (Additional attachment(s) added on 8/18/2016: # 3 Exhibits V-X) (nms). Modified on 8/18/2016 (nms). (Main Document 148 replaced on 8/18/2016) (nms). (Entered: 08/17/2016)
08/17/2016	149	Joint Claim Construction Chart, Volume 3, by Sonos Inc.. (Attachments: # 1 Exhibit Y-AA)(Rovner, Philip) (Additional attachment(s) added on 8/18/2016: # 2 Exhibit BB part 1, # 3 Exhibit BB part 2, # 4 Exhibit CC) (nms). Modified on 8/18/2016 (nms). Modified on 8/18/2016 (nms). (Main Document 149 replaced on 8/18/2016) (nms). (Entered: 08/17/2016)
08/18/2016		CORRECTING ENTRY: The Joint Claim Construction Chart initially filed in seven volumes (D.I. 147 through D.I. 153) has been reconfigured, and is now three volumes in total (D.I. 147 through 149). (nms) (Entered: 08/18/2016)
08/25/2016	150	STIPULATION of Dismissal Regarding U.S. Patent No. 9,130,771, by Sonos Inc.. (Rovner, Philip) Modified on 8/25/2016 (nms). (Entered: 08/25/2016)
08/25/2016	151	SO ORDERED Granting 150 Stipulation and Order of Dismissal With Prejudice of All Claims and Defenses Regarding U.S. Patent No. 9,130,771 Only. Signed by Judge Richard G. Andrews on 8/25/2016. (nms) (Entered: 08/25/2016)
08/26/2016	152	ANSWERING BRIEF in Opposition re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct filed by Sonos Inc..Reply Brief due date per Local Rules is 9/6/2016. (Attachments: # 1 Exhibit A-F)(Rovner, Philip) (Entered: 08/26/2016)
08/29/2016	153	STIPULATION TO EXTEND TIME for defendants to file a reply brief in support of motion for leave to amend answer to September 9, 2016 - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 08/29/2016)
08/30/2016		SO ORDERED, re 153 STIPULATION TO EXTEND TIME to file a reply brief in support of motion for leave to amend answer to September 9, 2016, filed by Denon Electronics (USA) LLC, D&M Holdings Inc., D&M Holdings U.S. Inc. (Reset Briefing Schedule: re 141 MOTION for Leave to

		Amend Answer to Add the Defense of Inequitable Conduct. Reply Brief due 9/9/2016). Signed by Judge Richard G. Andrews on 8/30/2016. (nms) (Entered: 08/30/2016)
08/30/2016	154	NOTICE to Take Deposition of Amended First Notice of Rule 30(b)(6) Deposition to Defendants on September 21, 2016 filed by Sonos Inc.. (Rovner, Philip) (Entered: 08/30/2016)
08/30/2016	155	NOTICE to Take Deposition of Second Notice of Rule 30(b)(6) Deposition to Defendants on September 23, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 08/30/2016)
08/30/2016	156	NOTICE to Take Deposition of Third Notice of Rule 30(b)(6) Deposition to Defendants on September 22, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 08/30/2016)
09/01/2016	157	ORDER ADOPTING 143 Report and Recommendation. The Motion to Strike (D.I. 111) is GRANTED in part and DENIED in part as set forth in the Report and Recommendation. Signed by Judge Richard G. Andrews on 8/31/2016. (nms) (Entered: 09/01/2016)
09/07/2016	158	Amended ANSWER to 102 Third Amended Complaint for Patent Infringement, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) Modified on 9/8/2016 (nms). (Entered: 09/07/2016)
09/09/2016	159	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Opening Claim Construction Brief (with Exhibits 1-8) and Declaration of Steven C. Visser (with Exhibit A-B) filed by Sonos Inc..(Rovner, Philip) (Entered: 09/09/2016)
09/09/2016	160	REPLY BRIEF re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-B)(Flynn, Michael) (Entered: 09/09/2016)
09/15/2016	161	MOTION to Strike New Amended Answer Submitted With Their Reply Brief - filed by Sonos Inc.. (Rovner, Philip) Modified on 9/16/2016 (nms). (Entered: 09/15/2016)
09/15/2016		Set Answering Brief Deadline re 161 MOTION to Strike New Amended Answer Submitted With Their Reply Brief. Answering Brief/Response due date per Local Rules is 10/3/2016. (nms) (Entered: 09/16/2016)
10/03/2016	162	ORAL ORDER: The Court will hear oral argument on the MOTION for Judgment on the Pleadings (D.I. 116) on 11/14/2016, at 3:00 PM in Courtroom 6A before Judge Richard G. Andrews. Ordered by Judge Richard G. Andrews on 10/3/2016. (nms) (Entered: 10/03/2016)
10/03/2016	163	ANSWERING BRIEF in Opposition re 161 MOTION to Strike New Amended Answer Submitted With Their Reply Brief filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Reply Brief due date per Local Rules is 10/14/2016. (Flynn, Michael) (Entered: 10/03/2016)
10/03/2016	164	DECLARATION of John M. Jackson re 163 Answering Brief in Opposition, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-B)(Flynn, Michael) Modified on 10/4/2016 (nms). (Entered: 10/03/2016)
10/05/2016	165	NOTICE to Take Deposition of Brendon Stead on October 13, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	166	NOTICE to Take Deposition of Evan Stuart on October 25, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	167	NOTICE to Take Deposition of Peter Celinksi on October 26, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	168	NOTICE to Take Deposition of Christopher Commons on October 27, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)

10/05/2016	169	NOTICE to Take Deposition of Satoshi Fukuzuku on October 28, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	170	NOTICE to Take Deposition of Martin R. Wachter on October 28, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/06/2016	171	NOTICE OF SERVICE of (1) Defendants' Second Set of Requests for Production of Documents to Plaintiff; and (2) Defendants' Third Set of Interrogatories to Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/06/2016)
10/07/2016	172	ORDER regarding Motion to Amend (D.I. 141]). Defendants are Ordered to advise the Court by October 12, 2016, upon which pleading they want to rely. If it is the second one, Defendants will need to file another motion to amend. Signed by Judge Richard G. Andrews on 10/7/2016. (nms) (Entered: 10/07/2016)
10/07/2016	173	NOTICE OF SERVICE of (1) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Amended First Notice of Rule 30(b)(6) Deposition; (2) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Second Notice of Rule 30(b)(6) Deposition; (3) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Third Notice of Rule 30(b)(6) Deposition; and (4) Defendants' Notice of 30(b)(6) Deposition filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/07/2016)
10/10/2016	174	NOTICE OF SERVICE of Sonos, Inc.'s Amended Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff filed by Sonos Inc..(Rovner, Philip) (Entered: 10/10/2016)
10/12/2016	175	Letter to The Honorable Richard G. Andrews from Michael Flynn regarding the Courts October 7, 2016 Order (D.I. 172). (Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/12/2016	176	MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/12/2016	177	OPENING BRIEF in Support re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct, filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 10/31/2016. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/12/2016	178	DECLARATION of John M. Jackson re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit 1)(Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/14/2016	179	NOTICE of Non-Party Subpoena (International Business Machines Corporation) by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Flynn, Michael) (Entered: 10/14/2016)
10/14/2016	180	ORAL ORDER: The motion for leave to amend (D.I. 141) and the motion to strike (D.I. 161) are both DISMISSED AS MOOT in light of the filing of the motion for leave to amend. (D.I. 176). Ordered by Judge Richard G. Andrews on 10/14/2016. (nms) (Entered: 10/14/2016)
10/14/2016	181	NOTICE OF SERVICE of (1) Defendants' Responsive Claim Construction Brief; and (2) Declaration of John M. Jackson in Support of Defendants' Responsive Claim Construction Brief filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/14/2016)
10/18/2016	182	

		NOTICE of Non-Party Subpoenas by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Attachments: # 1 Exhibits 1-5)(Flynn, Michael) (Entered: 10/18/2016)
10/19/2016	183	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s First Set of Requests for Admission to Defendants and Plaintiff Sonos Inc.'s Requests for Admission to Defendants Directed to Authenticity of Documents filed by Sonos Inc.. (Rovner, Philip) (Entered: 10/19/2016)
10/20/2016	184	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Amended Initial Disclosures Pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure and Section 3 of the District of Delaware's Default Standard filed by Sonos Inc..(Rovner, Philip) (Entered: 10/20/2016)
10/24/2016	185	NOTICE to Take Deposition of Mike Groeninger on November 2, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/24/2016	186	NOTICE to Take Deposition of Nick Millington on November 4, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/24/2016	187	NOTICE to Take Deposition of Tom Cullen on November 11, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/24/2016	188	NOTICE to Take Deposition of Sonos, Inc. Pursuant to Fed. R. Civ. P. 30(b)(6) on November 2, 2016, November 4, 2016 and November 11, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/31/2016	189	ANSWERING BRIEF in Opposition re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct filed by Sonos Inc..Reply Brief due date per Local Rules is 11/10/2016. (Attachments: # 1 Exhibit A-D)(Rovner, Philip) (Entered: 10/31/2016)
10/31/2016	190	NOTICE OF SERVICE of Plaintiff's Objections and Responses to Defendants' Notice of 30(b)(6) deposition filed by Sonos Inc..(Rovner, Philip) (Entered: 10/31/2016)
11/08/2016	191	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Responses to Defendants' Third Set of Interrogatories (Nos. 14-16) to Plaintiff and Plaintiff Sonos, Inc.'s Objections and Responses to Defendants' Second Set of Requests for Production of Documents filed by Sonos Inc..(Rovner, Philip) (Entered: 11/08/2016)
11/10/2016	192	REPLY BRIEF re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 11/10/2016)
11/10/2016	193	STIPULATION and Order Regarding Discovery by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC, D&M Holdings Inc.. (Flynn, Michael) (Entered: 11/10/2016)
11/11/2016	194	REQUEST for Oral Argument by Sonos Inc. re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct. (Rovner, Philip) (Entered: 11/11/2016)
11/14/2016	195	SO ORDERED Granting (193 in 14-cv-1330-RGA, 37 in 16-cv-141-RGA) Stipulation and Order Regarding Discovery. Signed by Judge Richard G. Andrews on 11/14/2016. Associated Cases: 1:14-cv-01330-RGA, 1:16-cv-00141-RGA(nms) (Entered: 11/14/2016)
11/16/2016	196	NOTICE to Take Deposition of Jonathan Lang on December 8, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/16/2016)
11/16/2016	197	

		NOTICE to Take Deposition of Robert Lambourne on December 6, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/16/2016)
11/18/2016	198	Amended NOTICE to Take Deposition of Martin R. Wachter on November 29, 2016, filed by Sonos Inc..(Rovner, Philip) Modified on 11/21/2016 (nms). (Entered: 11/18/2016)
11/18/2016	199	NOTICE OF SERVICE of Sonos, Inc.'s Second Amended Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff; Sonos, Inc.'s Amended Responses to Defendants' Second Set of Interrogatories (Nos. 12-13) to Plaintiff; and Sonos, Inc.'s Amended Responses to Defendants' Third Set of Interrogatories (Nos. 14-16) to Plaintiff filed by Sonos Inc..(Rovner, Philip) (Entered: 11/18/2016)
11/18/2016	200	NOTICE OF SERVICE of (1) Defendants' Sixth Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories; (2) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Requests For Admission; (3) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Requests for Admission to Defendants Directed to Authenticity of Documents; and (4) Defendants' Amended Objections and Responses to Plaintiff Sonos, Inc.'s Second Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/18/2016)
11/23/2016	201	[SEALED] Joint Claim Construction Brief, filed by Sonos Inc.. (Attachments: # 1 Exhibits 1-5, # 2 Exhibits 6-10, # 3 Exhibit 11 part 1, # 4 Exhibit 11 part 2, # 5 Exhibit 12, # 6 Exhibit 13 part 1, # 7 Exhibit 13 part 2, # 8 Exhibits 14-15, # 9 Exhibits 16-20, # 10 Exhibit 21)(Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	202	DECLARATION of Robert John Anders re 201 Joint Claim Construction Brief, by Sonos Inc.. (Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	203	DECLARATION of John M. Jackson re 201 Joint Claim Construction Brief, by Sonos Inc.. (Attachments: # 1 Exhibits 1-4)(Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	204	DECLARATION of Steven C. Visser re 201 Joint Claim Construction Brief, by Sonos Inc.. (Attachments: # 1 Exhibits A-B)(Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	205	Supplemental DECLARATION of Steven C. Visser re 201 Joint Claim Construction Brief, by Sonos Inc.. (Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/28/2016	206	Official Transcript of hearing held on November 14, 2016 before Judge Andrews. Court Reporter/Transcriber Valerie Gunning,Telephone number (302) 573-6194. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 12/19/2016. Redacted Transcript Deadline set for 12/29/2016. Release of Transcript Restriction set for 2/27/2017. (vjg) (Entered: 11/28/2016)
11/30/2016	207	REDACTED VERSION of 201 Joint Claim Construction Brief, by Sonos Inc.. (Attachments: # 1 Exhibits 1-5, # 2 Exhibits 6-10, # 3 Exhibit 11 part 1, # 4 Exhibit 11 part 2, # 5 Exhibit 12, # 6 Exhibit 13 part 1, # 7 Exhibit 13 part 2, # 8 Exhibit 14, # 9 Exhibits 15-20, # 10 Exhibit 21)(Rovner, Philip) Modified on 11/30/2016 (nms). (Entered: 11/30/2016)
12/01/2016	208	NOTICE of Final Rejection Concerning U.S. Patent No. D559,197 in Ex Parte Reexamination by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Flynn, Michael) (Entered: 12/01/2016)
12/02/2016	209	Joint STIPULATION to Amend Scheduling Order by Sonos Inc.. (Rovner, Philip) (Entered: 12/02/2016)

12/05/2016	210	SO ORDERED Granting 209 Joint Stipulation to Amend Scheduling Order, filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 12/5/2016. (nms) (Entered: 12/05/2016)
12/07/2016	211	NOTICE to Take Deposition of Kevin Zarow on December 16, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 12/07/2016)
12/13/2016	212	ORAL ORDER: The Markman Hearing set for 12/14/2016, will now commence at 9:30 AM in Courtroom 6A. Ordered by Judge Richard G. Andrews on 12/13/2016. (nms) (Entered: 12/13/2016)
12/14/2016		Minute Entry for proceedings held before Judge Richard G. Andrews - Markman Hearing held on 12/14/2016. Appearances: P. Rovner, G. Lee, R. Shea, M. Boyea, A. Silverstein for Plaintiffs; M. Flynn, J. Jackson, M. Aeosta for Defendants. (Court Reporter Taneha Carroll - Hawkins Reporting Service.) (ksr,) (Entered: 12/15/2016)
12/20/2016	213	Official Transcript of Markman Hearing held on 12-14-16 before Judge Richard G. Andrews. Court Reporter/Transcriber Taneha Carroll. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 1/10/2017. Redacted Transcript Deadline set for 1/20/2017. Release of Transcript Restriction set for 3/20/2017. (lad) (Entered: 12/20/2016)
12/22/2016	214	Letter to The Honorable Richard G. Andrews from Michael J. Flynn regarding claim construction. (Flynn, Michael) (Entered: 12/22/2016)
12/22/2016	215	Letter to the Honorable Richard G. Andrews from Philip A. Rovner regarding claim construction. (Attachments: # 1 Exhibit A-C)(Rovner, Philip) (Entered: 12/22/2016)
12/22/2016	216	DECLARATION of John M. Jackson re 214 Letter, by D&M Holdings Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-I)(Flynn, Michael) Modified on 12/28/2016 (nms). (Entered: 12/22/2016)
12/27/2016	217	NOTICE OF SERVICE of Final infringement charts pursuant to paragraph 2 (d) of the Scheduling Order, as amended filed by Sonos Inc..(Rovner, Philip) (Entered: 12/27/2016)
01/09/2017	218	NOTICE to Take Deposition of Christopher Kallai on February 16, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 01/09/2017)

Copyright © 2017 LexisNexis CourtLink, Inc. All rights reserved.
*** THIS DATA IS FOR INFORMATIONAL PURPOSES ONLY ***



1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

7571014

Link to Claims Section

August 4, 2009

Method and apparatus for controlling multimedia players in a multi-zone system

INVENTOR: Lambourne, Robert A. - Santa Barbara, California, United States of America (US), United States of America () ; Millington, Nicholas A. J. - Santa Barbara, California, United States of America (US), United States of America ()

CERT-CORRECTION:
March 19, 2013 - a Certificate of Correction was issued for this patent (O.G. April 9, 2013)

APPL-NO: 861653 (10)

FILED-DATE: June 5, 2004

GRANTED-DATE: August 4, 2009

PRIORITY: June 5, 2004 - 10861653, United States of America (US)

ASSIGNEE-PRE-ISSUE:
June 5, 2004 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., SONOS, INC., 506 CHAPALA STREET, SANTA BARBARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 93101, Reel and Frame Number: 015443/0654
May 24, 2006 - SECURITY AGREEMENT, SILICON VALLEY BANK, 3003 TASMAN DRIVE, SANTA CLARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 95054, Reel and Frame Number: 017664/0836

ASSIGNEE-AT-ISSUE:
Sonos, Inc., Santa Barbara, California, United States of America (US), United States company or corporation (02)

ASSIGNEE-AFTER-ISSUE:
February 26, 2010 - RELEASE BY SECURED PARTY (SEE DOCUMENT FOR DETAILS)., SONOS, INC., 223 E. DE LA GUERRA, SANTA BARBARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 93101, Reel and

Frame Number: 023998/0778
June 8, 2012 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., SONOS, INC., 223 EAST DE LA GUERRA STREET, SANTA BARBARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 93101, Reel and Frame Number: 028345/0881
November 15, 2015 - PATENT SECURITY AGREEMENT, JPMORGAN CHASE BANK, N.A., 10 S. DEARBORN STREET, CHICAGO, ILLINOIS, UNITED STATES OF AMERICA (US), 60603, Reel and Frame Number: 037112/0014
April 1, 2016 - SECURITY INTEREST (SEE DOCUMENT FOR DETAILS)., GORDON BROTHERS FINANCE COMPANY, 27TH FLOOR, 800 BOYLSTON STREET, BOSTON, MASSACHUSETTS, UNITED STATES OF AMERICA (US), 02199, Reel and Frame Number: 038329/0253

LEGAL-REP: Zheng, Joe

PUB-TYPE: August 4, 2009 - Patent without a pre-grant publication (B1)

PUB-COUNTRY: United States of America (US)

LEGAL-STATUS:

June 5, 2004 - ASSIGNMENT
May 24, 2006 - ASSIGNMENT
February 26, 2010 - ASSIGNMENT
February 26, 2010 - ASSIGNMENT
June 8, 2012 - ASSIGNMENT
February 4, 2013 - FEE PAYMENT
March 19, 2013 - CERTIFICATE OF CORRECTION
November 15, 2015 - ASSIGNMENT
April 1, 2016 - ASSIGNMENT
February 4, 2013 - Payment of Maintenance Fee, 4th Year, Large Entity.
February 5, 2013 - Entity Status Set to Undiscounted

FILING-LANG: English (EN) (ENG)

PUB-LANG: English (EN) (ENG)

REL-DATA:

Continuation-in-part of Ser. No. 10816217, April 1, 2004, PENDING

US-MAIN-CL: 700#94

US-ADDL-CL: 715#716

CL: 700, 715

SEARCH-FLD: 700#94, 715#716, 715#734, 715#735, 709#220, 709#221, 381#56

IPC-MAIN-CL: [8] G06F 017#00 (20060101) Advanced Inventive 20090804 (A F I B H US)

IPC-ADDL-CL: [8] G06F 003#00 (20060101) Advanced Inventive 20090804 (A L I B H US)

PRIM-EXMR: Kuntz, Curtis

ASST-EXMR: Sellers, Daniel R

REF-CITED:

5239458, August 24, 1993, Suzuki, United States of America (US), 700#83
5299266, March 29, 1994, Lumsden, United States of America (US), 381#119
5751819, May 12, 1998, Dorrough, United States of America (US), 381#56
7218708, May 15, 2007, Berezowski et al., United States of America (US), 379#37
20020109710, August 15, 2002, Holtz et al., United States of America (US), 345#723
20020124097, September 5, 2002, Isely et al., United States of America (US), 709#231
20020188762, December 12, 2002, Tomassetti et al., United States of America (US), 709#251
20030126211, July 3, 2003, Anttila et al., United States of America (US), 709#205
20040008852, January 15, 2004, Also et al., United States of America (US), 381#119
20040252400, December 16, 2004, Blank et al., United States of America (US), 360#70
20050047605, March 3, 2005, Lee et al., United States of America (US), 381#56
20070038999, February 15, 2007, Millington, United States of America (US), 718#100

ENGLISH-ABST:

Techniques for controlling zone group and zone group characteristics such as audio volume in a multi-zone system are disclosed. The multi-zone system includes a number of multimedia players, each preferably located in a zone. A controller may control the operations of all of the zone players remotely from any one of the zones. Two or more zone players may be dynamically grouped as a zone group for synchronized operations. According to one aspect of the techniques, a zone group configuration can be managed, updated, modified via an interactive user interface provided in a controlling device. The zone group configuration may be saved in one of zone players. According to another aspect of the techniques, the audio volume control of a zone group can be performed individually or synchronously as a group.

NO-OF-CLAIMS: 44

EXMPL-CLAIM: 16

NO-OF-FIGURES: 15

NO-DRWNG-PP: 14

PARENT-PAT-INFO:

CROSS-REFERENCE TO RELATED APPLICATION

[0001]This application is a continuation-in-part of U.S. patent application Ser. No. 10/816,217, filed Apr. 1, 2004, in the name of Nicholas A. J. Millington, and entitled "System and method for synchronizing operations among a plurality of independently clocked digital data processing devices" filed on Apr. 1, 2004.

SUMMARY:

BACKGROUND OF THE INVENTION

[0002]1. Field of the Invention

[0003]The invention is generally related to the area of audio technologies and human-computer interaction. In particular, the invention is related to method and apparatus for controlling or manipulating a plurality of multimedia players in a multi-zone system.

[0004]2. The Background of Related Art

[0005]An enduring passion for quality audio reproduction or system is continuing to drive demands from users. One of the demands includes an audio system in a house in which, for example, one could grill to classic rock on a patio while another one may cook up his/her own music selections in a kitchen. This is all at the same time while a teenager catches a ballgame in a family room, and another one blasts pop in a bedroom. And the best part of such audio system is that each family member does not need his or her own stereo system--one system gives everyone access to all the music sources.

[0006]Currently, one of the systems that can meet part of such demand is a conventional multi-zone audio system that usually includes a number of audio players. Each of the audio players has its own amplifier(s) and a set of speakers and typically installed in one place (e.g., a room). In order to play an audio source at one location, the audio source must be provided locally or from a centralized location. When the audio source is provided locally, the multi-zone audio system functions as a collection of many stereo systems, making source sharing difficult. When the audio source is provided centrally, the centralized location may include a juke box, many compact discs, an AM or FM radio, tapes, or others. To send an audio source to an audio player demanding such source, a cross-bar type of device is used to prevent the audio source from going to other audio players that may be playing other audio sources.

[0007]In order to achieve playing different audio sources in different audio players, the traditional multi-zone audio system is generally either hard-wired or controlled by a pre-configured and pre-programmed controller. While the pre-programmed configuration may be satisfactory in one situation, it may not be suitable for another situation. For example, a person would like to listen to broadcast news from his/her favorite radio station in a bedroom, a bathroom and a den while preparing to go to work in the morning. The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning, the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.

[0008]Other than the above mentioned problem, the control of the audio players as a group does not exist. For example, the audio volume of the audio players in the traditional multi-zone audio system needs to be adjusted one at a time, resulting in an inconvenient and non-homogenous audio environment.

[0009]There is, therefore, a need for solutions in a multi-zone audio system to control a plurality of audio players and their audio characteristics from one controlling device.

SUMMARY OF THE INVENTION

[0010]This section is for the purpose of summarizing some aspects of the present invention and to briefly introduce some preferred embodiments. Simplifications or omissions in this section as well as in the abstract or the title of this description may be made to avoid obscuring the purpose of this section, the abstract and the title. Such simplifications or omissions are not intended to limit the scope of the present invention.

[0011]In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player. According to one aspect of the present invention, the same audio source is selected to be played synchronously in a group of players via a controlling device operated by a user. The group may be flexibly formed in a dynamic manner. Within the group, any one of the audio sources may be chosen and made available to each of the players. All audio playback control operations such as pause/play, forward/rewind, next/previous track are synchronously controlled, while the audio volume adjustment may be applied to a selected player or all of the players in the group.

[0012]According to another aspect of the present invention, a configurable module is implemented in the controlling device that provides interactive graphic user interface for controlling playback of the audio source, grouping a plurality of players together, de-grouping a group or adjusting audio volume of individual players or a group of players.

[0013]According to yet another aspect of the present invention, a player in a group of players is configured to synchronously play an audio source by selecting a source, making the source available or retrieving the source if the source is not found locally

[0014]The present invention may be implemented in many forms including software, hardware or a combination of both. According to one embodiment, the present invention is directed to a method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players, selecting at least one of the players as a zone group head, displaying on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head, selecting one or more players from the at least some of the players to be a group being formed by the group head, and synchronizing all players in the group.

[0015]According to another embodiment, the present invention is a method for controlling a plurality of players, the method comprising displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such group, selecting one of the volume meters from the list, and adjusting the one of the volume meters as desired.

[0016]According to still another embodiment, the present invention is an apparatus for controlling a plurality of players, the apparatus comprises a screen, a screen driver commanding the screen, an input interface, a network interface, a memory for storing code for an application module, a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of: displaying on the screen a first list showing at least available players; selecting at least one of the players as a zone group head; displaying on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head; selecting one or more players from the at least some of the players to be a zone group being formed by the zone group head; and synchronizing all players in the zone group.

[0017]The operations further include displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such group; selecting one of the volume meters from the list; and adjusting the one of the volume meters as desired.

[0018]One of the objects, features, and advantages of the present invention is to remotely control a plurality of multimedia players in a multi-zone system, playing and controlling the audio source synchronously if the players are grouped together, or playing and controlling the audio source individually if the players are disassociated with each other.

[0019]Other objects, features, and advantages of the present invention will become apparent upon examining the following detailed description of an embodiment thereof, taken in conjunction with the attached drawings.

DRWDESC:

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

[0021]FIG. 1 shows an exemplary configuration in which the present invention may be practiced;

[0022]FIG. 2A shows an exemplary functional block diagram of a player in accordance with the present invention;

[0023]FIG. 2B shows an example of a controller that may be used to remotely control one of more players of FIG. 2A;

[0024]FIG. 2C shows an exemplary internal functional block diagram of a controller in accordance with one embodiment of the present invention;

[0025]FIGS. 3A and 3B illustrate a sequence of screen displays in accordance with one embodiment of the present invention for controlling a plurality of players;

[0026]FIG. 3C shows a sequence of screen displays in accordance with one embodiment of the present invention for alternatively controlling players;

[0027]FIGS. 4A and 4B show a sequence of screen displays in accordance with one embodiment of the present invention for controlling players regarding audio volume;

[0028]FIG. 5 shows a flowchart or process of controlling a plurality of zones players according to one embodiment of the present invention;

[0029]FIG. 6 shows a flowchart or process of controlling audio volume of a plurality of players in a zone group according to one embodiment of the present invention; and

[0030]FIGS. 7A-7D show a sequence of screen displays in accordance with one embodiment of the present invention on a computing device for alternatively controlling players.

DETDESC:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0031]The present invention pertains to techniques for controlling a plurality of players, grouping some of the players, manipulating audio characteristics of the players individually or in groups. The audio characteristics include, but are not limited to, audio volume, audio bass, and audio treble. The players, also referred to as zone players, are part of in a multi-zone system that may be installed in a complex with multiple zones. In general, each zone player is located in one of the zones. Each of the zone players in the multi-zone system is coupled to a data network to communicate not only with each other but with other devices. According to one aspect of the present invention, through a controlling device, not only can each of the zone players be individually controlled, but also two or more of the zone players may

be grouped as one or more groups and controlled as if they were a single unit. The audio playback for the zone players in a zone group can be synchronized.

[0032]According to another aspect of the techniques, a zone group configuration can be manipulated via a user interface provided in a controlling device. The user interface provides a mechanism to manage, create, delete or modify zone groups. All audio playback operations, such as pause/play, forward/rewind, next/previous track, are synchronized for the zone players in a zone group. The zone group configuration may be saved in any one of zone players for easy retrieval in any of the zones at anytime.

[0033]The detailed description of the present invention is presented largely in terms of procedures, steps, logic blocks, processing, or other symbolic representations that directly or indirectly resemble the operations of devices or systems that can be used on networks. These descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art.

[0034]Reference herein to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Further, the order of blocks in process flowcharts or diagrams representing one or more embodiments of the invention do not inherently indicate any particular order nor imply any limitations in the invention.

[0035]Referring now to the drawings, in which like numerals refer to like parts throughout the several views. FIG. 1 shows an exemplary configuration **100** in which the present invention may be practiced. The configuration may represent, but not be limited to, a part of a residential home, a business building or a complex with multiple zones. There are a number of multimedia players of which three examples **102**, **104** and **106** are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein.

[0036]As used herein, unless explicitly stated otherwise, an audio source or audio sources are in digital format and can be transported or streamed over a data network. To facilitate the understanding of the present invention, it is assumed that the configuration **100** represents a home. Thus, the zone player **102** and **104** may be located in two of the bedrooms respectively while the zone player **106** may be installed in a living room. All of the zone players **102**, **104** and **106** are coupled directly or indirectly to a data network **108**. In addition, a computing device **110** is shown to be coupled on the network **108**. In reality, any other devices such as a home gateway device, a storage device, or an MP3 player may be coupled to the network **108** as well.

[0037]The network **108** may be a wired network, a wireless network or a combination of both. In one example, all devices including the zone players **102**, **104** and **106** are coupled to the network **108** by wireless means based on an industry standard such as IEEE 802.11. In yet another example, all devices including the zone players **102**, **104** and **106** are part of a local area network that communicates with a wide area network (e.g., the Internet).

[0038]Many devices on the network **108** are configured to download and store audio sources. For example, the computing device **110** can download audio sources from the Internet and store the downloaded sources locally for sharing with other devices on the Internet or the network **108**. The computing device **110** can also be configured to receive streaming audio. Shown as a stereo system, the device **112** is configured to receive an analog audio source (e.g., from broadcasting) or retrieve a digital audio source (e.g., from a compact disk). The analog audio sources can be converted to digital audio sources. In accordance with the present invention, the audio source may be shared among the devices on the network **108**.

[0039]Two or more zone players may be grouped together to form a new zone group. Any combinations of zone players and an existing zone group may be grouped together. In one instance, a new zone group is formed by adding one

zone player to another zone player or an existing zone group. A first chosen zone player to form the new zone group may be referred to as a zone group head. Depending on implementation, all other zone players in the group are synchronized to play an audio source or a queue of sources being played or provided by the zone group head or any one zone player in the group may be selected to synchronize others. For example, when the zone player **106** is added to the zone player **102** to form a new zone group, the zone players **102** is the zone group head of the new zone group. Both players will synchronously playback audio sources that are accessible to any one of the zone players in the multi-zone system. In one embodiment, the audio source being played or provided by the zone player **102** will be also played in the zone player **106**. In another embodiment, the audio source being played or provided by the newly added zone player **106** will be played in all players in the group.

[0040]In spite of an existing zone group including the zone players **102** or **106**, it is still possible to add another zone player (e.g., player **104**) to the existing zone group containing the zone players **102** and **106**. In one embodiment, when this zone group is selected to play an audio source, the zone players **102** and **106** will synchronize with the zone player **104**, playing whatever the zone player **104** is playing or ready to play. In another embodiment, when this zone group is selected to play an audio source, the zone player **104** will synchronize with the zone players **102** and **106**, playing whatever the zone players **102** and **106** are playing or ready to play. In an exemplary deployment, a zone group includes the zone players **102**, **104** and **106** located in a bedroom, a kitchen and a bathroom of a house, respectively. When an audio source is played in the zone group, the playback is synchronized among the zone players **102**, **104** and **106** in the group. As a result, a user may hear the same music or song regardless of whether the user is in the bedroom, the kitchen or the bathroom.

[0041]Many devices on the network **108** may be configured to control operations of the zone players **102**, **104** and **106**. In particular, one or more controlling devices **140** and **142** are used to control zone players **102**, **104** and **106** as shown in FIG. 1. The controlling devices **140** and **142** are preferably portable and remotely control the zone players via wireless means (e.g., infrared, radio, wireless standard IEEE 802.11b or 802.11g). In one embodiment, besides controlling an individual zone player, the controlling device **140** or **142** is configured to manage audio sources and audio characteristics of all the zone players regardless where the controlling device **140** or **142** is located in a house or a confined complex.

[0042]Referring now to FIG. 2A, there is shown an exemplary functional block diagram of a zone player **200** in accordance with the present invention. The zone player **200** includes a network interface **202**, a processor **204**, a memory module **206**, an audio processing circuit **210**, a digital signal processing module **212**, an audio amplifier **214** and a RF interface **216**. The network interface **202** facilitates a data flow between a data network (i.e., the data network **108** of FIG. 1) and the zone player **200** and typically executes a special set of rules (i.e., a protocol) to send data back and forth. One of the common protocols is TCP/IP (Transmission Control Protocol/Internet Protocol) commonly used in the Internet. In general, a network interface manages the assembling of an audio source or file into smaller packets that are transmitted over the data network or reassembles received packets into the original source or file. In addition, the network interface **202** handles the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player **200**.

[0043]The network interface **202** may include one or both of a wireless interface **216** and a wired interface **217**. The wireless interface **216**, also referred to as a RF interface, provides network interface functions by a wireless means for the zone player **200** to communicate with other devices in accordance with a communication protocol (such as the wireless standard IEEE 802.11a, 802.11b or 802.11g). The wired interface **217** provides network interface functions by a wired means (e.g., an Ethernet cable). In one embodiment, a zone player, referred to as an access zone player, includes both of the interfaces **216** and **217**, and other zone players include only the RF interface **216**. Thus these other zone players communicate with other devices on a network or retrieve audio sources via the access zone player. The processor **204** is configured to control the operation of other parts in the zone player **200**. The memory **206** may be loaded with one or more software modules that can be executed by the processor **204** to achieve desired tasks. According to one aspect of the present invention, a software module implementing one embodiment of the present invention is executed, the processor **204** operates in accordance with the software module in reference to a saved zone

group configuration characterizing a zone group created by a user, the zone player **200** is caused to retrieve an audio source from another zone player or a device on the network.

[0044]According to one embodiment of the present invention, the memory **206** is used to save one or more saved zone configuration files that may be retrieved for modification at any time. Typically, a saved zone group configuration file is transmitted to a controller (e.g., the controlling device **140** or **142** of FIG. 1) when a user operates the controlling device. The zone group configuration provides an interactive user interface so that various manipulations or control of the zone players may be performed.

[0045]The audio processing circuit **210** resembles most of the circuitry in an audio playback device and includes one or more digital-to-analog converters (DAC), an audio preprocessing part, an audio enhancement part or a digital signal processor and others. In operation, when an audio source is retrieved via the network interface **202**, the audio source is processed in the audio processing circuit **210** to produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier **214** for playback on speakers. In addition, the audio processing circuit **210** may include necessary circuitry to process analog signals as inputs to produce digital signals for sharing with other devices on a network.

[0046]Depending on an exact implementation, the digital signal processing module **212** may be implemented within the audio processing circuit **210** or as a combination of hardware and software. The audio amplifier **214** is typically an analog circuit that powers the provided analog audio signals to drive one or more speakers.

[0047]Referring now to FIG. 2B, there is shown an example of a controller **240**, which may correspond to the controlling device **140** or **142** of FIG. 1. The controller **240** may be used to facilitate the control of multi-media applications, automation and others in a complex. In particular, the controller **240** is configured to facilitate a selection of a plurality of audio sources available on the network, controlling operations of one or more zone players (e.g., the zone player **200**) through a RF interface corresponding to the RF interface **216** of FIG. 2A. According to one embodiment, the wireless means is based on an industry standard (e.g., infrared, radio, wireless standard IEEE 802.11a, 802.11b or 802.11g). When a particular audio source is being played in the zone player **200**, a picture, if there is any, associated with the audio source may be transmitted from the zone player **200** to the controller **240** for display. In one embodiment, the controller **240** is used to synchronize more than one zone players by grouping the zone players in a group. In another embodiment, the controller **240** is used to control the volume of each of the zone players in a zone group individually or together.

[0048]The user interface for the controller **240** may include some of a screen **242** (e.g., a LCD screen) and a set of functional buttons as follows: a "zones" button **244**, a "back" button **246**, a "music" button **248**, a scroll wheel **250**, "ok" button **252**, a set of transport control buttons **254**, a mute button **262**, a volume up/down button **264**, a set of soft buttons **266** corresponding to the labels **268** displayed on the screen **242**.

[0049]The screen **242** displays various screen menus in response to a user's selection. In one embodiment, the "zones" button **244** activates a zone management screen or "Zone Menu", which is described in more details below. The "back" button **246** may lead to different actions depending on the current screen. In one embodiment, the "back" button triggers the current screen display to go back to a previous one. In another embodiment, the "back" button negates the user's erroneous selection. The "music" button **248** activates a music menu, which allows the selection of an audio source (e.g., a song) to be added to a zone player's music queue for playback.

[0050]The scroll wheel **250** is used for selecting an item within a list, whenever a list is presented on the screen **242**. When the items in the list are too many to be accommodated in one screen display, a scroll indicator such as a scroll bar or a scroll arrow is displayed beside the list. When the scroll indicator is displayed, a user may rotate the scroll wheel **250** to either choose a displayed item or display a hidden item in the list. The "ok" button **252** is use to confirm the user selection on the screen **242**.

[0051]There are three transport buttons **254**, which are used to control the effect of the currently playing song. For example, the functions of the transport buttons may include play/pause and forward/rewind a song, move forward to a next song track, or move backward to a previous track. According to one embodiment, pressing one of the volume control buttons such as the mute button **262** or the volume up/down button **264** activates a volume panel. More detailed description of the volume panel will be discussed below. In addition, there are three soft buttons **266** that can be activated in accordance with the labels **268** on the screen **242**. It can be understood that, in a multi-zone system, there may be multiple audio sources being played. The music transport functions described herein shall apply selectively to one of the sources when a corresponding one of the zone players or zone groups is selected.

[0052]FIG. 2C illustrates an internal functional block diagram of an exemplary controller **270**, which may correspond to the controller **240** of FIG. 2B. The screen **272** on the controller **270** may be a LCD screen. The screen **272** communicates with and is commanded by a screen driver **274** that is controlled by a microcontroller (e.g., a processor) **276**. The memory **282** may be loaded with one or more application modules **284** that can be executed by the microcontroller **276** with or without a user input via the user interface **278** to achieve desired tasks. In one embodiment, an application module is configured to facilitate grouping a number of selected zone players into a zone group and synchronizing the zone players for one audio source. In another embodiment, an application module is configured to control together the audio volumes of the zone players in a zone group. In operation, when the microcontroller **276** executes one of the application modules **284**, the screen driver **274** generates control signals to drive screen **272** to display an application specific user interface accordingly, more of which will be described below.

[0053]The controller **270** includes a network interface **280** referred to as a RF interface **280** that facilitates wireless communication with a zone player via a corresponding RF interface thereof. In one embodiment, the commands such as volume control and audio playback synchronization are sent via the RF interfaces. In another embodiment, a saved zone group configuration is transmitted between a zone player and a controller via the RF interfaces. The controller **270** may control one or more zone players, such as **102**, **104** and **106** of FIG. 1. Nevertheless, there may be more than one controllers, each in a zone (e.g., a room) and configured to control any one and all of the zone players.

[0054]In one embodiment, a user creates a zone group including at least two zone players from the controller **240** that sends signals or data to one of the zone players. As all the zone players are coupled on a network, the received signals in one zone players can cause other zone players in the group to be synchronized so that all the zone players in the group playback an identical audio source or a list of identical audio sources. Similarly, when a user increases the audio volume of the group from the controller, the signals or data of increasing the audio volume for the group are sent to one of the zone players and causes other zone players in the group to be increased together in volume and in same scale.

[0055]According to one implementation, an application module is loaded in memory **282** for zone group management. When a predetermined key (e.g. the "zones" button **244**) is activated on the controller **240**, the application module is executed in the microcontroller **276**. The input interface **278** coupled to and controlled by the microcontroller **276** receives inputs from a user. A "Zone Menu" is then displayed on the screen **272**. The user may start grouping zone players into a zone group by activating a "Link Zones" or "Add Zone" soft button, or de-grouping a zone group by activating an "Unlink Zones" or "Drop Zone" button. The detail of the zone group manipulation will be further discussed below.

[0056]As described above, the input interface **278** includes a number of function buttons as well as a screen graphical user interface. It should be pointed out that the controller **240** in FIG. 2B is not the only controlling device that may practice the present invention. Other devices that provide the equivalent control functions (e.g., a computing device, a hand-held device) may also be configured to practice the present invention. In the above description, unless otherwise specifically described, it is clear that keys or buttons are generally referred to as either the physical buttons or soft buttons, enabling a user to enter a command or data.

[0057]FIGS. 3A and 3B illustrate a sequence of screens in accordance with one embodiment of the present

invention for manipulating a plurality of zone players for an exemplary four-zone distributed audio system. There are four zone players in four zones and referred to as: "Zone 1", "Zone 2", "Zone 3" and "Zone 4".

[0058]FIG. 3A shows a grouping process. A first "Zone Menu" **302** shows a first list **303** of available zone players. One of the zone players or existing zone group is selected as a zone group head **304**, which is indicated with uniformly highlighted texts. It is noted the highlighted texts may also be expressed as grouped icons, concatenated texts or other representations of a current selection on the screen. The highlighted texts react to a user's scrolling selection (e.g., via a scroll wheel **250** of FIG. 2B). Also shown as one of the bottom labels on the first "Zone Menu" **302** is the "Link Zones" or "Add Zone" label **306** that corresponds to a soft button (e.g., soft button **266** of FIG. 2B). A scroll indicator is displayed beside the first display **302** when the number of items is too many to be accommodated in one display.

[0059]When the soft button corresponding to "Link Zones" or "Add Zone" **306** is activated, a second "Zone Menu" **308** is displayed. A second list shows eligible zone groups or zone players **309** for the zone group head **304**. Since "Zone 2" has been selected as the zone group head to form a zone group, the eligible zone groups and zone players are now "Zone 1", "Zone 3" and "Zone 4". As shown as highlighted texts, the zone player (Zone 4) **310** is selected to be grouped with the zone group head (Zone 2) **304** to form a new zone group.

[0060]After the user confirms the selection, the newly formed zone group configuration is updated and the audio source can be played synchronously for all of the zone players in the newly formed zone group as shown in FIG. 3A. The first "Zone menu" **312** is displayed again with the newly formed zone group **314** as one of the choices along with other available zone players. Depending on implementation, any zone players that have been used in a group may or may not be used in another group. As shown in FIG. 3A, the zone players **2** and **4** are in a zone group started by the zone player **2**, the zone player **4** (even the zone player **2**) can be in another zone group, for example, while a player in a living room is grouped with a player in a dinning room, the same player in the living room can be grouped with a player in a family room.

[0061]In another embodiment, a display shows a list of available zone players for grouping. An interactive graphic interface allows a user to interactively select some of the available zone players that are automatically grouped. Anyone of the selected zone players in the group may be elected to be a group head such that other players in the group are synchronized to follow the group head.

[0062]According to one embodiment, the synchronization of all zone players in the new zone group is achieved with the following steps: 1) choosing an audio source from one of the zone players in the group, 2) checking if the chosen audio source is available locally on each of the zone players, 3) retrieving the audio source from another device (e.g., other zone players) which has the audio source via the data network, if the audio source is not available locally, and 4) playing the audio source on each of the zone players synchronously. In another embodiment, the audio source in the group or player to be added is chosen as default for other zone players. As shown in FIG. 3A, the audio source for "Zone 4" is track **10** with artist D. Accordingly, the zone player "Zone 2" will play track **10** with artist D synchronously with "Zone 4" after the new zone group is formed.

[0063]FIG. 3B shows a de-grouping process in reference to FIG. 3A.1. A first "Zone Menu" **322** shows a first list **323** of available zone players and zone groups, if there is any. One of the zone groups ("Zone 2+Zone 4") to be de-grouped is selected as shown in highlight texts **324**. When the "Unlink Zones" or "Drop Zone" soft button **326** is activated, the second "Zone Menu" **328** displays a list **329** that shows all of the member zone players in the selected zone group. One of the zone players **330** (Zone 4) in the selected zone group is chosen to be disassociated from the zone group **324**. When the de-grouping is confirmed by user, the "Zone Menu" **332** is presented to reflect the de-grouping of a zone group (e.g., "Zone 2") **334**. When zone players are grouped together, all of the zone players play the same audio source synchronously. If a zone player is disassociated or dropped from the zone group, the remaining zone players in the zone group continue playing the audio source. In the "Zone Menu" **332**, it shows the zone player (Zone 4) has no music **336** after the disassociation from the zone group, while the remaining player (Zone 2) continues to play the same music--track **10** with artist D.

[0064]Referring now to FIG. 3C, there shows a sequence of screens depicting alternative steps of creating a zone group. An exemplary five-zone audio system is used to describe these alternative steps. There are five zone players located in a living room, a dining room, a kitchen, an office and a master bedroom. It is assumed that three of the five rooms, the living room, the dining room and the kitchen, are grouped to form a zone group called "LivingRoom+DiningRoom+Kitchen". The Screen display **350** shows that an audio source called "Counting Crows" **352** is being played on all the zone players in the group. When a user activates the "music" button **248** on a controller **240** of FIG. 2B, the screen display **360** shows a "Music Menu" page which shows a list of choices **362**. One of the choices is "Play Music From Other Rooms" **364**. When the user selects this option, the screen display **370** for "Play Same Music As Other Rooms" displays a list **372** of eligible rooms or zone players to be grouped with the current group "Living Room+Dining Room+Kitchen". In this example the eligible rooms are Office **374** and Master Bedroom **376**. It is assumed that the "Office" **374** which is indicated with the highlighted bar is chosen. As a result, the zone player "Office" is grouped with the original zone group to become a new group called "LivingRoom+DiningRoom+Kitchen+Office" as shown in screen display **380**. And the audio source "Miles Davis" **382** from the zone player "Office" is played synchronously on all zone players in the new group.

[0065]Referring now to FIGS. 4A and 4B, there is shown a sequence of screens in accordance with one embodiment of the present invention for controlling audio volume of zone players in a zone group. These screens are activated and displayed when one of the volume control buttons is activated. According to one embodiment, the volume control buttons are "mute" button **262** and "volume up/down" button **264** on the controller **240** of FIG. 2B.

[0066]FIG. 4A shows that the current active zone player is in a living room of a house. The "Volume" panel **410** is displayed for the current zone player "Living Room". A volume meter **412** is included to indicate a volume adjustment made by a user. A mute icon **414** is shown when the "mute" button is activated while the audio is on.

[0067]FIG. 4B shows that the current active zone group includes five rooms: living room, dining room, kitchen, den and study. A "Volume" panel **430** for the zone group is displayed for the convenience of a user. In the display, a plurality of volume meters **431** is shown. One of the volume meters is for the entire zone group **432**. Other volume meters are for all the zone players in the group, one for each room or zone player. A scroll indicator is shown as a downward arrow **436** that indicates the screen is too small to hold all volume meters in one screen display. There are more hidden choices that can be viewed by scrolling down. The scrolling cursor **436** is highlighted (e.g., Den **434**). As a user scrolls down the list of volume meters **431**, the contents on "Volume" panel **440** includes the volume meter of the next zone player on the list (e.g., Study **444**). Similarly, when the scroll indicator is an upward arrow **442**, other hidden choices within the list can be viewed by scrolling up.

[0068]When a user adjusts the audio volume, only the highlighted zones or zone players are affected. If the highlighted selection is one zone player, the audio adjustment will only apply to that particular chosen player. If multiple zone players are selected, the adjustment applies to all of the chosen players similar to the volume adjustment to the group volume meter described below. The audio volume of all zone players in the zone group will be affected, if the highlighted selection is at the volume meter of the entire group **432**. Any audio volume adjustment to the zone group applies to all of the zone players equally within the entire zone group. Depending on implementation, the relative difference of the audio volume among zone players in the group remains unchanged either in percentage or graphic strength.

[0069]FIG. 5 shows a flowchart or process **500** of implementing one embodiment of the present invention for manipulating zone players. The process **500**, which is preferably understood in conjunction with the previous figures especially with FIGS. 2B, 2C, 3A and 3B, may be implemented in software, hardware, or a combination of both. According to one embodiment, an application module implementing the process **500** is embedded in a controller, for example, the device **240** of FIG. 2C. The module may be loaded in the memory **282** to be executed by the microcontroller (processor) **276** and operating in conjunction with user input commands via the input interface **278**.

[0070]The process **500** starts with a display at **502** showing a list of zone players or existing zone groups, if there

are any. When the available zone players and zone groups in the list is too long to be presented on the display, a scroll indicator will be displayed beside the list. A user may access the hidden items within the list by scrolling either upward or downward. At **503**, the process **500** splits into two branches based on the following tasks: 1) grouping a plurality of zone players to form a zone group, or 2) de-grouping a zone group.

[0071]If the process **500** performs the grouping task, the process moves onto **504**. The user selects one of the zone players as a zone group head or the zone groups from the list. Once the selection is made and a key is activated (e.g., a soft button **306** as shown in FIG. 3A), a new list (e.g., screen **308** as shown in FIG. 3A) showing all of the zone players and zone groups that are eligible to be grouped with the selection at **504** is displayed at **508**. In one embodiment as shown in FIG. 3A, when the zone player "Zone **2**" is selected as the zone group head in a four-zone audio system, the eligible zone players are all other zone players ("Zone **1**", "Zone **3**" and "Zone **4**") except for the zone player "Zone **2**". At **510**, the end user is then given the option to select one or more of the eligible zone players (e.g., "Zone **4**" in FIG. 3A) or one of the eligible zone groups to be grouped into the selection at **504**.

[0072]At **512**, the user has the option to confirm to accept or to discard the selection made at **510**. When a confirmation is made, the process **500** creates the zone group by synchronizing all of the zone players in the zone group at **514**. In one embodiment, the synchronization is performed first to determine the audio source in the selected player to be grouped (e.g., Zone **4** in FIG. 3A). Then the audio source is transmitted to all other zone players in the same zone group before playing the audio source synchronously. In the meantime, this newly formed zone group configuration is updated. For example, the zone group configuration is saved to the memory **206** on the zone player **200** of FIG. 2A via the wireless communication. After the zone player in the newly formed zone group has been synchronized, the process **500** moves back to **502**. An updated list of available zone players and zone groups is displayed. As an example shown in "Zone Menu" **312** of FIG. 3A, the newly formed zone group is listed as one of the items.

[0073]Going back to **512**, if the selection made at **510** can not be confirmed or is to be discarded, the process **500** goes back to **502** without updating any zone group configuration. In this case, the original list is intact (e.g., "Zone Menu" **302** of FIG. 3A).

[0074]Going back to the grouping task test at **503**, when the process **500** performs the de-grouping task, the process **500** moves to **524**. A user selects one zone group from the first list. Once the selection is made, a list (e.g., screen **328** as shown in FIG. 3B) showing all of the zone players in the selected zone group is displayed at **528**. In one embodiment as shown in FIG. 3B, "Zone **2**+Zone **4**" is the selected zone group, the zone players in the selected zone group are "Zone **2**" and "Zone **4**". At **530**, the end user selects one or more of the zone players (e.g., Zone **4**) from the list to be disassociated from the zone group. At **532**, the user has the option to confirm or to discard the selection made at **530**.

[0075]When the selection is confirmed, the process **500** updates the selected zone group by disassociating the zone player from the zone group at **534**. As a result of the disassociation, the audio source being played in the zone group is no longer available to the disassociated zone player. In the meantime, the updated zone group configuration is saved. For example, the zone configuration is saved to the memory **206** on the zone player **200** (FIG. 2A). After the zone player has been disassociated, the process **500** moves back to **502**. The list of available zone players and zone groups is displayed. This time the newly updated zone group is listed as one of the items (e.g., "Zone Menu" **332** of FIG. 3B).

[0076]Going back to **532**, if the selection made at **530** is to be discarded, the process **500** moves back to **502** directly without updating the zone group configuration. In this case, the original list is presented (e.g., "Zone Menu" **322** of FIG. 3B).

[0077]Referring now to FIG. 6, there is shown a flowchart or process **600** of controlling audio volume of a plurality of zone players in a zone group. The process **600**, which is preferably understood in conjunction with the previous figures especially with FIGS. 2B, 2C, 4A and 4B, may be implemented in software, hardware, or a combination of both. According to one embodiment, an application module implementing the process **600** is embedded in a controller, for example, the device **240** of FIG. 2C. The module may be loaded in the memory **282** to be executed by the

microcontroller (processor) **276** and operating in conjunction with user input commands. In one embodiment, the module is configured to control the audio volume of a group of zone players. It should be noted that zone group and a group of zone players are used interchangeably in the description for FIG. 6.

[0078]At **605**, the process **600** starts when one of the volume control buttons, for example, "mute" button **262** or "volume up/down" button **264**, on the controller **240** of FIG. 2B, is activated. The process **600** splits into two branches depending on whether a single zone player or a group of zone players is to be controlled at **610**.

[0079]If it is for a single zone player, a volume meter (e.g., "Volume" panel **410** in FIG. 4A) is presented at **612**. At **614**, the end user has option to adjust the volume for the zone player with one of the volume control buttons. The volume control signals are sent from the controller **240** (FIG. 2C) to the zone player **200** (FIG. 2A). In one embodiment, the volume panel displays a moving volume meter showing an increasing or decreasing bar as the audio volume of the selected zone player is adjusted up or down. In another embodiment, the mute icon is shown instead of a volume meter, when the "mute" button is activated while the audio is on.

[0080]At **616**, the process **600** is waiting for a user's command. If a predetermined amount of time (e.g., 1 second) has lapsed, the process **600** ends, which means the user is not going to change the volume. Otherwise, the process **600** goes back to **612** waiting for another action from the end user.

[0081]Referring back to **610**, if process **600** is for a group of zone players, then the process **600** moves to the zone group branch at **622**, in which a plurality of volume meters is presented. The plurality of volume meters includes one for each of the zone players in the zone group, plus one more for the entire zone group. In one embodiment as shown in FIG. 4B, a "Volume" panel **430** for a plurality of zone players in a zone group is presented. When the screen is too small to display all the zone players, a scroll indicator is displayed beside the list of the volume meters to indicate that there are hidden volume meters. At **624**, the user selects one of the volume meters. At **626**, the audio volume is adjusted with one of the volume control buttons. When the volume adjustment is made to one of the zone players, only the selected zone player is affected. The audio volume of the rest of the zone players remains unchanged. However, when the volume adjustment is made to the zone group, the entire group will respond to the volume adjustment in an identical scale. In one embodiment, the identical scale is based on percentage of the audio volume. In another embodiment, the identical scale is based on graphic representation of the volume meter.

[0082]In one embodiment, an end user increases the audio volume for the zone group by 5%. The volume for each of the zone players in the zone group will be increased by 5%, and the relative volume loudness difference among each of the zone players remains unchanged. In another embodiment, if a user had muted one of the zone players of the zone group, the volume of all other zone players would have been unchanged.

[0083]The group audio volume is calculated based on a predetermined formula. In one embodiment, the group audio volume is the averaged value of the audio volume of all the zone players within the zone group. In another embodiment, the median value may be chosen as the group audio volume. The user uses a scrolling device (e.g., scroll wheel **250** of FIG. 2B) to select a zone player or the entire zone group and then adjust the volume with one of the volume control buttons.

[0084]At **628**, the process **600** is waiting for a user's command. If a predetermined amount of time has lapsed, the process **600** ends, which means the user is not going to change the volume of the zone group. Otherwise, the process **600** goes back to **622** waiting for another action from the end user.

[0085]FIGS. 7A-7D are a series of screenshots according to one embodiment of the present invention on a computing device on a network. The computing device may correspond to the device **110** of FIG. 1 and be configured to control operations of the zone players installed in a complex. With a larger screen of the computing device than that of a portable controller, the graphic user interface on the larger screen appears different from that, for example, shown in FIGS. 3A-4B, the underlying principle nevertheless does not depart from the above description for the portable

controller. A user is able to control any one or all of the zone players from the computing device. FIG. 7A shows all individual available zone players with the one in the Dining Room being selected to play a track entitled "A Charlie Brown Christmas". FIG. 7B shows a pop-up window listing remaining available players to be grouped with the one in the Dining Room. Depending on a desirable group, the user can select from the remaining available players to be grouped with the one in the Dining Room to form a zone group. FIG. 7C shows, as a result, the players in the Dining Room and the living room are in one group and play synchronously a song entitled "Christmas time is here". FIG. 7D shows the control of some exemplary acoustic characteristics of the zone players in a group with the volume being controlled.

[0086]The present invention can be implemented in many ways, each of which may yield one or more of the following benefits, advantages or features. One of them is a mechanism provided to enable a user to remotely control audio characteristics of the zone players either as a group or as an individual player. Second, an interactive graphic user interface is provided to enable a user to manage, create, delete or modify zone groups. Another one of the benefits, advantages or features is to provide a user interface to facilitate a user to control audio characteristics of an individual zone player or a group of zone players. Other benefits, advantages or features can be appreciated by those skilled in the art given the detailed description herein.

[0087]While the present invention has been described with reference to specific embodiments, the description is illustrative of the invention and is not to be construed as limiting the invention. Various modifications to the present invention can be made to the preferred embodiments by those skilled in the art without departing from the true spirit and scope of the invention as defined by the appended claim. For example, the present invention can be implemented in a multi-zone multimedia system providing other than audio entertainment. Accordingly, the scope of the present invention is defined by the appended claims rather than the forgoing description of embodiments.

ENGLISH-CLAIMS:

Return to Top of Patent

We claim:

1. A method for controlling a plurality of players, the method comprising:

- displaying on a screen a first list showing at least available players;
- displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
- forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and
- synchronizing all players in the zone group;
-

adjusting a volume meter represented by an averaged value of audio volumes of the slayers in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of slayers synchronously in accordance with an adjustment made by a user.

2. The method of claim 1, wherein the first list becomes scrollable, when the available players do not fit in the screen.

3. The method of claim 1, wherein said synchronizing all players in the zone group comprises:

- determining an audio source for the zone group;
- making the audio source available to each of the players in the zone group; and
- playing the audio source synchronously in all players in the zone group.

4. The method of claim 3, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by the zone group head.

5. The method of claim 3, wherein said of determining an audio source for the zone comprises selecting the audio source being played or ready to be played by one of the players in the zone group.

6. The method of claim 3, wherein said making of the audio source available comprises:

- determining whether the audio source is available locally; and
- retrieving the audio source from a device on a network, if the audio source is not available locally.

7. The method of claim 6, wherein said making of the audio source available comprises:

- determining the audio source from one of the players in the zone group; and
- causing the audio source available to every other player in the zone group.

8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:

- causing all players in the zone group to play an identical audio source; and
- presenting the zone group in a manner that indicates a grouping.

9. The method of claim 8, wherein the manner includes one or more of highlighting, colors, explicit texts and graphs.

10. The method of claim 1, wherein the first list further shows at least one zone group.

11. The method of claim 10, wherein the zone group includes at least two players.

12. The method of claim 9, wherein a configuration of the zone group is stored in at least one of the players or a controller for remotely controlling one or more of the players, the configuration including information on how the two players are grouped.

13. The method of claim 8, further including:

- selecting the zone group to be de-grouped from the first list;
- displaying on the screen another list showing all the players within the zone group to be de-grouped;
- selecting one or more players from the another list; and
- disassociating the selected players from the zone group.

14. The method of claim 13, wherein said disassociating the selected players comprises making the selected players available for grouping with a zone group.

15. The method of claim 13, wherein the another list becomes scrollable, when all the players within the zone group to be de-grouped do not fit in the screen.

16. A method for controlling a plurality of players, the method comprising:

- -

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and

- -

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes

changing a volume of each of the group of slayers synchronously in accordance with an adjustment made by a user.

17. The method of claim 16, wherein said adjusting the one of the volume meters includes:

- -

causing the audio volume to be adjusted in accordance with an adjustment to the volume meter; or

- -

causing the audio volume to be off, when a mute button is activated while the audio volume is ou; and

- -

causing the audio volume to be on, when a mute button is activated while the audio volume is off.

18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.

19. The method of claim 16, further comprising maintaining relative volume loudness difference among each of the players in the group.

20. The method of claim 16, further comprising playing an identical audio source in the group of players.

21. The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.

22. The method of claim 21, wherein at least part of the audio source is retrieved or being streamed from one of the players.

23. The method of claim 16, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.

24. The method of claim 16, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing a predetermined unit change in volume for

ever action by a user.

25. An apparatus for controlling a plurality of players, the apparatus comprising:

- a screen;
- a screen driver commanding the screen;
- an input interface;
- a network interface;
- a memory for storing code for an application module;
- a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:
  - displaying on a screen a first list showing at least available players;
  - displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;
  - synchronizing all players in the zone group in accordance with the zone group head; and
  - adjusting a volume meter represented by an averaged value of audio volumes of the slayers in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

26. The apparatus of claim 25, wherein the first list becomes scrollable, when the available players do not fit in the screen.

27. The apparatus of claim 25, wherein said synchronizing all players in the zone group comprises:

- determining an audio source for the zone group;
- making the audio source available to each of the players in the zone group; and
- playing the audio source synchronously in all players in the zone group.

28. The apparatus of claim 27, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by the zone group head.

29. The apparatus of claim 27, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by one of the players in the zone group.

30. The apparatus of claim 27, wherein said making the audio source available comprises:

- determining whether the audio source is available locally; and
- retrieving the audio source from a device on a network, if the audio source is not available locally.

31. The apparatus of claim 27, wherein said making the audio source available comprises:

- determining the audio source from one of the players in the zone group; and
- causing the audio source available to every other player in the zone group.

32. The apparatus of claim 25, wherein said synchronizing all players in the zone group comprises:

-

causing all players in the zone group to play an identical audio source; and

- presenting the zone group in a manner that indicates a grouping.

33. The apparatus of claim 32, wherein the manner includes one or more of highlighting, colors, explicit texts and graphs in the screen.

34. The apparatus of claim 25, wherein the first list further shows at least one zone group.

35. The apparatus of claim 25, wherein the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

- selecting the zone group to be de-grouped from the first list;
- displaying on the screen an another list showing all the players within the zone group to be de-grouped;
- selecting one or more players from the another list; and
- disassociating the selected players from the zone group.

36. The apparatus of claim 35, wherein said disassociating the selected players comprises making the selected players available for grouping with a zone group.

37. The apparatus of claim 35, wherein the another list becomes scrollable, when all the players within the zone group to be de-grouped do not fit in the screen.

38. An apparatus for manipulating a plurality of players, the apparatus comprising:

- a screen;
- a screen driver commanding the screen;
-

an input interface;

- a network interface;

- a memory for storing code for an application module;

- a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:
  - displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and
  - adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the slayers in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

39. The apparatus of claim 38, wherein said adjusting the one of the volume meters includes:

- causing the audio volume to be adjusted in accordance with an adjustment to the volume meter; or
- causing the audio volume to be off, when a mute button is activated while the audio volume is on; and
- causing the audio volume to be on, when a mute button is activated while the audio volume is off.

40. The apparatus of claim 38, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes:

changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

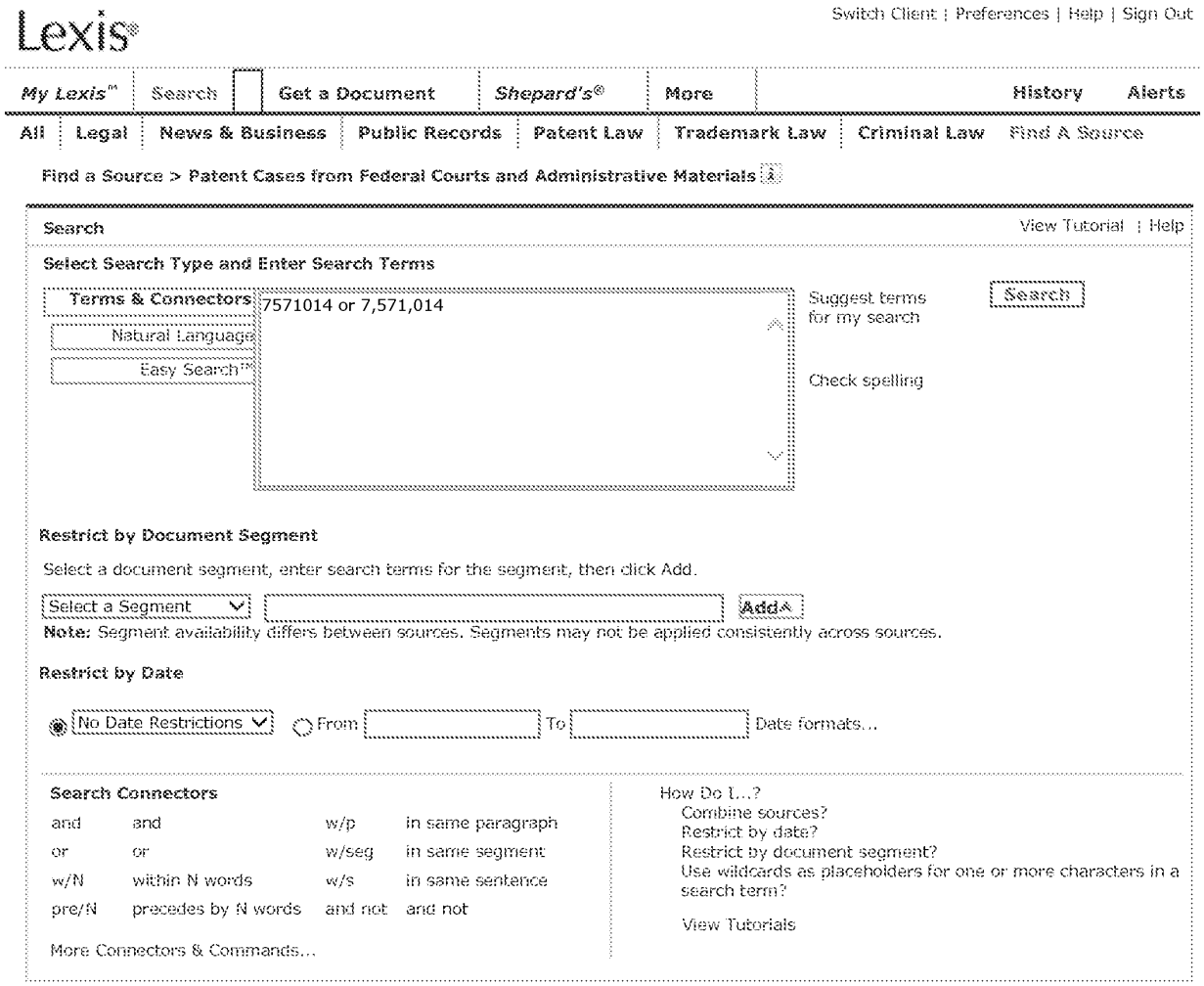
41. The apparatus of claim 38, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.

42. The apparatus of claim 38, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of maintaining relative volume loudness difference among each of the players in the group.

43. The apparatus of claim 38, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.

44. The apparatus of claim 38, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing a predetermined unit change in volume for ever action by a user.

LOAD-DATE: January 8, 2017


Lexis
Switch Client | Preferences | Help | Sign Out
My Lexis™ Search Get a Document Shepard's® More History Alerts
All Legal News & Business Public Records Patent Law Trademark Law Criminal Law Find A Source
Find a Source > Patent Cases from Federal Courts and Administrative Materials
Search
View Tutorial | Help
Select Search Type and Enter Search Terms
Terms & Connectors
Natural Language
Easy Search™
7571014 or 7,571,014
Suggest terms for my search
Check spelling
Search
Restrict by Document Segment
Select a document segment, enter search terms for the segment, then click Add.
Select a Segment
Add
Note: Segment availability differs between sources. Segments may not be applied consistently across sources.
Restrict by Date
No Date Restrictions
From
To
Date formats...
Search Connectors
and and w/p in same paragraph
or or w/seg in same segment
w/N within N words w/s in same sentence
pre/N precedes by N words and not and not
More Connectors & Commands...
How Do I...?
Combine sources?
Restrict by date?
Restrict by document segment?
Use wildcards as placeholders for one or more characters in a search term?
View Tutorials
LexisNexis About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2017 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™

No Documents Found

No documents were found for your search terms

"7571014 or 7,571,014"

Click "Save this search as an Alert" to schedule your search to run in the future.

- OR -

Click "Search Using Natural Language" to run your search as Natural Language search.

- OR -

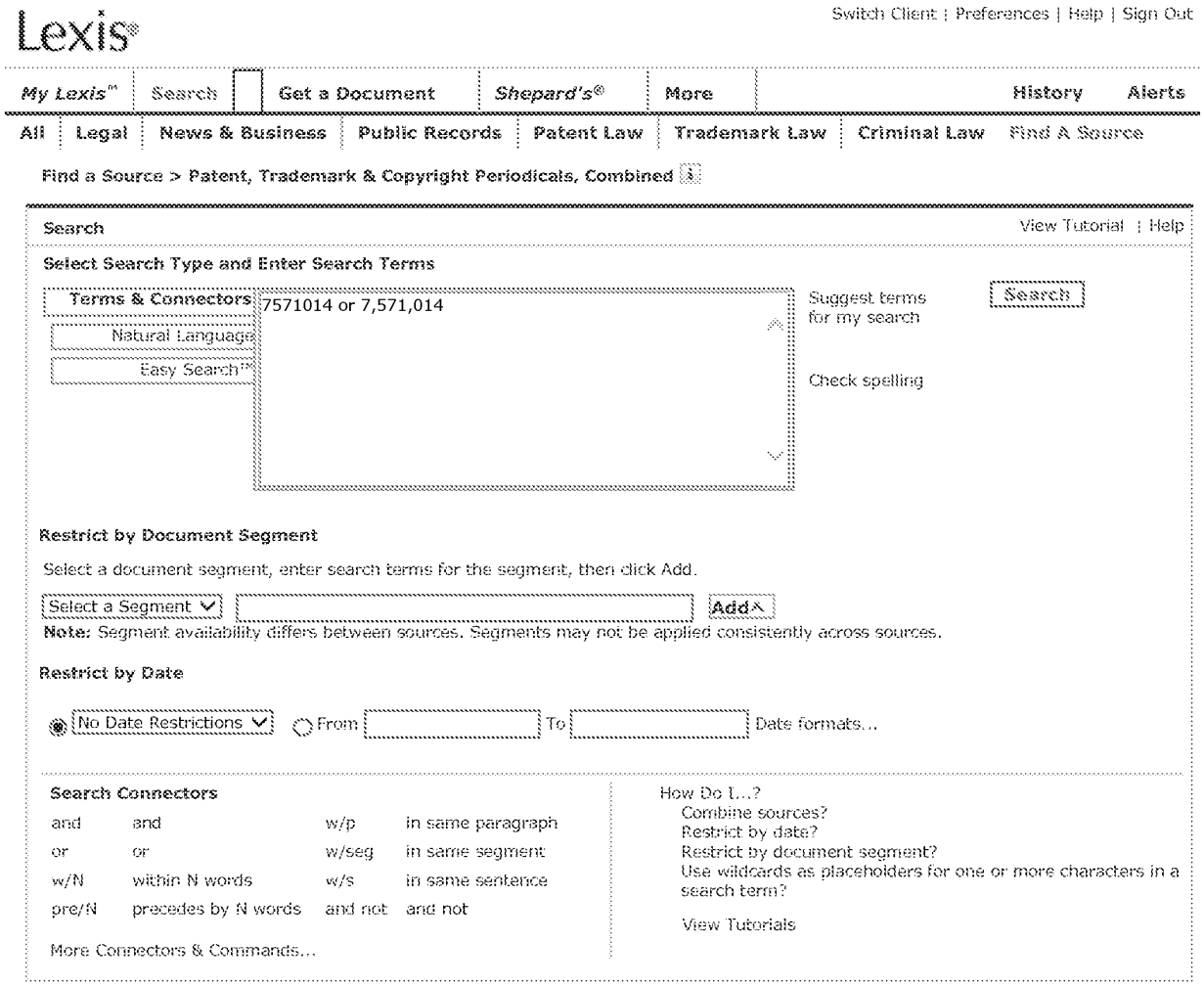
Click "Edit Search" to return to the search form and modify your search.

Suggestions:

- Check for spelling errors.
- Remove some search terms.
- Use more common search terms, such as those listed in "Suggested Words and Concepts."
- Use a less restrictive date range.
- Use "OR" in between terms to search for one term or the other.

Save this Search as an Alert **Search Using Natural Language** **Edit Search**

LexisNexis® About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2017 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™


Lexis
Switch Client | Preferences | Help | Sign Out
My Lexis™ Search Get a Document Shepard's® More History Alerts
All Legal News & Business Public Records Patent Law Trademark Law Criminal Law Find A Source
Find a Source > Patent, Trademark & Copyright Periodicals, Combined
Search
View Tutorial | Help
Select Search Type and Enter Search Terms
Terms & Connectors
Natural Language
Easy Search™
7571014 or 7,571,014
Suggest terms for my search
Check spelling
Search
Restrict by Document Segment
Select a document segment, enter search terms for the segment, then click Add.
Select a Segment
Add
Note: Segment availability differs between sources. Segments may not be applied consistently across sources.
Restrict by Date
No Date Restrictions
From
To
Date formats...
Search Connectors
and and
or or
w/N within N words
pre/N precedes by N words
w/p in same paragraph
w/seg in same segment
w/s in same sentence
and not and not
More Connectors & Commands...
How Do I...?
Combine sources?
Restrict by date?
Restrict by document segment?
Use wildcards as placeholders for one or more characters in a search term?
View Tutorials
LexisNexis
About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2017 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™

No Documents Found

No documents were found for your search terms

"7571014 or 7,571,014"

Click "Save this search as an Alert" to schedule your search to run in the future.

- OR -

Click "Search Using Natural Language" to run your search as Natural Language search.

- OR -

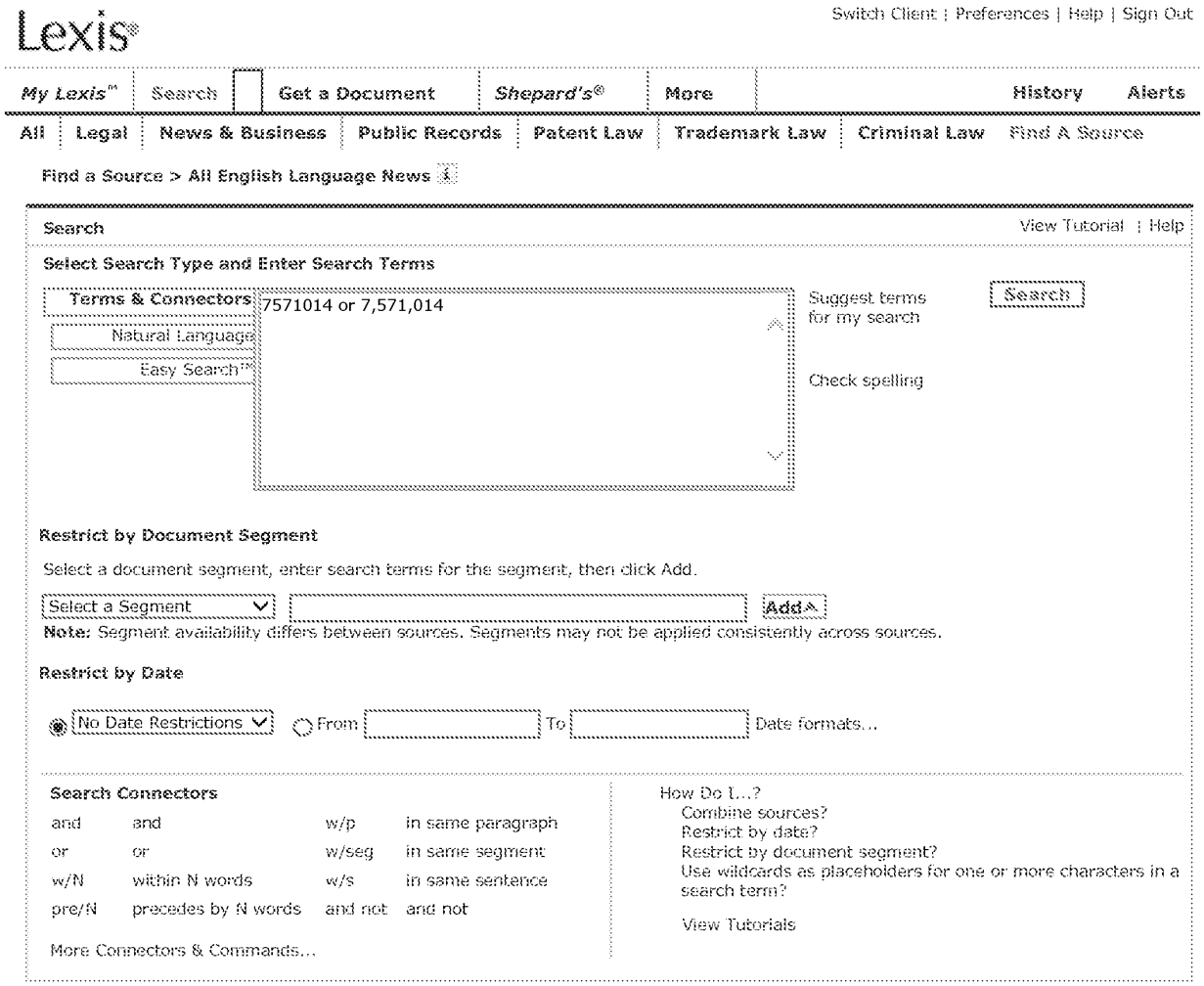
Click "Edit Search" to return to the search form and modify your search.

Suggestions:

- Check for spelling errors.
- Remove some search terms.
- Use more common search terms, such as those listed in "Suggested Words and Concepts."
- Use a less restrictive date range.
- Use "OR" in between terms to search for one term or the other.

Save this Search as an Alert **Search Using Natural Language** **Edit Search**

LexisNexis® About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2017 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™


Lexis
Switch Client | Preferences | Help | Sign Out
My Lexis™ Search Get a Document Shepard's® More History Alerts
All Legal News & Business Public Records Patent Law Trademark Law Criminal Law Find A Source
Find a Source > All English Language News
Search View Tutorial | Help
Select Search Type and Enter Search Terms
Terms & Connectors
Natural Language
Easy Search™
7571014 or 7,571,014
Suggest terms for my search
Check spelling
Search
Restrict by Document Segment
Select a document segment, enter search terms for the segment, then click Add.
Select a Segment
Add
Note: Segment availability differs between sources. Segments may not be applied consistently across sources.
Restrict by Date
No Date Restrictions
From
To
Date formats...
Search Connectors
and and
or or
w/N within N words
pre/N precedes by N words
w/p in same paragraph
w/seg in same segment
w/s in same sentence
and not and not
More Connectors & Commands...
How Do I...?
Combine sources?
Restrict by date?
Restrict by document segment?
Use wildcards as placeholders for one or more characters in a search term?
View Tutorials
LexisNexis About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2017 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™

1. Consumer Electronics Daily, October 23, 2014 Thursday, TOP NEWS, 840 words, Sonos Sues D&M Holdings, Alleging Denon HEOS Multiroom System Infringes Sonos Patents

... HEOS speakers -- infringes on U.S. Patent No. 7,571,014, "Method and Apparatus for Controlling Multimedia Players in ...

2. Consumer Electronics Daily, October 23, 2014 Thursday, TOP NEWS, 840 words, Sonos Sues D&M Holdings, Alleging Denon HEOS Multiroom System Infringes Sonos Patents

... HEOS speakers -- infringes on U.S. Patent No. 7,571,014, "Method and Apparatus for Controlling Multimedia Players in ...

3. US Fed News, August 7, 2009 Friday 11:42 AM EST, , 204 words, Patent No. 7,571,014 Issued on Aug. 4, Assigned to Sonos for Multimedia Players Controlling Apparatus (California Inventors), ALEXANDRIA, Va.

... multimedia players. The inventors were issued U.S. Patent No. 7,571,014 on Aug. 4.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,882	12/27/2016	7571014

CONFIRMATION NO. 8704

REEXAM ASSIGNMENT NOTICE

107361
McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

OC000000088221070

Date Mailed: 12/30/2016

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
JACKSON WALKER LLP
2323 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

/abjones/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,882	12/27/2016	7571014

CONFIRMATION NO. 8704

JACKSON WALKER LLP
2323 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

REEXAMINATION REQUEST NOTICE

OC000000088221068

Date Mailed: 12/30/2016

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 12/27/2016, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
107361
McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

/abjones/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,882	12/21/2016	7571014

CONFIRMATION NO. 8704

REEXAM ASSIGNMENT NOTICE

107361
McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

OC000000088108088

Date Mailed: 12/27/2016

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
JACKSON WALKER LLP
2323 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

/abjones/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,882	12/21/2016	7571014

CONFIRMATION NO. 8704

JACKSON WALKER LLP
2323 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

REEXAMINATION REQUEST NOTICE

OC000000088108086

Date Mailed: 12/27/2016

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 12/21/2016, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
107361
McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

/abjones/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors:	Robert A. Lambourne, et al.
In re U.S. Patent No.:	7,571,014
Ex Parte Reexam No.:	90/013,882
Filing Date:	12/21/2016
Docket No.:	131131.00049.004
For:	Method and apparatus for controlling multimedia players in a multi-zone system

MAIL STOP: Ex Parte Reexam
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

TRANSMITTAL FOR SUPPLEMENTAL REQUEST FOR EX PARTE REEXAMINATION

On December 21, 2016, the Requester for U.S. 90/013,882 filed the above-captioned request for reexamination for claims 1, 8, 16, 18, 21 and 38 of the '014 Patent, based on the claims of that patent that were being asserted by Sonos in the Concurrent Litigation referenced in the Request, and provided a courtesy copy of the request to Sonos on that date. In the Concurrent Litigation, Sonos is not permitted to add any claims to the litigation without a showing of good cause, but nonetheless did so on Friday, December 23 by adding claim 25 to their infringement contentions. Requesters thus respectfully request that the Office accept this Supplemental Request in this pending reexamination matter, which adds claim 25 to the claims for which reexamination is requested.

As noted in the original examination of the '014 Patent, claim 25 (original claim 27) did not add anything substantive to the claims beyond what was already presented in other claims for which reexamination has been requested, such as claims 1 and 38, so the additional examination burden on the Office should be minor. In addition, Requester notes that the '653 Application, which the '014 Patent would have issued from, is presently abandoned under 35 U.S.C. §

122(b)(2)(B)(iii), and Sonos has yet to submit a petition to revive the '653 Application as required under 37 CFR § 1.137. As such, substantive evaluation of the issues raised in the pending reexamination request should not yet have begun, and addition of claim 25 should not unduly burden the Office.

Date: December 27, 2016

Respectfully submitted,

By: /Christopher J. Rourk/

Christopher J. Rourk
Registration No. 39,348
JACKSON WALKER LLP

ATTORNEYS FOR REQUESTORS

TABLE OF CONTENTS

I. REEXAMINATION REQUEST 1

II. CONCURRENT LITIGATION 3

III. SONOS MUST REVIVE THE '653 APPLICATION BEFORE THE PATENT OFFICE CAN REEXAMINE THE '014 PATENT 4

IV. OVERVIEW OF THE '014 PATENT AND PROSECUTION HISTORY 9

1. The '653 Application was filed on June 5, 2004 with 47 claims. 9

2. The Examiner rejected the claims in the First Office action over an earlier filed Sonos application that lacked a common inventor. 11

3. In order to overcome the rejection, Sonos amended inventorship and added a priority claim. 11

4. The Examiner again rejected the claims in a second non-final Office action 12

A. Berezowski 13

B. Tomassetti 14

C. Isely 15

5. The new claims submitted by Sonos in response to the first Office Action were allowed on June 6, 2009, but the Examiner was not clear on the record regarding why the claims were allowable. 20

V. PATENTS AND PRINTED PUBLICATIONS RELIED UPON OR REFERRED TO 23

VI. DISCUSSION OF THE ART AND SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY 23

A. Claim limitations 23

B. The UPnP Standard and Microsoft UPnP 26

C. The UPnP Standard and Microsoft UPnP presents a substantial new question of patentability 33

D. Isely 34

E. Isely, either alone or with the UPnP Standard, Microsoft UPnP and NexSys, presents a substantial new question of patentability 38

F. Berezowski, Tomassetti, Isely, the UPnP Standard, Microsoft UPnP and NexSys presents a substantial new question of patentability....40

G. Crest Audio NexSys Software, Version 3.0....42

VII. CONCLUSION....44

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Robert A. Lambourne, et al.
In re U.S. Patent No.: 7,571,014
Ex Parte Reexam No.: 90/013,882
Filing Date: December 21, 2016
Docket No.: 131131.00049.004
For: Method and apparatus for controlling multimedia players in a multi-zone system

MAIL STOP: Ex Parte Reexam
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

SUPPLEMENTAL REQUEST FOR EX PARTE REEXAMINATION

I. REEXAMINATION REQUEST

Reexamination under 35 U.S.C. §§ 302-307 and 37 C.F.R. § 1.510 is requested of Claims 1, 8, 16, 18, 21, 25 and 38 (collectively, the "Challenged Claims") of United States Patent No. 7,571,014 which issued August 4, 2009 to Robert A. Lambourne and Nicholas A. J. Millington (the '014 Patent) from U.S. Application No. 10/861,653 (the "'653 Application").

A threshold issue to this request is whether the Office has authority to consider the request, because the '653 Application was abandoned under 35 U.S.C. § 122(b)(2)(B)(iii) prior to issuance of the '014 Patent, as explained further below. If Sonos does not file a petition to revive the '653 Application under 37 CFR § 1.137, then the Office does not have authority to decide this request and must issue a decision that states that the request was not considered because the '653 Application is abandoned.

If Sonos successfully petitions to revive the '653 Application under 37 C.F.R. § 1.137, then Requestors seek reexamination of the Challenged Claims of the '014 Patent on the basis of:

a) Universal Plug and Play ("UPnP") AV Architecture:1 For UPnP™ Version 1.0, June 25, 2002 ("UPnP AV")

b) RenderingControl:1 Service Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Rendering Control")

c) MediaServer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Media Server");

d) Universal Plug and Play Device Architecture V. 1.0, June 8, 2000 ("UPnP Architecture")

e) MediaRenderer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Media Renderer"),

(where UPnP AV, UPnP Rendering Control, UPnP Media Server, UPnP Media Renderer and UPnP Architecture are collectively referred to as "the UPnP Standard");

f) Microsoft, Universal Plug and Play (UPnP) Client Support, August 2001 at pg. 11 ("Microsoft UPnP");

g) U.S. 2002/0124097 to Isely et al. ("Isely");

h) U.S. 7,218,708 B2, to Berezowski et al. ("Berezowski"),

i) U.S. 2002/0188762 to Tomassetti et al. ("Tomassetti"), and

j) Crest Audio, NexSys version 3.0 Software Manual ("NexSys") (all collectively, the "Asserted Art").

A Substantial New Question of Patentability, as to the Challenged Claims of the '014 Patent, is raised by the Asserted Art, as required by 37 C.F.R. § 1.510(b)(1). A detailed explanation of the pertinence and manner of applying the Asserted Art to the Challenged Claims for which reexamination is requested is also included in this request, as required by 37 C.F.R. § 1.510(b)(2). Specifically, each item or combination of items of the Asserted Art not only raises a Substantial New Question of Patentability, but also anticipates the Challenged Claims of the '014

Patent under 35 U.S.C. 102(b), or renders claims the Challenged Claims of the '014 Patent obvious under 35 U.S.C. 103(a), as shown below:

1. The UPnP Standard with Microsoft UPnP under 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) – claims 1, 8, 16, 18, 21, 25 and 38

2. Isely (with the UPnP Standard and Microsoft UPnP) under 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) – claims 1, 8, 16, 18, 21, 25 and 38

3. Berezowski, Tomassetti and Isely, as applied in the Office action mailed February 18, 2009 during the original prosecution of the '014 Patent, and as acquiesced to by Sonos, with the UPnP Standard, Microsoft UPnP and NexSys under 35 § U.S.C. 103(a) – claims 1, 8, 16, 18, 21, 25 and 38

Accordingly, Requestors respectfully request that the Director order reexamination of the '014 Patent under 37 C.F.R. § 1.525(a), if and only if Sonos files a petition to revive the '653 Application under 37 C.F.R. § 1.137 and the Office grants that petition. Otherwise, Requestors respectfully request a statement that the '653 Application is abandoned and that the request for reexamination cannot be granted.

II. CONCURRENT LITIGATION

The '014 Patent is presently being asserted by the assignee, Sonos, Inc., against D&M Holdings Inc. and others in litigation pending in the United States District Court for the District of Delaware, C.A. No. 14-1330 (RGA) (the "Concurrent Litigation"), which was filed on October 21, 2014. In the Concurrent Litigation, Sonos has claimed to have invented the concept of networked audio devices. As shown in this reexamination request, numerous prior art references that were known to Sonos show that claim to be false.

III. SONOS MUST REVIVE THE '653 APPLICATION BEFORE THE PATENT OFFICE CAN REEXAMINE THE '014 PATENT

Sonos must file a petition to revive under 37 C.F.R. 1.137 before the '014 Patent can qualify for ex parte reexamination under 35 U.S.C. § 302, because the '653 Application stands abandoned under 35 U.S.C. § 122(b)(2)(B)(iii) as of August 16, 2004. In particular, the '014 Patent was abandoned during prosecution under 35 U.S.C. § 122(b)(2)(B)(iii), as discussed below, so it is not presently a patent for the purposes of 35 U.S.C. § 302, which states that any "person at any time may file a request for reexamination by the Office of any claim of a **patent** . . ." However, 35 U.S.C. § 302 does not state that a person may file a request for reexamination of an abandoned application. As such, the Office will not have the authority to reexamine the '014 Patent as long as the '653 Application remains abandoned under 35 U.S.C. § 122(b)(2)(B)(iii). This is not an issue outside of the scope of reexamination, but rather a threshold issue prior to considering the request for reexamination, because the Office does not have jurisdiction to reexamine an abandoned application.[1]

It is noted that M.P.E.P. 711.03(c)(II)(A)(5) states that "[s]ince the Office cannot ascertain whether an application is abandoned under 35 U.S.C. 122(b)(2)(B)(iii), the Office may continue to process and examine the application until the Office is notified of applicant's failure to meet the forty-five days' notice requirement of 35 U.S.C. 122(b)(2)(B)(iii). Therefore, the filing of a petition under 37 CFR 1.137 to revive such an application will not operate to stay any period for reply that may be running against the application. Applicants may use form PTO/SB/64a to file a petition for revival under 37 CFR 1.137." The Office has now been notified

[1] For example, Sonos could obtain an adverse outcome without reviving, and could then revive and argue that the adverse outcome was not legally binding because the Office lacked authority to reexamine the abandoned application. This is likely, given that Sonos has been notified of the abandonment in the Concurrent Litigation and has failed to act yet, and apparently intends to argue in the concurrent litigation that it complied with its obligations under 35 U.S.C. 122(b)(2)(B)(iii), even though the Office was never notified of the filing of an application that resulted in the publication of the materials from the unpublished '653 Application that were subsequently used to reject the claims of the '653 Application.

of the failure of Sonos to meet the forty-five day notice requirement of 35 U.S.C. 122(b)(2)(B)(iii), and therefore should not continue to process and reexamine the '014 Patent unless and until Sonos files a petition for revival under 37 CFR 1.137 that is accepted by the Office.

The '653 Application was filed on June 5, 2004, with a non-publication request that stated "the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing." In the First Office action mailed June 27, 2008 (the "First Office Action"), the Office rejected the pending claims of the '653 Application in part over U.S. Patent Application Publication No. 2007/0038999 to Nicholas Millington ("Millington"), which was the publication of U.S. application 10/816,217, filed April 1, 2004 (the '217 Application). In particular, the Office found that Millington disclosed the following elements of the claimed invention of claim 1 of the '653 Application at pages 3-4 of the First Office action:

- A method for controlling a plurality of players, the method comprising:
- displaying on a screen a first list showing at least available players;
- displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
- forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group . . .; and
- synchronizing all players in the zone group . . .

In regards to claim 27, the Office found at page 8 of the First Office action that Millington disclosed the following elements of the claimed invention:

- An apparatus for controlling a plurality of players, the apparatus comprising:
- a screen;
- a screen driver commanding the screen;
- an input interface;
- a network interface;
- displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head; and
- synchronizing all players in the zone group in accordance with the zone group head.

In addition, the Office also found that Millington alone disclosed the limitations of filed claims 3-7, 10, 11, 13, 14, 18, 19, 22, 23, 24, 42, 43, 29-33, 36-38. As such, the Office has established that Millington, which was filed on April 1, 2004 and which was published on February 15, 2007, disclosed numerous inventions of the '653 Application, as otherwise Millington could not be cited as prior art against those claim limitations.

35 U.S.C. § 122(b)(2)(B)(i) states in pertinent part that if "an applicant makes a request upon filing, certifying that the invention disclosed in the application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing, the application shall not be published as provided in paragraph (1).". 35 U.S.C. § 100(a) states that the "term 'invention' means invention or discovery," and 35 U.S.C. § 100(j) states that the "term 'claimed invention'

means the subject matter defined by a claim in a patent or an application for a patent.". As such, the term "invention" as used in 35 U.S.C. 100 et seq. is broader than the term "claimed invention," and encompasses any discovery disclosed in the application, and not just the claimed inventions.

35 U.S.C. § 122(b)(2)(B)(iii) further states in pertinent part that if "an applicant who has made a request under clause (i) but who subsequently files, in a foreign country or under a multilateral international agreement specified in clause (i), an application directed to the invention disclosed in the application filed in the Patent and Trademark Office, shall notify the Director of such filing not later than 45 days after the date of the filing of such foreign or international application. A failure of the applicant to provide such notice within the prescribed period shall result in the application being regarded as abandoned.". Thus, an application will become abandoned if the applicant 1) subsequently files 2) an application ***directed to the invention*** disclosed in the application that was filed in the Patent and Trademark Office for which non-publication was requested. 35 U.S.C. § 122(b)(2)(B)(iii) does not require disclosure of every element of every claimed invention, because to do so would allow an applicant to easily circumvent the requirements of the law by omitting minor portions of the claimed subject matter in the unpublished U.S. application from the published application in a foreign country.

Millington was filed on April 1, 2004, and claimed priority to U.S. Provisional Application no. 60/490,768, which was filed on July 28, 2003. Sonos subsequently filed PCT/US04/23102 on July 2, 2004 (the "Millington PCT Application"), which was after the June 5, 2004 filing date of the '653 Application. As such, the filing of the Millington PCT Application was the filing of an application directed to the invention of the '653 Application, which triggered the requirement of 35 U.S.C. § 122(b)(2)(B)(iii) for Sonos to file a notice to the Director within

45 days. No such notice was filed, and the '653 Application is therefore abandoned under 35 U.S.C. § 122(b)(2)(B)(iii). It is noted that 35 U.S.C. § 122(b)(2)(B)(v) provides for publication of only those portions of the specification that are common in cases such as this, such that the failure of Sonos to notify the Director cannot be excused on the grounds that the disclosure of the Millington PCT Application is not identical to the disclosure of the '653 Application. At least those sections that provided the basis for the rejection of the claims of the '653 Application over Millington should have been the subject of notice and publication under 35 U.S.C. § 122(b)(2)(B)(iii).

The fact that the Examiner rejected most of the claim limitations of claims 1, 3-7, 10, 11, 13, 14, 18, 19, 22, 23, 24, 27, 42, 43, 29-33, 36-38 over Millington establishes that the subsequent filing of the Millington PCT application was a violation of 35 U.S.C. § 122(b)(2)(B)(iii). The Office lacks the jurisdiction to institute ex parte reexamination of an abandoned application, and can only institute ex parte reexamination of an issued patent. 35 U.S.C. § 302. As such, the Office cannot consider this request unless or until Sonos files a petition to withdraw the holding of abandonment under 37 C.F.R. § 1.137, with a statement that the entire delay in filing the notice required under 35 U.S.C. § 122(b)(2)(B)(iii) until the filing of a grantable petition pursuant to 37 C.F.R. § 1.137 was unintentional.[2] In that regard, the Requester notes that Counsel for Sonos was notified of these facts on September 14, 2016, but has not yet taken any action to address the abandonment of the '653 Application. Therefore, the Director should require additional information from Sonos regarding this delay if Sonos does not provide an adequate explanation, because it appears that any delay since at least October, 2016

[2] The petition could easily be filed by Sonos after it receives the service copy of this request, and before the Office must make a decision whether to grant the request, unless it is not possible for Sonos to provide a statement that the entire delay in filing the notice required under 35 U.S.C. § 122(b)(2)(B)(iii) until the filing of a grantable petition pursuant to 37 C.F.R. § 1.137 was unintentional.

was intentional, assuming that a reasonably diligent party should have been able to file a petition within several weeks of being notified of the abandonment of the '653 Application.

It is also noted that Sonos has a strong financial incentive not to acknowledge that the '653 Application is abandoned, because the abandonment of the '653 Application and Sonos's failure to recognize that abandonment and to timely petition to revive the '653 Application and the associated '014 Patent will have substantial adverse monetary consequences in the Concurrent Litigation, including the loss of the ability to collect damages for any alleged infringement and the loss of the ability to claim priority to the '014 Patent for any other asserted patents that rely on the '014 Patent for priority. For these reasons, Sonos apparently refuses to acknowledge that the '653 Application is abandoned by force of law. Petitioners therefore respectfully request that the Office refuse to grant this request for ex parte reexamination until such time as the '653 Application is successfully revived.

IV. OVERVIEW OF THE '014 PATENT AND PROSECUTION HISTORY

1. The '653 Application was filed on June 5, 2004 with 47 claims.

The '653 Application was filed on June 5, 2004 with independent claims 1, 16, 27 and 40, and with 47 total claims. The independent claims relevant to this request are claims 1, 16, 27 and 40, which are shown below:

> 1. A method for controlling a plurality of players, the method comprising:
> displaying on a screen a first list showing at least available players;
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and
> synchronizing all players in the zone group.

16. A method for controlling a plurality of players, the method comprising:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected.

27. An apparatus for controlling a plurality of players, the apparatus comprising:

a screen;

a screen driver commanding the screen;

an input interface;

a network interface;

a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a first list showing at least available players;

displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head; ; and

synchronizing all players in the zone group in accordance with the zone group head.

40. An apparatus for manipulating a plurality of players, the apparatus comprising:

a screen;

a screen driver commanding the screen;

an input interface;

a network interface;

a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected.

Claims 1 and 16 did not change their numbering after allowance and issue, but claim 27 was renumbered as claim 25 and claim 40 was renumbered as claim 38. In addition, claim 19 was renumbered as claim 18 and claim 23 was renumbered as claim 21.

2. The Examiner rejected the claims in the First Office action over an earlier filed Sonos application that lacked a common inventor.

In the First Office action, the Office rejected claims 1-15 and 27-39 under 35 U.S.C. 103(a) over U.S. Patent application publication 2007/0038999 A1 to Millington ("Millington"), in view of US 7,218,708 to Berezowski, et al. ("Berezowski"). Claims 16, 18, 19, 22-24, 40, 42, and 43 were rejected under 35 U.S.C. 103(a) over Millington and Berezowski and further in view of U.S. 5,239,458 to Suzuki. Claims 21 and 45 were objected as depending from a rejected base claim, but were indicated to be allowable if amended to include all of the limitations of the base claim from which they depended and any intervening claims.

3. In order to overcome the rejection, Sonos amended inventorship and added a priority claim.

In response to the rejection of the claims over Millington, Sonos elected to amend the inventorship of the '653 Application to include Nicholas A. J. Millington as an inventor, and then added a priority claim to the '217 Application, which was the application associated with the Millington reference. These actions by Sonos establish that Sonos acquiesced to the rejection of the claims of the '653 Application, both in that the cited references disclosed the relevant claim limitations, and also in that it would be obvious to combine those references. Sonos cannot dispute these points at this time, either to argue that the rejections over Millington were improper for the purposes of overcoming the abandonment of the '653 Application, or to argue that the claims as originally presented were improperly rejected during reexamination, if it is instituted.

As noted in *TorPharm Inc. v. Ranbaxy Pharms.*, Inc., 336 F.3d 1322, 1330 (Fed. Cir. 2003), "in ascertaining the scope of an issued patent, the public is entitled to equate an inventor's

acquiescence to the examiner's narrow view of patentable subject matter with abandonment of the rest. Such acquiescence may be found where the patentee narrows his or her claims by amendment, *Lemelson v. General Mills, Inc.*, 968 F.2d 1202, 1288-89 (Fed. Cir. 1992), or lets stand an examiner's restrictive interpretation of a claim, *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 978-79 (Fed. Cir. 1999).". The extraordinary steps of amending the '653 Application to add Millington as an inventor and to add a priority claim to the '217 Application go well beyond merely amending the claims, and amount to letting stand an examiner's restrictive interpretation of a claim. Sonos cannot now argue that Millington does not disclose the limitations that were previously identified by the Office, or that the combination of Millington with Berezowski or Suzuki was improper, as that would amount to an improper broadening of the claims during reexamination. This principle of acquiescence is also important for this ex parte reexamination request with respect to the rejection of the claims over Berezowski, Tomassetti and Isely, and the Office should not allow Sonos to broaden the claims by arguing that these combinations of prior art are not obvious, or that they do not disclose the claim limitations that Sonos previously acquiesced to.

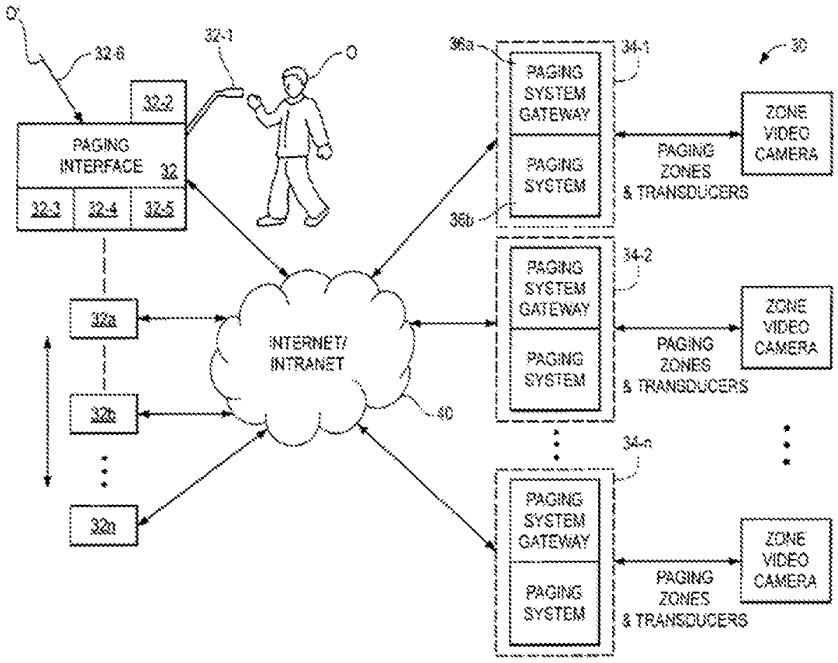
4. <u>The Examiner again rejected the claims in a second non-final Office action</u>

On February 18, 2009, the Office rejected claims 1-15 and 27-39 over Berezowski in view of US 2002/0188762 to Tomassetti ("Tomassetti"), and claims 16, 18-20, 22-26, 40, 42-44, 46, and 47 under 35 U.S.C. 103(a) as being unpatentable over the combination of Berezowski and Tomassetti as applied to claim 1 above, and further in view of US 2002/0124097 A1 to Isely ("Isely"). These references are further described below, for the convenience of the Office.

A. Berezowski

Berezowski discloses an Internet facilitated emergency and general paging system that includes network connected paging systems 34 that can be wirelessly connected, and a paging interface 32 that is used to control the paging systems 34, as shown in Fig. 2 of Berezowski:

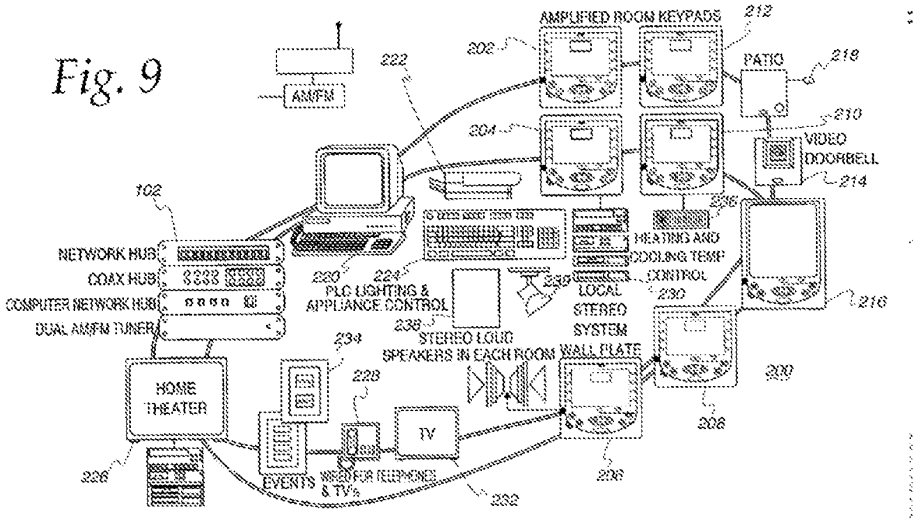
FIG. 2



The Examiner found that Berezowski discloses many of the claim limitations, including displaying on a screen a first list showing at least available players (5:57 – 6:13), displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head, forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group and synchronizing all players in the zone group. Office action dated February 28, 2009 at pg. 3.

B. Tomassetti

Like Berezowski, Tomassetti discloses a paging system that includes augmented audiovisual functionality. While Sonos has argued in many of the ex parte reexamination proceedings filed against patents asserted in the Concurrent Litigation that the claims of those patents are not applicable to paging systems,[3] this argument fails for several reasons. First, Sonos acquiesced to those rejections, and cannot now argue that those references are not applicable or that the rejections were improper. Second, the claims in those patents, as the Challenged Claims in the '014 Patent, are extremely broad and abstract, and do not require any specific networking protocols or functionality, such as wireless networks. Third, even if such limitations were added, those limitations were well known in the prior art, and there was nothing inventive in 2004 in recognizing that audio data could be wirelessly transmitted to other devices using wireless networking standards.



The Examiner found that Tomassetti discloses that any node in the network of Tomassetti can be configured as a source or destination at [0019], and synchronization of audio within a

[3] E.g., see U.S. 8,588,949, U.S. 9,202,509 and U.S. 9,219,959.

zone at [0005], [0009]-[0012] and [0016]-[0019]. It is noted that Tomassetti does not explicitly disclose that the network 100 can be a wireless network, but Sonos acquiesced to the combination of Tomassetti with Berezowski, and cannot now argue that the failure of Tomassetti to explicitly disclose a wireless network has any bearing on the combination of Tomassetti with Berezowski to render the claims as present obvious.

C. Isely

Isely discloses systems and methods for dynamic distribution of audio signals at a site based on defined zones within the site. Isely, Abstract. Isely discloses networked audio devices 105, and a controller 125 that "tells the network audio devices 105 the 'channel' to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation.". [0039]. The channels are for multi-channel sound, where "a pair of channels is used to drive the left and right stereo channels for a pair of speakers, resulting in support for up to six zones with a 12 channel system.". [0005]. As such, each "of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence.". Figure 1 of Isely shows these features:

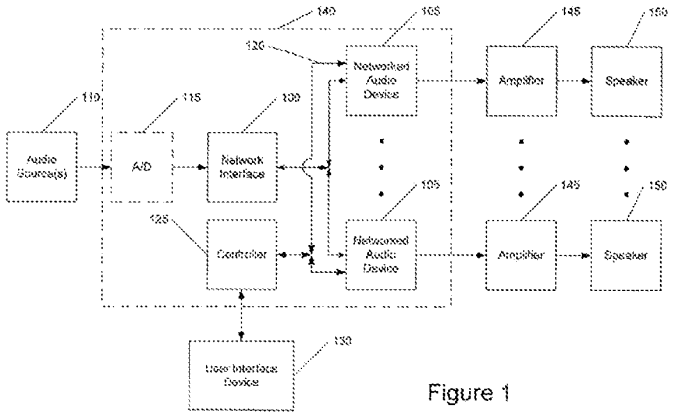


Figure 1

As described at [0039] of Isely, "the controller 125 essentially tells the network audio devices 105 the 'channel' to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation.". The user interface device 130 must therefore be able to receive a user designation of a channel for a networked audio device 105. The Examiner found that Isely teaches a zone audio player [abstract], a volume level to represent each player in a designated zone [0011]-[0012)], volume levels with unique relationships associated with a zone [0047]-[0049], [0053], [0056] and [0057], and that it would have been "obvious to display on a screen (such as the LCD taught by Tomassetti) the volume meters representing one of the unique relationships in the zone for the purpose of providing better ambiance, and that therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski, Tomassetti, and Isely for the purpose of providing better ambiance.". Office action mailed February 18, 2009 as pgs. 10-11.

However, while the Examiner properly rejected some of the claims. over Berezowski, Tomassetti and Isely, as subsequently acquiesced to by Sonos, the Examiner did not appreciate that Isely disclosed that the players of Isely were configured for UPnP (which was created to

allow wireless devices to connect with each other for seamless networking and data transfer, including enabling user interface functionality). See Isely at [0041]. As discussed below, Sonos designed the commercial implementation of the devices described in the '014 Patent using the UPnP standard as a blueprint, but failed to disclose the UPnP Standard to the Patent Office, or that best mode to the public. The. UPnP standard is prior art to the '014 Patent, and shown below, provides an independent basis for invalidating the Challenged Claims of the '014 Patent. Compliance with this standard requires devices that meet all of the claim limitations of the Challenged Claims, as discussed further below.

In response to the new rejections, Sonos further acquiesced to all of the new rejections, and amended the claims to overcome the rejection. In particular, the claims relevant to this ex parte reexamination request were amended as shown below:

> 1. (amended) A method for controlling a plurality of players, the method comprising:
>
> displaying on a screen a first list showing at least available players;
>
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and
>
> synchronizing all players in the zone group**;**
>
> **adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user**.
>
> 16. (amended) A method for controlling a plurality of players, the method comprising:
>
> displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and
>
> adjusting one of the volume meters as desired after one of the volume meters from the list is selected**, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the**

players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

27. An apparatus for controlling a plurality of players, the apparatus comprising:

a screen;

a screen driver commanding the screen;

an input interface;

a network interface;

a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a first list showing at least available players;

displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head; ~~**and**~~

synchronizing all players in the zone group in accordance with the zone group head; **and**

adjusting a volume meter represented by an averaged value of audio volumes of the players in the group. wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.[4]

40. (amended) An apparatus for manipulating a plurality of players, the apparatus comprising:

a screen;

a screen driver commanding the screen;

an input interface;

a network interface;

a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected**, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters**

[4] A minor non-substantive amendment to correct a typographical error was made in the response to the first Office action filed on September 15, 2008.

includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

As such, Sonos did not contest the finding that the unamended claim limitations were present in the cited art, but instead acquiesced to the rejections of the claims and amended the claims to overcome the rejections, by allegedly including the limitations of allowed claims 21 and 45 and any intervening claims. However, that amendment was not in fact made.

The claimed subject matter that was indicated to be allowable that was added to claim 16 was in claims 18 and 21:

> 18. The method of claim 16, wherein the one of the volume meters from the list
> selected is for the group of players, and wherein said adjusting the one of the volume meters includes:
> changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user;

(the Examiner never rejected claim 18 for lacking a period).

> 21. The method of claim 18, wherein the one of the volume meters from the list selected is represented by an averaged value of audio volumes of the players in the group.

While claim 16 was properly amended to include these limitations, claim 16 included a limitation that was not present in claim 1, namely, "a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group.". Claim 1 thus fails to include all of the limitations that were indicated to be allowable in claim 21, because claim 21 depended from claim 16, which included those additional limitations.

Likewise, the claimed subject matter that was indicated to be allowable that was added to claim 40 was in claims 44 and 45:

44. The apparatus of claim 40, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of maintaining relative volume loudness difference among each of the players in the group.

45. The apparatus of claim 44, wherein the one of the volume meters from the list selected is represented by an averaged value of audio volumes of the players in the group.

Unlike the amendments to claim 16, the amendments to claim 40 did not include all of the limitations from claims 44 and 45. In particular, "maintaining relative volume loudness difference among each of the players in the group" was not included in either claim 27, claim 40 or in claim 1. Thus, only claim 16 was amended in accordance with the indication of allowable subject matter from the First Office action, and claims 1, 27 and 40 were not amended to include allowable subject matter.

5. The new claims submitted by Sonos in response to the first Office Action were allowed on June 6, 2009, but the Examiner was not clear on the record regarding why the claims were allowable.

In the Notice of Allowance mailed June 6, 2009, the Examiner provided reasons for allowing the claims. In regards to each of claims 1, 16, 27 and 40 the Examiner stated that "the prior art does not teach or reasonably suggest an average volume level to represent volumes of the players in the group, wherein an average volume level of a player is analogous to the volume gain of a player.". However, claims 1, 16, 27 and 40 includes no limitations directed to an average volume level of a player or a volume gain of a player, and this statement thus has no relevance to the claim language of claims 1, 16, 27 and 40. As shown above, the limitation that was added to claims 1 and 27 was "adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an

adjustment made by a user," and the limitation that was added to claims 16 and 40 was "wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user." As such, it is unclear exactly what the Examiner understood to be allowable, or why that subject matter was allowable, but the presence of the "adjusting" term appears to have been important, even though it was not addressed.

The Examiner provided some additional explanation, stating that "Dorrough, US 5,751,819 A, teaches level meters, which can display averages (see abstract and column 4, lines 44-59). However, the average level display is not the same as the average gain. Dorrough is concerned with simplifying a recording engineer's job in setting volume gain, and not displaying the average volume gain of tracks, or channels, or even players in a group.". This is correct, and Dorrough discloses meters for displaying the average level of a single signal, and not an average value for multiple signals, or a control for adjusting such a level, as claimed in the Challenged Claims of the '014 Patent.

The Examiner further stated "Lee et al., US 2005/0047605 A1, teaches a similar concept to Dorrough. Lee et al. teaches a power display unit representing the power in a group of channels (see ¶ 0016 and 0024). Lee et al. is concerned with a visual display to represent the average fluctuation in volume, or power, in multiple channels and is not concerned with representing the average volume gain of multiple channels or players in a group.". This is correct, and it is noted that [0024] of Lee discloses that "one light-emitting display element of the multiple light-emitting display elements 40, 42, 44 may display one or more selected from the group consisting of a right channel power, a center channel power, a left channel power, an

average of right and left channel powers, and an average of multiple channels power levels." Thus, Lee discloses a volume or power meter that only displays average power, but which is not used to adjust the volume gain of multiple players, as is claimed in the Challenged Claims of the '014 Patent.

As such, it appears that the Examiner was focusing on the claimed ability to adjust a volume meter that changes a volume of each of the group of players synchronously in accordance with an adjustment made by a user, as opposed to a volume meter that simply displays such changes, and indicated that claims were allowable only because the Examiner believed that the prior art did not disclose adjusting changes to an average volume level for a group of channels, only displaying average power levels for devices. This makes sense, because a meter that displays power that is provided to a device or a group of devices that generate audio sound waves having an associated volume will display anything that is provided to it, so it must be the ability to adjust what is being provided that the Examiner understood to be the distinction between the prior art and the claims, not the display of what is being provided.

In that regard, it is noted that the Examiner's understanding of Isely is set forth at page 10 of the Office action mailed February 18, 2009, and states that "Isely teaches a zone audio player (see abstract). Specifically, Isely teaches a volume level to **represent** each player in a designated zone (see ¶ 0011-0012). Isely also teaches volume levels with unique relationships associated with a zone (see ¶ 0047-0049, 0053, 0056, and 0057).". The Examiner did not rely on any other teachings of Isely, and thus clearly expressed that Isely was believed to be limited to **representation** of volume levels. However, other sections of Isely disclose more than just representation of player volume levels, they also teach the synchronous **adjustment** of a "characteristic" of multiple players, where the "characteristic" is the average volume level of

multiple players. These sections are discussed below. As such, the Examiner failed to appreciate that Isely discloses control functionality that includes adjusting one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user, because Isely discloses that control functionality as control of a "characteristic" and not control of a volume. The sections of Isely that provide this disclosure and which were not addressed by the Examiner are discussed further below, in regards to Isely.

V. PATENTS AND PRINTED PUBLICATIONS RELIED UPON OR REFERRED TO

A copy of every patent or printed publication relied upon above or referred to herein is discussed in detail in one of the following appendices. Further, each patent and printed publication set forth below or discussed in the appendices has also been either provided or cited on the attached modified Form PTO/SB/42.

APPENDIX NO.	REFERENCE
A.	The UPnP Standard and Microsoft UPnP
B.	Isely (in conjunction with the UPnP Standard, Microsoft UPnP and NexSys)
C.	Berezowski, Tomassetti, Isely, the UPnP Standard, Microsoft UPnP and NexSys

VI. DISCUSSION OF THE ART AND SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

A. Claim limitations

During ex parte reexamination, as during original prosecution, the claims must be "given their broadest reasonable interpretation consistent with the specification," *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005). The following claim constructions are used in the request for ex parte reexamination, and are believed to be consistent with the broadest reasonable

interpretation for the reasons provided. Based on Sonos' prior handling of both ex parte prosecution and ex parte reexamination matters, it is likely that they will argue that the claims are limited in some manner, either by the specification, or by demonstrating commercial versions of Sonos products and arguing that such commercial versions of products embody the claims, but in most cases, the commercial versions of Sonos products contain numerous new features that are not disclosed in Sonos patent applications.[5] The Office should scrutinize any such arguments by Sonos to ensure that the broadest reasonable interpretation of any claim terms does not cause them to read on the prior art, such as the UPnP Standard documents.

1. "playback device" – the specification of the '014 patent does not provide any special definition of a "playback device," so the ordinary meaning of the term applies. In this regard, it is noted that Sonos has argued in the Concurrent Litigation that a playback device should be construed to mean **"a data network device configured to process and output audio," where "audio" can be encoded audio data and not sound waves**. See PLAINTIFF SONOS, INC.'S OPENING CLAIM CONSTRUCTION BRIEF, at page 3, which is provided with the accompanying Information Disclosure Statement to this request.

The construction of "playback device" is relevant to whether Isely alone discloses the claimed playback devices. For example, the Examiner stated at pages 3-4 of the Office action mailed February 18, 2009 that:

> Berezowski teaches a zone group started with the source node, after one or more players from at least some of the destinations, or players, are selected to join the zone group (see column 5, line 66 - column 6, line 13 implies that a zone is created by at least one player being added as a destination). Berezowski does not appear to teach the selection of a zone group head or synchronization. Tomassetti teaches a multi-zone entertainment network (see abstract). Specifically,

[5] For example, the '014 Patent does not disclose a stand-alone player like the Sonos Play 1, Play 3 or Play 5, but instead discloses a unit that has adjunct speakers that are plugged into it, which is presently marketed as the Sonos Connect, but Sonos has displayed only the Play 5 in the past when demonstrating its alleged inventions to Examiners. The Play 5 was not commercially sold until November 2015.

> Tomassetti teaches that any node can become a source or a destination (see ¶ 0019). Therefore, it would have been obvious for one of ordinary skill at the time to select one of the players as a zone group head.

However, Berezowski discloses at 4:28-31 that "[i]nterface 32 enables operator O to **select** one or more remote paging systems and zone(s) therein to transmit live audio, via transducer 32-1 to the select zone(s) in real-time.". As such, while Sonos acquiesced to the combination of Berezowski and Tomassetti as rendering obvious claim 1 as originally presented in regards to the limitation of selecting a player as a zone group head, and to Berezowski disclosing a source node 32 that is a playback device, it is unclear why the Examiner did not understand that Berezowski alone also disclosed selection of a source node 32 as a zone group head. However, based upon the prosecution history, the broadest reasonable construction of the term "playback device" should cover either the source node 32 of Berezowski, the local nodes 118 and remote nodes 120 of Tomassetti, or audio sources 110 and audio devices 105/205/305/405 of Isely, all of which comply with the proposed construction from Sonos in the Concurrent Litigation.

2. "volume meter" – **a volume control that displays a volume**. As discussed above, the term "volume meter" has a meaning in the art that relates to only the display of a volume metric, and the Examiner appears to have allowed the claims of the '014 Patent based on an understanding the claimed volume meter included adjustment functionality that was not disclosed in the prior art. However, as also described above, this understanding was in error, and Isely also disclosed the control of a "characteristic" that could include a master volume control, and then when the master volume control and the separate controlled channels were initiated from a zero level, that adjusting the master volume control would cause a volume meter to be adjusted that represented an averaged value of audio volumes of the players in the group,

wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. As such, the proper broadest reasonable interpretation of this claim term is relevant as to whether Isely alone discloses the claimed volume meters.

B. The UPnP Standard and Microsoft UPnP

The UPnP standard provides an architecture for peer to peer network connectivity that was specifically tailored to provide the functions claimed in the '014 Patent. For example, in regards to the limitations of claim 1 of displaying on a screen a first list showing at least available players; displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head; and forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group, UPnP AV discloses a system architecture at page 5 that is identical to the architecture disclosed in the '014 Patent:

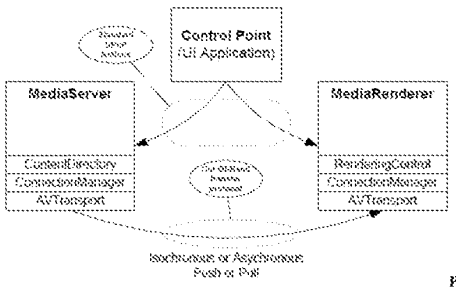


Figure 3

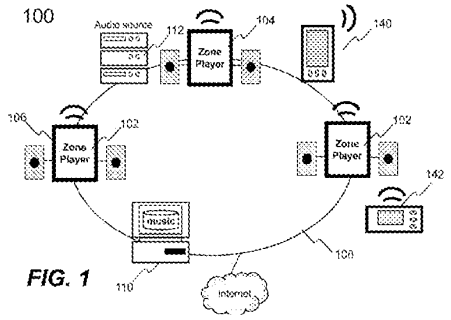


FIG. 1

As can be seen in this side-by-side comparison, controlling devices 140 and 142 directly correspond to the UPnP Control Point, the audio source 112 corresponds directly to the UPnP Media Server, and the zone players 102, 104 and 106 correspond directly to the UPnP Media Renderer. Sonos publicly disclosed that Sonos products were compliant with the UPnP Standard

during the prosecution of the '014 Patent, see, e.g., https://en.community.sonos.com/advanced-setups-229000/upnp-and-sonos-questions-4545, which is provided with the accompanying Information Disclosure Statement to this request, yet Sonos did not disclose the use of UPnP as an embodiment in the specification of the '014 Patent, and never disclosed the UPnP Standard to the Examiner of the '014 Patent during the prosecution of the '014 Patent.

UPnP AV further discloses at page 9 that "Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered.". Thus, the UPnP Standard discloses displaying on a screen a first list showing at least available players (media servers); and displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head (media renderers). It is noted that as of the date of issue of the UPnP Standard, common operating systems such as Microsoft Windows and Linux provided support for the UPnP Standard, including the ability to locate and display available media servers and media renderers. See Microsoft UPnP, pg. 2 ("Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system. Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services. The Internet Connection Sharing (ICS) service uses UPnP to announce the availability of the service to other computers on the network, which are running UPnP clients."); and the Linux SDK for UPnP Devices v 1.2, which is provided with the accompanying

Information Disclosure Statement to this request. As such, while the UPnP Standard might not explicitly disclose operating system functionality, it was written by people with knowledge of such functionality (including Microsoft employees), and implicitly included such operating system functionality within the scope of the standard.[6]

Likewise, in regards to "forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group," the UPnP Standard discloses that a UPnP Control Point can be used to establish a connection between a first device with a UPnP Media server and a Second Device with a UPnP Media Renderer, to create a "zone group.". For example, UPnP Media Server discloses at page 7 that "the Control Point uses the ConnectionManager::PrepareFor Connection() action on each device to inform the device that the specified protocol/format are about to be used. Depending on which transfer protocol was selected, the PrepareForConnection() action on either the MediaServer or MediaRenderer will return an AVTransport InstanceID to the Control Point.". Thus, the UPnP Standard discloses this limitation also.

The next limitation of claim 1, "synchronizing all players in the zone group," is also disclosed by the UPnP Standard. For example, UPnP AV discloses the use of Isochronous-Push Transfer Protocols (IEC 61883/IEEE 1394) at page 5, stating that when "using an isochronous transfer protocol (e.g. IEC 61883/IEEE 1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual packets of content are transferred within a certain (relatively small) period of time. This real-time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow of the content is

[6] In that regard, it is noted that Inventor Millington was a Microsoft employee from June 1998 to April 2003, immediately before leaving to found Sonos. https://www.linkedin.com/in/nickmillington

controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer." Further details regarding this isochronous-push transfer embodiment is provided at UPnP AV pages 12, 13, 18, 21.[7]

The last limitation of claim 1, "adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user," is also disclosed by the UPnP Standard. For example, UPnP Rendering Control discloses at page 16 that A_ARG_TYPE_Channel is a variable that "is used to identify a particular channel of an audio output stream," and that such channels include the normal stereo and surround channels ("A channel cluster is the collection of all channels, including the Master channel, within an audio stream. . . . A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel.") At page 41, UPnP Rendering Control discloses that "audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole.". Thus separate devices can receive separate channels, and the channels can be controlled independently or as a whole.

At start up, a UPnP Control Point adjusts a volume meter for the master channel from a zero setting, which also represents an averaged value of audio volumes of the players in the group, which are also at the zero setting. Adjusting of the master volume meter includes changing a volume of each of the group of players in the channel group synchronously, in accordance with an adjustment made by a user. The UPnP Standard also explicitly discloses an

[7] Wireless implementations of IEEE 1394 are prior art to the '014 Patent, see, e.g., Wireless Home Networks — DECT, Bluetooth, HomeRF, and Wireless LANs, Xilinx White Paper WP 135, March 21, 2001, which is provided with the accompanying Information Disclosure Statement to this request.

example that involves the synchronized adjustment of an average volume level for a plurality of players. See UPnP Rendering Control, pgs. 41-42:

"Set the volume of the audio content (as a whole) to the quietest (non-silent) setting:

• Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1.

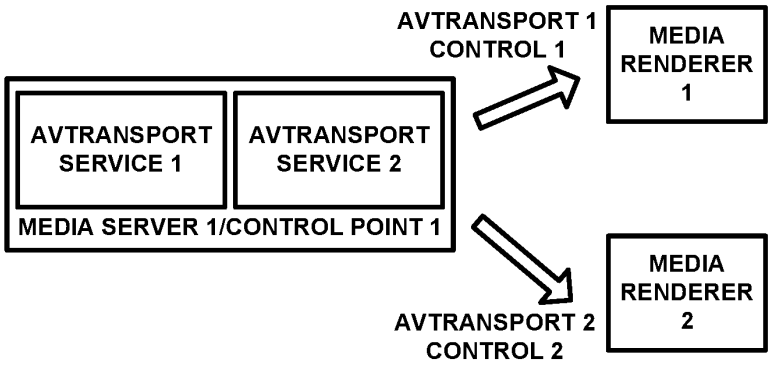
Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting

• Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device.

• Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

In this example, the audio content as a whole (including all channels) is being adjusted through a UPnP Control Point by first being set to the same average minimum value and then being increased to the same average level of the 20th quietest setting. The different channels of the audio can be played through network-enabled speakers, see UPnP AV, pg. 6 ("The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc."). The UPnP Standard thus discloses every limitation of claim 1 of the '014 Patent.

The UPnP standard was developed by the industry to provide a generic user interface for media rendering devices. See, e.g. UPnP Media Server at page 7 ("MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network."); UPnP Rendering Control at page 6 ("audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl:1 service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports."). The UPnP Standard explicitly discloses the control of multi-channel audio, and Control Points for user control and adjustment of any rendering attribute that a device supports (see UPnP Rendering Control, page 1), including control of channel spatial positions, such as Left Front, Right Front and so forth (see UPnP Rendering Control, page 16). The UPnP Standard also explicitly discloses that multiple media renderers can be controlled by a single media server. For example, UPnP Av discloses at page 7 that "[m]ultiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time.". In accordance with this disclosure, a combined UPnP Media Server and UPnP Control Point with multiple virtual instances of the AV Transport service can support multiple other UPnP Media Renderer devices in a zone group, such as by providing audio and controls:



The two AV Transport Services can be started at the same time for the same source, resulting in synchronized playback. The two channels can include a master a left front channel and a right front channel that have an associated master channel, such that the master channel volume control can be used to synchronously control the volume of the master and the left front channel and the right front channel.

As such, the UPnP Standard explicitly discloses a standardized format for use in creating user interface devices, such as controllers 140 and 142, for controlling media rendering devices, such as zone players 102, 104 and 106, to interface with media servers, such as audio sources 110 and 112. Whether the UPnP Standard in conjunction with common operating system functionality such as that disclosed in Microsoft UPnP is viewed as a single reference under 35 U.S.C. 102(b) or a combination of references under 35 U.S.C. 103(a), there can be no doubt that one of ordinary skill in the art would have been aware of these references and the fact that they could be readily combined to provide the claimed functionality of the Challenged Claims of the '014 Patent. Sonos did not invent any of what is disclosed in the UPnP Standard or the associated operating system functionality that existed to support the UPnP Standard, and any existing, amended or new claims of the '014 Patent that read on the UPnP standard are not allowable.

The UPnP Standard was developed by the Open Connectivity Foundation, which presently includes over 100 members, such as Microsoft, Sony, IBM, Dell, Samsung and D&M Holdings, the company that Sonos has accused of infringing the '014 Patents and other patents. But not Sonos. Even though Sonos did not contribute to the development of these industry standards, or even disclose the existence of these industry standards to the Examiner of the '014 Patent, it built products based on those standards, has obtained claims that cover these industry standards and now seeks to assert those claims against the very members that helped to create the market that Sonos now exploits and that those standards serve. While the requester has identified exemplary citations from the UPnP Standard and operating system user guidance, to the extent that Sonos attempts to amend the claims to encompass devices that are compliant with the UPnP Standard or any other industry standards, the Office should not allow them to do so again. The Office should require Sonos to provide additional information regarding its use of the UPnP Standards to develop the claimed inventions of the '014 Patent, including any exposure of the inventors and other Sonos personnel to the UPnP Standards.

C. The UPnP Standard and Microsoft UPnP presents a substantial new question of patentability

The UPnP Standard and Microsoft UPnP is prior art to the '014 Patent under 35 U.S.C. 102(b), but might be considered a combination of related documents under 35 U.S.C. 103(a), such as the combination of separate standards documents or in conjunction with Microsoft UPnP, but one of ordinary skill would have understood that these various UPnP materials and commercially available operating system functionality could be readily combined. The UPnP Standard, either alone or with Microsoft UPnP, discloses every limitation of the Challenged Claims of the '014 Patent, as shown and discussed in Appendix A. The UPnP Standard and Microsoft UPnP was not considered by the Examiner of the '653 Application, and even though it

was known to Sonos during the prosecution of the '653 Application and was used by Sonos to implement the commercial embodiments of the claims of the '014 Patents, it was not disclosed to the Examiner. Requester respectfully requests that the Office consider the charted exemplary disclosure provided in Appendix A when determining whether the UPnP Standard provides a substantial new question of patentability, as well as other materials from the provided copies of the UPnP Standards and Microsoft UPnP, if that should be necessary.

D. Isely

As discussed above, Isely discloses systems and methods for dynamic distribution of audio signals at a site based on defined zones within the site. Isely, Abstract. The audio device 205 discussed at [0044] of Isely has a network interface, performs decoding of encoded stereo data, equalization, left and right channelization and other common functions associated with MP3 decoders, and can function as either a UPnP Media Server or a UPnP Media Renderer:

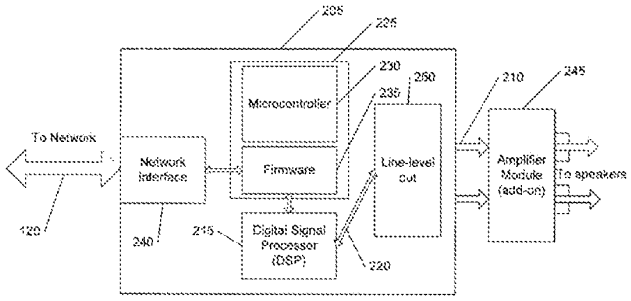


Figure 2

The presence of a network interface 240 in network device 205 means that network device 205 was synchronized with other network devices on network 120. In the concurrent litigation, Sonos appears to be accusing such commonplace prior art functionality of infringing elements of its patents, and appears to be asserting that Sonos invented the concept of networked devices that process audio data. The Office should require Sonos to fully disclose and explain its

infringement contentions in the pending litigation to understand how broadly Sonos is construing its claims, to ensure that Sonos does not continue to obtain claim coverage on prior art systems and methods.

Isely discloses that audio devices 105 can use UPnP protocols, such as those disclosed in the UPnP Standard. As discussed above, the UPnP Standard discloses every feature of the claims of the '014 Patent, and combined with the design of the audio devices 105/205/305/405, network interface 100, user interface device 130, digital audio source 330 and audio server 455/zone manager 415 of Isely, there is nothing left in the claims of the '014 Patent that is not explicitly or inherently disclosed in Isely, either alone or in combination with the UPnP Standard and Microsoft UPnP.

Isely also discloses a controller 125 that "tells the network audio devices 105 the 'channel' to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation.". [0039]. The channels are for multi-channel sound, where "a pair of channels is used to drive the left and right stereo channels for a pair of speakers, resulting in support for up to six zones with a 12 channel system.". [0005]. As such, each "of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence." These audio devices can include a Digital Signal Processor 215, firmware 235, a microcontroller 230, line out level control 250 and a network interface 240, where the network can utilize the UDP Internet protocol over an Ethernet network or other common data networks that require networked devices to request transmission of data packets, such as a Transport Control Protocol (TCP). [0061]. In addition to the use of UDP, Ethernet and TCP, Isely also discloses the audio devices

105 are compliant with the UPnP Standard[8] and Jini [0041] and Real-time Transport Protocol (RTP) [0040], each of which are standards that were developed specifically to allow networked devices to autonomously interact with each other.

Grouping of playback devices for multicasting is explicitly disclosed at [0040] of Isely ("However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889.")

Isely at [0020] (which was not relied on by the Examiner). states that a "relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a **control** input associated with the characteristic.". Thus, the Examiner misunderstood that the relationship of the volume level of Isely was a **display** relationship with a zone, and not a **control** relationship that can be used to adjust multiple devices, such as a reference audio device and addressable audio devices in the zones. Isely describes this relationship in other sections that were not considered by the Examiner.

For example, Isely discloses at [0015] (which was not cited by the Examiner) that "the relationship between a characteristic of the audio signal for a reference audio device and ones of the addressable audio devices is a relative relationship. The relative relationship between the

[8] Isely refers to UPnP as a "salutation protocol," which appears to refer to the Salutation Consortium, see "Salutation Architectures and the newly defined service discovery protocols from Microsoft® and Sun®," The Salutation Consortium, June 6, 1999, which states that. "UPnP will be implemented for all Microsoft® Windows® platforms, for PCs and devices running under the Windows 98, Windows 2000, and Windows CE operating systems. Microsoft has made available UPnP specifications, an implementation guide, and sample source code at WinHEC 99."

reference audio device and ones of the addressable audio devices may be a proportional relationship and the relative relationship between the reference audio device and another of the addressable audio devices may be a static relationship.". Thus, where the reference audio device and all of the addressable audio devices are set at the same **average** volume level, such as at start up, and the volume for the reference audio device is adjusted, that average volume level for all of the associated addressable audio devices would also synchronously change, in accordance with the disclosure of Isely.

Isely next discloses at [0020] that an "audio signal is distributed to the selected addressable audio devices based on the defined relationships and a **control** input associated with the characteristic. An update to the **control** input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input. The audio signal may be received as a digital audio stream and may be distributed over a local network of the zoned environment.". Again, Isely discloses in this section that was not considered by the Examiner that the audio signal is not just displayed but is controlled and adjusted, such as where all addressable audio devices start from the same average zero level and the average is increased or decreased synchronously with "a control input associated with the characteristic."

Isely further discloses at [0062] that a "relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein," and further at [0063] that an "update to the **control** input specifying the characteristic(s) may be periodically received from a

user (block 640)." Thus, Isely discloses that a complex, proportional or static **control** relationship between volumes for a plurality of devices can be defined and adjusted by a user. This disclosure encompasses the common use case where all players in a zone and the reference audio device all start at the same average zero volume level, and where the control is used to increase the average volume level of all players.

The Examine thus erred, based on these specified passages of Isely that were not cited or discussed on the record by the Examiner during prosecution, and this explanation as to these overlooked portions would be considered important to a reasonable examiner. A reasonable examiner would have understood from these passages that the disclosure of Isely that is relevant to the adjustment of an average volume level of multiple devices was not limited to the portions of Isely that only disclose the display of "volume," but rather included portions of Isely that discuss control of "characteristics," because a characteristic can include a volume that is adjusted as part of a group from a minimum setting at startup, where the adjustment results in a synchronous change in the average volume level of the players.

E. Isely, either alone or with the UPnP Standard, Microsoft UPnP and NexSys, presents a substantial new question of patentability

Isely is prior art to the '014 Patent under 35 U.S.C. 102(b), and was used to reject the originally filed claims of the '014 Patent as a tertiary reference, in combination with Berezowski as a primary reference and Tomassetti as a secondary reference under 35 U.S.C. 103(a) during the original prosecution of the '014 Patent. "The substantial new question of patentability may be based on art previously considered by the Office if the reference is presented in a new light or a different way that escaped review during earlier examination.". M.P.E.P. 2216. Isely discloses every limitation of the '014 Patent, as shown and discussed in Appendix B, and is presented in a new light because the Examiner only understood Isely to disclose displaying a volume, and did

not understand that the "characteristics" of Isely that could be controlled and adjusted included the average volume of a group of players.

Isely is further presented in a new light because the various standards that are disclosed in Isely, such as the UPnP Standard, disclose the claimed functionality, but that was not understood by the Examiner, who was not provided with copies of the standards during the original examination. As shown in Appendix B (and as disclosed in more detail in Appendix A with respect to the UPnP Standard), these standards disclose all of the claimed functionality, and one of ordinary skill would be motivated to combine Isely with the UPnP Standard and Microsoft UPnP, because Isely explicitly discloses that it can be implemented using UPnP and one of ordinary skill would consider the teachings of the UPnP Standard and associated software such as the Windows XP operating system that provided UPnP support, when implementing Isely. Any device that is compliant with these standards meets the corresponding claim limitations, and is configured to perform the correspond method claim steps. Although Isely clearly discloses that the audio devices 105/205/305/405 of Isely are compatible with UPnP, it is acknowledged that the UPnP Standard included documents that were not released yet in the versions discussed herein as of the date on which Isely was filed (although they were likely being prepared at that time, and the inventors of Isely were affiliated with IBM, a current member of the Open Connectivity Foundation that developed the UPnP Standard). As such, to the extent that Isely in conjunction with the UPnP Standard is not considered to present a substantial new question of patentability under 35 U.S.C. 102(b), then it would be obvious to combine Isely with the UPnP Standard under 35 U.S.C. 103(a), because Isely explicitly discloses that the audio devices 105/205/305/405 of Isely are compliant with the UPnP Standard as of the date of filing of Isely,

and one of ordinary skill in the art would thus understand that Isely was designed to be compliant with those standards as they continued to develop.

In addition, as discussed below, NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an adjustment made by a user, and presents the zone group in a manner that indicates a grouping. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of Isely and the UPnP Standard, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications.

F. Berezowski, Tomassetti, Isely, the UPnP Standard, Microsoft UPnP and NexSys presents a substantial new question of patentability

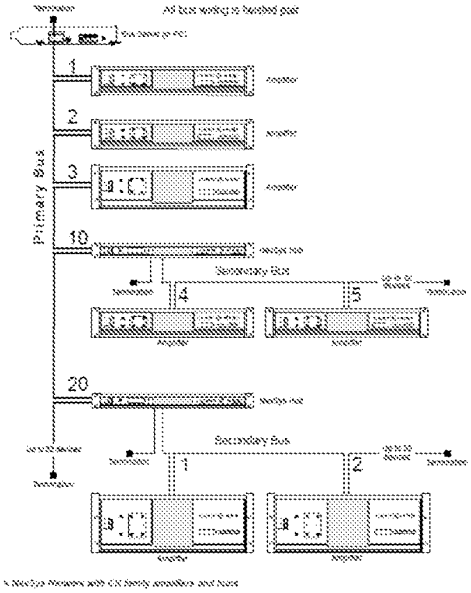
As discussed above, Isely discloses adjusting a characteristic/volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user in accordance with the characteristic, such as where the volume setting is the well-known master volume setting and the master volume and player volumes are increased at initialization from a zero setting. However, to the extent that it is considered that Isely fails to disclose certain elements of the claims, Sonos acquiesced to the rejection of the claims over the combinations of Berezowski and Tomassetti or of Berezowski, Tomassetti and Isely. In addition, to the extent that the Office does not agree that the Examiner misunderstood Isely to only disclose the display of volumes having a relationship to a zone, and did not understand that Isely also disclosed the control of a characteristic that included a volume

control, with the control of a reference audio device resulting in the control of selected addressable audio devices, then the UPnP Standard and Microsoft UPnP explicitly disclose a master channel that can be used to control additional channels, where different media renderer devices can be assigned to different channels, and where the master is used to synchronously adjust all of the associated channels of the channel group. It would be obvious to combine the UPnP Standard and Microsoft UPnP with the combination of Berezowski, Tomassetti and Isely, because Isely explicitly discloses the use of the UPnP as an exemplary embodiment of the disclosure of Isely, and Sonos acquiesced to the combination of Berezowski, Tomassetti, Isely. The combination of Berezowski, Tomassetti, Isely, the UPnP Standard and Microsoft UPnP is discussed in greater detail in Appendix C, in addition to the motivation to combine Berezowski, Tomassetti and Isely with the UPnP Standard and Microsoft UPnP.

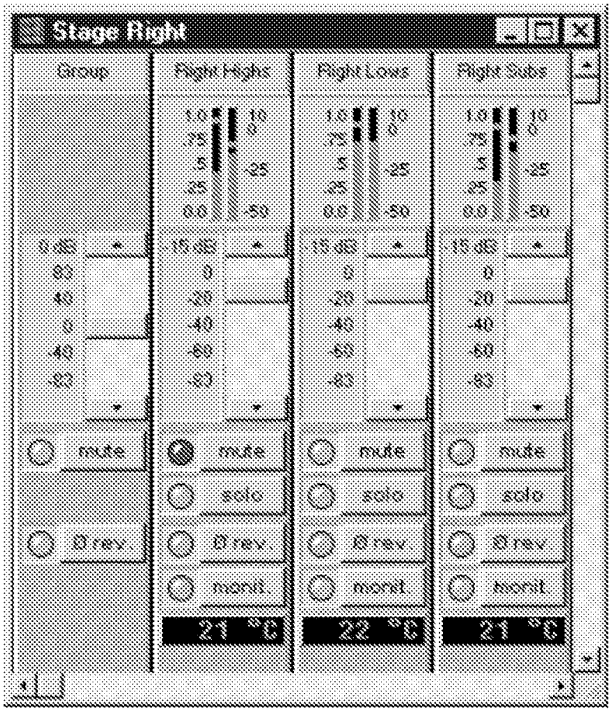
In addition, as discussed below, NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an adjustment made by a user, and presents the zone group in a manner that indicates a grouping. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of Berezowski, Tomassetti, Isely and the UPnP Standard, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications.

G. Crest Audio NexSys Software, Version 3.0

Crest Audio is a manufacturer of power amplifiers, and provided the NexSys Software to allow users to control Crest Audio amplifiers with a personal computer. Page 3.2 of the NexSys Manual discloses an exemplary system in which the NexSys Software could be used:



While the NexSys system has certain similarities to the network structure disclosed in the '014 Patent, the most pertinent disclosure in the NexSys Manual relates to the control of different channels of audio data. In particular, the NexSys Manual discloses a group control that allows separate channels to be grouped together for common control, as shown on page 7.4:



The NexSys further discuses at page 9.3 in regards to the group control that "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5.". The exemplary embodiment shown in the figure from the NexSys manual shows that all three channels are at the same average level to the accuracy shown on the meter (21, 22 and 21), such that any change in the group level will result in a change to the average level. In addition, the channels are shown in a manner that indicates a grouping. The NexSys Manual thus shows group volume meters functionality that was not considered by the Examiner, and it would be obvious to combine the group volume meters of the NexSys Manual to implement the master volume control and channel volume control functions of the UPnP

Standard, Isely, Berezowski and/or Tomassetti, because one of ordinary skill would provide controls like the ones shown in the NexSys Manual to control multiple channels of audio in the same zone, as further discussed in Appendices B and C.

VII. CONCLUSION

For these reasons, Substantial New Questions of Patentability exist, and claims 1, 8, 16, 18, 21, 25 and 38 of the '014 Patent do not satisfy the requirements of Title 35 U.S.C. §101 et seq. A Notice to this effect is requested, if a petition under 37 C.F.R. § 1.137 to revive the '653 Application is filed by Sonos and granted by the Office, otherwise, a Notice that reexamination has not been instituted because the '653 Application stands abandoned is requested.

Date: December 27, 2016

Respectfully submitted,

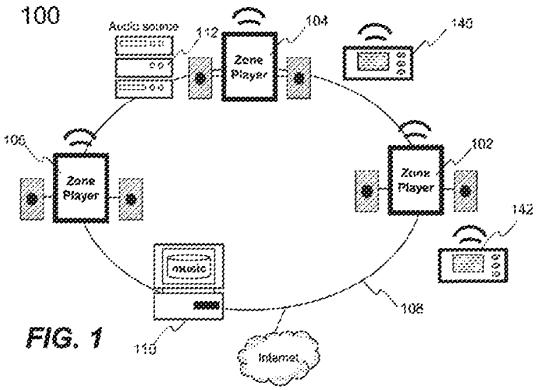
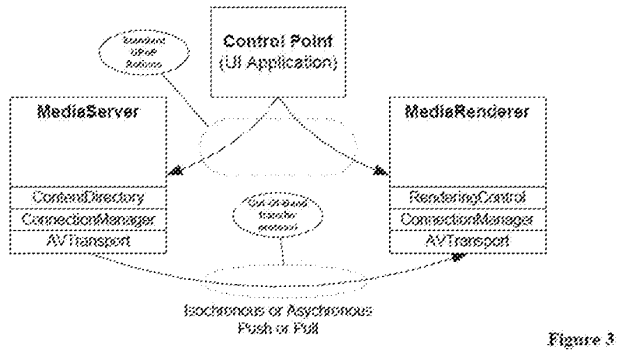
By:___/Christopher J. Rourk/_____

Christopher J. Rourk
Registration No. 39,348
JACKSON WALKER LLP

ATTORNEYS FOR REQUESTORS

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
1. A method for controlling a plurality of players, the method comprising:	The UPnP Standard discloses a method for controlling a plurality of players (UPnP Media Renderers, which can also be combined with a UPnP Media Server in a single device, referred to herein as a "UPnP Combined Device"). The UPnP Standard was known to the inventors of the '014 Patent but was not disclosed to the Patent Office during the prosecution of the '014 Patent. An example of the manner in which Sonos copied the UPnP Standard can be seen from comparing Figure 1 of the '014 Patent with the system architecture diagram at UPnP AV, pg. 5:  '014 Patent, Fig. 1  UpnP AV, pg. 5 **<u>UPnP Control Point = '014 Controllers 140 and 142</u>** As can be seen above, the UPnP Standard discloses a control point that is equivalent to controllers 140 and 142 in the '014 Patent, a UPnP Media Server that is equivalent to audio source 110 and 112, and a UPnP Media Renderer that is equivalent to zone players 102, 104 and 106. The UPnP Control Point of the UPnP Standard can be implemented as an application operating on a "a wireless PDA-like device with a small display" (1P1), as well as an application operation on a person computer, tablet computer with a touch screen interface or other similar devices, and was provided for the purpose of controlling a plurality of UPnP Media Servers and UPnP Media Renderers. The UPnP Control Point can operate on a personal computer in conjunction with an operating system, such as Windows XP, which provided UPnP support. (1P4)

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	UPnP Media Server = '014 Audio Sources 110 and 112 and Zone Players 102, 104 and 106 Examples of a UPnP Media Server include a "VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." (1P2). The UPnP Media Server can also be combined with the UPnP Media Renderer (and with the UPnP Control Point, if desired), as was done with the zone players 102, 104 and 106 of the '014 Patent. (1P3) **UPnP Media Renderer = '014 Zone Players 102, 104 and 106** Examples of a UPnP Media Renderer include a "stereo" and "network enabled speakers." (1P1). In other words, '014 zone players 102, 104 and 106 provide a UPnP Combined Device, and can support multiple instantiations of those UPnP Media Servers and UPnP Media Renderers. The '014 controllers 140 and 142 are configured to act as UPnP Control Points, which can configure one of the zone players 102, 104 or 106 to be a UPnP Media Server, and to provide content to the others of zone players 102, 104 and 106 that are configured to be UPnP Media Renderers (the zone player that is the UPnP Media Server can also have a combined UPnP Media Renderer and can play local or remote content). 1P1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 1P2. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 1P3. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 1P4. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2.

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
1A) displaying on a screen a first list showing at least available players;	The UPnP Standard discloses that UPnP Control Points display UPnP presentation pages, and that UPnP presentation pages are written in HTML version 3.0 or higher. (1A15). HTML includes list display mechanisms. The UPnP Standard also discloses a discovery service for locating devices that are players (such as devices that are combined UPnP Media Servers and UPnP Media Renderers) on the network and a user interface for displaying the discovered players at a UPnP Control Point in a manner that requires lists or other common display mechanisms. (1A1, 1A5, 1A6, 1A9, 1A11, 1A12) The UPnP Control Point display of discovered players (UPnP Media Renderers) in HTML could include lists, and the UPnP Standards disclose allowing users to select from available UPnP Media Servers and UPnP Media Renderers (1A4) using a UPnP Control Point, which also requires those devices to be listed on a display of the UPnP Control Point. Operating systems such as Windows XP also provided tools for UPnP Control Points to display a list of available UPnP Media servers (content sources) and UPnP Media Renderers (players) on a screen, such as in the form of icons, and Windows allows the user to configure icons as lists. (1A18, 1A19) Sonos has accused groups of icons on a screen as meeting the limitation of a list in the concurrent litigation. When there are multiple independent sets of rendering hardware associated with a UPnP Media Renderer device, such as separate speakers, the UPnP Standard instructs that the UPnP Control Point presents those as multiple instantiations of the UPnP Media Renderer device, each with its own rendering control and connection manager, which would require a list of those devices. (1A2, 1A3) Users interact with the UPnP Control Point through a user interface, which commonly uses a list for multiple items, such as a list of player URLs that can each be selected to allow a user to access player-specific controls for services. (1A7, 1A8) The UPnP Media Renderers (players) can be assigned "user friendly names," such as living room, kitchen, etc. (1A10). 1A1. "Most rendering devices contain a number of dynamically configurable attributes that affect how the current content is rendered. For example, video rendering devices, such as TVs, allow user control of display characteristics such as brightness and contrast, whereas audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl:1 service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports. The RenderingControl:1 service enables a Control Point to: • Discover the set of attributes supported by the device. • Retrieve the current setting of any supported attribute • Change the setting of (e.g. control) any modifiable attribute • Restore the settings defined by a named Preset," UPnP Rendering Control, pg. 6.

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	1A2. "Note that a single physical device may include multiple logical devices. Multiple logical devices can be modeled as a single root device with embedded devices (and services) or as multiple root devices (perhaps with no embedded devices). In the former case, there is one UPnP device description for the root device, and that device description contains a description for all embedded devices. In the latter case, there are multiple UPnP device descriptions, one for each root device. A UPnP device description is written by a UPnP vendor. The description is in XML syntax and is usually based on a standard UPnP Device Template. A UPnP Device Template is produced by a UPnP Forum working committee; they derive the template from the UPnP Template Language, which was derived from standard constructions in XML. This section explains the format for a UPnP device description, UPnP Device Templates, and the part of the UPnP Template Language that covers devices." UPnP Architecture, pg. 14 1A3. "As described in the Media Renderer device template, a rendering device that contains multiple, independent rendering hardware (e.g. two independent display screen, or two independent sets of output speakers) shall be modeled as multiple instantiations of the MediaRenderer device, each with its own Rendering Control, Connection Manager, and (optional) AV Transport services. In other words, from an UPnP AV modeling point of view, each output on a physical rendering device is treated as a completely independent Media Rendering device. Refer to the Media Renderer device template for more information." UPnP Rendering Control, pg. 40. 1A4. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 1A5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 1A6. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UpnP AV pgs. 9-10.

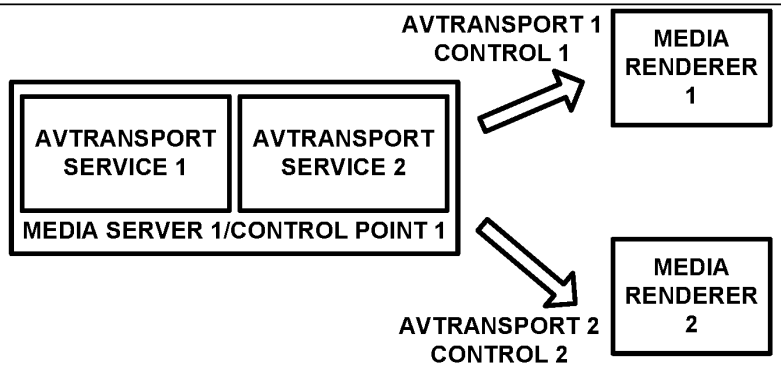
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	1A7. "In most cases, the choice of AVTransport actions that are actually invoked will likely be directed by the end-user as they interact with the Control Point's UI." UPnP Rendering Control pg. 8 1A8. "Step 5 in UPnP networking is presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device. The section on Presentation below explains the protocol for retrieving a presentation page." UPnP Architecture, pg. 3. 1A9. "Addressing is Step 0 of UPnP networking. Through addressing, devices get a network address. Addressing enables discovery (Step 1) where control points find interesting device(s), description (Step 2) where where control points learn about device capabilities, control (Step 3) where a control point sends commands to device(s), eventing (Step 4) where control points listen to state changes in device(s), and presentation (Step 5) where control points display a user interface for device(s)." UPnP Architecture, pg. 4. 1A10. "Once a device has a valid IP address for the network, it can be located and referenced on that network through that address. There may be situations where the end user needs to locate and identify a device. In these situations, a friendly name for the device is much easier for a human to use than an IP address." UPnP Architecture, pg. 5. 1A11. "friendlyName Required. Short description for end user. Should be localized (cf. ACCEPT-/CONTENT-LANGUAGE headers). Specified by UPnP vendor. String. Should be < 64 characters." UPnP Architecture, pg. 17. 1A12. "Presentation is Step 5 in UPnP networking. Presentation comes after addressing (Step 0) where devices get network addresses, after discovery (Step 1) where control points find interesting device(s), and after description (Step 2) where control points learn about device capabilities. Presentation exposes an HTML-based user interface for controlling and/or viewing device status. Presentation is complementary to control (Step 3) where control points send actions to devices, and eventing (Step 4) where control points listen to state changes in device(s). After a control point has (1) discovered a device and (2) retrieved a description of the device, the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	control point is ready to begin presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device." UPnP Architecture, pg. 52. 1A13. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 1A14. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 1A15. "At the highest layer, the presentation page is specified by a UPnP vendor. Moving down the stack, the UPnP Device Architecture specifies that this page be written in HTML. The page is delivered via HTTP over TCP over IP. For reference, colors in [square brackets] are included for consistency with other sections in this document. To retrieve a presentation page, the control point issues an HTTP GET request to the presentation URL, and the device returns a presentation page. Unlike the UPnP Device and Service Templates, and standard device and service types, the capabilities of the presentation page are completely specified by the UPnP vendor. The presentation page is not under the auspices of a UPnP Forum working committee. The page must be an HTML page; it should be version HTML 3.0 or later. However, other design aspects are left to the vendor to specify. This includes, but is not limited to, all capabilities of the control point's browser, scripting language or browser plug-ins used, and means of interacting with the device. To implement a presentation page, a UPnP vendor may wish to use UPnP mechanisms for control and/or eventing, leveraging the device's existing capabilities but is not constrained to do so. Presentation pages should use mechanisms provided by HTML for localization (e.g., META tag with charset attribute). Control points should use the ACCEPT- / CONTENT-LANGUAGE feature of HTTP to try to retrieve a localized presentation page. Specifically, a control point may include a HTTP ACCEPT-LANGUAGE header in the request for a presentation page; if an ACCEPT-LANGUAGE header is present in the request, the response must include a CONTENT-LANGUAGE header to identify the page's language." UPnP AV, pg. 53.
1B. displaying, when at least one	The UPnP Standard discloses displaying, when at least one of the UPnP Combined Devices (players) (1B1, 1B4) is selected as a zone group head (such as one of the combined devices that is operating as a UPnP Media Server),

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;	on a screen of a UPnP Control Point, a second list showing at least some of the UPnP Combined Devices (players) that are eligible to be grouped with the zone group head (UPnP Media Server device), such as a list of icons or URLs of available players. (1B2, 1B3, 1B5) In the concurrent litigation, Sonos has accused the display of icons on a screen as meeting the limitations of the first list and second list. In addition, based on the construction of the term "player" proposed by Sonos in the concurrent litigation, a player can be either a UPnP Media Server or a UPnP Media Renderer. 1B1. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 1B2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 1B3. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 1B4. "As described above, the AV Architecture consists of three distinct components that perform well-defined roles. In some cases, these components will exist as separate, individual UPnP devices. However, this need not be the case. Device manufacturers are free to combine any of these logical entities into a single physical device. In such cases, the individual components of these combo devices may interact with each other using either the standard UPnP control protocols (e.g. SOAP over HTTP) or using some private communication mechanism. In

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	either case, the function of each logical entity remains unchanged. However, in the later case, since the communication between the logical entities is private, the individual components will not be able to communicate with other UPnP AV devices that do not implement the private protocol." UPnP AV, pg. 6. 1B5. "MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network. In general terms, the process begins with the Control Points discovering MediaServer and MediaRenderer devices within the home network. The Control Point interacts with a MediaServer(s) to locate a desired piece of content (e.g. a movie, a song, a playlist, a photo album, etc). After the content has been identified, the Control point needs to identify a common transfer protocol and data format that can be used to transfer the content from the MediaServer to the desired MediaRenderer. After these transfer parameters have been established, the Control Point controls the flow of the content (e.g. Play, Pause, Stop, Seek, etc.). (Depending on the selected transfer protocol, these flow control operations are sent either to the MediaServer or MediaRenderer, but not both). The actual transfer of the content is performed directly by the MediaServer and MediaRenderer. The content transfer happens independently from the Control Point and does not involve UPnP itself at all. The Control Point uses UPnP to setup the transfer of the content, but the transfer is performed using a transfer protocol other than UPnP." UPnP Media Server, pg. 7
1C. forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and	The UPnP Standard discloses a UPnP Connection Manager that forms a zone group started with the zone group head, such as a first combined UPnP Media Server/UPnP Media Renderer device that is acting as a UPnP Media Server, after one or more players (second or more combined UPnP Media Server/UPnP Media Renderer devices) from the at least some of the players are selected to join the zone group. (1C3, 1C4). As noted above, UPnP discloses the combination of a UPnP Media Server and UPnP Media Renderer into a single device. (1C1, 1C2). As described above, a UPnP Control Point can be used to perform these functions. (1C5, 1C6, 1C7). Combinations of UPnP Media Renderers can be used to provide stereo or surround sound through different speakers. (1C8). 1C1. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV

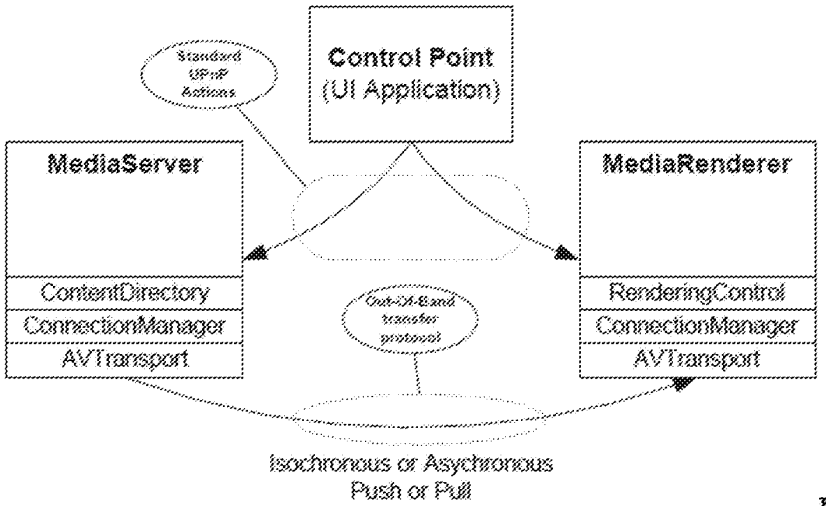
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 1C2. "As described above, the AV Architecture consists of three distinct components that perform well-defined roles. In some cases, these components will exist as separate, individual UPnP devices. However, this need not be the case. Device manufacturers are free to combine any of these logical entities into a single physical device. In such cases, the individual components of these combo devices may interact with each other using either the standard UPnP control protocols (e.g. SOAP over HTTP) or using some private communication mechanism. In either case, the function of each logical entity remains unchanged. However, in the later case, since the communication between the logical entities is private, the individual components will not be able to communicate with other UPnP AV devices that do not implement the private protocol." UPnP AV, pg. 6. 1C3. "5.1.2. ConnectionManager Service This service is used to manage the connections associated with a particular device. The primary action of this service (within the context of a MediaServer) is PrepareForConnection(). When implemented, this optional action is invoked by the Control Point to give the Server an opportunity to prepare itself for an upcoming transfer. Depending on the specified transfer protocol and data format, this action may return the InstanceID of an AVTransport service that the Control Point can use to control the flow of this content (e.g. Stop, Pause, Seek, etc). As described below, this InstanceID is used to distinguish multiple (virtual) instances of the AVTransport service, each of which is associated with a particular connection to Renderer. Multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time. When the Control Point wants to terminate this connection, it should invoke the MediaServer's ConnectionComplete() action (if implemented) to release the connection. If the PrepareForConnection() action is not implemented, the Control Point is only able to support a single Renderer at an given time. In this case, the Control Point should use InstanceID=0." UPnP AV, pg. 7.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	 Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that include the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 1C9, 1C10, 1C11 1C4. "5.2.2. ConnectionManagerService This service is used to manage the connections associated with a device. Within the context of a MediaRenderer, the primary action of this service is the GetProtocolInfo() action. This action allows a Control Point to enumerate the transfer protocols and data formats that are supported by the MediaRenderer. This information is used to predetermine if a MediaRenderer is capable of rendering a specific content item. A MediaRenderer may also implement the optional PrepareForConnection() action. This action is invoked by the Control Point to give the Render an opportunity to prepare itself for an upcoming transfer. Additionally, this action assigns a unique ConnectionID that can be used by a 3rdparty Control Point to obtain information about the connections that the MediaRenderer is using. Also, depending on the specified transfer protocol and data format being used, this action may return a unique AVTransport InstanceID that the Control Point can use to control the flow of the content (e.g. Stop, Pause, Seek, etc). (Refer to the AVTransport section below for additional details). Lastly, PrepareForConnection() also returns a unique Rendering Control InstanceID which can be used by the Control Point to control the rendering characteristics of the associated content as described above. When the Control Point wants to terminate a connection, it should invoke the Renderer's ConnectionComplete() action (if

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	implemented) to release the connection." UPnP AV, pg. 8. 1C5. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UPnP AV pgs. 9-10. 1C6. "2.2.1. Description of Device Requirements Each implementation of the MediaRenderer requires a Rendering Control and ConnectionManager service. The Rendering Control service allows Control Points to control the various rendering capabilities of the device. The Connection Manager is used to enumerate and select a particular transfer protocol and data format to be used for transferring the content. Additionally, the Connection Manager also allows Control Points, such as a home network management application, to discover useful information about the content transfers that the device is actively participating in. Such information could be useful to a Quality Of Service capability, which may be defined in the future." UPnP Media Renderer, pg. 5. 1C7. "2.2.2. Relationships Between Services The Connection Manager's PrepareForConnection() action provides the trigger point for creating new instances of the Rendering Control and AVTransport service. When a new connection is established (one that requires an instance of the AVTransport on the MediaRenderer, which is determined by the selected transfer protocol), the PrepareForConnection() action returns the InstanceId of the Rendering Control and AVTransport services that are bound to that connection. The Rendering Control instance is used by the Control Point to control how the content from that connection is rendered. The AVTransport instance is used by the Control Point to control the flow (e.g. Play, FF, REW, Seek, etc) of the content received via that connection. As described in the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	RenderingControl and AVTransport specification, each instance of these services operates independently from all other instances." UPnP Media Renderer, pg. 6. 1C8. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	1C9. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 1C10. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 1C11. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
1D synchronizing all players in the zone group;	The UPnP Standard discloses synchronizing all zones in the zone group, such as by using the IEC61883/IEEE1394 isochronous transfer protocols to synchronize UPnP Media Servers and UPnP Media Renderers.  Figure 3 UPnP AV, pg. 5.

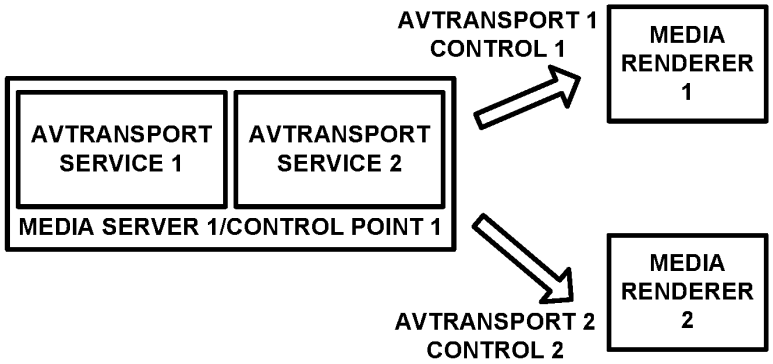
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	"6.1. Isochronous-Push Transfer Protocols (IEC61883 /IEEE1394) When using an isochronous transfer protocol (e.g.IEC61883/ IEEE1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual packets of content are transferred within a certain (relatively small) period of time. This real-time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer. Refer to the diagram below for details." UPnP AV, pgs. 12, 13, 18, 21.
1E. adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	The UPnP Standard discloses multiple audio channels (1E1) and a Rendering Control service that allows "Control Points to control each of these channels independently or as a whole" (1E2). Adjusting the volume of all of the channels as a whole is performed by adjusting a master volume meter represented by an averaged value of audio volumes of the players in the group. (1E3) The averaged value is at least represented when the associated channels, which can each be assigned to a different wireless network-enabled speakers, are first set to the lowest level and then increased by the master as a whole. 1E4, 1E5 Adjusting the master volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. (1E3). 1E1. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS)

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17. 1E2. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole." UPnP Rendering Control, pg, 41. 1E3. "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Control, pg, 42. 1E4 "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42. 1E5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.
8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:	

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
8A. causing all players in the zone group to play an identical audio source; and	The UPnP Standard discloses the use of multiple instances of the AVTransport service to allow a combined UPnP Media Server/UPnP Media Renderer device that is acting as UPnP Media Server to support multiple combined UPnP Media Server/UPnP Media Renderer devices that are action as Media Renderers at the same time, to cause all devices/players in a zone group (a group of UPnP Media Servers associated with a UPnP Media Renderer) to play an identical audio source (media server). (8A1) The claim limitation does not state that the players have to play the same content from the same source, just that they have to have an identical audio source, but UPnP discloses both scenarios. The claim limitation also does not state that the players have to play in synchrony, although as described above, the UPnP Standard discloses the use of isochronous Push Transfer Protocols (IEC61883 /IEEE1394) that results in synchrony. 8A1 "Multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time." UPnP AV, pg. 7.  Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that include the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 8A2, 8A3, 8A4 8A2. "Windows can also serve as a platform for building and running control point applications to control UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	connected devices and services." Microsoft UPnP, pg. 2. 8A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 8A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
8B. presenting the zone group in a manner that indicates a grouping.	The UPnP Standard represents the zone group in a manner that represents a grouping, such as by indicating speakers that play different channels for a multi-channel audio device. (8B1) This is referred to as a "channel cluster," and each of the separate speakers in the channel cluster can be a separate network-enabled speakers. (8B2) The channel cluster can also be displayed using the operating system, such as Microsoft Windows XP, which can display icons associated with each combined UPnP media Server/UPnP Media Renderer, with lists of associated services that include the devices that are receiving content from a server device. 8B3, 8B4, 8B5, 8B6, 8B7 8B1. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS)

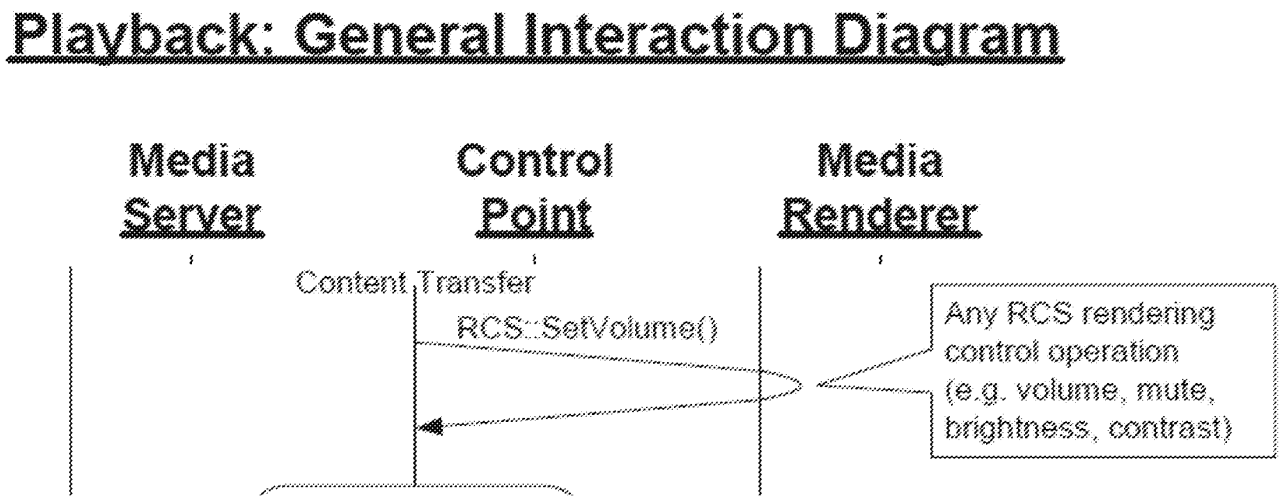
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17. 8B2. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 8B3. "Devices are logical containers for a service or set of services, and possibly for other devices. Devices and services are identified partially by their type, which defines their minimum capabilities. Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system. Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services. The Internet Connection Sharing (ICS) service uses

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	UPnP to announce the availability of the service to other computers on the network, which are running UPnP clients." Microsoft UPnP, pg. 2. 8B4, "When the device tree was parsed and stored by the UPnP client implementation, the services were also enumerated and added to a list attached to the device. The client application can use the Services method on the device object to retrieve this list of services. This service collection can be parsed to locate a particular service and retrieve a service object." Microsoft UPnP, pg. 13. 8B5. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 8B6. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 8B7. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
16. A method for controlling a plurality of players, the method comprising:	The UPnP Standard discloses a method for controlling a plurality of players, which are combined UPnP Media Servers and UPnP Media Renderers, from a controller that is a UPnP Control Point, as discussed above.
16A. displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an	As discussed above, the UPnP Standard discloses displaying on a screen of a Control Point (such as the screen of a wireless PDA device) a list showing a plurality of volume meters (such as separate volume meters for each device that is a combined UPnP Media Server and UPnP Media Renderer in a channel group that can include stereo or surround channels, and a volume meter for a master channel associated with the channel group), where the volume controls can display a relative volume setting or volume in decibels. (16A4). At least one of the volume meters representing an audio volume of one of the players (the UPnP Media Renderer's Rendering Control Service allows a user to control the volume setting, which requires a volume meter). (16A1). Another one of the volume meters (for the master) represents an audio volume of a group of players, when there is such a

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and	group (the master volume control represents an audio volume of the group of players, when there is such a group). (16A2). The media renderer's rendering control service of the UPnP Standard allowed a user to invoke any rendering control action, such as adjusting volume, which requires the use of a volume meter that represents the audio volume of the media renderer/player. (16A3). Microsoft UPnP functionality supported the creation of user interfaces from device presentation pages. 16A5, 16A6, 16A7 16A1. "8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc)." UPnP AV pg. 9. 16A2. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead]

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17." 16A3. UPnP AV pg. 11 (general interaction diagram showing control of media renderer/player from control point (RCS::SetVolume()):  16A4. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 16A5. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 16A6. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 16A7. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
16B. adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an	As discussed above, the UPnP Standard discloses adjusting one of the volume meters as desired after one of the volume meters from the list is selected. The list can be generated by an operating system such as Windows XP, which can generate icons or a list that represent URLs associated with devices that are combined UPnP Media Servers/UPnP Media Renderers. 16B1. Selection of the URL allows the user to access the volume meters associated with the device. 16B2. One of the volume meters is for the Master channel of the group of players, such as wireless speakers. 16B3, 16B4. The Master channel represents an averaged value of audio volumes of the players in the group when the players are all at the same level as the Master, such as by using the SetVolume control. 16B5. 16B1. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
averaged value of audio volumes of the players in the group, and	the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 16B2. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 16B3. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control,

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	pgs. 16-17." 16B4. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a music controlled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), whereas other MediaRenderers may support a wide variety of content including video, audio, still images. The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 16B5. "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42.
16C. said adjusting of the one of the volume meters includes changing a volume of each of	The UPnP Standard discloses that adjustments made to the master volume control are synchronously made by the UPnP Control Point (16C1) to the associated combined UPnP Media Server/UPnP Media Renderer devices, such as wireless network-enabled speakers (16C2) that are associated with each channel of the channel set for stereo or surround sound. (16C3). 16C1. "[T]he Control Point coordinates and synchronizes the behavior of both devices. . . ." UPnP AV, pg. 4.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
the group of players synchronously in accordance with an adjustment made by a user.	16C2. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.
18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.	As discussed above, the UPnP Standard discloses adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time, such as the master volume group which actually adjusts the group of players at the same time. The UPnP Control Points can control each of the channels independently or as a whole, which requires a user interface that identifies the group of players that are being adjusted as a whole. 18A1 The user interface can be generated using Windows UPnP functions for generating presentation pages for listed devices. 18A2, 18A3, 18A4 18A1. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 18A2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 18A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 18A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
20. The method of claim 16, further comprising playing an identical audio source in the group of players.	UPnP discloses that an identical audio source is played by the UPnP Media Server and the UPnP Media Renderer. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on a

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 1P3. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5.
21. The method of claim 20, wherein the audio source is retrieved in form of audio data	UPnP discloses that the audio source is retrieved in form of audio data packets over the network, such as MP3 audio data. "When using an isochronous transfer protocol (e.g.IEC61883/ IEEE1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
packets over the network.	packets of content are transferred within a certain (relatively small) period of time. This real-time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer. Refer to the diagram below for details." UPnP Av, pg. 12. "The AV Architecture allows devices to support different types of formats for the entertainment content (such as MPEG2, MPEG4, JPEG, MP3, Windows Media Architecture (WMA), bitmaps (BMP), NTSC, PAL, ATSC, etc.) and multiple types of transfer protocols (such as IEC-61883/IEEE-1394, HTTP GET, RTP, HTTP PUT/POST, TCP/IP, etc.)." UPnP AV, pg. 3.
25P. An apparatus for controlling a plurality of players, the apparatus comprising:	As discussed above, the UPnP Standard discloses an apparatus for controlling a plurality of players, such as a UPnP Control Point that is used for controlling devices that are combined UPnP Media Servers and UPnP Media Renderers.
25A. a screen;	The UPnP Control Point includes a screen, such as a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 25A1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens. 25A2, 25A3, 25A4 25A1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 25A2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 25A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
25B. a screen driver commanding the screen;	The UPnP Control Point includes a screen driver commanding the screen, such as a screen driver of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 25B1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens that would require use of a screen driver. 25B2, 25B3, 25B4 25B1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25B2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 25B3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25B4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
25C. an input interface;	The UPnP Control Point includes an input interface, such as an input interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
25D. a network interface;	The UPnP Control Point includes a network interface, such as a network interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.
25E. a memory for storing code for an application module;	The UPnP Control Point includes a memory for storing code for an application module, such as a memory of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
25F. a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	The UPnP Control Point provides a UI for the user to interact with the system, which inherently requires a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, such as a processor of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
25G. displaying on a screen a first list showing at least available players;	The UPnP Standard discloses that UPnP Control Points display UPnP presentation pages, and that UPnP presentation pages are written in HTML version 3.0 or higher. (25G15). HTML includes list display mechanisms. The UPnP Standard also discloses a discovery service for locating devices that are players (such as devices that are combined UPnP Media Servers and UPnP Media Renderers) on the network and a user interface for displaying the discovered players at a UPnP Control Point in a manner that requires lists or other common display mechanisms. (25G1, 25G5, 25G6, 265G9, 25G11, 25G12) The UPnP Control Point display of discovered players (UPnP Media Renderers) in HTML could include lists, and the UPnP Standards disclose allowing users to select from available UPnP Media Servers and UPnP Media Renderers (25G4) using a UPnP Control Point, which also requires those devices to be listed on a display of the UPnP Control Point. Operating systems such as Windows XP also provided tools for UPnP Control Points to display a list of available UPnP Media servers (content sources) and UPnP Media Renderers (players) on a screen, such as in the form of icons, and Windows allows the user to configure icons as lists. (25G18, 25G19) Sonos has accused groups of icons on a screen as meeting the limitation of a list in the concurrent litigation. When there are multiple independent sets of rendering hardware associated with a UPnP Media Renderer device, such as separate speakers, the UPnP Standard instructs that the UPnP Control Point presents those as multiple instantiations of the UPnP Media Renderer device, each with its own rendering control and connection manager, which would require a list of those devices. (25G2, 25G3) Users interact with the UPnP Control Point through a user interface, which commonly uses a list for multiple items, such as a list of player URLs that can each be selected to allow a user to access player-specific controls for services. (25G7, 25G8) The UPnP Media Renderers (players) can be assigned "user friendly names," such as living room, kitchen, etc. (25G10).

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25G1. "Most rendering devices contain a number of dynamically configurable attributes that affect how the current content is rendered. For example, video rendering devices, such as TVs, allow user control of display characteristics such as brightness and contrast, whereas audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl:1 service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports. The RenderingControl:1 service enables a Control Point to: • Discover the set of attributes supported by the device. • Retrieve the current setting of any supported attribute • Change the setting of (e.g. control) any modifiable attribute • Restore the settings defined by a named Preset," UPnP Rendering Control, pg. 6. 25G2. "Note that a single physical device may include multiple logical devices. Multiple logical devices can be modeled as a single root device with embedded devices (and services) or as multiple root devices (perhaps with no embedded devices). In the former case, there is one UPnP device description for the root device, and that device description contains a description for all embedded devices. In the latter case, there are multiple UPnP device descriptions, one for each root device. A UPnP device description is written by a UPnP vendor. The description is in XML syntax and is usually based on a standard UPnP Device Template. A UPnP Device Template is produced by a UPnP Forum working committee; they derive the template from the UPnP Template Language, which was derived from standard constructions in XML. This section explains the format for a UPnP device description, UPnP Device Templates, and the part of the UPnP Template Language that covers devices." UPnP Architecture, pg. 14 25G3. "As described in the Media Renderer device template, a rendering device that contains multiple, independent rendering hardware (e.g. two independent display screen, or two independent sets of output speakers) shall be modeled as multiple instantiations of the MediaRenderer device, each with its own Rendering Control, Connection Manager, and (optional) AV Transport services. In other words, from an UPnP AV modeling point of view, each output on a physical rendering device is treated as a completely independent Media Rendering device. Refer to the Media Renderer device template for more information." UPnP Rendering Control, pg. 40.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25G4. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 25G5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 25G6. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service,

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UpnP AV pgs. 9-10. 25G7. "In most cases, the choice of AVTransport actions that are actually invoked will likely be directed by the end-user as they interact with the Control Point's UI." UPnP Rendering Control pg. 8 25G8. "Step 5 in UPnP networking is presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device. The section on Presentation below explains the protocol for retrieving a presentation page." UPnP Architecture, pg. 3. 25G9. "Addressing is Step 0 of UPnP networking. Through addressing, devices get a network address. Addressing enables discovery (Step 1) where control points find interesting device(s), description (Step 2) where where control points learn about device capabilities, control (Step 3) where a control point sends commands to device(s), eventing (Step 4) where control points listen to state changes in device(s), and presentation (Step 5) where control points display a user interface for device(s)." UPnP Architecture, pg. 4. 25G10. "Once a device has a valid IP address for the network, it can be located and referenced on that network through that address. There may be situations where the end user needs to locate and identify a device. In these situations, a friendly name for the device is much easier for a human to use than an IP address." UPnP Architecture, pg. 5.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25G11. "friendlyName Required. Short description for end user. Should be localized (cf. ACCEPT-/CONTENT-LANGUAGE headers). Specified by UPnP vendor. String. Should be < 64 characters." UPnP Architecture, pg. 17. 25G12. "Presentation is Step 5 in UPnP networking. Presentation comes after addressing (Step 0) where devices get network addresses, after discovery (Step 1) where control points find interesting device(s), and after description (Step 2) where control points learn about device capabilities. Presentation exposes an HTML-based user interface for controlling and/or viewing device status. Presentation is complementary to control (Step 3) where control points send actions to devices, and eventing (Step 4) where control points listen to state changes in device(s). After a control point has (1) discovered a device and (2) retrieved a description of the device, the control point is ready to begin presentation. If a device has a URL for presentation, then the control point can retrieve a page from this URL, load the page into a browser, and depending on the capabilities of the page, allow a user to control the device and/or view device status. The degree to which each of these can be accomplished depends on the specific capabilities of the presentation page and device." UPnP Architecture, pg. 52. 25G13. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25G14. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 25G15. "At the highest layer, the presentation page is specified by a UPnP vendor. Moving down the stack, the UPnP Device Architecture specifies that this page be written in HTML. The page is delivered via HTTP over TCP over IP. For reference, colors in [square brackets] are included for consistency with other sections in this document. To retrieve a presentation page, the control point issues an HTTP GET request to the presentation URL, and the device returns a presentation page. Unlike the UPnP Device and Service Templates, and standard device and service types, the capabilities of the presentation page are completely specified by the UPnP vendor. The presentation page is not under the auspices of a UPnP Forum working committee. The page must be an HTML page; it should be version HTML 3.0 or later. However, other design aspects are left to the vendor to

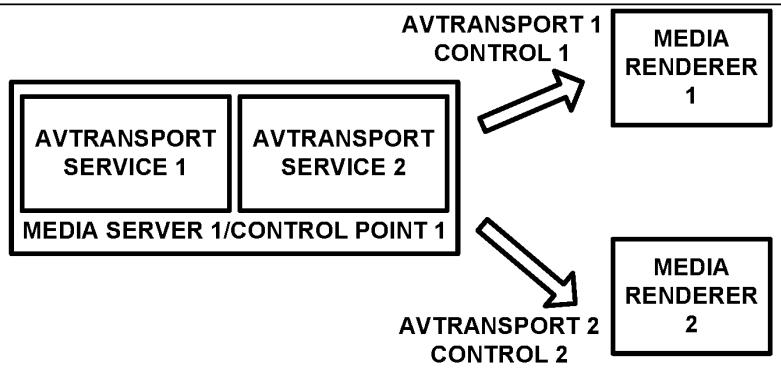
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	specify. This includes, but is not limited to, all capabilities of the control point's browser, scripting language or browser plug-ins used, and means of interacting with the device. To implement a presentation page, a UPnP vendor may wish to use UPnP mechanisms for control and/or eventing, leveraging the device's existing capabilities but is not constrained to do so. Presentation pages should use mechanisms provided by HTML for localization (e.g., META tag with charset attribute). Control points should use the ACCEPT- / CONTENT-LANGUAGE feature of HTTP to try to retrieve a localized presentation page. Specifically, a control point may include a HTTP ACCEPT-LANGUAGE header in the request for a presentation page; if an ACCEPT-LANGUAGE header is present in the request, the response must include a CONTENT-LANGUAGE header to identify the page's language." UPnP AV, pg. 53.
25H. displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;	The UPnP Standard discloses displaying a zone group including players from the available players when at least two of the UPnP Combined Devices (players) (25H1, 25H4) are selected to form a zone group (such as one of the combined devices that is operating as a UPnP Media Server and a second such device operating as a UPnP Media Renderer), on a screen of a UPnP Control Point, wherein any one of the players in the group serves as a zone group head (all players are combined UPnP Media Servers and UPnP Media Renderers). As discussed below, UPnP discloses a second list showing at least some of the UPnP Combined Devices (players) that are eligible to be selected as or grouped with the zone group head (UPnP Media Server device), such as a list of icons or URLs of available players. (25H2, 25H3, 25H5) In the concurrent litigation, Sonos has accused the display of icons on a screen as meeting the limitations of the first list and second list. In addition, based on the construction of the term "player" proposed by Sonos in the concurrent litigation, a player can be either a UPnP Media Server or a UPnP Media Renderer. Common operating system functionality also provided display support. (25H12) The UPnP Standard discloses a UPnP Connection Manager that forms a zone group started with the zone group head, such as a first combined UPnP Media Server/UPnP Media Renderer device that is acting as a UPnP Media Server, after one or more players (second or more combined UPnP Media Server/UPnP Media Renderer devices) from the at least some of the players are selected to join the zone group. (25H6, 25H7). As noted above, UPnP discloses the combination of a UPnP Media Server and UPnP Media Renderer into a single device. (25H1, 25H4). As described above, a UPnP Control Point can be used to perform these functions. (25H8, 25H9, 25H10). Combinations of UPnP Media Renderers can be used to provide stereo or surround sound through different speakers. (25H11).

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25H1. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 25H2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 25H3. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11. 25H4. "As described above, the AV Architecture consists of three distinct components that perform well-defined roles. In some cases, these components will exist as separate, individual UPnP devices. However, this need not be the case. Device manufacturers are free to combine any of these logical entities into a single physical device. In such cases, the individual components of these combo devices may interact with each other using either the standard UPnP control protocols (e.g. SOAP over HTTP) or using some private communication mechanism. In either case, the function of each logical entity remains unchanged. However, in the later case, since the communication between the logical entities is private, the individual components will not be able to communicate with other UPnP AV devices that do not implement the private protocol." UPnP AV, pg. 6. 25H5. "MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network. In general terms, the process

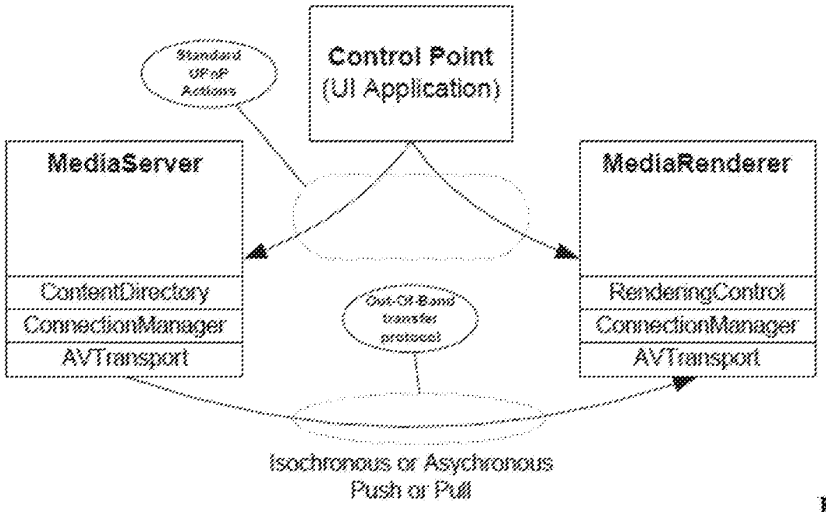
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	begins with the Control Points discovering MediaServer and MediaRenderer devices within the home network. The Control Point interacts with a MediaServer(s) to locate a desired piece of content (e.g. a movie, a song, a playlist, a photo album, etc). After the content has been identified, the Control point needs to identify a common transfer protocol and data format that can be used to transfer the content from the MediaServer to the desired MediaRenderer. After these transfer parameters have been established, the Control Point controls the flow of the content (e.g. Play, Pause, Stop, Seek, etc.). (Depending on the selected transfer protocol, these flow control operations are sent either to the MediaServer or MediaRenderer, but not both). The actual transfer of the content is performed directly by the MediaServer and MediaRenderer. The content transfer happens independently from the Control Point and does not involve UPnP itself at all. The Control Point uses UPnP to setup the transfer of the content, but the transfer is performed using a transfer protocol other than UPnP." UPnP Media Server, pg. 7 25H6. "5.1.2. ConnectionManager Service This service is used to manage the connections associated with a particular device. The primary action of this service (within the context of a MediaServer) is PrepareForConnection(). When implemented, this optional action is invoked by the Control Point to give the Server an opportunity to prepare itself for an upcoming transfer. Depending on the specified transfer protocol and data format, this action may return the InstanceID of an AVTransport service that the Control Point can use to control the flow of this content (e.g. Stop, Pause, Seek, etc). As described below, this InstanceID is used to distinguish multiple (virtual) instances of the AVTransport service, each of which is associated with a particular connection to Renderer. Multiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time. When the Control Point wants to terminate this connection, it should invoke the MediaServer's ConnectionComplete() action (if implemented) to release the connection. If the PrepareForConnection() action is not implemented, the Control Point is only able to support a single Renderer at an given time. In this case, the Control Point should use InstanceID=0." UPnP AV, pg. 7.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	 Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that include the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 1C9, 1C10, 1C11 25H7. "5.2.2. ConnectionManagerService This service is used to manage the connections associated with a device. Within the context of a MediaRenderer, the primary action of this service is the GetProtocolInfo() action. This action allows a Control Point to enumerate the transfer protocols and data formats that are supported by the MediaRenderer. This information is used to predetermine if a MediaRenderer is capable of rendering a specific content item. A MediaRenderer may also implement the optional PrepareForConnection() action. This action is invoked by the Control Point to give the Render an opportunity to prepare itself for an upcoming transfer. Additionally, this action assigns a unique ConnectionID that can be used by a 3rdparty Control Point to obtain information about the connections that the MediaRenderer is using. Also, depending on the specified transfer protocol and data format being used, this action may return a unique AVTransport InstanceID that the Control Point can use to control the flow of the content (e.g. Stop, Pause, Seek, etc). (Refer to the AVTransport section below for additional details). Lastly, PrepareForConnection() also returns a unique Rendering Control InstanceID which can be used by the Control Point to control the rendering characteristics of the associated content as described above. When the Control Point wants to terminate a connection, it should invoke the Renderer's ConnectionComplete() action (if

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	implemented) to release the connection." UPnP AV, pg. 8. 25H8. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UPnP AV pgs. 9-10. 25H9. "2.2.1. Description of Device Requirements Each implementation of the MediaRenderer requires a Rendering Control and ConnectionManager service. The Rendering Control service allows Control Points to control the various rendering capabilities of the device. The Connection Manager is used to enumerate and select a particular transfer protocol and data format to be used for transferring the content. Additionally, the Connection Manager also allows Control Points, such as a home network management application, to discover useful information about the content transfers that the device is actively participating in. Such information could be useful to a Quality Of Service capability, which may be defined in the future." UPnP Media Renderer, pg. 5. 25H10. "2.2.2. Relationships Between Services The Connection Manager's PrepareForConnection() action provides the trigger point for creating new instances of the Rendering Control and AVTransport service. When a new connection is established (one that requires an instance of the AVTransport on the MediaRenderer, which is determined by the selected transfer protocol), the PrepareForConnection() action returns the InstanceId of the Rendering Control and AVTransport services that are bound to that connection. The Rendering Control instance is used by the Control Point to control how the content from that connection is rendered. The AVTransport instance is used by the Control Point to control the flow (e.g. Play, FF, REW, Seek, etc) of the content received via that connection. As described in the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	RenderingControl and AVTransport specification, each instance of these services operates independently from all other instances." UPnP Media Renderer, pg. 6. 25H11. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall] • Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	25H12. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2.
25I. synchronizing all players in the zone group in accordance with the zone group head; and	The UPnP Standard discloses synchronizing all zones in the zone group, such as by using the IEC61883/IEEE1394 isochronous transfer protocols to synchronize UPnP Media Servers and UPnP Media Renderers.  Figure 3 UPnP AV, pg. 5. "6.1. Isochronous-Push Transfer Protocols (IEC61883 /IEEE1394) When using an isochronous transfer protocol (e.g.IEC61883/ IEEE1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual packets of content are transferred within a certain (relatively small) period of time. This real-time behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer. Refer to the diagram below for details." UPnP AV, pgs. 12, 13, 18, 21.
25J. adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	The UPnP Standard discloses multiple audio channels (25J1) and a Rendering Control service that allows "Control Points to control each of these channels independently or as a whole" (25J2). Adjusting the volume of all of the channels as a whole is performed by adjusting a master volume meter represented by an averaged value of audio volumes of the players in the group. (25J3) The averaged value is at least represented when the associated channels, which can each be assigned to a different wireless network-enabled speakers, are first set to the lowest level and then increased by the master as a whole. (25J4, 25J5) Adjusting the master volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. (25J3). 25J1. "2.2.19. A_ARG_TYPE_Channel This variable is used to identify a particular channel of an audio output stream. A channel, except the Master channel, is associated with the location of the speaker where the audio data stream is to be presented. It is customary to refer a channel using the spatial position of associated speaker as described below. The Master channel is a logical channel and, therefore, has no spatial position associated with it. A one-channel channel cluster does not have spatial position associated with it either and will use the Master channel to control its properties. The following channel spatial positions are defined: • Master (Master) • Left Front (LF) • Right Front (RF) • Center Front (CF) • Low Frequency Enhancement (LFE) [Super woofer] • Left Surround (LS) • Right Surround (RS) • Left of Center (LFC) [in front] • Right of Center (RFC) [in front] • Surround (SD) [rear] • Side Left (SL) [left wall] • Side Right (SR) [right wall]

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Top (T) [overhead] • Bottom (B) [bottom] A channel cluster is the collection of all channels, including the Master channel, within an audio stream. A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel. In this specification, only the Master channel is required. All other channels are optional, see Table 2-15 for details." UPnP Rendering Control, pgs. 16-17. 25J2. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole." UPnP Rendering Control, pg, 41. 25J3. "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering Control, pg, 42. 25J4 "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	• Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42. 25J5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.
38. An apparatus for manipulating a plurality of players, the apparatus comprising:	As discussed above, the UPnP Standard discloses an apparatus for manipulating a plurality of players, such as a UPnP Control Point that is used for manipulating devices that are combined UPnP Media Servers and UPnP Media Renderers.
38A. a screen;	The UPnP Control Point includes a screen, such as a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 38A1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens. 38A2, 38A3, 38A4 38A1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 38A2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 38A3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 38A4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
38B. a screen driver commanding the screen;	The UPnP Control Point includes a screen driver commanding the screen, such as a screen driver of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. 38B1. For example, Windows UPnP discloses that the Windows XP operating system for personal computers was UPnP compatible and had extensive UPnP functionality, and generated user interfaces on screens that would require use of a screen driver. 38B2, 38B3, 38B4 "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images),

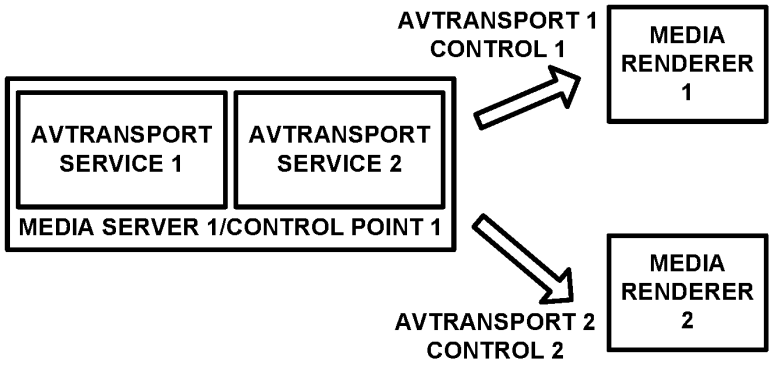
U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 38B2. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 38B3. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 38B4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
38C. an input interface;	The UPnP Control Point includes an input interface, such as an input interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
38D. a network interface;	The UPnP Control Point includes a network interface, such as a network interface of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6.
38E. a memory for storing code for an application module;	The UPnP Control Point includes a memory for storing code for an application module, such as a memory of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	"The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
38F. a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code	The UPnP Control Point provides a UI for the user to interact with the system, which inherently requires a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, such as a processor of a wireless PDA-like device with a small display, or a personal computer running Windows XP or other UPnP-compatible operating systems. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
in the memory to cause the application module and the screen driver to perform operations of:	formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. "After checking the local cache for any cached entries matching the search request, the devices returned are added to a list of the found devices." Microsoft UPnP, pg. 11.
38G. displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters	The UPnP Control Point displays a list on a screen showing a plurality of volume meters, such as by using a UPnP Control Point that receive HTML for each device that includes the volume setting for the device, and a master volume level for a master channel associated with the devices. 38G1 The volume meter/control for one of the devices represents an audio volume of one of the players, and the volume meter/control for the Master represents an audio volume of a group of players associated with the master. 38G2, 38G3 38G1. "At the highest layer, the presentation page is specified by a UPnP vendor. Moving down the stack, the UPnP Device Architecture specifies that this page be written in HTML. The page is delivered via HTTP over TCP over IP. For reference, colors in [square brackets] are included for consistency with other sections in this document. To retrieve a presentation page, the control point issues an HTTP GET request to the presentation URL, and the device returns a presentation page. Unlike the UPnP Device and Service Templates, and standard device and service types, the capabilities of the presentation page are completely specified by the UPnP vendor.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
representing an audio volume of a group of players, if there is such a group; and	The presentation page is not under the auspices of a UPnP Forum working committee. The page must be an HTML page; it should be version HTML 3.0 or later. However, other design aspects are left to the vendor to specify. This includes, but is not limited to, all capabilities of the control point's browser, scripting language or browser plug-ins used, and means of interacting with the device. To implement a presentation page, a UPnP vendor may wish to use UPnP mechanisms for control and/or eventing, leveraging the device's existing capabilities but is not constrained to do so. Presentation pages should use mechanisms provided by HTML for localization (e.g., META tag with charset attribute). Control points should use the ACCEPT- / CONTENT-LANGUAGE feature of HTTP to try to retrieve a localized presentation page. Specifically, a control point may include a HTTP ACCEPT-LANGUAGE header in the request for a presentation page; if an ACCEPT-LANGUAGE header is present in the request, the response must include a CONTENT-LANGUAGE header to identify the page's language." UPnP AV, pg. 53. 38G2. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 38G3. "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering Control, pg, 42.  Media Server 1 can be associated with the master channel, Media Renderer 1 can be associated with a left channel of the master channel, and Media Renderer 2 can be associated with a right channel of the master channel. Control Point 1 can generate a user interface with HTML that includes a list that has the master volume, the left channel volume and the right channel volume, such as using the Microsoft UPnP functionality to invoke devices through the presentation page of the device. 38G4, 38G5, 38G6 38G4. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2. 38G5. "You can now see if any UPnP enabled devices exist on your network by opening My Network Places on the desktop. If there are UPnP devices on your local network, they will appear here with a generic icon based on the device type. You can invoke the device from here through its presentation page." Microsoft UPnP, pg. 4. 38G6. "After checking the local cache for any cached entries matching the search request, the devices returned

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	are added to a list of the found devices." Microsoft UPnP, pg. 11.
38H. adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group,	The user of the UPnP Control Point can adjust one of the volume meters as desired after one of the volume meters from the list is selected, such as the Master channel for a channel group, wherein the volume meter/control for the Master is for the group of players associated with the channels assigned to the Master channel. The volume meter/control is represented by an averaged value of audio volumes of the players in the group, at least when all players are starting from the same minimum level with the Master. Adjusting the Master volume meter/control includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. "2.5.4. Controlling Audio Content The Rendering Control Service exposes a set of state variables that can be used to control the audio output of a device. These include various characteristics such as volume, mute, and loudness. However, unlike most visual content, audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole. In order to accomplish this, it is necessary for the Control Point to identify the channel that is to be controlled. This is accomplished via the 'Channel' parameter included in each action that is associated with the audio portion of an input stream. Each channel is uniquely named as described in Section 2.2.19. The "master" channel allows a Control Point to control the "composite" (post-mixed) audio content as a whole. When controlling the volume of a particular channel, Control Points can choose between two different representations of the volume setting. One representation uses the Volume state variable and the other representation uses the VolumeDB state variable. As described in Sections 2.2.16 and 2.2.17, the Volume state variable represents volume as a contiguous set of "positions" numbered from 0 to some device-specific maximum, and the VolumeDB state variable represents volume in units of 1/256 of a decibel (dB). Two pair of actions (one pair for each representation) are provided to get and set the volume of a channel." UPnP AV pg. 41 "Double the volume of the entire audio content: (Note: Increasing the volume by 6dB doubles the volume level.) • Invoke the GetVolumeDB() action with the Channel parameter set to 'Master'. Based on the previous example, the CurrentVolume out parameter returned a -1280 (increments of 1/256 dB), which indicates that the volume level is at -5dB. • Invoke the SetVolumeDB() action with the Channel parameter set to "Master" (and the DesiredVolume parameter set to 256 (-1280+1536 increments of 1/256dB), which corresponds to 1dB (-5+6)." UPnP Rendering

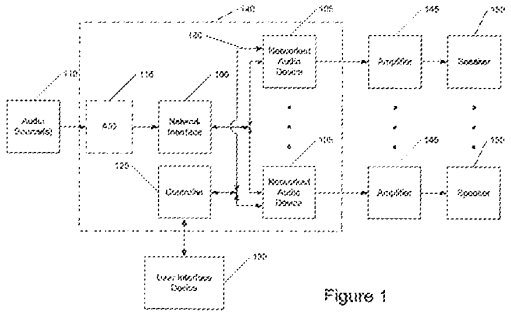
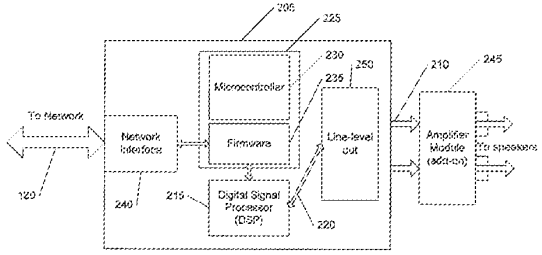
Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	Control, pg, 42.
38I. and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	The UPnP Control Point changes a volume of each of the group of players synchronously in accordance with an adjustment made by a user, such as by invoking the SetVolume() action with the Channel parameter set to "Master" and the Desired Volume parameter set to 1, which sets the volume levels at all associated devices that are assigned to different channels to 1. Subsequent SetVolume() actions for the Channel parameter set to Master result in the devices associated with the Master channel being synchronously adjusted. "[T]he Control Point coordinates and synchronizes the behavior of both devices. . . ." UPnP AV, pg. 4. "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device." UPnP Rendering Control, pgs. 41-42.

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
1. A method for controlling a plurality of players, the method comprising:	An example of a player is provided in Fig. 1 of Isely, which shows a networked audio device 105, and in Fig. 2 of Isely, which discloses that the networked audio device 205 includes a network interface 240, a microcontroller 230 and firmware 235, a digital signal processor 215 and an amplifier module 245 for speakers. Isley also discloses audio devices 305 and 405, which are equivalent to audio devices 105 and 205. Isely discloses that UPnP can be used for a salutation protocol, which is another term for a service discovery protocol that requires the use of UPnP Media Servers, UPnP Media Renderers, and UPnP Controls points, such as those disclosed and discussed in Exhibit A, which is hereby incorporated by reference. Isely thus discloses that audio sources 110/33/460, audio devices 105/205/305/405 and user interface devices 130/340/430 should be compliant with UPnP Media Servers, UPnP Media Renderers, and UPnP Control Points, and one of ordinary skill in the art would use the UPnP Standard to implement Isely in accordance with this disclosure.  Figure 1  Figure 2 Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." The chart of Appendix A is hereby incorporated by reference for each element, as further discussed below.
1A. displaying on a screen a first list showing at least available players;	Isely discloses a user interface device 130 (and user interface devices 340 and 430), which provides a user interface to receive user designations of aggregations of audio equipment, including audio sources 110 (and audio sources 330 and 460), to provide dynamic zone aggregation. [0039] The user interface can be implemented using a computer and HTML. [0057] The broadest reasonable construction of player includes audio sources 110, and Sonos has proposed a construction for the term "player" in the concurrent litigation of a "data network device configured to process and output audio" (Sonos Opening Claim Construction Brief, page 3), and has opposed a construction that would require an audio player to output sound, which would encompass audio sources 110/330/460. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose that UPnP Media Servers and UPnP Media Renderers can be displayed in a list. Isely, [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145, 150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
displaying, when at least one of the players is selected as a zone group	Isely discloses displaying a second list on the screen showing at least some of the players that are eligible to be grouped with the zone group head, such as audio devices 105/205/305/405,

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;	when at least one of the players is selected as a zone group head, such as one of audio sources 110/330/460. In other words, a user of Isely selects an audio source 110/330/460 to be the zone group head and the audio devices 105/205/305/405 to be grouped with the zone group head. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose displaying lists of UPnP Media Renderers to be grouped with a UPnP Media Server. Isely, [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely, [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely, [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."
forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and	Isely discloses forming a zone group started with the zone group head (audio sources 110/330/460), after one or more players from the at least some of the players (audio devices 105/205/305/405) are selected to join the zone group. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard discloses how to form a zone group by grouping a UPnP Media Server with one or more UPnP Media Renderers. Isely, [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely, [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely, [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."
synchronizing all players in the zone group;	Isely discloses synchronizing all players (audio sources 110/330/460 and players 105/205/305/405) in the zone group through the use of the Real Time Protocol and multicasting, and that an audio source 110/330/460 and group of players 105/205/305/405 provide the same audio channels at the same time, which requires synchronization. Isley also discloses the use of time stamped packets, which would only be needed for playing synchronous content. [0018], [0040], [0061]. Isely also references the use of RFC 1889/RTP, which discloses a synchronization source that is used to synchronize playback at multiple devices. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard discloses synchronization of UPnP Media Servers and UPnP Media Renderers through IEC61883/IEEE1394 isochronous transfer protocols, or that other common synchronization protocols can be used. Isely, [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network.

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0061] "Dynamic designation may be provided to the audio devices over the local network. The digital audio streams may be provided over the local network based on UDP or based on Transport Control Protocol (TCP). Furthermore, RTP may be used to provide the digital audio streams using time-stamped packets over UDP. Furthermore, the designations provided at block 525 may be provided over the local network using the salutation protocol

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	used by the respective audio devices to announce their presence at block 515." RFC 1889, pg. 7 "Synchronization source (SSRC): The source of a stream of RTP packets, identified by a 32-bit numeric SSRC identifier carried in the RTP header so as not to be dependent upon the network address. All packets from a synchronization source form part of the same timing and sequence number space, so a receiver groups packets by synchronization source for playback. Examples of synchronization sources include the sender of a stream of packets derived from a signal source such as a microphone or a camera, or an RTP mixer (see below). A synchronization source may change its data format, e.g., audio encoding, over time. The SSRC identifier is a randomly chosen value meant to be globally unique within a particular RTP session (see Section 8). A participant need not use the same SSRC identifier for all the RTP sessions in a multimedia session; the binding of the SSRC identifiers is provided through RTCP (see Section 6.4.1). If a participant generates multiple streams in one RTP session, for example from separate video cameras, each must be identified as a different SSRC."
adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses adjusting a control characteristic of a reference audio device 105/205/305/405 that includes a volume meter/control, which can have a complex, proportional, or static relationship to audio volumes of other audio devices 105/205/305/405 in a zone. Adjusting the volume meter/control of the reference audio devices includes changing a volume of each of the other audio devices synchronously in accordance with an adjustment made by a user. All volume changes are synchronized to the change of control level, such as by RFC 1889. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard provides extensive details on adjustment of a volume control that represents an averaged value of audio volumes of players in a group, such as when the volume is increased at startup from a minimum setting using the master channel volume to control all channels. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input."

APPENDIX B

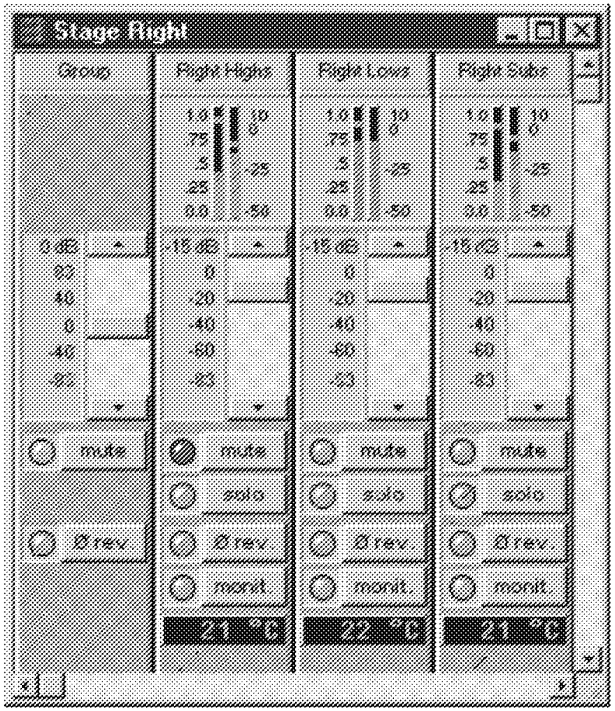
Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely, [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely, [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." Isely, [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." To the extent that Isely is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the Isely, because Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls.

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
Claim: 8	**Claim: 8**
8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:	
causing all players in the zone group	Isely discloses causing all players 105/205/305/405 in the zone group to play an identical

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
to play an identical audio source; and	audio source 110/330/460, such as by assigning each player 105/205/305/405 in a group to the same audio source 110/330/460. For example, a user can merge audio devices to form a single party zone. [0052] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that a UPnP Media Server can provide an identical source to multiple UPnP Media Renderers. Isely [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input."

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely [0052] "The virtual zone aspects of the present invention will now be further described by way of example where each audio device is associated with a room in a residence. To create a Party virtual zone, a user might merge the living room, kitchen, deck, and main floor bathroom audio devices. By default, built-in virtual effects, like "Concert Hall" could be used with the Party virtual zone, which could cause all rooms to switch to their individual "Concert Hall" effects. The virtual effects could have different equalization and processing settings as characteristics of the audio signal for each room, but as a virtual effect, "Concert Hall" could be controlled as if it were a single effect. In addition, the user could define a virtual effect called "Party" which could be associated with the Party virtual zone. The Party virtual effect could in turn define a "Concert Hall" virtual effect for the living room, a "Low Key" virtual effect for the kitchen, a low-volume "Rock" virtual effect for the deck, and a "Muzak®" virtual effect for the bathroom." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	associated with the addressable audio devices (block 535)."
presenting the zone group in a manner that indicates a grouping.	Isely discloses presenting the zone group in a manner that indicates a grouping. For example, Isely discloses a "defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone," where "a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen." [0049] A user device 130 allows a user to group players 105/205/305/405 and to control the grouping. [0039], [0057] This is a "manner that indicates a grouping." Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard and Microsoft UPnP discloses presenting a zone group in a manner that indicates a grouping, such as surround sound channels or stereo channels. NexSys also presents the zone group channels in a manner that indicates a grouping (such as where the channel bands shown above are replaced by the separate channels in the UPnP channel group). Isely [0037] "Each of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to

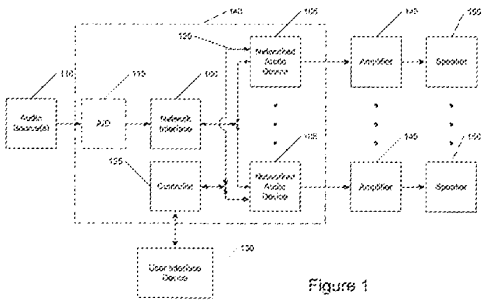
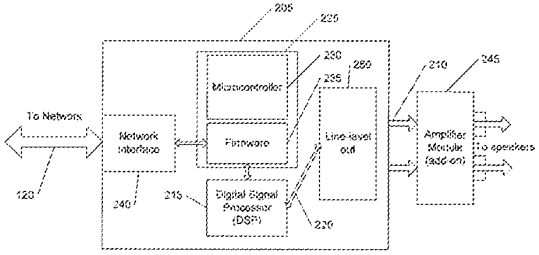
APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."
Claim: 16	**Claim: 16**
16. A method for controlling a plurality of players, the method comprising:	Isely discloses a method for controlling a plurality of players 105/205/305/405.  Figure 1  Figure 2
displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters	Isely discloses displaying on a screen, such as using HTML in conjunction with user interface device 130/340/430 a list showing a plurality of volume meters. [0057]. At least one of the volume meters represents an audio volume of one of the players (a zone can include one or a

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and	plurality of players 105/205/305/405 [0045], [0047]), and another one of the volume meters represents an audio volume of a group of players, when there is such a group. [0039] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard and Microsoft UPnP discloses displaying on a screen a list showing a plurality of volume meters, such as a master volume control and separate channel volume controls. At least one of the channel volume meters in that configuration represents an audio volume of one of the players, and the master volume meters represents an audio volume of a group of players. Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0045] "A plurality of these audio devices 105, 205, such as six or more, may be bundled in a single component, to provide a Network Architectural Preamplifier (NetPreAmp). The NetPreAmp may include a single network interface and a network switch which routes network traffic to the proper self-contained audio device. One or more network audio streams can be directed to one or more of the contained audio devices, providing the

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	basic architectural amplifier structure." Isely [0047] "The zone manager 315 defines a plurality of zones for the site. The zones may include one or a plurality of the individual addressable audio devices included in the illustrated block of network audio devices 305. For ease of understanding in connection with the remainder of the description of FIG. 3, references to audio devices 305 refer to individual ones of the plurality of networked audio devices unless specified otherwise. The zone manager 315 defines a relationship between a characteristic of an audio signal being distributed for a reference audio device and for ones of the addressable audio devices 305 in respective zones. For example, the reference audio device may be an individual one of the provided addressable audio devices 305 associated with a specific room and a relationship may be provided between the characteristics for the audio signal in that room and other rooms included in a common zone with the base audio device room." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input."

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein."
adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses adjusting a control characteristic of one of the volume meters/controls as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players (such as the reference audio device), represented by an averaged value of audio volumes of the players in the group (such as when there is a complex, proportional or static relationship with the other audio devices). Adjusting the volume meter/control of the reference audio device changes a volume of each of the group of players synchronously in accordance with an adjustment (complex, proportional or static) made by a user. For example, Isely discloses that relative relationship between devices can be provided, where a change in volume for one device results in a different change in volume for the other device. [0053] The relationship between volume levels of different players 105/205/305/405 in a zone can be "complex, proportional, or static," which covers every possible manner of adjusting and representing volume levels, and which explicitly discloses changing each of the volume of the group of players synchronously in accordance with an adjustment made by a user. [0062] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that one of the volume meters can be adjusted as desired with a UPnP Control Point after one of the volume meters from the list is selected, wherein the one of the volume meters is the master channel for the group of players. The master volume represents an averaged value of audio volumes of the players in the group at startup, when all volume settings are at the lowest level and when the master increases all volume levels by the same amount. Adjusting the master channel volume of adjusts the volume of each of the group of players synchronously in accordance with the adjustment

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	made by a user. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may

APPENDIX B

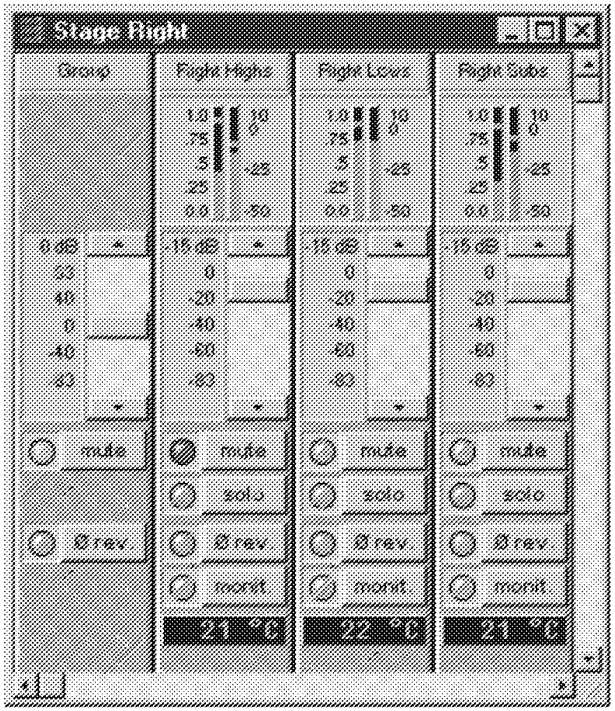
Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." To the extent that Isely is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:  As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with Isely, Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	controls. NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
Claim: 18	**Claim: 18**
18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players	Isely discloses adjusting the one of the volume meters for the group of players/audio devices 105/205/306/405 in a predetermined manner that appears that the group of players are being adjusted at the same time, such as in a "complex, proportional, or static" manner. [0062] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that the master channel is adjusted in a predetermined

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
are being adjusted at the same time.	manner that both appears and actually causes the volume of the group of associated channels (which can each have separate UPnP Media Renderers or audio device 105/205/305/405) to be adjusted at the same time. Isely [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
Claim: 20	**Claim: 20**
20. The method of claim 16, further comprising playing an identical audio source in the group of players.	Isely discloses playing an identical audio source in the group of players 105/205/305/405, such as from one of sources 110, 340 or 460, where "individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence." [0039] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that a UPnP Media Server can provide an identical audio source to multiple UPnP Media Renderers. Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the

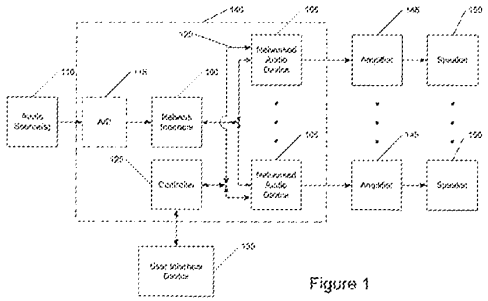
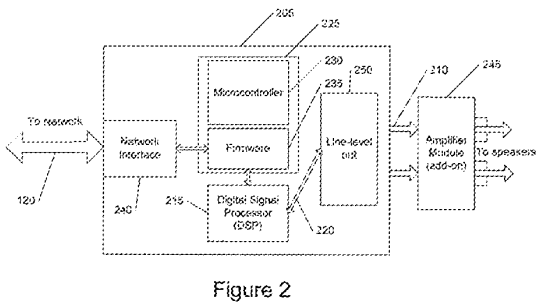
APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein."
Claim: 21	**Claim: 21**
21. The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.	Isely discloses the audio source is retrieved in form of audio data packets over the network. [0018] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of networked audio data. Isely [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	remotely configured using the same salutation protocol to add them to network groups."
Claim: 25	**Claim: 25**
25. An apparatus for controlling a plurality of players, the apparatus comprising:	Isely discloses an apparatus (user interfaces 130, 340, 430) for controlling a plurality of players 105/205/305/405.  Figure 1  Figure 2
a screen;	Isely discloses that user interfaces 130/340/430 can be implemented using a PC, which would inherently include a screen. [0031, 0039, 0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses a user interface that requires a screen and is implemented in HTML. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145, 150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a screen driver commanding the screen;	Isely discloses a screen driver commanding the screen, which is inherent in the disclosure of a PC or other device with a screen as shown above. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML, which requires a screen and screen driver. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." [Isely 0041] "When the audio devices 105 are powered they may use a salutation protocol

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	(such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups."
an input interface;	Isely discloses an input interface, such as one that can be implemented in HTML, to provide the user interface screens shown above. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML as an input interface. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a network interface;	Isely discloses a network interface 240 for each networked audio device player 105/205/305/405, plus a network interface 100 for the interface to audio sources. [0035], [0043] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses networked data communications between the UPnP Control Point, the UPnP Media Server and the UPnP Media Renderer. Isely [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely [0035] "The present invention will now be described with reference to the embodiments illustrated in the figures. Referring first to FIG. 1, embodiments of site based dynamic distribution systems according to the present invention will be further described. As shown in FIG. 1, a site based dynamic distribution system for distributing an audio signal over a local network for the site includes a network interface 100 coupled to a plurality of network attached audio devices 105. An audio signal is received by the network interface 100 from an audio source 110. The audio source 110 may be a digital audio stream source such as, for example, a digital audio stream from the Internet or an outside device providing a digital audio stream in a format, for example, MP3. The audio source 110 may also be an analog audio source, in which case, an analog to digital converter 115 may convert a received analog signal to a digital audio stream and pass the digital audio stream to the network interface 100. A plurality of different types of audio sources 110 may be coupled by the network interface 100 to the local network 120 at the site." Isely [0038] "The network interface 100 receives digital audio streams and outputs the digital audio streams on the local network 120 using an address based protocol with each of the digital audio streams having a different associated identifier. The plurality of network attached audio devices 105 are configured to receive a selected one of the digital audio streams over the network 120 based on a designated one of the associated identifiers. The network attached audio devices 105 are further configured to output the received digital audio stream to the audio equipment 145, 150." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0043] "As shown in the embodiments of FIG. 2, the audio device 205 includes a digital signal processor (DSP) 215 which converts the incoming digital audio stream to a line-level output 220. The DSP 215 may further include equalization functions and/or audio mixing function circuitry. The DSP 215 operates in cooperation with a control device 225 which includes a microcontroller 220 and firmware 235. The control device 225 provides protocol support for obtaining the digital audio stream from the local network 120 through a network interface 240 and providing the audio signal to the DSP 215 for further processing. The output signal from the DSP 215 is provided through the line-level output circuit 250 to the amplifier module 245." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	associated with the addressable audio devices (block 535)."
a memory for storing code for an application module;	Isely inherently discloses a memory for storing code for an application module, because the operations disclosed in Isely can be carried out using computer program code [0031] on a computer [0057]. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses numerous application modules that inherently require memory. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	Isely inherently discloses a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, because of the disclosure of user interface devices 130/340/430 that are implemented on a computer. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses processor-driven UPnP Control Points, UPnP Media Renderers and UPnP Media Servers. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
displaying on a screen a first list showing at least available players;	Isely discloses a user interface device 130 (and user interface devices 340 and 430), which provides a user interface to receive user designations of aggregations of audio equipment, including audio sources 110 (and audio sources 330 and 460), to provide dynamic zone aggregation. [0039] The user interface can be implemented using a computer and HTML. [0057] The broadest reasonable construction of player includes audio sources 110, and Sonos has proposed a construction for the term "player" in the concurrent litigation of a "data

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	network device configured to process and output audio" (Sonos Opening Claim Construction Brief, page 3), and has opposed a construction that would require an audio player to output sound, which would encompass audio sources 110/330/460. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose that UPnP Media Servers and UPnP Media Renderers can be displayed in a list. Isely, [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145, 150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	remotely configured using the same salutation protocol to add them to network groups." Isely, [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;	Isely discloses displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head, such as audio devices 105/205/305/405 and sources 110/330/460, where any one of the players can be selected as a zone group head. In other words, a user of Isely selects an audio source 110/330/460 or one of audio devices 105/205/305/405 to be the zone group head, because "zone group head" is a statement of intended use and does not have any structural significance. Isely also discloses forming a zone group started with the zone group head (such as audio devices 105/205/305/405 or audio sources 110/330/460), after one or more players from the at least some of the players are selected to join the zone group. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard and Microsoft UPnP disclose displaying lists of UPnP Media Renderers to be grouped with a UPnP Media Server. Isely, [0037] "Each of the network attached audio devices 105 is associated with a group of

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence. As shown in FIG. 1, a separate amplifier 145 and speaker(s) 150 are provided as audio equipment located at the site which equipment is responsive to a signal output from a particular network attached audio device 105. However, it is to be understood that the network attached audio devices 105 may include therein a pre-amplifier circuit and/or a pre-amplifier and amplifier circuits so that the speaker 150 may be driven directly by the audio devices 105 or driven though the amplifier 145 as illustrated in FIG. 1." Isely, [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	(such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely, [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."
synchronizing all players in the zone group in accordance with the zone group head; and	Isely discloses synchronizing all players (audio sources 110/330/460 and players 105/205/305/405) in "accordance with the zone group head" (which is a statement of intended use and which only requires the zone group to be synchronized in some manner) through the use of the Real Time Protocol and multicasting, and that an audio source 110/330/460 and group of players 105/205/305/405 provide the same audio channels at the same time, which requires synchronization. Isley also discloses the use of time stamped packets, which would only be needed for playing synchronous content. [0018], [0040], [0061]. Isely also references the use of RFC 1889/RTP, which discloses a synchronization source that is used to synchronize playback at multiple devices. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard discloses synchronization of UPnP Media Servers and UPnP Media Renderers through IEC61883/IEEE1394 isochronous transfer protocols, or that other common synchronization protocols can be used. Isely, [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely, [0040] "One element of various embodiments of the present invention, as described above, is the ability to dynamically define aggregate zones. To accomplish this, the system provides the ability to add or remove audio device 105 to or from groups or virtual zones. Defining virtual zones involves assigning audio devices 105 to a particular network group. This will now be further described with reference to an example using the IP-based UDP protocol over an Ethernet network. However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0061] "Dynamic designation may be provided to the audio devices over the local network. The digital audio streams may be provided over the local network based on UDP or based on Transport Control Protocol (TCP). Furthermore, RTP may be used to provide the

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	digital audio streams using time-stamped packets over UDP. Furthermore, the designations provided at block 525 may be provided over the local network using the salutation protocol used by the respective audio devices to announce their presence at block 515." RFC 1889, pg. 7 "Synchronization source (SSRC): The source of a stream of RTP packets, identified by a 32-bit numeric SSRC identifier carried in the RTP header so as not to be dependent upon the network address. All packets from a synchronization source form part of the same timing and sequence number space, so a receiver groups packets by synchronization source for playback. Examples of synchronization sources include the sender of a stream of packets derived from a signal source such as a microphone or a camera, or an RTP mixer (see below). A synchronization source may change its data format, e.g., audio encoding, over time. The SSRC identifier is a randomly chosen value meant to be globally unique within a particular RTP session (see Section 8). A participant need not use the same SSRC identifier for all the RTP sessions in a multimedia session; the binding of the SSRC identifiers is provided through RTCP (see Section 6.4.1). If a participant generates multiple streams in one RTP session, for example from separate video cameras, each must be identified as a different SSRC."
adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses adjusting a control characteristic of a reference audio device 105/205/305/405 that includes a volume meter/control, which can have a complex, proportional, or static relationship to audio volumes of other audio devices 105/205/305/405 in a zone. Adjusting the volume meter/control of the reference audio devices includes changing a volume of each of the other audio devices synchronously in accordance with an adjustment made by a user. All volume changes are synchronized to the change of control level, such as by RFC 1889. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, and the UPnP Standard provides extensive details on adjustment of a volume control that represents an averaged value of audio volumes of players in a group, such as when the volume is increased at startup from a minimum setting using the master channel volume to control all

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

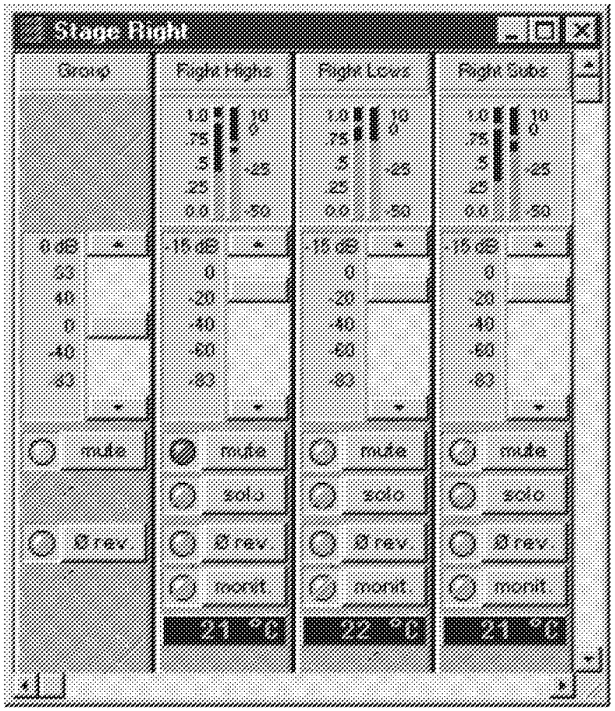
Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	channels. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely, [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely, [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely, [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430." Isely, [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." To the extent that Isely is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:  As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the Isely, because Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for

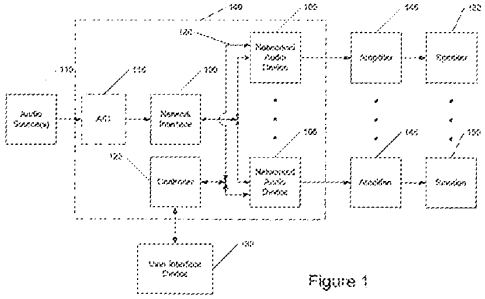
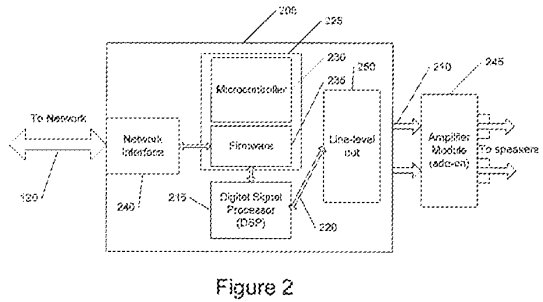
APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls. NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
Claim: 38	**Claim: 38**
38. An apparatus for manipulating a plurality of players, the apparatus comprising:	Isely discloses an apparatus (user interfaces 130, 340, 430) for manipulating a plurality of players 105/205/305/405.

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	 Figure 1  Figure 2
a screen;	Isely discloses that user interfaces 130/340/430 can be implemented using a PC, which would inherently include a screen. [0031, 0039, 0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses a user interface that requires a screen and is implemented in HTML. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0039] "The user device 130, in combination with the controller 125, provides a user interface configured to receive a user designation of aggregations of the audio equipment 145,

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	150 located at the site so as to provide dynamic zone aggregation in various embodiments of the present invention. The controller 125 operates to designate the associated identifiers to be received by respective ones of the plurality of network attached audio devices 105. In other words, the controller 125 essentially tells the network audio devices 105 the "channel" to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation. Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected.

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a screen driver commanding the screen;	Isely discloses a screen driver commanding the screen, which is inherent in the disclosure of a PC or other device with a screen as shown above. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML, which requires a screen and screen driver. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." [Isely 0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups."

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
an input interface;	Isely discloses an input interface, such as one that can be implemented in HTML, to provide the user interface screens shown above. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses the use of HTML as an input interface. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a network interface;	Isely discloses a network interface 240 for each networked audio device player 105/205/305/405, plus a network interface 100 for the interface to audio sources. [0035], [0043] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses networked data communications between the UPnP Control Point, the UPnP Media Server and the UPnP Media Renderer. Isely [0018] "In further embodiments of the present invention, the site is a residence and various of the groups of audio equipment are associated with respective rooms of the residence. The address based protocol may be a User Datagram Protocol (UDP) and may further be a Real-time Transport Protocol (RTP) and the network interface may be an RTP interface. The RTP interface may output the digital audio streams using time-stamped packets using UDP. The plurality of network attached audio devices may be configured to provide a salutation protocol to announce their presence to the controller over the local network. Furthermore, the controller may be configured to assign the associated address to be received by respective ones of the plurality of network attached audio devices to the network attached audio devices over the local network using the salutation protocol so as to group ones of the plurality of network attached audio devices." Isely [0035] "The present invention will now be described with reference to the embodiments illustrated in the figures. Referring first to FIG. 1, embodiments of site based dynamic distribution systems according to the present invention will be further described. As shown in FIG. 1, a site based dynamic distribution system for distributing an audio signal over a local

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	network for the site includes a network interface 100 coupled to a plurality of network attached audio devices 105. An audio signal is received by the network interface 100 from an audio source 110. The audio source 110 may be a digital audio stream source such as, for example, a digital audio stream from the Internet or an outside device providing a digital audio stream in a format, for example, MP3. The audio source 110 may also be an analog audio source, in which case, an analog to digital converter 115 may convert a received analog signal to a digital audio stream and pass the digital audio stream to the network interface 100. A plurality of different types of audio sources 110 may be coupled by the network interface 100 to the local network 120 at the site." Isely [0038] "The network interface 100 receives digital audio streams and outputs the digital audio streams on the local network 120 using an address based protocol with each of the digital audio streams having a different associated identifier. The plurality of network attached audio devices 105 are configured to receive a selected one of the digital audio streams over the network 120 based on a designated one of the associated identifiers. The network attached audio devices 105 are further configured to output the received digital audio stream to the audio equipment 145, 150." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0043] "As shown in the embodiments of FIG. 2, the audio device 205 includes a digital signal processor (DSP) 215 which converts the incoming digital audio stream to a line-level output 220. The DSP 215 may further include equalization functions and/or audio mixing function circuitry. The DSP 215 operates in cooperation with a control device 225 which

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	includes a microcontroller 220 and firmware 235. The control device 225 provides protocol support for obtaining the digital audio stream from the local network 120 through a network interface 240 and providing the audio signal to the DSP 215 for further processing. The output signal from the DSP 215 is provided through the line-level output circuit 250 to the amplifier module 245." Isely [0060] "A user may, at various times, provide designations of ones of the groups of audio equipment at the site to be aggregated/segregated (block 520). Each group of audio equipment which is designated is associated with one of the addressable audio devices 305 so that, for example, an aggregation of groups of audio equipment may include groups of audio equipment in a plurality of different rooms with each group of audio equipment being associated with a room (or rooms) serviced by a particular addressable audio device 305 and a virtual zone across multiple rooms being provided by the aggregation of groups of audio equipment. The network interface 100 or audio interface 320 may, thus, dynamically designate respective ones of the addressable audio devices for inclusion in an aggregation of groups of audio equipment. (block 525). Furthermore, one of the identifiers associated with a digital audio stream to be received by the respective addressable audio devices in the group may be provided (block 525). The selection of a digital audio stream to which each audio device in a group will "tune" may be provided to the OSGi 350 as part of a received user designation at block 520. The digital audio stream associated with the designated identifier is then received at respective ones of the addressable audio devices over the local network (block 530). The received digital audio stream is then output to the groups of audio equipment associated with the addressable audio devices (block 535)."
a memory for storing code for an application module;	Isely inherently discloses a memory for storing code for an application module, because the operations disclosed in Isely can be carried out using computer program code [0031] on a computer [0057]. Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses numerous application modules that

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	inherently require memory. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and
further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	Isely inherently discloses a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations, because of the disclosure of user interface devices 130/340/430 that are implemented on a computer. [0057] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses processor-driven UPnP Control Points, UPnP Media Renderers and UPnP Media Servers. Isely [0031] "Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®), Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language or assembly language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider)." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	remotely configured using the same salutation protocol to add them to network groups." Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group."
displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and	Isely discloses displaying on a screen, such as using HTML in conjunction with user interface device 130/340/430 a list showing a plurality of volume meters. [0057]. At least one of the volume meters represents an audio volume of one of the players (a zone can include one or a plurality of players 105/205/305/405 [0045], [0047]), and another one of the volume meters represents an audio volume of a group of players, when there is such a group. [0039] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard and Microsoft UPnP discloses displaying on a screen a list showing a plurality of volume meters, such as a master volume control and separate channel volume controls. At least one of the channel volume meters in that configuration represents an audio volume of one of the players, and the master volume meters represents an audio volume of a group of players. Isely [0039] "Thus, individual ones of the network attached audio devices may be grouped together and instructed to listen to the same channel to provide common audio signals to

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	multiple rooms in a house while other groupings of the network attached audio devices 105 may be assigned a different channel to provide a different audio signal source in another set of rooms within the residence. Groups of the network attached audio devices 105 may be defined which provide a dynamically configurable virtual zone within the house for purposes of providing communication of audio signals over the local network 120." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0045] "A plurality of these audio devices 105, 205, such as six or more, may be bundled in a single component, to provide a Network Architectural Preamplifier (NetPreAmp). The NetPreAmp may include a single network interface and a network switch which routes network traffic to the proper self-contained audio device. One or more network audio streams can be directed to one or more of the contained audio devices, providing the basic architectural amplifier structure." Isely [0047] "The zone manager 315 defines a plurality of zones for the site. The zones may include one or a plurality of the individual addressable audio devices included in the illustrated block of network audio devices 305. For ease of understanding in connection with the remainder of the description of FIG. 3, references to audio devices 305 refer to individual ones of the plurality of networked audio devices unless specified otherwise. The zone manager 315 defines a relationship between a characteristic of an audio signal being distributed for a reference audio device and for ones of the addressable audio devices 305 in respective zones. For example, the reference audio device may be an individual one of the provided addressable audio devices 305 associated with a specific room and a relationship

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	may be provided between the characteristics for the audio signal in that room and other rooms included in a common zone with the base audio device room." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430."

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely [0057] "The systems 140, 350, 305, 415 along with the user devices 130, 340, 430 provide an audio player as a device or interface, which control the configuration of an "audio network." It can be provided as a true hardware device with knobs and flashing lights or as a software component that presents a user interface via a computer, either directly attached or remote via, for example, a network and HTML or some other markup language. The audio player may be visually configured to select a virtual zone or room/channel and a virtual effect can be associated with the selected channel(s). An audio signal source, such as a CD player, digital content from the Internet, or digital audio files on network storage, is also selected. The audio player then delivers the audio signal to the target virtual zone and/or channel using the proper network group and the proper encapsulation protocol. Channels can be added or removed from the virtual zone in some embodiments of the present invention by dynamically configuring additional audio devices to belong to the same network group." Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein."
adjusting one of the volume meters as desired after one of the volume meters from the list is selected,	Isely discloses adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. For example, Isely discloses that relative relationship between devices can be provided, where a change in volume for one device results in a different change in volume for the other device. [0053] The relationship between volume levels of different players 105/205/305/405 in a zone can be "complex, proportional, or static," which covers every possible manner of adjusting and representing volume levels, and which explicitly discloses changing each of the volume of the group of players synchronously in accordance with an adjustment made by a user. [0062] Isely also discloses that the system of Isely can be compliant with the UPnP Standard, [0041], and the UPnP Standard discloses that one of the volume meters can be adjusted as desired with a UPnP Control Point after one of the volume meters from the list is selected, wherein the one of the volume meters is the master channel for the group of players. The master volume represents an averaged value of audio volumes of the players in the group at startup, when all volume settings are at the lowest level and when the master increases all volume levels by the same amount. Adjusting the master channel volume of adjusts the volume of each of the group of players synchronously in accordance with the adjustment made by a user. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely [0041] "When the audio devices 105 are powered they may use a salutation protocol (such as Universal Plug and Play (UPnP), Jini from Sun Microsystems or Salutation) to announce their presence on the network 120. The controller 125 with audio configuration capability collects a list of all the audio devices 105 and provides, in cooperation with the network interface 100, an interface for aggregating and segregating virtual zones and may use

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	the same salutation protocol to distribute the interface. The audio devices 105 may then be remotely configured using the same salutation protocol to add them to network groups." Isely [0048]-[0049] "The characteristic may, for example, be any of a number of audio signal characteristics commonly associated with playing audio signals such as volume, tone, balance and spatialization. In various embodiments of the present invention, the characteristic is an equalization specification for the audio signal to be transmitted to the respective addressed audio devices 305. In such cases, the audio devices 305 further include an equalizer circuit configured to provide the desired equalization specification for delivery of the audio signal to their associated audio equipment. The audio interface 320 receives the digital audio streams and outputs the digital audio streams on a local network 310 addressed (i.e., with an identifier of a particular audio stream which is detectable by the audio devices 305) to selected ones of the audio devices 305 based on the defined zones. The output is further based on the defined relationship between a characteristic of the audio signal for the reference audio device and for others of the audio devices in a zone. The output may also be provided based upon a control input associated with a characteristic, for example, a desired volume input for the kitchen may result in a different volume adjustment for other rooms grouped in a common zone with the kitchen. A user interface 340 is configured to receive a user designation of the control input." Isely [0053] "The effect of volume or equalization changes to each audio device in a virtual zone could also be configured based on the type of room and the purpose of the audio content in each room. Because the main room is likely to be the living room, the living room audio device could be configured to "match" the equalization or volume changes to the reference zone of the virtual zone. For example, a 20 dB volume increase of the virtual zone would cause a 20 dB volume change in the living room (i.e., the living room would be the reference point). On the other hand, the bathroom audio may be intended as more of an ambient effect, and the user would probably not want a 20 dB volume increase in the bathroom. The bathroom audio device could, therefore, be configured to maintain a fixed or "static" volume level. The deck is another audio device "room" that may require a special relationship to the reference zone of the virtual zone. Even though the user is throwing a party, the user may not

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	want to annoy neighbors, so the deck may be configured to maintain a "relative" relationship with the virtual zone. As an example of such a relative relationship, if the reference volume is increased 20 dB or 50%, the volume on the deck (which presumptively started out lower than the rest of the house) will increase by 50%, as well. Other relationships between individual rooms and the reference could also be used. For example, for every 5 dB increase in the reference, a room could increase 1 dB. Furthermore, a maximum decibel limit may be provided for a room or a virtual zone." Isely [0056] "To provide a virtual reality effect, one or more of the tracks 460 is associated with a reference position in the residence. For example, the waterfall of track 1 460 could be associated with a location serviced by the room 1 audio equipment 450 which is driven by the channel 1 audio device 405. The audio mixer circuit of the zone manager 415 is configured to provide different mixed audio streams for a plurality of the addressable audio devices 405 in which a characteristic of at least one of the plurality of designated digital audio streams included in the mixed audio stream is based on a relative position between the associated equipment receiving the mixed audio stream and the reference position. In other words, for example, the volume of the track 1 waterfall could be maintained at a loud level in its designated reference location at the room 1 audio equipment 450 with a proportionally reduced volume in each of the remaining rooms 2-4 based upon their distance within the residence from room 1. Other of the tracks 460 could be associated with different rooms. So, for example, a babbling brook (track 4) could be loud in room 3 and quieter in room 1, while the waterfall of track 1 would be louder in room 1 and quieter in room 3. Each output channel from the respective audio devices 405 may, thus, be a combination of one or more of the respective tracks 460 at different volumes to create the illusion of proximity to a respective sound source, thereby providing a virtual reality effect. Furthermore, some of the tracks included in the mix could be purely ambient tracks that provided no indication of proximity. The level of the respective tracks for each channel and which tracks to include in the mix for each channel may be pre-set by a manufacturer or configurable dynamic through a user interface 430."

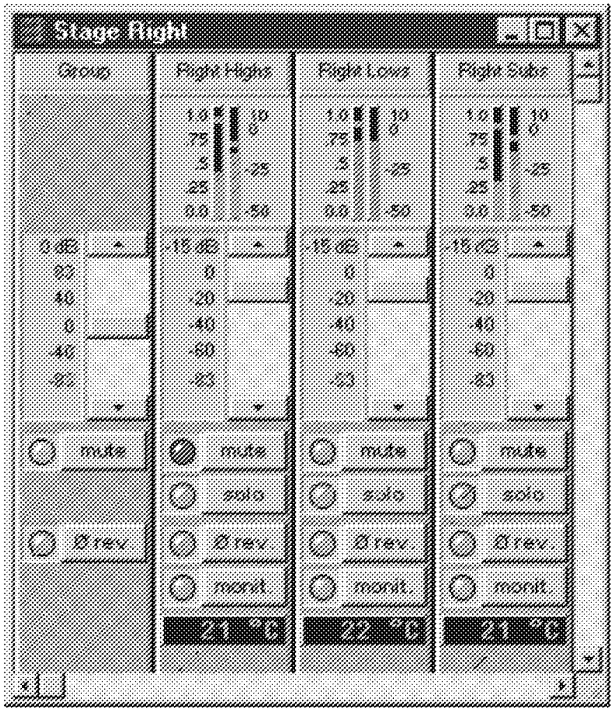
APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	Isely [0062] "Referring now to the flowchart diagram of FIG. 6, operations for dynamic distribution of an audio signal in a zoned environment will now be further described for various embodiments of the present invention. More particularly, the description with reference to FIG. 6 will be directed to what may be referred to as the tone by zone or virtual effect aspects of the present invention. Operations in FIG. 6, begin at block 600 with defining a plurality of zones in the zoned environment. One or more of the defined zones may include a plurality of addressable audio devices 305, 405. An audio signal, such as a digital audio stream, is subsequently received (block 610). A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." To the extent that Isely is not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with Isely, because Isely explicitly discloses volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls.

APPENDIX B

Invalidity of the Challenged Claims of the '014 Patent in view of Isely, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

Claim	Isely, the UPnP Standard, Microsoft UPnP and NexSys
	NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
1. A method for controlling a plurality of players, the method comprising:	The arguments and exemplary citations from Appendices A and B are hereby incorporated for each corresponding element of this chart, as further described below.
displaying on a screen a first list showing at least available players;	Office Action from U.S. patent application 10/861,653, mailed February 18, 2009 ("OA"), page 3 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players (see column 5, line 57 - column 6, line 13 teaches a screen displaying a list of available players previously entered) . . . "
displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;	OA, page 3 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: . . . displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head . . . " OA, page 3 – "Berezowski teaches a source node to communicate to a group or zone (see column 2, line 49 - column 3, line 7, column 3, lines 44-49, and column 4, lines 7-43). Berezowski teaches a paging system employing different groups or zones, wherein at least some of the destinations (i.e. players) that are eligible to be grouped with a source node (i.e. zone group head) can be selected on a display (see column 6, lines 5-13 and figures 8-9)."
forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and	OA, page 3 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: . . . forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group . . . " OA, page 3-4 – "Berezowski teaches a zone group started with the source node, after one or more players from at least some of the destinations, or players, are selected to join the zone group (see column 5, line 66 - column 6, line 13 implies that a zone is created by at least one player being added as a destination)."
synchronizing all players in the zone group;	OA, pages 3-4 - "Regarding claim 1, Berezowski teaches a method for controlling a plurality of players, the method comprising: . . . synchronizing all players in the zone group. . . . Berezowski does not appear to teach the selection of a zone group head or synchronization. Tomassetti teaches a multi-zone entertainment network (see abstract). Specifically, Tomassetti teaches that any node can become a source or a destination (see ¶ 0019). Therefore, it would have been obvious for one of ordinary skill at

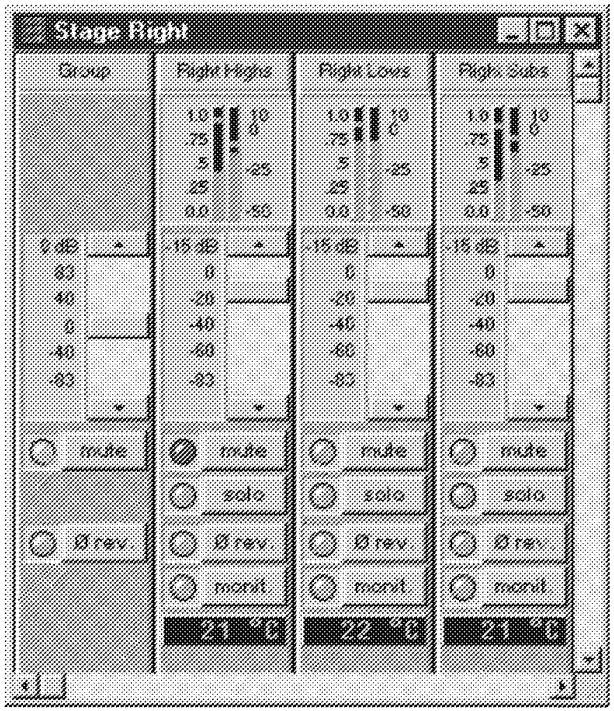
APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	the time to select one of the players as a zone group head. Tomassetti also teaches synchronization of an audio within a zone (see ¶ 0005, 0009-0012, and 0016-0019), so it would have been obvious to synchronize all the players in a zone group. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski and Tomassetti for the purpose of reducing echoes. It is obvious to one of ordinary skill in the art that the same audio stream played in adjacent rooms, or rooms that are not acoustically separate, can create a slightly disturbing echo when the audio is not synchronized."
adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased. The invalidity chart of Appendix B is hereby incorporated by reference for each element of this claim chart. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	reference for each element of this claim chart. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a Windows-based group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:  As can be seen above, the group control increases or decreases the separate channels (right highs, right

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:	
causing all players in the zone group to play an identical audio source; and	OA, page 6 "Regarding claim 8, see the preceding argument with respect to claim 1. The combination teaches the method of claim 1, wherein said synchronizing all players in the zone group comprises: causing all players in the zone group to play an identical audio source (see Tomassetti, ¶ 0067, wherein "The home theater system 226 may be capable ... of sending ... audio files ... to individual room stations

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	202-212 .... " and ¶ 0074, wherein " ... each remote station itself can broadcast or receive independent of and simultaneous with other remote stations."); and presenting the zone group in a manner that indicates a grouping (see Berezowski, figures 8- 10 and column 6, lines 5-13)."
presenting the zone group in a manner that indicates a grouping.	OA, page 6 "Regarding claim 8, see the preceding argument with respect to claim 1. The combination teaches the method of claim 1, wherein said synchronizing all players in the zone group comprises: causing all players in the zone group to play an identical audio source (see Tomassetti, ¶ 0067, wherein "The home theater system 226 may be capable ... of sending ... audio files ... to individual room stations 202-212 .... " and ¶ 0074, wherein " ... each remote station itself can broadcast or receive independent of and simultaneous with other remote stations."); and presenting the zone group in a manner that indicates a grouping (see Berezowski, figures 8- 10 and column 6, lines 5-13)."
16. A method for controlling a plurality of players, the method comprising:	OA, pages 10 – "Regarding claim 16, see the preceding argument with respect to claim 1. The combination of Berezowski and Tomassetti teaches a method for controlling a plurality of players, the method comprising: displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and adjusting one of the volume meters as desired after one of the volume meters from the list is selected (see Tomassetti, ¶ 0004 and 0068)."
displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and	OA, pages 10-11 – "Regarding claim 16, see the preceding argument with respect to claim 1. The combination of Berezowski and Tomassetti teaches a method for controlling a plurality of players, the method comprising: displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group . . . (see Tomassetti, ¶ 0004 and 0068). The prior combination of Berezowski and Tomassetti teaches the features shown above, wherein Tomassetti makes it obvious to control the audio for each individual player in a group. However, it does not appear to teach a display listing a plurality of volume meters, where one volume level represents a group of players. Isely teaches a zone audio player (see abstract). Specifically, Isely teaches a volume level to represent each player in a designated zone (see ¶ 0011-0012). Isely also teaches volume levels with unique relationships associated with a zone (see ¶ 0047-0049, 0053, 0056, and 0057). It would have been obvious to display on a screen (such as the LCD taught by Tomassetti) the volume meters representing one of the unique relationships in the zone for the purpose of providing better

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	ambiance. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski, Tomassetti, and Isely for the purpose of providing better ambiance."
adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and	OA, pages 10-11 – "Regarding claim 16, see the preceding argument with respect to claim 1. The combination of Berezowski and Tomassetti teaches a method for controlling a plurality of players, the method comprising: . . . adjusting one of the volume meters as desired after one of the volume meters from the list is selected (see Tomassetti, ¶ 0004 and 0068). The prior combination of Berezowski and Tomassetti teaches the features shown above, wherein Tomassetti makes it obvious to control the audio for each individual player in a group. However, it does not appear to teach a display listing a plurality of volume meters, where one volume level represents a group of players. Isely teaches a zone audio player (see abstract). Specifically, Isely teaches a volume level to represent each player in a designated zone (see ¶ 0011-0012). Isely also teaches volume levels with unique relationships associated with a zone (see ¶ 0047-0049, 0053, 0056, and 0057). It would have been obvious to display on a screen (such as the LCD taught by Tomassetti) the volume meters representing one of the unique relationships in the zone for the purpose of providing better ambiance. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski, Tomassetti, and Isely for the purpose of providing better ambiance." OA, page 4 - "Tomassetti also teaches synchronization of an audio within a zone (see ¶ 0005, 0009-0012, and 0016-0019), so it would have been obvious to synchronize all the players in a zone group."
said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	OA, page 4 - "Tomassetti also teaches synchronization of an audio within a zone (see ¶ 0005, 0009-0012, and 0016-0019), so it would have been obvious to synchronize all the players in a zone group." Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased, and the change would be synchronous in accordance with an adjustment made by the

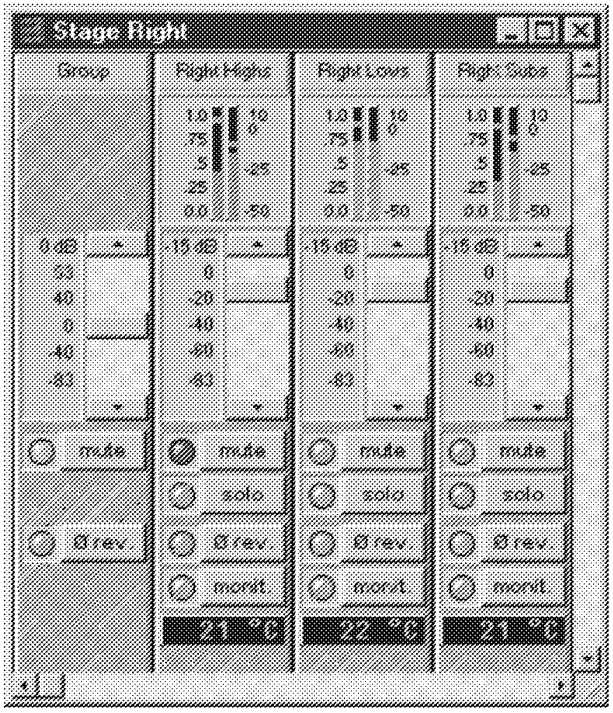
APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	user. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by reference for all purposes. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.	Claim 18 was originally presented as claim 19 during prosecution. OA, page 11 – "Regarding claim 18, see the preceding argument with respect to claim 16. The combination teaches the method of claim 16, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes: changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user (see Tomassetti, ¶ 0004, 0005, 0009-0012, 0016-0019, and 0068, and Isely, ¶ 0053). It would have been obvious to synchronize the change in volume due to linking the volume changes according to the unique relationships defined in Isely. **Regarding claim 19**, see the preceding argument with respect to claim 18. The combination teaches the method of claim 18, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players is being adjusted at the same time." (emphasis added)
20. The method of claim 16, further comprising playing an identical audio source in the group of	Claim 20 was originally presented as claim 22. OA, pages 11-12 – "Regarding claim 22, see the preceding argument with respect to claim 16. The combination teaches the method of claim 16, further comprising playing an identical audio source in the

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
players.	group of players (see Tomassetti, ¶ 0067, wherein "The home theater system 226 may be capable ... of sending ... audio files ... to individual room stations 202-212 .... " and ¶ 0074, wherein " ... each remote station itself can broadcast or receive independent of and simultaneous with other remote stations.")."
21. The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.	Claim 21 was originally presented as claim 23 OA, page 12 – "Regarding claim 23, see the preceding argument with respect to claim 22. The combination teaches the method of claim 22, wherein the audio source is retrieved in form of audio data packets over the network (see Tomassetti, ¶ 0016)."
25. An apparatus for controlling a plurality of players, the apparatus comprising:	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . The combination of claim 1, teaches the features above, wherein it is inherent there must be a screen driver to display an output and a processor to execute the software."
a screen;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: a screen (see Berezowski, figure 8 and column 5, lines 57-59) . . ."
a screen driver commanding the screen;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a screen driver commanding the screen (inherent) . . ."
an input interface;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . an input interface (id., column 5, lines 59-65) . . ."
a network interface;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a network interface (id., column 4, lines 7-22) . .
a memory for storing code for an application module;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a memory for storing code for an application module (id., column 2, line 49 - column 3, line 7) . .
a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver (inherent) to perform operations of . .

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
cause the application module and the screen driver to perform operations of:	
displaying on a screen a first list showing at least available players;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . displaying on a screen a first list showing at least available players (id., column 5, line 57 - column 6, line 13 and figures 8-1 O) . . ."
displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head (id., column 5, line 66 - column 6, line 13 in view of Tomassetti, ¶ 0074) . . ."
synchronizing all players in the zone group in accordance with the zone group head; and	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising . . . synchronizing all players in the zone group in accordance with the zone group head (see Tomassetti, ¶ 0005, 0009-0012, and 0016-0019)."
adjusting a volume meter represented by an averaged value of audio volumes of the slayers in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in	Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased. The invalidity chart of Appendix B is hereby incorporated by reference for each element of this claim chart. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which

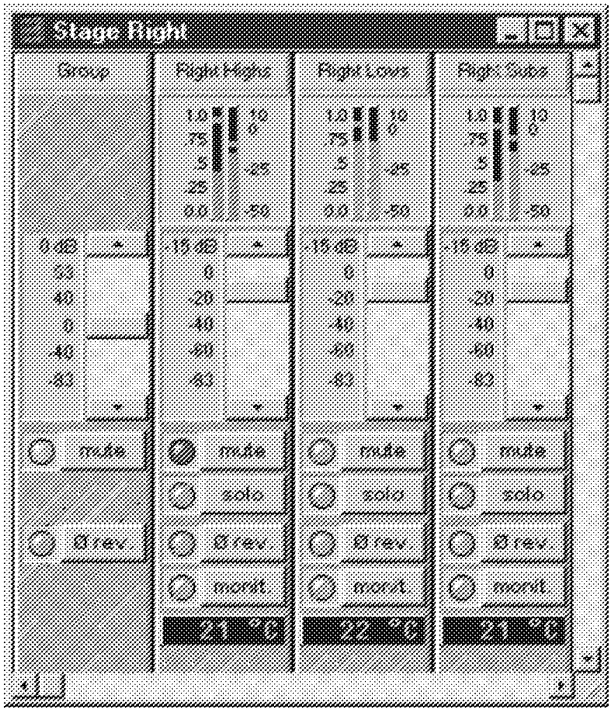
APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
accordance with an adjustment made by a user.	would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by reference for each element of this claim chart. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a Windows-based group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to one of ordinary skill in the art to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	stereo and right stereo channel, either by using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
38. An apparatus for manipulating a plurality of players, the apparatus comprising:	Claim 38 was originally presented as claim 40. OA, page 13 "Regarding claim 40, see the preceding argument with respect to claims 16 and 27. The combination teaches these features like the method of claim 16, wherein it is performed on an apparatus with the features of claim 27."
a screen;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: a screen (see Berezowski, figure 8 and column 5, lines 57-59)"
a screen driver commanding the screen;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a screen driver commanding the screen (inherent)"
an input interface;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . n input interface (id., column 5, lines 59-65)"
a network interface;	OA, page 7 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a network interface (id., column 4, lines 7-22)"
a memory for storing code for an application module;	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a memory for storing code for an application module (id., column 2, line 49 - column 3, line 7)"

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver (inherent) to perform operations of:"
displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . displaying on a screen a first list showing at least available players (id., column 5, line 57 - column 6, line 13 and figures 8-1 O); displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head (id., column 5, line 66 - column 6, line 13 in view of Tomassetti, ¶ 0074); and synchronizing all players in the zone group in accordance with the zone group head (see Tomassetti, ¶ 0005, 0009-0012, and 0016-0019). The combination of claim 1, teaches the features above, wherein it is inherent there must be a screen driver to display an output and a processor to execute the software."
adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an	Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices that provides for adjusting one volume meter/control as desired after one of the volume meters/controls from the list is selected, wherein the one of the volume meters/controls is for the group of players, represented by an averaged value of audio volumes of the players in the group. The controllable characteristic of Isely includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the

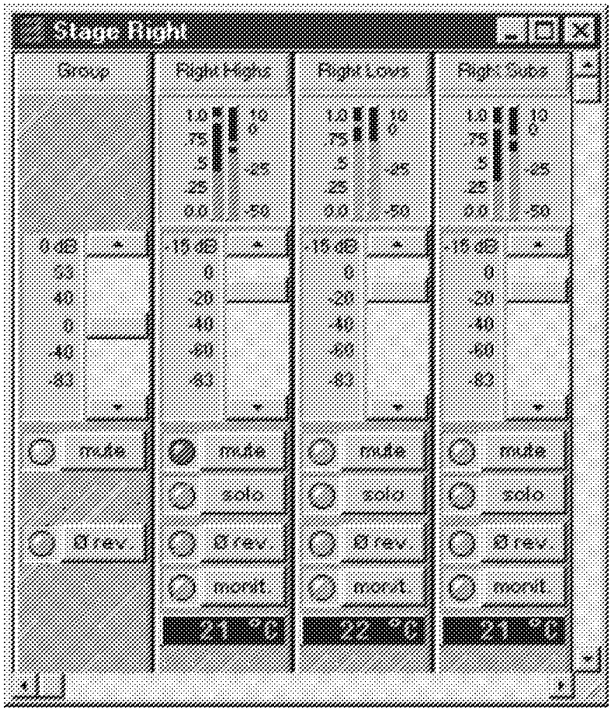
APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
averaged value of audio volumes of the players in the group, and	average volume level at the addressable audio device as the volume level for the reference device is increased, and the change would be synchronous in accordance with an adjustment made by the user. To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by reference for all purposes. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels. The group volume meter/control represents an averaged value of audio volumes of the players in the group when all players in the group start from the same volume, such as at start-up. This is shown in the exemplary diagram below from page 7.4 of NexSys:

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). The group volume control thus represents "an averaged value of audio volumes of the players in the group," where the audio volumes are the changes to the current audio volume settings. The claim does not require a specific averaged value of specific audio volumes, so a representation of an average change value of audio volumes" satisfies the claim limitation. It would be obvious to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."
said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	OA, pages 7-8 – "Regarding claim 27, the combination teaches an apparatus for controlling a plurality of players, the apparatus comprising: . . . synchronizing all players in the zone group in accordance with the zone group head (see Tomassetti, ¶ 0005, 0009-0012, and 0016-0019)." Isely discloses a control relationship between a characteristic of an audio signal for a reference device and selected addressable audio devices. The controllable characteristic includes volume, and the relationship between the reference device volume and the addressable audio device volumes can be "complex, proportional, or static." For example, if the reference device and addressable audio devices all start from a zero volume setting at start-up, then a static relationship between the volume levels would maintain the average volume level at the addressable audio device as the volume level for the reference device is increased, and the change would be synchronous in accordance with an adjustment made by the user.

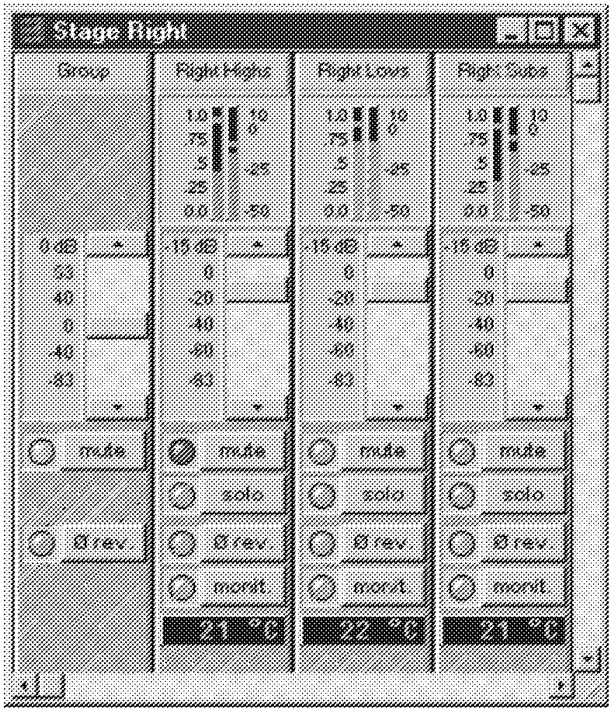
APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	To the extent that Isely is not considered to disclose this limitation, Isely discloses that the UPnP Standard can be used to implement functions of the system of Isely. One of ordinary skill in the art would consider the UPnP Standard for guidance on how to implement volume controls, because the UPnP Standard provides specifications for implementing individual and group volume controls. For example, UPnP Rendering Control discloses at pages 41-42 a process whereby the master volume control is used to set all channels to the lowest setting, which is a representation of an average value of audio volumes of players, and where the player volumes are then changed synchronously in accordance with an adjustment made by the user. Further details on the UPnP Standard as they are relevant to the Challenged Claims of the '014 Patent are provided in Appendix A, which is hereby incorporated by reference for all purposes. Tomassetti also discloses a central receiver that controls all local and remote volume settings, which would inherently include a master volume setting that represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations. To the extent that Isely and/or Tomassetti are not considered to disclose this limitation, NexSys discloses a group volume control with a master volume control and independent channels, which represents an averaged value of audio volumes at least at startup, when all volumes are set to zero and any increase in the master volume would result in a synchronous increase in the average at all remote locations, as shown in the exemplary diagram below from page 7.4 of NexSys:

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	 As can be seen above, the group control increases or decreases the separate channels (right highs, right lows, right subs) by the same magnitude in every channel, which have the same average setting within the 2 digit accuracy of the meter (21, 22 and 21). It would be obvious to combine the group/individual volume control of NexSys with the combination of Berezowski, Tomassetti and Isely, because at least Tomassetti and Isely explicitly disclose volume control for groups of channels, and one of skill in the art would use a well-known display such as the one shown in NexSys for providing a user interface for such controls. The user interface of NexSys could also be combined with the UPnP channel controls, such as for the Master channel and associated channels such as a left stereo and right stereo channel, either by

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	using Microsoft UPnP functionality to emulate the NexSys control window, or by recreating the NexSys user interface functionality in HTML. Isely, [0020] "A relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a control input associated with the characteristic. An update to the control input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input." Isely, [0062] "A relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein." Isely, [0063] "The audio signal is distributed to a plurality of the audio devices 305, 405 based on the defined relationships and the control input associated with the characteristic(s) on which the defined relationship is based (block 630). An update to the control input specifying the characteristic(s) may be periodically received from a user (block 640). Where such an update is received (block 640), the relationship may be redefined if such a change is specified in the control input or may be simply applied to respective streams for different ones of the audio devices 305, 405 based on the existing relationships for distribution to the devices at block 630. Thus, the audio signal after receipt of a control input change is distributed to the plurality of audio devices 305, 405 based on the defined relationships and the update to the control input specifying the characteristic (block 630)." Tomassetti, [0004] "The centralized receiver controls the volume at all speaker sets, i.e., on both the local speaker set and on the remote speakers." NexSys, page 9.3 - "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the

APPENDIX C

Invalidity of the Challenged Claims of the '014 Patent in view of Berezowski in view of Tomassetti and Isely, as applied in the Office Action mailed February 18, 2009 and acquiesced to by Sonos, and further in view of the UPnP Standard, Microsoft UPnP and NexSys

U.S. 7,571,014	Berezowski, Tomassetti, Isely, UPnP, Microsoft UPnP and NexSys
	group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5." UPnP Rendering Control, pages 41-42: "Set the volume of the audio content (as a whole) to the quietest (non-silent) setting: • Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1. Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting • Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device. • Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *Ex Parte* Reexamination Control No.: 90/013,882 Filed: December 21, 2016 Title: METHOD AND APPARATUS FOR CONTROLLING MULTIMEDIA PLAYERS IN A MULTI-ZONE SYSTEM	U.S. Patent No. 7,571,014 CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 1.510(B)(5) AND MPEP § 2220

CERTIFICATE OF SERVICE

It is hereby certified that the attached Supplemental Request for Ex Parte Reexamination as filed on December 27, 2016 is being served by first class mail on the patent owner at the correspondence address provided in the USPTO PAIR system on December 28, 2016:

McDonnell Boehnen Hulbert & Berghoff LLP
c/o Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

Date: December 27, 2016

Respectfully submitted,

By: /Christopher J. Rourk/
Christopher J. Rourk
Reg. No. 39,348

Jackson Walker LLP
2323 Ross Avenue, Suite 600
Dallas, Texas 75201
Telephone: (214) 953-5990
Facsimile: (214) 661-6604
E-Mail: crourk@jw.com

Litigation Search Report CRU 3999

Reexam Control No. 90/013,882

To: Examiner Location: CRU Art Unit: 3992 Date: 12/22/2016	From: Renee Preston Location: CRU 3999 MDE 4B15 Phone: (571) 272-1607 Renee.preston@uspto.gov

Search Notes

U.S. Patent No. 7,571,014

1) I performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.

2) I performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.

3) I performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.

4) I performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.

5) I performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Litigation found

Status	Description	Docket	Court
Open	Sonos Inc. v. D&M Holdings Inc. et al	US-DIS-DED	1:14cv1330

References Cited Items (12)

Title	Date	Type
1. LEVEL METER FOR DIGITALLY-ENCODED AUDIO Out Of Plan US PAT 5751819	Jul 24, 1995	Patents
2. MULTI MACHINE MONITOR FOR TV POST PRODUCTION Out Of Plan US PAT 5299266	Mar 20, 1992	Patents
3. INTERNET FACILITATED EMERGENCY AND GENERAL PAGING SYSTEM Out Of Plan US PAT 7218708	Mar 12, 2004	Patents
4. COMPUTER MEDIA SYNCHRONIZATION PLAYER Out Of Plan US PAT APP 20040252400	Jun 13, 2003	Patents
5. REAL TIME VIDEO PRODUCTION SYSTEM AND METHOD Out Of Plan US PAT APP 20020109710	Apr 15, 2002	Patents
6. AUDIO POWER MONITORING SYSTEM Out Of Plan US PAT APP 20050047605	Sep 03, 2003	Patents
7. LEVEL ADJUSTMENT APPARATUS Out Of Plan US PAT APP 20040008852	Jul 09, 2003	Patents
8. SYNCHRONOUS MEDIA PLAYBACK AND MESSAGING SYSTEM Out Of Plan US PAT APP 20030126211	Dec 12, 2001	Patents
9. SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Plan US PAT APP 20070038999	Apr 01, 2004	Patents
10. DATA STRUCTURE FOR AN ENTERTAINMENT AND COMMUNICATIONS NETWORK Out Of Plan US PAT APP 20020188762	May 04, 2001	Patents
11. METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR ZONE BASED DISTRIBUTION OF AUDIO SIGNALS Out Of Plan US PAT APP 20020124097	Dec 29, 2000	Patents
12. FADER DEVICE HAVING A FINE ADJUSTMENT OF THE SIGNAL LEVEL Out Of Plan US PAT 5239458	Jul 20, 1990	Patents

WESTLAW © 2016 Thomson Reuters. No claim to original U.S. Government Works.

Citing References (235)

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	1. Second Amendedcomplaint for Patent Infringement Out Of Plan SONOS, INC., Plaintiff, v. D&M HOLDINGS INC. d/b/a the D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants. 2015 WL 5398693, *1+ , D.Del. (Trial Pleading)	Mar. 09, 2015	Petition		—
Examined by	2. First Amended Complaint for Patent Infringement Out Of Plan SONOS, INC., Plaintiff, v. D&M HOLDINGS INC. d/b/a the D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants. 2014 WL 10394226, *1+ , D.Del. (Trial Pleading)	Dec. 17, 2014	Petition		—
Cited by	3. Multi-channel pairing in a media system LitAlert P2014-43-64	Oct. 21, 2014	Lit Alert		—
Cited by	4. Patent Owner Preliminary Response Pursuant to 37 C.F.R. s 42.107 Out Of Plan UNIFIED PATENTS INC., Petitioner, v. QURIO HOLDINGS, INC., Patent Owner. 2016 WL 696517, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Jan. 07, 2016	Administrative Filing		—
Cited by	5. Petition for Inter Partes Review of U.S. Patent 7,787,904 Out Of Plan UNIFIED PATENTS INC., Petitioner, v. QURIO HOLDINGS, INC., Patent Owner. 2015 WL 5782138, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 28, 2015	Administrative Filing		—
Cited by	6. Defendants' Response in Opposition to Plaintiff's Motion to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) Out Of Plan SONOS, INC., Plaintiff, v. D&M HOLDINGS INC. d/b/a the D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants. 2016 WL 4771470, *1 , D.Del. (Trial Motion, Memorandum and Affidavit)	May 09, 2016	Motion		—
—	7. NETWORK DIGITAL AUDIO SYSTEM HAS ONE TASK SOURCE PROCESSOR AND SEVERAL MEMBER PROCESSORS, SUCH THAT EACH MEMBER PROCESSOR DETERMINES ITS TASK EXECUTION TIME BASED ON CURRENT TIME VALUE INDICATED BY SOURCE PROCESSOR Out Of Plan DWPI 2005-172844+	July 28, 2003	DWPI	—	—
—	8. VOLUME CONTROL SYSTEM, CONTROLLER, AND AMPLIFYING APPARATUS Out Of Plan US PAT 8571236 , U.S. PTO Utility	Oct. 29, 2013	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	9. MULTI-CHANNEL BROADCASTING SYSTEM USING DIGITAL MATRIX AMPLIFIER AND METHOD OF CONTROLLING THE SAME Out Of Plan US PAT 8553902 , U.S. PTO Utility	Oct. 08, 2013	Patents	—	—
—	10. REMOTE AUDIO AMPLIFIER MONITORING SYSTEM Out Of Plan US PAT 8554347 , U.S. PTO Utility	Oct. 08, 2013	Patents	—	—
—	11. SYSTEM AND METHODS FOR ADJUSTING GRAPHICAL REPRESENTATIONS OF MEDIA FILES BASED ON PREVIOUS USAGE Out Of Plan US PAT 8527876 , U.S. PTO Utility	Sep. 03, 2013	Patents	—	—
—	12. AUDIO RELATED SYSTEM LINK MANAGEMENT Out Of Plan US PAT 8473844 , U.S. PTO Utility	June 25, 2013	Patents	—	—
—	13. SYNCHRONIZED PLAYBACK OF MEDIA PLAYERS Out Of Plan US PAT 8463875 , U.S. PTO Utility	June 11, 2013	Patents	—	—
—	14. SYSTEM AND METHOD FOR SHARING PLAYLISTS Out Of Plan US PAT 8458356 , U.S. PTO Utility	June 04, 2013	Patents	—	—
—	15. CONTROL DEVICE, CONTROL METHOD, AND CONTROL SYSTEM Out Of Plan US PAT 8458594 , U.S. PTO Utility	June 04, 2013	Patents	—	—
—	16. USER INTERFACE FOR MANAGING THE OPERATION OF NETWORKED MEDIA PLAYBACK DEVICES Out Of Plan US PAT 8423893 , U.S. PTO Utility	Apr. 16, 2013	Patents	—	—
—	17. PRE-PROGRAMMED MULTIMEDIA CONTROLLER FOR E.G. REMOTELY CONTROLLING MPEG-1 AUDIO LAYER 3 PLAYERS, HAS PROCESSOR CONTROLLING OPERATION OF PARTS IN ZONE PLAYER, WHERE ZONE SCENE CONFIGURATION INCLUDES ACTIVATION OF GROUP AUTOMATICALLY AT TIME Out Of Plan DWPI 2012-N21945	June 05, 2004	DWPI	—	—
—	18. MULTIMEDIA PLAYER I.E. AUDIO PLAYER, CONTROL METHOD FOR MULTI-ZONE MULTI MEDIA SYSTEM, INVOLVES CHANGING VOLUME OF EACH GROUP OF PLAYERS SYNCHRONOUSLY IN ACCORDANCE WITH ADJUSTMENT MADE BY USER Out Of Plan DWPI 2009-M16194	Apr. 01, 2004	DWPI	—	—
—	19. RF 038329/0253 Out Of Plan	Apr. 01, 2016	Assignments	—	—
—	20. RF 037112/0014 Out Of Plan	Nov. 15, 2015	Assignments	—	—
—	21. RF 028345/0881 Out Of Plan	June 08, 2012	Assignments	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
---	22. RF 023998/0778 Out Of Plan	Feb. 26, 2010	Assignments	---	---
---	23. RF 017664/0836 Out Of Plan	May 24, 2006	Assignments	---	---
---	24. RF 015443/0654 Out Of Plan	June 05, 2004	Assignments	---	---
---	25. USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT APP 20130288802 , U.S. PTO Application	Oct. 31, 2013	Patents	---	---
---	26. VOLUME CONTROL SYSTEM, CONTROLLER PROGRAM OF THE VOLUME CONTROL SYSTEM, AND AUDIO OUTPUT DEVICE OF THE VOLUME CONTROL SYSTEM Out Of Plan US PAT APP 20130148825 , U.S. PTO Application	June 13, 2013	Patents	---	---
---	27. PatStat 7571014	Apr. 09, 2013	Patent Status Files	---	---
---	29. The program of the controller of a sound volume control system and a sound volume control system, and the audio/voice output apparatus of a sound volume control system Out Of Plan JP PAT APP 2013123154 A (MAT)	June 20, 2013	Patents	---	---
---	30. DEVICE BASE Out Of Plan US PAT 9512954 , U.S. PTO Utility	Dec. 06, 2016	Patents	---	---
---	31. MICROPHONE CALIBRATION Out Of Plan US PAT 9513865 , U.S. PTO Utility	Dec. 06, 2016	Patents	---	---
---	32. SOFTWARE APPLICATION AND ZONES Out Of Plan US PAT 9513868 , U.S. PTO Utility	Dec. 06, 2016	Patents	---	---
---	33. METHOD, DEVICE, AND SYSTEM FOR DIRECTING A WIRELESS SPEAKER FROM A MOBILE PHONE TO RECEIVE AND RENDER A PLAYLIST FROM A CONTENT SERVER ON THE INTERNET Out Of Plan US PAT 9516370 , U.S. PTO Utility	Dec. 06, 2016	Patents	---	---
---	34. PLAYBACK DEVICE SETTING ACCORDING TO THRESHOLD(S) Out Of Plan US PAT 9516419 , U.S. PTO Utility	Dec. 06, 2016	Patents	---	---
---	35. PROVIDING A MULTI-CHANNEL AND A MULTI- ZONE AUDIO ENVIRONMENT Out Of Plan US PAT 9516440 , U.S. PTO Utility	Dec. 06, 2016	Patents	---	---
---	36. INTELLIGENT AMPLIFIER ACTIVATION Out Of Plan US PAT 9516441 , U.S. PTO Utility	Dec. 06, 2016	Patents	---	---

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**37.** MEDIA CONTENT BASED ON PLAYBACK ZONE AWARENESS Out Of Plan US PAT 9516445 , U.S. PTO Utility	Dec. 06, 2016	Patents	—	—
—	**38.** DISPLAY SCREEN OR PORTION THEREOF WITH GRAPHICAL USER INTERFACE Out Of Plan US PAT D772918 , U.S. PTO Design	Nov. 29, 2016	Patents	—	—
—	**39.** DEVICE PLAYBACK FAILURE RECOVERY AND REDISTRIBUTION Out Of Plan US PAT 9507560 , U.S. PTO Utility	Nov. 29, 2016	Patents	—	—
—	**40.** SYSTEM AND METHOD FOR A MEDIA EXPERIENCE SOCIAL INTERFACE Out Of Plan US PAT 9510055 , U.S. PTO Utility	Nov. 29, 2016	Patents	—	—
—	**41.** PRIVATE QUEUE FOR A MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9501533 , U.S. PTO Utility	Nov. 22, 2016	Patents	—	—
—	**42.** PLAYLIST MODIFICATION Out Of Plan US PAT 9495076 , U.S. PTO Utility	Nov. 15, 2016	Patents	—	—
—	**43.** CLOUD QUEUE ACCESS CONTROL Out Of Plan US PAT 9497182 , U.S. PTO Utility	Nov. 15, 2016	Patents	—	—
—	**44.** USER INTERFACES FOR REMOTE MANAGEMENT AND CONTROL OF NETWORK-CONNECTED THERMOSTATS Out Of Plan US PAT 9489062 , U.S. PTO Utility	Nov. 08, 2016	Patents	—	—
—	**45.** SYSTEM AND METHOD FOR PLAYBACK OF MEDIA CONTENT WITH AUDIO TOUCH MENU FUNCTIONALITY Out Of Plan US PAT 9489113 , U.S. PTO Utility	Nov. 08, 2016	Patents	—	—
—	**46.** SYSTEM AND METHOD FOR PLAYBACK OF MEDIA CONTENT WITH SUPPORT FOR AUDIO TOUCH CACHING Out Of Plan US PAT 9483166 , U.S. PTO Utility	Nov. 01, 2016	Patents	—	—
—	**47.** WEARABLE DEVICE ZONE GROUP CONTROL Out Of Plan US PAT 9483230 , U.S. PTO Utility	Nov. 01, 2016	Patents	—	—
—	**48.** INCONSISTENT QUEUES Out Of Plan US PAT 9485545 , U.S. PTO Utility	Nov. 01, 2016	Patents	—	—
—	**49.** HIGH-SPEED WAN TO WIRELESS LAN GATEWAY Out Of Plan US PAT 9485804 , U.S. PTO Utility	Nov. 01, 2016	Patents	—	—
—	**50.** DISPLAY SCREEN OR PORTION THEREOF WITH SEQUENTIAL GRAPHICAL USER INTERFACE Out Of Plan US PAT D769897 , U.S. PTO Design	Oct. 25, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**51.** DYNAMIC DEVICE-ASSOCIATED FEEDBACK INDICATIVE OF RESPONSIBLE DEVICE USAGE Out Of Plan US PAT 9476606 , U.S. PTO Utility	Oct. 25, 2016	Patents	—	—
—	**52.** CAPACITIVE PROXIMITY SENSOR CONFIGURATION INCLUDING A SPEAKER GRILLE Out Of Plan US PAT 9477440 , U.S. PTO Utility	Oct. 25, 2016	Patents	—	—
—	**53.** MANAGEMENT OF MEDIA CONTENT PLAYBACK Out Of Plan US PAT 9478247 , U.S. PTO Utility	Oct. 25, 2016	Patents	—	—
—	**54.** ZONE GROUP CONTROL Out Of Plan US PAT 9467737 , U.S. PTO Utility	Oct. 11, 2016	Patents	—	—
—	**55.** SYSTEMS AND METHODS FOR ENERGY-EFFICIENT CONTROL OF AN ENERGY-CONSUMING SYSTEM Out Of Plan US PAT 9459018 , U.S. PTO Utility	Oct. 04, 2016	Patents	—	—
—	**56.** SYSTEMS, METHODS, APPARATUS, AND ARTICLES OF MANUFACTURE FOR PLAYBACK DEMONSTRATION AT A POINT OF SALE DISPLAY Out Of Plan US PAT 9460631 , U.S. PTO Utility	Oct. 04, 2016	Patents	—	—
—	**57.** QUEUE IDENTIFICATION Out Of Plan US PAT 9460755 , U.S. PTO Utility	Oct. 04, 2016	Patents	—	—
—	**58.** METHODS AND GRAPHICAL USER INTERFACES FOR REPORTING PERFORMANCE INFORMATION FOR AN HVAC SYSTEM CONTROLLED BY A SELF- PROGRAMMING NETWORK-CONNECTED THERMOSTAT Out Of Plan US PAT 9453655 , U.S. PTO Utility	Sep. 27, 2016	Patents	—	—
—	**59.** VOLUME INTERACTIONS FOR CONNECTED PLAYBACK DEVICES Out Of Plan US PAT 9455679 , U.S. PTO Utility	Sep. 27, 2016	Patents	—	—
—	**60.** IDENTIFYING A USEFUL WIRED CONNECTION Out Of Plan US PAT 9456037 , U.S. PTO Utility	Sep. 27, 2016	Patents	—	—
—	**61.** BRIDGE SYSTEM FOR AUXILIARY DISPLAY DEVICES Out Of Plan US PAT 9448814 , U.S. PTO Utility	Sep. 20, 2016	Patents	—	—
—	**62.** SATELLITE VOLUME CONTROL Out Of Plan US PAT 9438193 , U.S. PTO Utility	Sep. 06, 2016	Patents	—	—
—	**63.** PROXIMITY DETECTION USING AUDIO PULSE Out Of Plan US PAT 9439021 , U.S. PTO Utility	Sep. 06, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**64.** PLAYBACK DEVICE SPEAKER CONFIGURATION BASED ON PROXIMITY DETECTION Out Of Plan US PAT 9439022 , U.S. PTO Utility	Sep. 06, 2016	Patents	—	—
—	**65.** STREAMING MUSIC USING AUTHENTICATION INFORMATION Out Of Plan US PAT 9432365 , U.S. PTO Utility	Aug. 30, 2016	Patents	—	—
—	**66.** SYSTEM AND METHOD FOR BYPASSING AN ACCESS POINT IN A LOCAL AREA NETWORK FOR P2P DATA TRANSFERS Out Of Plan US PAT 9433023 , U.S. PTO Utility	Aug. 30, 2016	Patents	—	—
—	**67.** SYSTEM AND METHOD FOR PLAYBACK OF MEDIA CONTENT WITH AUDIO SPINNER FUNCTIONALITY Out Of Plan US PAT 9423998 , U.S. PTO Utility	Aug. 23, 2016	Patents	—	—
—	**68.** AUDIO SETTINGS BASED ON ENVIRONMENT Out Of Plan US PAT 9419575 , U.S. PTO Utility	Aug. 16, 2016	Patents	—	—
—	**69.** PLAYBACK ZONE REPRESENTATIONS Out Of Plan US PAT 9408008 , U.S. PTO Utility	Aug. 02, 2016	Patents	—	—
—	**70.** PLAYBACK ACCORDING TO PLAYBACK RESPONSIBILITY IN STEREO PAIR Out Of Plan US PAT 9400632 , U.S. PTO Utility	July 26, 2016	Patents	—	—
—	**71.** DETECTION AND CONTROL OF MULTIMEDIA APPLICATIONS Out Of Plan US PAT 9395871 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**72.** GROUPING ZONES Out Of Plan US PAT 9395877 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**73.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9395878 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**74.** AUDIO CONTENT AUDITIONING Out Of Plan US PAT 9395950 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**75.** AUDIO CONTENT AUDITIONING Out Of Plan US PAT 9395951 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**76.** NETWORK-ENABLED AUDIO DEVICE Out Of Plan US PAT 9397627 , U.S. PTO Utility	July 19, 2016	Patents	—	—
—	**77.** UNGROUPING ZONES Out Of Plan US PAT 9383896 , U.S. PTO Utility	July 05, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	78. VOLUME INTERACTIONS FOR CONNECTED PLAYBACK DEVICES Out Of Pate US PAT 9379683 , U.S. PTO Utility	June 28, 2016	Patents	—	—
—	79. DISPLAY SCREEN PORTION WITH GRAPHICAL USER INTERFACE Out Of Pate US PAT D759700 , U.S. PTO Design	June 21, 2016	Patents	—	—
—	80. MEDIA SYSTEM CONTROLLER INTERFACE Out Of Pate US PAT 9372610 , U.S. PTO Utility	June 21, 2016	Patents	—	—
—	81. MEDIA PLAYBACK SYSTEM WITH GUEST ACCESS Out Of Pate US PAT 9374607 , U.S. PTO Utility	June 21, 2016	Patents	—	—
—	82. AUDIO SYSTEM DISPLAY WITH GRAPHICAL USER INTERFACE Out Of Pate US PAT D759069 , U.S. PTO Design	June 14, 2016	Patents	—	—
—	83. AUDIO SETTINGS Out Of Pate US PAT 9367283 , U.S. PTO Utility	June 14, 2016	Patents	—	—
—	84. DETECTING IMPROPER POSITION OF A PLAYBACK DEVICE Out Of Pate US PAT 9367611 , U.S. PTO Utility	June 14, 2016	Patents	—	—
—	85. AUDIO OUTPUT BALANCING Out Of Pate US PAT 9369104 , U.S. PTO Utility	June 14, 2016	Patents	—	—
—	86. PLAYLIST UPDATE IN A MEDIA PLAYBACK SYSTEM Out Of Pate US PAT 9361371 , U.S. PTO Utility	June 07, 2016	Patents	—	—
—	87. CLOUD QUEUE ACCESS CONTROL Out Of Pate US PAT 9363254 , U.S. PTO Utility	June 07, 2016	Patents	—	—
—	88. CLOUD QUEUE PLAYHEAD Out Of Pate US PAT 9363255 , U.S. PTO Utility	June 07, 2016	Patents	—	—
—	89. AUDIO OUTPUT BALANCING Out Of Pate US PAT 9363601 , U.S. PTO Utility	June 07, 2016	Patents	—	—
—	90. METHOD AND APPARATUS FOR DYNAMIC CHANNELIZATION DEVICE SWITCHING IN A SYNCHRONY GROUP Out Of Pate US PAT 9354656 , U.S. PTO Utility	May 31, 2016	Patents	—	—
—	91. SYSTEM AND METHOD FOR ISSUING COMMANDS IN A MEDIA PLAYBACK SYSTEM Out Of Pate US PAT 9355555 , U.S. PTO Utility	May 31, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**92.** SYSTEMS AND METHODS FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES WITHOUT A VOLTAGE CONTROLLED CRYSTAL OSCILLATOR Out Of Pat. US PAT 9348354 , U.S. PTO Utility	May 24, 2016	Patents	—	—
—	**93.** DEVICE GROUP IDENTIFICATION Out Of Pat. US PAT 9348824 , U.S. PTO Utility	May 24, 2016	Patents	—	—
—	**94.** METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM Out Of Pat. US PAT 9344206 , U.S. PTO Utility	May 17, 2016	Patents	—	—
—	**95.** SYSTEMS AND METHODS FOR PLAYER SETUP ROOM NAMES Out Of Pat. US PAT 9344292 , U.S. PTO Utility	May 17, 2016	Patents	—	—
—	**96.** INDICATION OF BARRIER DETECTION Out Of Pat. US PAT 9344829 , U.S. PTO Utility	May 17, 2016	Patents	—	—
—	**97.** ACCOUNT AWARE MEDIA PREFERENCES Out Of Pat. US PAT 9338514 , U.S. PTO Utility	May 10, 2016	Patents	—	—
—	**98.** PLAYBACK EXPANSION Out Of Pat. US PAT 9329831 , U.S. PTO Utility	May 03, 2016	Patents	—	—
—	**99.** PLAYBACK EXPANSION Out Of Pat. US PAT 9330096 , U.S. PTO Utility	May 03, 2016	Patents	—	—
—	**100.** AUDIO SYSTEMS AND RELATED DEVICES AND METHODS Out Of Pat. US PAT 9330169 , U.S. PTO Utility	May 03, 2016	Patents	—	—
—	**101.** MEDIA CONTENT REQUEST INCLUDING ZONE NAME Out Of Pat. US PAT 9332348 , U.S. PTO Utility	May 03, 2016	Patents	—	—
—	**102.** CAPACITIVE PROXIMITY SENSOR CONFIGURATION INCLUDING AN ANTENNA GROUND PLANE Out Of Pat. US PAT 9323404 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—
—	**103.** SYSTEM WITH SPEAKER, TRANSCEIVER AND RELATED DEVICES Out Of Pat. US PAT 9326069 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—
—	**104.** MEDIA CONTENT BASED ON PLAYBACK ZONE AWARENESS Out Of Pat. US PAT 9326070 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—
—	**105.** MEDIA CONTENT SUGGESTION BASED ON PLAYBACK ZONE AWARENESS Out Of Pat. US PAT 9326071 , U.S. PTO Utility	Apr. 26, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**106.** MOBILE SOURCE MEDIA CONTENT ACCESS Out Of Plan US PAT 9319153 , U.S. PTO Utility	Apr. 19, 2016	Patents	—	—
—	**107.** AUTOMATIC CONFIGURATION OF HOUSEHOLD PLAYBACK DEVICES Out Of Plan US PAT 9319409 , U.S. PTO Utility	Apr. 19, 2016	Patents	—	—
—	**108.** SYSTEMS AND METHODS FOR PRE-FETCHING MEDIA CONTENT Out Of Plan US PAT 9319445 , U.S. PTO Utility	Apr. 19, 2016	Patents	—	—
—	**109.** AUDIO SYNCHRONIZATION AMONG PLAYBACK DEVICES USING OFFSET INFORMATION Out Of Plan US PAT 9313591 , U.S. PTO Utility	Apr. 12, 2016	Patents	—	—
—	**110.** ENERGY EFFICIENCY PROMOTING SCHEDULE LEARNING ALGORITHMS FOR INTELLIGENT THERMOSTAT Out Of Plan US PAT 9298196 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**111.** COMMUNICATION ROUTES BASED ON LOW POWER OPERATION Out Of Plan US PAT 9298244 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**112.** SYSTEMS AND METHODS TO PROVIDE PLAY/PAUSE CONTENT Out Of Plan US PAT 9298415 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**113.** SOFTWARE APPLICATION AND ZONES Out Of Plan US PAT 9300647 , U.S. PTO Utility	Mar. 29, 2016	Patents	—	—
—	**114.** THERMOSTAT USER INTERFACE Out Of Plan US PAT 9291359 , U.S. PTO Utility	Mar. 22, 2016	Patents	—	—
—	**115.** METHODS AND SYSTEMS TO SHARE MEDIA Out Of Plan US PAT 9286384 , U.S. PTO Utility	Mar. 15, 2016	Patents	—	—
—	**116.** COORDINATOR DEVICE FOR PAIRED OR CONSOLIDATED PLAYERS Out Of Plan US PAT 9288596 , U.S. PTO Utility	Mar. 15, 2016	Patents	—	—
—	**117.** VOLUME CONTROL SYSTEM, CONTROLLER PROGRAM OF THE VOLUME CONTROL SYSTEM, AND AUDIO OUTPUT DEVICE OF THE VOLUME CONTROL SYSTEM Out Of Plan US PAT 9270243 , U.S. PTO Utility	Feb. 23, 2016	Patents	—	—
—	**118.** PLAYBACK DEVICE CONFIGURATION BASED ON PROXIMITY DETECTION Out Of Plan US PAT 9264839 , U.S. PTO Utility	Feb. 16, 2016	Patents	—	—
—	**119.** POWER DECREASE BASED ON PACKET TYPE Out Of Plan US PAT 9252721 , U.S. PTO Utility	Feb. 02, 2016	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**120.** MEDIA PLAYBACK SYSTEM USING STANDBY MODE IN A MESH NETWORK Out Of Plan US PAT 9244516 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**121.** POWER INCREASE BASED ON PACKET TYPE Out Of Plan US PAT 9246442 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**122.** SYSTEMS, METHODS, AND USER INTERFACES FOR PREVIEWING MEDIA CONTENT Out Of Plan US PAT 9246967 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**123.** PLAYBACK QUEUE TRANSFER IN A MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9247363 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**124.** SYSTEMS AND METHODS FOR MULTI-NETWORK AUDIO CONTROL Out Of Plan US PAT 9247492 , U.S. PTO Utility	Jan. 26, 2016	Patents	—	—
—	**125.** MEDIA SYSTEM ACCESS VIA CELLULAR NETWORK Out Of Plan US PAT 9241355 , U.S. PTO Utility	Jan. 19, 2016	Patents	—	—
—	**126.** AUTOMATIC CONFIGURATION OF HOUSEHOLD PLAYBACK DEVICES Out Of Plan US PAT 9237384 , U.S. PTO Utility	Jan. 12, 2016	Patents	—	—
—	**127.** VOLUME ENHANCEMENTS IN A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9231545 , U.S. PTO Utility	Jan. 05, 2016	Patents	—	—
—	**128.** ASSOCIATING PLAYBACK DEVICES WITH PLAYBACK QUEUES Out Of Plan US PAT 9232277 , U.S. PTO Utility	Jan. 05, 2016	Patents	—	—
—	**129.** TOUCHSCREEN DEVICE USER INTERFACE FOR REMOTE CONTROL OF A THERMOSTAT Out Of Plan US PAT 9222693 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**130.** USER FRIENDLY INTERFACE FOR CONTROL UNIT Out Of Plan US PAT 9223323 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**131.** AMBIENT LIGHT PROXIMITY SENSING CONFIGURATION Out Of Plan US PAT 9223353 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**132.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9223490 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**133.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Plan US PAT 9223491 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**134.** REMOTE STORAGE AND PROVISIONING OF LOCAL- MEDIA INDEX Out Of Plan US PAT 9223862 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**135.** ENTERTAINMENT SYSTEM WITH SOURCELESS SELECTION OF NETWORKED AND NON-NETWORKED MEDIA CONTENT Out Of Plan US PAT 9225773 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**136.** MEDIA CONTENT BASED ON PLAYBACK ZONE AWARENESS Out Of Plan US PAT 9226072 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**137.** AUDIO OUTPUT BALANCING DURING SYNCHRONIZED PLAYBACK Out Of Plan US PAT 9226073 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**138.** AUDIO OUTPUT BALANCING DURING SYNCHRONIZED PLAYBACK Out Of Plan US PAT 9226087 , U.S. PTO Utility	Dec. 29, 2015	Patents	—	—
—	**139.** SYSTEMS AND METHODS FOR CONTROLLING MEDIA PLAYERS IN A SYNCHRONY GROUP Out Of Plan US PAT 9218017 , U.S. PTO Utility	Dec. 22, 2015	Patents	—	—
—	**140.** AUDIO SETTINGS BASED ON ENVIRONMENT Out Of Plan US PAT 9219460 , U.S. PTO Utility	Dec. 22, 2015	Patents	—	—
—	**141.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan US PAT 9219959 , U.S. PTO Utility	Dec. 22, 2015	Patents	—	—
—	**142.** METHOD AND APPARATUS FOR SYNCHRONY GROUP CONTROL VIA ONE OR MORE INDEPENDENT CONTROLLERS Out Of Plan US PAT 9213356 , U.S. PTO Utility	Dec. 15, 2015	Patents	—	—
—	**143.** OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK Out Of Plan US PAT 9213357 , U.S. PTO Utility	Dec. 15, 2015	Patents	—	—
—	**144.** OPERATION USING POSITIONING INFORMATION Out Of Plan US PAT 9213762 , U.S. PTO Utility	Dec. 15, 2015	Patents	—	—
—	**145.** METHOD AND APPARATUS FOR PROVIDING SYNCHRONY GROUP STATUS INFORMATION Out Of Plan US PAT 9207905 , U.S. PTO Utility	Dec. 08, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**146.** CONTROLLING AND GROUPING IN A MULTI-ZONE MEDIA SYSTEM Out Of Pate US PAT 9202509 , U.S. PTO Utility	Dec. 01, 2015	Patents	—	—
—	**147.** SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Pate US PAT 9195258 , U.S. PTO Utility	Nov. 24, 2015	Patents	—	—
—	**148.** METHOD AND APPARATUS TO RECEIVE, PLAY, AND PROVIDE AUDIO CONTENT IN A MULTI-ZONE SYSTEM Out Of Pate US PAT 9189010 , U.S. PTO Utility	Nov. 17, 2015	Patents	—	—
—	**149.** METHOD AND APPARATUS FOR PROVIDING AUDIO AND PLAYBACK TIMING INFORMATION TO A PLURALITY OF NETWORKED AUDIO DEVICES Out Of Pate US PAT 9189011 , U.S. PTO Utility	Nov. 17, 2015	Patents	—	—
—	**150.** SYSTEMS AND METHODS FOR CONNECTING AN AUDIO CONTROLLER TO A HIDDEN AUDIO NETWORK Out Of Pate US PAT 9191699 , U.S. PTO Utility	Nov. 17, 2015	Patents	—	—
—	**151.** SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Pate US PAT 9182777 , U.S. PTO Utility	Nov. 10, 2015	Patents	—	—
—	**152.** STREAMING MUSIC USING AUTHENTICATION INFORMATION Out Of Pate US PAT 9185103 , U.S. PTO Utility	Nov. 10, 2015	Patents	—	—
—	**153.** THERMOSTAT USER INTERFACE Out Of Pate US PAT 9175871 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**154.** METHOD AND APPARATUS FOR CAUSING A DEVICE TO JOIN A SYNCHRONY GROUP Out Of Pate US PAT 9176519 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**155.** OBTAINING AND TRANSMITTING AUDIO Out Of Pate US PAT 9176520 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**156.** AUDIO SYSTEMS AND RELATED DEVICES AND METHODS Out Of Pate US PAT 9177052 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**157.** DEVICE DISCOVERY FOR DIGITAL ENTERTAINMENT NETWORK Out Of Pate US PAT 9178946 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**158.** METHODS AND APPARATUS FOR MULTICAST OPTIMIZATION Out Of Plan US PAT 9179197 , U.S. PTO Utility	Nov. 03, 2015	Patents	—	—
—	**159.** METHOD AND APPARATUS FOR PROVIDING SYNCHRONY GROUP STATUS INFORMATION Out Of Plan US PAT 9170600 , U.S. PTO Utility	Oct. 27, 2015	Patents	—	—
—	**160.** SYSTEM AND METHOD FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES Out Of Plan US PAT 9164531 , U.S. PTO Utility	Oct. 20, 2015	Patents	—	—
—	**161.** METHOD AND APPARATUS FOR DISPLAYING ZONES IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 9164532 , U.S. PTO Utility	Oct. 20, 2015	Patents	—	—
—	**162.** METHOD AND APPARATUS FOR OBTAINING AUDIO CONTENT AND PROVIDING THE AUDIO CONTENT TO A PLURALITY OF AUDIO DEVICES IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 9164533 , U.S. PTO Utility	Oct. 20, 2015	Patents	—	—
—	**163.** AUDIO SYSTEM Out Of Plan US PAT D740787 , U.S. PTO Design	Oct. 13, 2015	Patents	—	—
—	**164.** METHOD AND APPARATUS FOR SKIPPING TRACKS IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 9158327 , U.S. PTO Utility	Oct. 13, 2015	Patents	—	—
—	**165.** USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT 9141645+ , U.S. PTO Utility	Sep. 22, 2015	Patents	—	—
—	**166.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan US PAT 9143859 , U.S. PTO Utility	Sep. 22, 2015	Patents	—	—
—	**167.** SHIFT TO CORRESPONDING MEDIA IN A PLAYBACK QUEUE Out Of Plan US PAT 9137564 , U.S. PTO Utility	Sep. 15, 2015	Patents	—	—
—	**168.** SYSTEM WITH SPEAKER, TRANSCEIVER AND RELATED DEVICES Out Of Plan US PAT 9137602 , U.S. PTO Utility	Sep. 15, 2015	Patents	—	—
—	**169.** THERMOSTAT WITH RING-SHAPED CONTROL MEMBER Out Of Plan US PAT 9127853 , U.S. PTO Utility	Sep. 08, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**170.** ESTABLISHING A SECURE WIRELESS NETWORK WITH A MINIMUM HUMAN INTERVENTION Out Of Plac US PAT 9130770 , U.S. PTO Utility	Sep. 08, 2015	Patents	—	—
—	**171.** ESTABLISHING A SECURE WIRELESS NETWORK WITH MINIMUM HUMAN INTERVENTION Out Of Plac US PAT 9130771 , U.S. PTO Utility	Sep. 08, 2015	Patents	—	—
—	**172.** CAPACITIVE PROXIMITY SENSOR CONFIGURATION INCLUDING A SPEAKER GRILLE Out Of Plac US PAT 9122451 , U.S. PTO Utility	Sep. 01, 2015	Patents	—	—
—	**173.** TEMPERATURE CONTROLLER WITH MODEL-BASED TIME TO TARGET CALCULATION AND DISPLAY Out Of Plac US PAT 9104211 , U.S. PTO Utility	Aug. 11, 2015	Patents	—	—
—	**174.** SYSTEM AND METHOD FOR DEVICE PLAYBACK CALIBRATION Out Of Plac US PAT 9106192 , U.S. PTO Utility	Aug. 11, 2015	Patents	—	—
—	**175.** HVAC CONTROLLER WITH USER-FRIENDLY INSTALLATION FEATURES WITH WIRE INSERTION DETECTION Out Of Plac US PAT 9092039 , U.S. PTO Utility	July 28, 2015	Patents	—	—
—	**176.** SYSTEMS AND METHODS FOR WIRELESS MUSIC PLAYBACK Out Of Plac US PAT 9094706 , U.S. PTO Utility	July 28, 2015	Patents	—	—
—	**177.** SOUND FIELD CALIBRATION USING LISTENER LOCALIZATION Out Of Plac US PAT 9084058 , U.S. PTO Utility	July 14, 2015	Patents	—	—
—	**178.** AUDIO CONTENT PLAYBACK MANAGEMENT Out Of Plac US PAT 9078010 , U.S. PTO Utility	July 07, 2015	Patents	—	—
—	**179.** METHODS AND APPARATUS TO MANAGE ZONES OF A MULTI-ZONE MEDIA PLAYBACK SYSTEM Out Of Plac US PAT 9052810 , U.S. PTO Utility	June 09, 2015	Patents	—	—
—	**180.** SHAPING SOUND RESPONSIVE TO SPEAKER ORIENTATION Out Of Plac US PAT 9042556 , U.S. PTO Utility	May 26, 2015	Patents	—	—
—	**181.** SMART AUDIO SETTINGS Out Of Plac US PAT 9031244 , U.S. PTO Utility	May 12, 2015	Patents	—	—
—	**182.** THERMOSTAT USER INTERFACE Out Of Plac US PAT 9026232 , U.S. PTO Utility	May 05, 2015	Patents	—	—
—	**183.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plac US PAT 9014834 , U.S. PTO Utility	Apr. 21, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**184.** CROSSOVER FREQUENCY ADJUSTMENTS FOR AUDIO SPEAKERS Out Of Plan US PAT 9008330 , U.S. PTO Utility	Apr. 14, 2015	Patents	—	—
—	**185.** ROUND THERMOSTAT WITH FLANGED ROTATABLE USER INPUT MEMBER AND WALL-FACING OPTICAL SENSOR THAT SENSES ROTATION Out Of Plan US PAT 8998102 , U.S. PTO Utility	Apr. 07, 2015	Patents	—	—
—	**186.** PLAYBACK USING POSITIONING INFORMATION Out Of Plan US PAT 8995240 , U.S. PTO Utility	Mar. 31, 2015	Patents	—	—
—	**187.** VOLUME INTERACTIONS FOR CONNECTED PLAYBACK DEVICES Out Of Plan US PAT 8995687 , U.S. PTO Utility	Mar. 31, 2015	Patents	—	—
—	**188.** ACOUSTIC OPTIMIZATION Out Of Plan US PAT 8965033 , U.S. PTO Utility	Feb. 24, 2015	Patents	—	—
—	**189.** SYSTEMS AND METHODS FOR PROVIDING ZONE FUNCTIONALITY IN NETWORKED MEDIA SYSTEMS Out Of Plan US PAT 8965544 , U.S. PTO Utility	Feb. 24, 2015	Patents	—	—
—	**190.** SOUND OUTPUT SETTING APPARATUS, METHOD, AND COMPUTER-EXECUTABLE PROGRAM Out Of Plan US PAT 8966365 , U.S. PTO Utility	Feb. 24, 2015	Patents	—	—
—	**191.** DISPLAY SCREEN PORTION WITH GRAPHICAL USER INTERFACE Out Of Plan US PAT D722614 , U.S. PTO Design	Feb. 17, 2015	Patents	—	—
—	**192.** REMOTE CONTROL Out Of Plan US PAT D722306 , U.S. PTO Design	Feb. 10, 2015	Patents	—	—
—	**193.** SYSTEMS AND METHODS FOR SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES WITHOUT A VOLTAGE CONTROLLED CRYSTAL OSCILLATOR Out Of Plan US PAT 8938637 , U.S. PTO Utility	Jan. 20, 2015	Patents	—	—
—	**194.** CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT 8934997 , U.S. PTO Utility	Jan. 13, 2015	Patents	—	—
—	**195.** ACOUSTIC SIGNATURES IN A PLAYBACK SYSTEM Out Of Plan US PAT 8930005 , U.S. PTO Utility	Jan. 06, 2015	Patents	—	—
—	**196.** METHOD AND APPARATUS FOR ADJUSTING A SPEAKER SYSTEM Out Of Plan US PAT 8923997 , U.S. PTO Utility	Dec. 30, 2014	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**197.** USER FRIENDLY INTERFACE FOR CONTROL UNIT Out Of Plan US PAT 8918219 , U.S. PTO Utility	Dec. 23, 2014	Patents	—	—
—	**198.** ASSISTED REGISTRATION OF AUDIO SOURCES Out Of Plan US PAT 8910265 , U.S. PTO Utility	Dec. 09, 2014	Patents	—	—
—	**199.** METHOD AND APPARATUS FOR SELECTING A PLAYBACK QUEUE IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 8886347 , U.S. PTO Utility	Nov. 11, 2014	Patents	—	—
—	**200.** DYNAMIC DEVICE-ASSOCIATED FEEDBACK INDICATIVE OF RESPONSIBLE DEVICE USAGE Out Of Plan US PAT 8850348 , U.S. PTO Utility	Sep. 30, 2014	Patents	—	—
—	**201.** METHOD AND APPARATUS FOR ACCESSING MEDIA CONTENT VIA METADATA Out Of Plan US PAT 8843092 , U.S. PTO Utility	Sep. 23, 2014	Patents	—	—
—	**202.** METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 8843228 , U.S. PTO Utility	Sep. 23, 2014	Patents	—	—
—	**203.** SYSTEM AND METHOD FOR PLAYING MEDIA Out Of Plan US PAT 8819554 , U.S. PTO Utility	Aug. 26, 2014	Patents	—	—
—	**204.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan US PAT 8788080 , U.S. PTO Utility	July 22, 2014	Patents	—	—
—	**205.** SYSTEM AND METHOD FOR INTEGRATING SENSORS IN THERMOSTATS Out Of Plan US PAT 8727611 , U.S. PTO Utility	May 20, 2014	Patents	—	—
—	**206.** MULTI-MODE MEDIA DEVICE USING METADATA TO ACCESS MEDIA CONTENT Out Of Plan US PAT 8725063 , U.S. PTO Utility	May 13, 2014	Patents	—	—
—	**207.** ACTIVE PLAYLIST HAVING DYNAMIC MEDIA ITEM GROUPS Out Of Plan US PAT 8725740 , U.S. PTO Utility	May 13, 2014	Patents	—	—
—	**208.** THERMOSTAT USER INTERFACE Out Of Plan US PAT 8706270 , U.S. PTO Utility	Apr. 22, 2014	Patents	—	—
—	**209.** SYSTEM AND METHOD FOR MONITORING/CONTROLLING A SOUND MASKING SYSTEM FROM AN ELECTRONIC FLOORPLAN Out Of Plan US PAT 8666086 , U.S. PTO Utility	Mar. 04, 2014	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**210.** ENTERTAINMENT SYSTEM WITH SOURCELESS SELECTION INCLUDING PLAYLISTS Out Of Plan US PAT 8655303 , U.S. PTO Utility	Feb. 18, 2014	Patents	—	—
—	**211.** DISPLAY SCREEN OR PORTION THEREOF WITH A GRAPHICAL USER INTERFACE Out Of Plan US PAT D696677 , U.S. PTO Design	Dec. 31, 2013	Patents	—	—
—	**212.** METHOD AND APPARATUS FOR ADJUSTING VOLUME LEVELS IN A MULTI-ZONE SYSTEM Out Of Plan US PAT 8588949+ , U.S. PTO Utility	Nov. 19, 2013	Patents	—	—
—	**213.** ELECTRICAL AND MECHANICAL CONNECTOR ADAPTOR SYSTEM FOR MEDIA DEVICES Out Of Plan US PAT 8355690 , U.S. PTO Utility	Jan. 15, 2013	Patents	—	—
—	**214.** AUDIO SIGNAL PROCESSING SYSTEM Out Of Plan US PAT 8352053 , U.S. PTO Utility	Jan. 08, 2013	Patents	—	—
—	**215.** USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT 8290603+ , U.S. PTO Utility	Oct. 16, 2012	Patents	—	—
—	**216.** AUDIO RELATED SYSTEM COMMUNICATION PROTOCOL Out Of Plan US PAT 8249071 , U.S. PTO Utility	Aug. 21, 2012	Patents	—	—
—	**217.** SYSTEM AND METHOD FOR SHARING PLAYLISTS Out Of Plan US PAT 8230099 , U.S. PTO Utility	July 24, 2012	Patents	—	—
—	**218.** ENTERTAINMENT SYSTEM WITH BANDLESS CONTENT SELECTION Out Of Plan US PAT 8195114 , U.S. PTO Utility	June 05, 2012	Patents	—	—
—	**219.** DISPLAY SCREEN PORTION WITH USER INTERFACE Out Of Plan US PAT D660313 , U.S. PTO Design	May 22, 2012	Patents	—	—
—	**220.** ENTERTAINMENT SYSTEM WITH UNIFIED CONTENT SELECTION Out Of Plan US PAT 8090309 , U.S. PTO Utility	Jan. 03, 2012	Patents	—	—
—	**221.** SYSTEM FOR NODE STRUCTURE DISCOVERY IN AN AUDIO-RELATED SYSTEM Out Of Plan US PAT 8078298 , U.S. PTO Utility	Dec. 13, 2011	Patents	—	—
—	**222.** APPARATUS AND METHOD TO FACILITATE UNIVERSAL REMOTE CONTROL Out Of Plan US PAT 8054211 , U.S. PTO Utility	Nov. 08, 2011	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**223.** OBTAINING A PLAYLIST BASED ON USER PROFILE MATCHING Out Of Plan US PAT 8028038 , U.S. PTO Utility	Sep. 27, 2011	Patents	—	—
—	**224.** METHOD AND SYSTEM FOR EMPLOYING A FIRST DEVICE TO DIRECT A NETWORKED AUDIO DEVICE TO OBTAIN A MEDIA ITEM Out Of Plan US PAT 8028323 , U.S. PTO Utility	Sep. 27, 2011	Patents	—	—
—	**225.** SYSTEM FOR AUDIO RELATED EQUIPMENT MANAGEMENT Out Of Plan US PAT 7742606 , U.S. PTO Utility	June 22, 2010	Patents	—	—
—	**226.** AUDIO-RELATED SYSTEM NODE INSTANTIATION Out Of Plan US PAT 7725826 , U.S. PTO Utility	May 25, 2010	Patents	—	—
—	**227.** SYSTEM FOR AUDIO-RELATED DEVICE COMMUNICATION Out Of Plan US PAT 7689305 , U.S. PTO Utility	Mar. 30, 2010	Patents	—	—
—	**228.** ADJUSTING VOLUME LEVELS Out Of Plan US PAT APP 20160357502+ , U.S. PTO Application	Dec. 08, 2016	Patents	—	—
—	**229.** PLAYBACK DEVICE GROUPING Out Of Plan US PAT APP 20160241983+ , U.S. PTO Application	Aug. 18, 2016	Patents	—	—
—	**230.** GROUP VOLUME CONTROL Out Of Plan US PAT APP 20160021479+ , U.S. PTO Application	Jan. 21, 2016	Patents	—	—
—	**231.** CONTROLLING AND DISPLAYING ZONES IN A MULTI-ZONE SYSTEM Out Of Plan US PAT APP 20140181658 , U.S. PTO Application	June 26, 2014	Patents	—	—
—	**232.** USER INTERFACES FOR CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM Out Of Plan US PAT APP 20130014015 , U.S. PTO Application	Jan. 10, 2013	Patents	—	—
—	**233.** MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM Out Of Plan EP PAT 2695400 B1	June 08, 2016	Patents	—	—
—	**234.** A computer-readable program and a volume level operating device Out Of Plan JP PAT APP 2016111554 A (MAT)	June 20, 2016	Patents	—	—
—	**235.** Content relay apparatus Out Of Plan JP PAT APP 2014096737 A (MAT)	May 22, 2014	Patents	—	—
—	**236.** Digital audio device Out Of Plan GB PAT APP 2491159 A	Nov. 28, 2012	Patents	—	—

US District Court Civil Docket

U.S. District - Delaware
(Wilmington)

1:14cv1330

Sonos Inc. v. D&M Holdings Inc. et al

This case was retrieved from the court on Thursday, December 22, 2016

Date Filed:	**10/21/2014**		
Assigned To:	**Judge Richard G. Andrews**	Class Code:	**OPEN**
Referred To:		Closed:	
Nature of suit:	**Patent (830)**	Statute:	**35:271**
Cause:	**Patent Infringement**	Jury Demand:	**Plaintiff**
Lead Docket:	**None**	Demand Amount:	**$0**
Other Docket:	**1:16cv00141**	NOS Description:	**Patent**
Jurisdiction:	**Federal Question**		

Litigants	Attorneys
Sonos Inc. Plaintiff	Philip A. Rovner LEAD ATTORNEY;ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA (302) 984-6000 Email:Provner@potteranderson.Com George I. Lee PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Lee@ls3ip.Com John D. Smith , III PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Smith@ls3ip.Com Jonathan A. Choa ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA 302-984-6189 Email:Jchoa@potteranderson.Com

	Michael P. Boyea PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Boyea@ls3ip.Com Rory P. Shea PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Shea@ls3ip.Com Sean M. Sullivan PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Sullivan@ls3ip.Com
D&M Holdings Inc. doing business as D+M Group Defendant	Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
D&M Holdings U.S. Inc. Defendant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Blake T. Dietrich PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Bdietrich@jw.Com John M. Jackson PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Jjackson@jw.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
Denon Electronics (Usa) Llc Defendant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP

	1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
D&M Holdings U.S. Inc. Counter Claimant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Blake T. Dietrich ATTORNEY TO BE NOTICED Email:Bdietrich@jw.Com John M. Jackson ATTORNEY TO BE NOTICED Email:Jjackson@jw.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
D&M Holdings Inc. Counter Claimant	Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com

Denon Electronics (Usa) Llc Counter Claimant	Jack B. Blumenfeld LEAD ATTORNEY;ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA (302) 658-9200 Email:Jbbefiling@mnat.Com Michael J. Flynn ATTORNEY TO BE NOTICED Morris, Nichols, Arsht & Tunnell LLP 1201 North Market Street P.O. Box 1347 Wilmington , DE 19899 USA 302-351-9661 Fax: 302-498-6217 Email:Mflynn@mnat.Com
Sonos Inc. Counter Defendant	Philip A. Rovner LEAD ATTORNEY;ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA (302) 984-6000 Email:Provner@potteranderson.Com George I. Lee PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Lee@ls3ip.Com John D. Smith , III PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Smith@ls3ip.Com Jonathan A. Choa ATTORNEY TO BE NOTICED Potter Anderson & Corroon, LLP 1313 N. Market St., Hercules Plaza, 6th Flr. P.O. Box 951 Wilmington , DE 19899-0951 USA 302-984-6189 Email:Jchoa@potteranderson.Com Michael P. Boyea ATTORNEY TO BE NOTICED Email:Boyea@ls3ip.Com Rory P. Shea PRO HAC VICE;ATTORNEY TO BE NOTICED Email:Shea@ls3ip.Com

Sean M. Sullivan
PRO HAC VICE;ATTORNEY TO BE NOTICED

Email:Sullivan@ls3ip.Com

Date	#	Proceeding Text	Source
10/21/2014	1	COMPLAINT FOR PATENT INFRINGEMENT - filed with Jury Demand against D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC - Magistrate Consent Notice to Pltf. (Filing fee $ 400.00, receipt number 0311-1611477.) - filed by Sonos Inc.. (Attachments: # 1 Exhibits A-D, # 2 Exhibits E-F, # 3 Exhibit G, # 4 Exhibits H-K, # 5 Exhibit L, # 6 Exhibits M-O, # 7 Exhibits P-R, # 8 Civil Cover Sheet)(etg,) (Entered: 10/21/2014)	
10/21/2014	2	Notice, Consent and Referral forms re: U.S. Magistrate Judge jurisdiction. (etg,) (Entered: 10/21/2014)	
10/21/2014	3	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) U.S. 8,788,080 B1; U.S. 7,571,014 B1; U.S. 8,588,949 B2; U.S. D559,197 S. (etg,) (Entered: 10/21/2014)	
10/21/2014	4	Disclosure Statement pursuant to Rule 7.1: No Parents or Affiliates Listed filed by Sonos Inc. (etg,) (Entered: 10/21/2014)	
10/21/2014		No Summons Issued. (etg,) (Entered: 10/21/2014)	
10/29/2014		Case Assigned to Judge Richard G. Andrews. Please include the initials of the Judge (RGA) after the case number on all documents filed. (rjb) (Entered: 10/29/2014)	
11/19/2014	5	NOTICE of withdrawal of McDonnell Boehnen Hulbert & Berghoff LLP as counsel for plaintiff by Sonos Inc. re 1 Complaint, (Rovner, Philip) (Entered: 11/19/2014)	
12/17/2014		Summons Issued with Magistrate Consent Notice attached as to D&M Holdings U.S. Inc. on 12/17/2014; Denon Electronics (USA) LLC on 12/17/2014. (rbe) (Entered: 12/17/2014)	
12/17/2014	6	FIRST Amended Complaint For Patent Infringement against All Defendants - filed by Sonos Inc.. (Attachments: # 1 Exhibits A-D, # 2 Exhibits E-F, # 3 Exhibit G, # 4 Exhibits H-K, # 5 Exhibit L, # 6 Exhibits M-O, # 7 Exhibits P-R, # 8 Exhibit S, # 9 Exhibit T)(Rovner, Philip) Modified on 12/18/2014 (nms). (Entered: 12/17/2014)	
12/17/2014	7	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) US 7,792,311 B1; US 7,805,682 B1; . (Rovner, Philip) (Entered: 12/17/2014)	
12/18/2014	8	SUMMONS Returned Executed by Sonos Inc.. Denon Electronics (USA) LLC served on 12/18/2014, answer due 1/8/2015. (Rovner, Philip) (Entered: 12/18/2014)	
12/18/2014	9	SUMMONS Returned Executed by Sonos Inc.. D&M Holdings U.S. Inc. served on 12/18/2014, answer due 1/8/2015. (Rovner, Philip) (Entered: 12/18/2014)	
12/22/2014		Summons Issued with Magistrate Consent Notice attached as to D&M Holdings Inc. on 12/22/2014. (rwc) (Entered: 12/22/2014)	
12/22/2014	10	PRAECIPE filed by Philip A. Rovner on behalf of Sonos Inc. requesting Clerk to issue Rule 4(f)(2)(C)(ii) service for D&M Holdings Inc. d/b/a The D+M Group. (Rovner, Philip) Modified on 12/23/2014 (nms). (Entered: 12/22/2014)	
12/22/2014	11	AFFIDAVIT of Philip A. Rovner re 10 Praecipe re service on D&M Holdings Inc. d/b/a The D+M Group, filed by Sonos Inc.. (Rovner, Philip) Modified on 12/22/2014 (nms). (Entered: 12/22/2014)	

12/23/2014	12	Postal Receipt(s) for the mailing of process to D&M Holdings Inc. (aah) (Entered: 12/23/2014)
12/24/2014	13	MOTION for Pro Hac Vice Appearance of Attorney John M. Jackson of Jackson Walker, LLP - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) Modified on 1/4/2015 (nms). (Entered: 12/24/2014)
01/02/2015	14	STIPULATION TO EXTEND TIME for Defendants D&M Holdings U.S. Inc. and Denon Electronics (USA), LLC to Respond to Complaint to February 9, 2015 - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 01/02/2015)
01/04/2015		SO ORDERED, re 13 MOTION for Pro Hac Vice Appearance of Attorney John M. Jackson of JACKSON WALKER, LLP filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.. Signed by Judge Richard G. Andrews on 1/4/2015. (nms) (Entered: 01/04/2015)
01/05/2015		SO ORDERED, re 14 STIPULATION TO EXTEND TIME for Defendants D&M Holdings U.S. Inc. and Denon Electronics (USA), LLC to Respond to Complaint to February 9, 2015, filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.(Reset Answer Deadlines: D&M Holdings U.S. Inc. answer due 2/9/2015; Denon Electronics (USA) LLC answer due 2/9/2015). Signed by Judge Richard G. Andrews on 1/5/2015. (nms) (Entered: 01/05/2015)
01/06/2015		Pro Hac Vice Attorney John M. Jackson for D&M Holdings U.S. Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (rbe) (Entered: 01/06/2015)
01/26/2015	15	MOTION for Pro Hac Vice Appearance of Attorney George I. Lee, Esq., Sean M. Sullivan, Esq., Rory P. Shea, Esq., John Dan Smith, III, Esq. - filed by Sonos Inc.. (Rovner, Philip) (Entered: 01/26/2015)
01/26/2015		SO ORDERED, re 15 MOTION for Pro Hac Vice Appearance of Attorney George I. Lee, Esq., Sean M. Sullivan, Esq., Rory P. Shea, Esq., John Dan Smith, III, Esq. filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 1/26/2015. (nms) (Entered: 01/26/2015)
01/29/2015		Pro Hac Vice Attorney George I. Lee,Sean M. Sullivan,Rory P. Shea,John D. Smith, III for Sonos Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (dmp,) (Entered: 01/29/2015)
02/09/2015	16	MOTION to Dismiss - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 02/09/2015)
02/09/2015	17	OPENING BRIEF in Support re 16 MOTION to Dismiss, filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 2/26/2015. (Blumenfeld, Jack) Modified on 2/9/2015 (nms). (Entered: 02/09/2015)
02/09/2015	18	Disclosure Statement pursuant to Rule 7.1: identifying Corporate Parent D&M Holdings Inc. for D&M Holdings U.S. Inc., Denon Electronics (USA) LLC filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 02/09/2015)
02/13/2015	19	MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 2/13/2015 (nms). (Entered: 02/13/2015)
02/13/2015	20	[SEALED] OPENING BRIEF in Support re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering

		Brief/Response due date per Local Rules is 3/2/2015. (Flynn, Michael) (Entered: 02/13/2015)
02/13/2015	21	[SEALED] DECLARATION re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A & B)(Flynn, Michael) (Entered: 02/13/2015)
02/13/2015	22	DECLARATION re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A - E)(Flynn, Michael) (Entered: 02/13/2015)
02/13/2015	23	[SEALED] DECLARATION re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A) (Flynn, Michael) (Entered: 02/13/2015)
02/17/2015	24	REDACTED VERSION of 20 Opening Brief in Support, by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 2/18/2015 (nms). (Entered: 02/17/2015)
02/17/2015	25	REDACTED VERSION of 21 Declaration of Blake DeSimone, by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-B)(Flynn, Michael) Modified on 2/18/2015 (nms). (Entered: 02/17/2015)
02/17/2015	26	REDACTED VERSION of 23 Declaration of David Meisels, by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A)(Flynn, Michael) Modified on 2/18/2015 (nms). (Entered: 02/17/2015)
02/23/2015	27	STIPULATION TO EXTEND TIME time to file opposition to Motion to Disqualify and time for defendants to file reply brief to motion to disqualify (D.I. 19) to March 16, 2015 and April 2, 2015 - filed by Sonos Inc.. (Rovner, Philip) Modified on 2/24/2015 (nms). (Entered: 02/23/2015)
02/24/2015		SO ORDERED, re 27 STIPULATION TO EXTEND TIME time for plaintiff to file opposition to Motion to Disqualify and time for defendants to file reply brief to Motion to Disqualify (D.I. 19) to March 16, 2015, and April 2, 2015, filed by Sonos Inc. (Reset Briefing Schedule: re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto. Answering Brief due 3/16/2015, Reply Brief due 4/2/2015). Signed by Judge Richard G. Andrews on 2/24/2015. (nms) (Entered: 02/24/2015)
02/26/2015	28	ANSWERING BRIEF in Opposition re 16 MOTION to Dismiss, filed by Sonos Inc..Reply Brief due date per Local Rules is 3/9/2015. (Rovner, Philip) Modified on 3/3/2015 (nms). (Entered: 02/26/2015)
02/27/2015	29	MOTION to Amend 6 Amended Complaint - filed by Sonos Inc.. (Attachments: # 1 Exhibit A - Second Amended Complaint, # 2 Exhibits A-D, # 3 Exhibits E-F, # 4 Exhibit G, # 5 Exhibits H-K, # 6 Exhibit L, # 7 Exhibits M-O, # 8 Exhibits P-R, # 9 Exhibit S, # 10 Exhibit T, # 11 Exhibit U, # 12 Exhibit V, # 13 Exhibit W, # 14 Exhibit X, # 15 Exhibit Y, # 16 Exhibit Z, # 17 Exhibit - Redline Version)(Rovner, Philip) Modified on 3/3/2015 (nms). (Entered: 02/27/2015)
02/27/2015		Set Answering Brief Deadline re 29 MOTION to Amend 6 Amended Complaint. Answering Brief/Response due date per Local Rules is 3/16/2015. (nms) (Entered: 03/03/2015)
03/09/2015	30	STIPULATION and Order regarding Second Amended Complaint, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics

		(USA) LLC. (Blumenfeld, Jack) Modified on 3/9/2015 (nms). (Entered: 03/09/2015)
03/09/2015		SO ORDERED, re 30 Stipulation and Order regarding Amended Complaint, filed by Denon Electronics (USA) LLC, D&M Holdings Inc., D&M Holdings U.S. Inc. (Reset Answer Deadlines: D&M Holdings Inc. answer due 4/30/2015; D&M Holdings U.S. Inc. answer due 4/30/2015; Denon Electronics (USA) LLC answer due 4/30/2015). Signed by Judge Richard G. Andrews on 3/9/2015. (nms) (Entered: 03/09/2015)
03/09/2015	31	SECOND AMENDED COMPLAINT for Patent Infringement against D&M Holdings Inc., D&M Holdings U.S. Inc., and Denon Electronics (USA) LLC- filed by Sonos Inc.. (Attachments: # 1 Exhibits A-D, # 2 Exhibits E-F, # 3 Exhibit G, # 4 Exhibits H-K, # 5 Exhibit L, # 6 Exhibits M-O, # 7 Exhibits P-R, # 8 Exhibit S, # 9 Exhibit T, # 10 Exhibit U, # 11 Exhibit V, # 12 Exhibit W, # 13 Exhibit X, # 14 Exhibit Y, # 15 Exhibit Z)(nms) (Entered: 03/09/2015)
03/16/2015	32	[SEALED] ANSWERING BRIEF in Opposition re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of Privileged Documents Relevant Thereto filed by Sonos Inc..Reply Brief due date per Local Rules is 3/26/2015. (Rovner, Philip) (Entered: 03/16/2015)
03/16/2015	33	[SEALED] DECLARATION of George I. Lee re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	34	[SEALED] DECLARATION of Rory P. Shea re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	35	[SEALED] DECLARATION of John Dan Smith III re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	36	[SEALED] DECLARATION of Sean M. Sullivan re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	37	[SEALED] DECLARATION of Mark Triplett re 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/16/2015	38	DECLARATION of Philip A. Rovner re 32 Answering Brief in Opposition, by Sonos Inc.. (Attachments: # 1 Exhibits A-C, # 2 Exhibits D-F, # 3 Exhibits G-I, # 4 Exhibits J-M)(Rovner, Philip) Modified on 3/17/2015 (nms). (Entered: 03/16/2015)
03/18/2015	39	REDACTED VERSION of 32 Answering Brief in Opposition, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	40	REDACTED VERSION of 33 Declaration of George I. Lee, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	41	REDACTED VERSION of 34 Declaration of Rory P. Shea, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	42	REDACTED VERSION of 35 Declaration of John Dan Smith III, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	43	REDACTED VERSION of 37 Declaration of Mark Triplett, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
03/18/2015	44	REDACTED VERSION of 36 Declaration of Sean M. Sullivan, by Sonos Inc.. (Rovner, Philip) Modified on 3/19/2015 (nms). (Entered: 03/18/2015)
04/02/2015	45	REPLY BRIEF re 19 MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff and for In Camera Review of

		Privileged Documents Relevant Thereto filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Blumenfeld, Jack) (Entered: 04/02/2015)
04/14/2015	46	ORAL ORDER: The Court will hear oral argument on the MOTION to Disqualify Counsel Lee, Sullivan, Shea & Smith from Representing Plaintiff (D.I. 19) on 6/19/2015 at 1:00 PM in Courtroom 6A before Judge Richard G. Andrews. Ordered by Judge Richard G. Andrews on 4/14/2015. (nms) (Entered: 04/14/2015)
04/22/2015	47	MOTION for Pro Hac Vice Appearance of Attorney Kurt A. Schwarz of JACKSON WALKER, LLP - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 04/22/2015)
04/23/2015		SO ORDERED, re 47 MOTION for Pro Hac Vice Appearance of Attorney Kurt A. Schwarz of JACKSON WALKER, LLP filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.. Signed by Judge Richard G. Andrews on 4/23/2015. (nms) (Entered: 04/23/2015)
04/30/2015	48	ANSWER to 31 Amended Complaint, with Jury Demand, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 5/5/2015 (nms). (Entered: 04/30/2015)
04/30/2015	49	Disclosure Statement pursuant to Rule 7.1: identifying Other Affiliate Morgan Stanley, Other Affiliate Goldman Sachs Group Inc. for D&M Holdings Inc. filed by D&M Holdings Inc.. (Flynn, Michael) (Entered: 04/30/2015)
06/19/2015		Minute Entry for proceedings held before Judge Richard G. Andrews - Oral Argument held on 6/19/2015. (Court Reporter Leonard Dibbs.) (ksr,) (Entered: 06/19/2015)
06/23/2015	50	Official Transcript of Motion to Disqualify held on 06-19-15 before Judge Richard G. Andrews. Court Reporter/Transcriber Leonard A. Dibbs. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 7/14/2015. Redacted Transcript Deadline set for 7/24/2015. Release of Transcript Restriction set for 9/21/2015. (lad) (Entered: 06/23/2015)
06/29/2015	51	Order Setting Rule 16(b) Conference: A Scheduling Conference is set for 8/18/2015, at 3:00 PM in Chambers before Judge Richard G. Andrews (see Order for further details). Signed by Judge Richard G. Andrews on 6/29/2015. (nms) (Entered: 06/29/2015)
07/17/2015	52	NOTICE OF SERVICE of Plaintiff Sonos Inc.'s First Set of Interrogatories to Defendants and Plaintiff Sonos, Inc.'s First Set of Requests for the Production of Documents and Things to Defendants filed by Sonos Inc.. (Rovner, Philip) (Entered: 07/17/2015)
07/29/2015	53	NOTICE OF SERVICE of (1) Defendants' First Set of Common Requests for Production of Documents to Plaintiff; and (2) Defendant D&M Holdings Inc.'s First Set of Interrogatories to Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 07/29/2015)
08/13/2015	54	Letter to The Honorable Richard G. Andrews from Jack B. Blumenfeld regarding scheduling conference. (Blumenfeld, Jack) (Entered: 08/13/2015)
08/13/2015	55	Letter to The Honorable Richard G. Andrews from Philip A. Rovner, Esq. responding to defendants' letter of earlier today re scheduling conference. (Rovner, Philip) Modified on 8/17/2015 (nms). (Entered: 08/13/2015)
08/14/2015	56	PROPOSED Scheduling Order, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Letter)(Blumenfeld, Jack) Modified on 8/17/2015 (nms). (Entered: 08/14/2015)

08/14/2015	57	PROPOSED Scheduling Order, by Sonos Inc.. (Attachments: # 1 Letter) (Rovner, Philip) Modified on 8/17/2015 (nms). (Entered: 08/14/2015)
08/17/2015	58	ORAL ORDER: Defendants' request (D.I. 54) is DENIED. Defendants' request (D.I. 56) is also DENIED. Scheduling conference will be based on D.I. 57 . Ordered by Judge Richard G. Andrews on 8/17/2015. (nms) (Entered: 08/17/2015)
08/17/2015	59	NOTICE OF SERVICE of (1) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Requests for Production of Documents and Things; and (2) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 08/17/2015)
08/18/2015	60	Joint PROPOSED revised scheduling order, by Sonos Inc.. (Attachments: # 1 Letter)(Rovner, Philip) Modified on 8/18/2015 (nms). (Entered: 08/18/2015)
08/18/2015		Minute Entry for proceedings held before Judge Richard G. Andrews - Scheduling Conference held on 8/18/2015. (Court Reporter Leonard Dibbs.) (nms) (Entered: 08/18/2015)
08/19/2015	61	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) US 8,024,055 B1; US 8,843,224 B2; US 8,923,997 B2; US 8,370,678 B2; US 8,689,036 B2; US 8,938,637 B2; . (Rovner, Philip) (Entered: 08/19/2015)
08/20/2015	62	Official Transcript of Scheduling Conference held on 08-18-15 before Judge Richard G. Andrews. Court Reporter/Transcriber Leonard A. Dibbs. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 9/10/2015. Redacted Transcript Deadline set for 9/21/2015. Release of Transcript Restriction set for 11/18/2015. (lad) (Entered: 08/20/2015)
08/24/2015	63	MOTION for Pro Hac Vice Appearance of Attorney Blake T. Dietrich of Jackson Walker, LLP - filed by D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 08/24/2015)
08/25/2015		SO ORDERED, re 63 MOTION for Pro Hac Vice Appearance of Attorney Blake T. Dietrich of Jackson Walker, LLP filed by Denon Electronics (USA) LLC, D&M Holdings U.S. Inc.. Signed by Judge Richard G. Andrews on 8/25/2015. (nms) (Entered: 08/25/2015)
08/25/2015	64	PROPOSED Scheduling Order, by Sonos Inc.. (Attachments: # 1 Letter) (Rovner, Philip) Modified on 8/25/2015 (nms). (Entered: 08/25/2015)
08/25/2015		Pro Hac Vice Attorney Blake T. Dietrich for D&M Holdings U.S. Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (dmp,) (Entered: 08/25/2015)
08/25/2015	65	SCHEDULING ORDER: Case referred to the Magistrate Judge for the purpose of exploring ADR. Joinder of Parties due by 1/29/2016. Amended Pleadings due by 1/29/2016. Discovery due by 11/18/2016. Dispositive Motions due by 4/27/2017. Answering Brief due 5/18/2017. Reply Brief due 6/8/2017. Joint Claim Construction Brief due by 9/23/2016. A Markman Hearing is set for 10/13/2016, at 9:00 AM in Courtroom 6A before Judge Richard G. Andrews. A Pretrial Conference is set for 9/22/2017, at 9:00 AM in Courtroom 6A before Judge Richard G. Andrews. A 5 day Jury Trial is set for 10/2/2017, at 9:30 AM in Courtroom 6A before Judge Richard G. Andrews (see Order for further details). Signed by Judge Richard G. Andrews on 8/25/2015. (nms) (Entered: 08/25/2015)
08/28/2015	66	NOTICE OF SERVICE of Sonos Inc.'s Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff; Plaintiff

		Sonos, Inc.'s Objections and Responses to Defendants' First Set of Common Requests for Production of Documents re 53 Notice of Service, filed by Sonos Inc..(Rovner, Philip) (Entered: 08/28/2015)
09/01/2015		CASE REFERRED to Judge Thynge for Mediation. (cak) (Entered: 09/01/2015)
09/03/2015	67	ORDER Setting Teleconference: Plaintiff's counsel to initiate the call. A Telephone Conference is set for 9/16/2015 at 11:00 AM Eastern Time before Judge Mary Pat Thynge to discuss ADR. Signed by Judge Mary Pat Thynge on 9/3/15. (cak) (Entered: 09/03/2015)
09/04/2015	68	PROPOSED Protective Order, by Sonos Inc.. (Rovner, Philip) Modified on 9/8/2015 (nms). (Entered: 09/04/2015)
09/08/2015	69	SO ORDERED Granting 68 Proposed Stipulated Protective Order. Signed by Judge Richard G. Andrews on 9/8/2015. (nms) (Entered: 09/08/2015)
09/09/2015	70	MEMORANDUM OPINION regarding MOTION to Disqualify Counsel (D.I. 19). Signed by Judge Richard G. Andrews on 9/9/2015. (nms) (Entered: 09/09/2015)
09/09/2015	71	ORDER Denying 19 MOTION to Disqualify Counsel. Signed by Judge Richard G. Andrews on 9/9/2015. (nms) (Entered: 09/09/2015)
09/23/2015	72	ORDER Setting Mediation Conferences: A Telephone Conference is set for 4/11/2016 at 10:00 AM Eastern Time before Judge Mary Pat Thynge. A Mediation Conference is set for 5/12/2016 at 10:00 AM in Courtroom 2B before Judge Mary Pat Thynge. SEE ORDER FOR DETAILS. Signed by Judge Mary Pat Thynge on 9/23/15. (cak) (Entered: 09/23/2015)
10/08/2015	73	NOTICE of Change of Address (Jackson Walker, L.L.P. - Dallas) by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Flynn, Michael) (Entered: 10/08/2015)
10/08/2015	74	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Initial Disclosures Pursuant to Section 2(B) of the Scheduling Order; Plaintiff Sonos, Inc.'s Initial Disclosures Pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure and Section 3 of the District of Delaware's Default Standard For Discovery re 65 Scheduling Order,, filed by Sonos Inc..(Rovner, Philip) (Entered: 10/08/2015)
10/08/2015	75	NOTICE OF SERVICE of (1) Defendants' Initial Disclosures; and (2) Defendants' Disclosures Pursuant to Paragraph 3 of the Delaware Default Standard for Discovery filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/08/2015)
10/15/2015	76	MOTION for Pro Hac Vice Appearance of Attorney Michael P. Boyea, Esq. - filed by Sonos Inc.. (Rovner, Philip) (Entered: 10/15/2015)
10/15/2015	77	NOTICE of change of address for Lee Sullivan Shea & Smith LLP, by Sonos Inc.. (Rovner, Philip) Modified on 10/16/2015 (nms). (Entered: 10/15/2015)
10/16/2015		SO ORDERED, re 76 MOTION for Pro Hac Vice Appearance of Attorney Michael P. Boyea, Esq., filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 10/16/2015. (nms) (Entered: 10/16/2015)
10/16/2015		Pro Hac Vice Attorney Michael P. Boyea for Sonos Inc. added for electronic noticing. Pursuant to Local Rule 83.5 (d)., Delaware counsel shall be the registered users of CM/ECF and shall be required to file all papers. (dmp,) (Entered: 10/16/2015)
10/16/2015	78	NOTICE OF SERVICE of Defendants' First Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/16/2015)
11/03/2015	79	

		NOTICE to Take Deposition of 30 (b)(6) notice of deposition of D&M Holdings Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC on November 17, 2015 filed by Sonos Inc.. (Rovner, Philip) (Entered: 11/03/2015)
11/05/2015	80	NOTICE OF SERVICE of Defendants' First Amended Disclosures Pursuant to Paragraph 3 of the Delaware Default Standard for Discovery filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/05/2015)
11/30/2015	81	[SEALED] Motion for Leave to Amend Answer to Assert Counterclaims - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibits A-I to Amended Answer, # 4 Exhibit J to Amended Answer, Part 1, # 5 Exhibit J to Amended Answer, Part 2, # 6 Exhibit 3)(Flynn, Michael) Modified on 12/1/2015 (nms). (Attachment 6 replaced on 12/1/2015) (nms). (Entered: 11/30/2015)
11/30/2015		Set Answering Brief Deadline re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims. Answering Brief/Response due date per Local Rules is 12/17/2015. (nms) (Entered: 12/01/2015)
12/01/2015		CORRECTING ENTRY: Exhibit 3 to D.I. 81 has been replaced per counsel's request. The reference to "Exhibit B" in the Order has been changed to read "Exhibit 2." (nms) (Entered: 12/01/2015)
12/04/2015	82	STIPULATION TO EXTEND TIME time for plaintiff to file its opposition to defendants' motion for leave to amend their answer to assert oounterclaims to January 4, 2016 - filed by Sonos Inc.. (Rovner, Philip) Modified on 12/4/2015 (nms). (Entered: 12/04/2015)
12/04/2015		SO ORDERED, re 82 STIPULATION TO EXTEND TIME to file opposition to motion for leave to amend answer to assert counterclaims to January 4, 2016, filed by Sonos Inc. (Reset Briefing Schedule: re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims. Answering Brief due 1/4/2016). Signed by Judge Richard G. Andrews on 12/4/2015. (nms) (Entered: 12/04/2015)
12/08/2015	83	REDACTED VERSION of 81 MOTION for Leave to Amend Answer to Assert Counterclaims, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibits A-I to Amended Answer, # 4 Exhibit J to Amended Answer, Part 1, # 5 Exhibit J to Amended Answer, Part 2, # 6 Exhibit 3)(Flynn, Michael) Modified on 12/8/2015 (nms). (Entered: 12/08/2015)
12/10/2015	84	NOTICE OF SERVICE of subpoenas on AL Infinity d/b/a Altec Lansing filed by Sonos Inc.. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Rovner, Philip) (Entered: 12/10/2015)
12/11/2015	85	NOTICE OF SERVICE of Defendants' Core Technical Document Production filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 12/11/2015)
12/28/2015	86	NOTICE OF SERVICE of Defendants' Second Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 12/28/2015)
12/29/2015	87	NOTICE OF SERVICE of subpoenas on Tymphany Corporation filed by Sonos Inc.. (Attachments: # 1 Exhibit A-B)(Rovner, Philip) (Entered: 12/29/2015)
01/04/2016	88	ANSWERING BRIEF in Opposition re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims filed by Sonos Inc..Reply Brief due date per Local Rules is 1/14/2016. (Attachments: # 1 Exhibit A-E)(Rovner, Philip) (Entered: 01/04/2016)
01/14/2016	89	REPLY BRIEF re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims filed by D&M Holdings Inc., D&M Holdings U.S.

		Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-D)(Flynn, Michael) (Entered: 01/14/2016)
01/15/2016	90	REQUEST for Oral Argument by Sonos Inc. re 81 MOTION for Leave to Amend Their Answer to Assert Counterclaims. (Rovner, Philip) (Entered: 01/15/2016)
01/20/2016	91	MOTION for Leave to File a Sur-Reply in Opposition to Motion for Leave to Amend Their Answer to Assert Counterclaims - filed by Sonos Inc.. (Attachments: # 1 Sur-Reply)(Rovner, Philip) Modified on 1/21/2016 (nms). (Entered: 01/20/2016)
01/20/2016		Set Answering Brief Deadline re 91 MOTION for Leave to File a Sur-Reply in Opposition to Motion for Leave to Amend Their Answer to Assert Counterclaims. Answering Brief/Response due date per Local Rules is 2/8/2016. (nms) (Entered: 01/21/2016)
01/29/2016	92	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Initial Claim Charts filed by Sonos Inc..(Rovner, Philip) (Entered: 01/29/2016)
01/29/2016	93	[SEALED] MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I - filed by Sonos Inc.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 1 (A-F), # 3 Exhibit 1 (G-L), # 4 Exhibit 1 (M-N), # 5 Exhibit 1 (O-U))(Rovner, Philip) Modified on 2/1/2016 (nms). (Entered: 01/29/2016)
01/29/2016	94	[SEALED] MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, VOL. II - filed by Sonos Inc.. (Attachments: # 1 Exhibit 1 (V-Z), # 2 Exhibit 1 (AA-CC), # 3 Exhibit 2, # 4 Exhibit 3)(Rovner, Philip) Modified on 2/1/2016 (nms). (Entered: 01/29/2016)
01/29/2016		Set Answering Brief Deadline re 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I. Answering Brief/Response due date per Local Rules is 2/16/2016. (nms) (Entered: 02/01/2016)
02/08/2016	95	ANSWERING BRIEF in Opposition re 91 MOTION for Leave to File a Sur-Reply in Opposition to Motion for Leave to Amend Their Answer to Assert Counterclaims, filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Reply Brief due date per Local Rules is 2/19/2016. (Attachments: # 1 Exhibits A-C)(Flynn, Michael) (Attachment 1 replaced on 2/9/2016) (nms). Modified on 2/9/2016 (nms). (Entered: 02/08/2016)
02/09/2016		CORRECTING ENTRY: The pdf for the exhibits attached to D.I. 95 has been replaced per counsel's request. Exhibit D has been removed. (nms) (Entered: 02/09/2016)
02/09/2016		REDACTION NOTICE: In accordance with section G of the Administrative Procedures Governing Filing and Service by Electronic Means, redacted versions of sealed documents shall be filed electronically within 7 days of the filing of the sealed document. The records of this case do not reflect the filing of redacted versions of DI # 93 and 94 . (nms) (Entered: 02/09/2016)
02/10/2016	96	REDACTED VERSION of 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I, by Sonos Inc.. (Attachments: # 1 Exhibit 1)(Rovner, Philip) Modified on 2/10/2016 (nms). (Entered: 02/10/2016)
02/10/2016	97	REDACTED VERSION of 94 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, VOL. II, by Sonos Inc.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3)(Rovner, Philip) Modified on 2/10/2016 (nms). (Entered: 02/10/2016)
02/16/2016	98	RESPONSE to 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, filed by D&M

		Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 2/17/2016 (nms). (Entered: 02/16/2016)
02/26/2016	99	REPLY BRIEF re 93 MOTION for Leave to Amend Complaint Against Defendants to Replace Seven Asserted Patents, Volume I filed by Sonos Inc.. (Rovner, Philip) (Entered: 02/26/2016)
03/07/2016	100	ORDER Granting Motion for Leave to Amend (D.I. 81). The Motion for Leave to File a Sur-Reply (D.I. 91) is Dismissed as moot. The Motion for Leave to Amend Complaint (D.I. 93) is Granted. Defendants counterclaims for patent infringement are, pursuant to Fed. R. Civ. P. 42 (b), and consistent with the Courts practice, SEVERED for a separate trial. The counterclaims are to be docketed with a new civil action number. The parties should meet and confer and submit by March 14, 2016, a Rule 16 scheduling order for the counterclaims. If the parties do not agree on a schedule, they should promptly call Chambers to get a date and time for a scheduling conference. Signed by Judge Richard G. Andrews on 3/4/2016. (nms) Modified on 3/7/2016 (nms). (Entered: 03/07/2016)
03/07/2016	101	[SEALED] AMENDED ANSWER, Defenses, and Counterclaims for Patent Infringement to 31 Amended Complaint, by D&M Holdings U.S. Inc., D&M Holdings Inc., Denon Electronics (USA) LLC. (nms) (Additional attachment(s) added on 3/7/2016: # 1 Exhibits A-I, # 2 Exhibit J - part 1, # 3 Exhibit J - part 2) (nms). (Entered: 03/07/2016)
03/07/2016	102	THIRD AMENDED COMPLAINT For Patent Infringement against D&M Holdings Inc., D&M Holdings U.S. Inc., and Denon Electronics (USA) LLC- filed by Sonos Inc.. (Attachments: # 1 Exhibits A-F, # 2 Exhibits G-L, # 3 Exhibits M-N, # 4 Exhibits O-U)(nms) (Entered: 03/07/2016)
03/07/2016		Remark: Per the Order (D.I. 100), the Counterclaims filed at D.I. 101 have been severed and have been filed in the new case found at Civil Action 16-141-RGA. (nms) (Entered: 03/07/2016)
03/08/2016	103	Report to the Commissioner of Patents and Trademarks for Patent/Trademark Number(s) D559, 197 S; 7,571,014 B1; 8,588,949 B2; 8,843,224 B2; 8,938,637 B2; 8,938,312 B2; 9,042,556 B2 9,130,771 B2, 9,195,258 B2, 9,213,357 B2, 9,202,509 B2, 9,219,959 B2. (Rovner, Philip) (Entered: 03/08/2016)
03/15/2016	104	STIPULATION TO EXTEND TIME to answer, move or otherwise respond to the Third Amended Complaint (D.I. 102) to March 28, 2016 - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 03/15/2016)
03/16/2016		SO ORDERED, re 104 STIPULATION TO EXTEND TIME to answer, move or otherwise respond to the Third Amended Complaint to March 28, 2016, filed by Denon Electronics (USA) LLC, D&M Holdings Inc., D&M Holdings U.S. Inc. (Reset Answer Deadlines: D&M Holdings Inc. answer due 3/28/2016; D&M Holdings U.S. Inc. answer due 3/28/2016; Denon Electronics (USA) LLC answer due 3/28/2016). Signed by Judge Richard G. Andrews on 3/16/2016. (nms) (Entered: 03/16/2016)
03/18/2016	105	NOTICE of Third Party Subpoenas by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Attachments: # 1 Part 2)(Flynn, Michael) (Entered: 03/18/2016)
03/28/2016	106	ANSWER to 102 Amended Complaint, with Jury Demand, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 3/29/2016 (nms). (Entered: 03/28/2016)
04/11/2016	107	ORAL ORDER: The mediation scheduled for 5/12/16 at 10:00 AM with Judge Thynge and the submission due date of 4/28/16 are cancelled. Ordered by Judge Mary Pat Thynge on 4/11/16. (cak) (Entered: 04/11/2016)
04/12/2016	108	ORAL ORDER: A teleconference with Judge Thynge has been scheduled for 8/11/16 at 9:30 AM Eastern Time to be initiated by defense counsel. The

		mediation with Judge Thynge has been rescheduled for 8/31/16 at 10:00 AM. Submissions of the parties shall now be due on or before 8/19/16 by no later than 12:00 Noon. All other provisions of the Court's 9/23/15 Order remain in full force and effect. Ordered by Judge Mary Pat Thynge on 4/12/16. (cak) (Entered: 04/12/2016)
04/15/2016	109	NOTICE OF SERVICE of Defendants' Initial Invalidity Contentions filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 04/15/2016)
04/18/2016	110	ORDER Setting Mediation Conferences: A Telephone Conference is set for 8/11/2016 at 9:30 AM before Judge Mary Pat Thynge to be initiated by defense counsel. The Mediation Conference is set for 8/31/2016 at 10:00 AM in Courtroom 2B before Judge Mary Pat Thynge. SEE ORDER FOR DETAILS. Signed by Judge Mary Pat Thynge on 4/18/16. Associated Cases: 1:14-cv-01330-RGA, 1:16-cv-00141-RGA(cak) (Entered: 04/18/2016)
04/21/2016	111	MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) - filed by Sonos Inc.. (Rovner, Philip) Modified on 4/22/2016 (nms). (Entered: 04/21/2016)
04/21/2016	112	OPENING BRIEF in Support re 111 MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f), filed by Sonos Inc..Answering Brief/Response due date per Local Rules is 5/9/2016. (Rovner, Philip) Modified on 4/22/2016 (nms). (Entered: 04/21/2016)
04/29/2016	113	NOTICE OF SERVICE of Sonos, Inc.'s Supplemental Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff and Plaintiff Sonos, Inc.'s First Supplemental Initial Disclosures Pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure and Section 3 of The District of Delaware's Default Standard filed by Sonos Inc..(Rovner, Philip) (Entered: 04/29/2016)
04/29/2016	114	NOTICE OF SERVICE of (1) Defendants' Third Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories; and (2) Defendants' First Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Requests for the Production of Documents and Things filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 04/29/2016)
05/03/2016	115	NOTICE OF SERVICE of Plaintiff Sonos Inc.'s Second Set of Interrogatories to Defendants filed by Sonos Inc..(Rovner, Philip) (Entered: 05/03/2016)
05/06/2016	116	MOTION for Judgment on the Pleadings - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 5/10/2016 (nms). (Entered: 05/06/2016)
05/06/2016	117	OPENING BRIEF in Support re 116 MOTION for Judgment on the Pleadings filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 5/23/2016. (Flynn, Michael) (Entered: 05/06/2016)
05/06/2016	118	DECLARATION of John M. Jackson re 116 MOTION for Judgment on the Pleadings, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit A)(Flynn, Michael) Modified on 5/10/2016 (nms). (Entered: 05/06/2016)
05/09/2016	119	ANSWERING BRIEF in Opposition re 111 MOTION to Strike, Inc.s Motion to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Reply Brief due date per Local Rules is 5/19/2016. (Flynn, Michael) (Entered: 05/09/2016)
05/11/2016	120	STIPULATION to extend time to file opposition to Motion for Judgment on the Pleadings to May 27, 2016 and time for Defendants to file a reply brief extended to June 10, 2016, by Sonos Inc.. (Rovner, Philip) Modified on 5/11/2016 (nms). (Entered: 05/11/2016)

05/11/2016	121	Letter to The Honorable Richard G. Andrews from Michael Flynn regarding Request for Oral Argument. (Flynn, Michael) Modified on 5/11/2016 (nms). (Entered: 05/11/2016)
05/11/2016		SO ORDERED, re 120 Stipulation to Extend Time, filed by Sonos Inc. (Reset Briefing Schedule: re 116 MOTION for Judgment on the Pleadings. (Answering Brief due 5/27/2016, Reply Brief due 6/10/2016). Signed by Judge Richard G. Andrews on 5/11/2016. (nms) (Entered: 05/11/2016)
05/12/2016	122	Letter to The Honorable Richard G. Andrews from Philip A. Rovner regarding D&M's Request for Oral Argument. (Rovner, Philip) Modified on 5/12/2016 (nms). (Entered: 05/12/2016)
05/17/2016	123	NOTICE OF SERVICE of Defendants' Second Set of Interrogatories to Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 05/17/2016)
05/19/2016	124	REPLY BRIEF re 111 MOTION to Strike, Inc.s Motion to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) filed by Sonos Inc.. (Attachments: # 1 Exhibit A-B)(Rovner, Philip) (Entered: 05/19/2016)
05/27/2016	125	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Second Set of Requests for the Production of Documents and Things to Defendants filed by Sonos Inc..(Rovner, Philip) (Entered: 05/27/2016)
05/27/2016	126	ANSWERING BRIEF in Opposition re 116 MOTION for Judgment on the Pleadings filed by Sonos Inc..Reply Brief due date per Local Rules is 6/6/2016. (Attachments: # 1 Exhibit A-G, # 2 Exhibit H-K)(Rovner, Philip) (Main Document 126 replaced on 5/31/2016) (nms). (Entered: 05/27/2016)
05/31/2016		CORRECTING ENTRY: The main document pdf for D.I. 126 has been replaced with an amended version per counsel's request. Formatting issues were corrected. (nms) (Entered: 05/31/2016)
06/02/2016	127	NOTICE OF SERVICE of Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Second Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 06/02/2016)
06/06/2016	128	NOTICE OF SERVICE of Defendants' List of Proposed Constructions for Terms Proposed by Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 06/06/2016)
06/09/2016	129	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Preliminary Proposed Claim Constructions filed by Sonos Inc..(Rovner, Philip) (Entered: 06/09/2016)
06/10/2016	130	REPLY BRIEF re 116 MOTION for Judgment on the Pleadings filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 06/10/2016)
06/17/2016	131	ORAL ORDER: The parties have advised that a dispute has arisen requiring judicial attention. The Court will hold a discovery conference on 6/27/2016, at 10:00 AM in Chambers before Judge Richard G. Andrews to take up this issue. In preparation for this hearing the parties shall follow the Discovery Matters and Disputes procedure as set forth in the Scheduling Order. Ordered by Judge Richard G. Andrews on 6/17/2016. (nms) (Entered: 06/17/2016)
06/17/2016	132	Joint STIPULATION to amend Scheduling Order, by Sonos Inc.. (Rovner, Philip) Modified on 6/20/2016 (nms). (Entered: 06/17/2016)
06/20/2016	133	SO ORDERED Granting 132 Joint Stipulation to Amend Scheduling Order. Joint Claim Construction Brief due by 11/23/2016, and the Markman Hearing is now set for 12/14/2016, at 8:30 AM in Courtroom 6A before Judge Richard G. Andrews (see Stipulation for further details). Signed by Judge Richard G. Andrews on 6/20/2016. (nms) (Entered: 06/20/2016)
06/20/2016	134	

		NOTICE OF SERVICE of Sonos, Inc.'s Responses to Defendants' Second Set of Interrogatories (Nos. 12-13) to Plaintiff filed by Sonos Inc..(Rovner, Philip) (Entered: 06/20/2016)
06/23/2016	135	Letter to The Honorable Richard G. Andrews from Michael J. Flynn regarding June 27, 2016 discovery dispute conference. (Flynn, Michael) (Entered: 06/23/2016)
06/24/2016	136	Letter to The Honorable Richard G. Andrews from Philip A. Rovner regarding June 27, 2016 discovery dispute conference - re 135 Letter. (Rovner, Philip) (Entered: 06/24/2016)
06/27/2016	137	Official Transcript of Discovery Dispute held on 06-27-16 before Judge Richard G. Andrews. Court Reporter/Transcriber Leonard A. Dibbs. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 7/18/2016. Redacted Transcript Deadline set for 7/28/2016. Release of Transcript Restriction set for 9/26/2016. (lad) (Entered: 06/27/2016)
06/27/2016	138	NOTICE OF SERVICE of Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Second Set of Requests for Production of Documents and Things filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 06/27/2016)
06/27/2016		Minute Entry for proceedings held before Judge Richard G. Andrews - Discovery Conference held on 6/27/2016. Appearances: Shea, Smith, Choa for Plaintiff; Blumenfeld, Flynn, Jackson for Defendants. (Court Reporter Leonard Dibbs.) (ksr,) (Entered: 06/28/2016)
06/29/2016	139	ORAL ORDER: The MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) (D.I. 111) is referred to Chief Magistrate Judge Mary Pat Thynge. Ordered by Judge Richard G. Andrews on 6/29/2016. Motions referred to Mary Pat Thynge.(nms) (Entered: 06/29/2016)
07/15/2016	140	NOTICE OF SERVICE of Defendants' Updated List of Proposed Claim Terms and Phrases for Construction filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 07/15/2016)
08/01/2016	141	MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 8/6/2016 (nms). (Entered: 08/01/2016)
08/01/2016	142	OPENING BRIEF in Support re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct<, filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 8/18/2016. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Flynn, Michael) Modified on 8/6/2016 (nms). (Entered: 08/01/2016)
08/10/2016	143	REPORT AND RECOMMENDATIONS re 111 MOTION to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f) filed by Sonos Inc. Please note that when filing Objections pursuant to Federal Rule of Civil Procedure 72(b)(2), briefing consists solely of the Objections (no longer than ten (10) pages) and the Response to the Objections (no longer than ten (10) pages). No further briefing shall be permitted with respect to objections without leave of the Court. Objections to R&R due by 8/29/2016. Signed by Judge Mary Pat Thynge on 8/10/16. (cak) (Entered: 08/10/2016)
08/11/2016	144	Joint STIPULATION to Amend Scheduling Order, by Sonos Inc.. (Rovner, Philip) Modified on 8/15/2016 (nms). (Entered: 08/11/2016)
08/12/2016		

		SO ORDERED, re 144 Stipulation filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 8/12/2016. (ksr,) (Entered: 08/12/2016)
08/12/2016	145	NOTICE OF SERVICE of Defendants' Fourth Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 08/12/2016)
08/16/2016	146	STIPULATION TO EXTEND TIME to file its opposition to Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct to August 26, 2016 - filed by Sonos Inc.. (Rovner, Philip) Modified on 8/17/2016 (nms). (Entered: 08/16/2016)
08/17/2016		SO ORDERED, re 146 STIPULATION TO EXTEND TIME to file opposition to Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct to August 26, 2016, filed by Sonos Inc. (Reset Briefing Schedule: re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct. Answering Brief due 8/26/2016). Signed by Judge Richard G. Andrews on 8/17/2016. (nms) (Entered: 08/17/2016)
08/17/2016	147	Joint Claim Construction Chart, Volume 1, by Sonos Inc.. (Attachments: # 1 Exhibit 1, # 2 Exhibit A, # 3 Exhibit B-D, # 4 Exhibit E, # 5 Exhibit F, # 6 Exhibits G-H)(Rovner, Philip) Modified on 8/18/2016 (nms). (Additional attachment(s) added on 8/18/2016: # 7 Exhibit I part 1, # 8 Exhibit I part 2, # 9 Exhibits J-K, # 10 Exhibits L-N, # 11 Exhibit O) (nms). (Main Document 147 replaced on 8/18/2016) (nms). (Entered: 08/17/2016)
08/17/2016	148	Joint Claim Construction Chart, Volume 2, by Sonos Inc.. (Attachments: # 1 Exhibits P-R)(Rovner, Philip) (Additional attachment(s) added on 8/18/2016: # 2 Exhibits S-U) (nms). Modified on 8/18/2016 (nms). (Additional attachment(s) added on 8/18/2016: # 3 Exhibits V-X) (nms). Modified on 8/18/2016 (nms). (Main Document 148 replaced on 8/18/2016) (nms). (Entered: 08/17/2016)
08/17/2016	149	Joint Claim Construction Chart, Volume 3, by Sonos Inc.. (Attachments: # 1 Exhibit Y-AA)(Rovner, Philip) (Additional attachment(s) added on 8/18/2016: # 2 Exhibit BB part 1, # 3 Exhibit BB part 2, # 4 Exhibit CC) (nms). Modified on 8/18/2016 (nms). Modified on 8/18/2016 (nms). (Main Document 149 replaced on 8/18/2016) (nms). (Entered: 08/17/2016)
08/18/2016		CORRECTING ENTRY: The Joint Claim Construction Chart initially filed in seven volumes (D.I. 147 through D.I. 153) has been reconfigured, and is now three volumes in total (D.I. 147 through 149). (nms) (Entered: 08/18/2016)
08/25/2016	150	STIPULATION of Dismissal Regarding U.S. Patent No. 9,130,771, by Sonos Inc.. (Rovner, Philip) Modified on 8/25/2016 (nms). (Entered: 08/25/2016)
08/25/2016	151	SO ORDERED Granting 150 Stipulation and Order of Dismissal With Prejudice of All Claims and Defenses Regarding U.S. Patent No. 9,130,771 Only. Signed by Judge Richard G. Andrews on 8/25/2016. (nms) (Entered: 08/25/2016)
08/26/2016	152	ANSWERING BRIEF in Opposition re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct filed by Sonos Inc..Reply Brief due date per Local Rules is 9/6/2016. (Attachments: # 1 Exhibit A-F)(Rovner, Philip) (Entered: 08/26/2016)
08/29/2016	153	STIPULATION TO EXTEND TIME for defendants to file a reply brief in support of motion for leave to amend answer to September 9, 2016 - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 08/29/2016)
08/30/2016		SO ORDERED, re 153 STIPULATION TO EXTEND TIME to file a reply brief in support of motion for leave to amend answer to September 9, 2016, filed by Denon Electronics (USA) LLC, D&M Holdings Inc., D&M Holdings U.S. Inc. (Reset Briefing Schedule: re 141 MOTION for Leave to

		Amend Answer to Add the Defense of Inequitable Conduct. Reply Brief due 9/9/2016). Signed by Judge Richard G. Andrews on 8/30/2016. (nms) (Entered: 08/30/2016)
08/30/2016	154	NOTICE to Take Deposition of Amended First Notice of Rule 30(b)(6) Deposition to Defendants on September 21, 2016 filed by Sonos Inc.. (Rovner, Philip) (Entered: 08/30/2016)
08/30/2016	155	NOTICE to Take Deposition of Second Notice of Rule 30(b)(6) Deposition to Defendants on September 23, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 08/30/2016)
08/30/2016	156	NOTICE to Take Deposition of Third Notice of Rule 30(b)(6) Deposition to Defendants on September 22, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 08/30/2016)
09/01/2016	157	ORDER ADOPTING 143 Report and Recommendation. The Motion to Strike (D.I. 111) is GRANTED in part and DENIED in part as set forth in the Report and Recommendation. Signed by Judge Richard G. Andrews on 8/31/2016. (nms) (Entered: 09/01/2016)
09/07/2016	158	Amended ANSWER to 102 Third Amended Complaint for Patent Infringement, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) Modified on 9/8/2016 (nms). (Entered: 09/07/2016)
09/09/2016	159	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Opening Claim Construction Brief (with Exhibits 1-8) and Declaration of Steven C. Visser (with Exhibit A-B) filed by Sonos Inc..(Rovner, Philip) (Entered: 09/09/2016)
09/09/2016	160	REPLY BRIEF re 141 MOTION for Leave to Amend Answer to Add the Defense of Inequitable Conduct filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-B)(Flynn, Michael) (Entered: 09/09/2016)
09/15/2016	161	MOTION to Strike New Amended Answer Submitted With Their Reply Brief - filed by Sonos Inc.. (Rovner, Philip) Modified on 9/16/2016 (nms). (Entered: 09/15/2016)
09/15/2016		Set Answering Brief Deadline re 161 MOTION to Strike New Amended Answer Submitted With Their Reply Brief. Answering Brief/Response due date per Local Rules is 10/3/2016. (nms) (Entered: 09/16/2016)
10/03/2016	162	ORAL ORDER: The Court will hear oral argument on the MOTION for Judgment on the Pleadings (D.I. 116) on 11/14/2016, at 3:00 PM in Courtroom 6A before Judge Richard G. Andrews. Ordered by Judge Richard G. Andrews on 10/3/2016. (nms) (Entered: 10/03/2016)
10/03/2016	163	ANSWERING BRIEF in Opposition re 161 MOTION to Strike New Amended Answer Submitted With Their Reply Brief filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Reply Brief due date per Local Rules is 10/14/2016. (Flynn, Michael) (Entered: 10/03/2016)
10/03/2016	164	DECLARATION of John M. Jackson re 163 Answering Brief in Opposition, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibits A-B)(Flynn, Michael) Modified on 10/4/2016 (nms). (Entered: 10/03/2016)
10/05/2016	165	NOTICE to Take Deposition of Brendon Stead on October 13, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	166	NOTICE to Take Deposition of Evan Stuart on October 25, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	167	NOTICE to Take Deposition of Peter Celinksi on October 26, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	168	NOTICE to Take Deposition of Christopher Commons on October 27, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)

10/05/2016	169	NOTICE to Take Deposition of Satoshi Fukuzuku on October 28, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/05/2016	170	NOTICE to Take Deposition of Martin R. Wachter on October 28, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 10/05/2016)
10/06/2016	171	NOTICE OF SERVICE of (1) Defendants' Second Set of Requests for Production of Documents to Plaintiff; and (2) Defendants' Third Set of Interrogatories to Plaintiff filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/06/2016)
10/07/2016	172	ORDER regarding Motion to Amend (D.I. 141]). Defendants are Ordered to advise the Court by October 12, 2016, upon which pleading they want to rely. If it is the second one, Defendants will need to file another motion to amend. Signed by Judge Richard G. Andrews on 10/7/2016. (nms) (Entered: 10/07/2016)
10/07/2016	173	NOTICE OF SERVICE of (1) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Amended First Notice of Rule 30(b)(6) Deposition; (2) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Second Notice of Rule 30(b)(6) Deposition; (3) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Third Notice of Rule 30(b)(6) Deposition; and (4) Defendants' Notice of 30(b)(6) Deposition filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/07/2016)
10/10/2016	174	NOTICE OF SERVICE of Sonos, Inc.'s Amended Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff filed by Sonos Inc..(Rovner, Philip) (Entered: 10/10/2016)
10/12/2016	175	Letter to The Honorable Richard G. Andrews from Michael Flynn regarding the Courts October 7, 2016 Order (D.I. 172). (Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/12/2016	176	MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct - filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/12/2016	177	OPENING BRIEF in Support re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct, filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.Answering Brief/Response due date per Local Rules is 10/31/2016. (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/12/2016	178	DECLARATION of John M. Jackson re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct, by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Attachments: # 1 Exhibit 1)(Flynn, Michael) Modified on 10/13/2016 (nms). (Entered: 10/12/2016)
10/14/2016	179	NOTICE of Non-Party Subpoena (International Business Machines Corporation) by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Flynn, Michael) (Entered: 10/14/2016)
10/14/2016	180	ORAL ORDER: The motion for leave to amend (D.I. 141) and the motion to strike (D.I. 161) are both DISMISSED AS MOOT in light of the filing of the motion for leave to amend. (D.I. 176). Ordered by Judge Richard G. Andrews on 10/14/2016. (nms) (Entered: 10/14/2016)
10/14/2016	181	NOTICE OF SERVICE of (1) Defendants' Responsive Claim Construction Brief; and (2) Declaration of John M. Jackson in Support of Defendants' Responsive Claim Construction Brief filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/14/2016)
10/18/2016	182	

		NOTICE of Non-Party Subpoenas by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Attachments: # 1 Exhibits 1-5)(Flynn, Michael) (Entered: 10/18/2016)
10/19/2016	183	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s First Set of Requests for Admission to Defendants and Plaintiff Sonos Inc.'s Requests for Admission to Defendants Directed to Authenticity of Documents filed by Sonos Inc.. (Rovner, Philip) (Entered: 10/19/2016)
10/20/2016	184	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Amended Initial Disclosures Pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure and Section 3 of the District of Delaware's Default Standard filed by Sonos Inc..(Rovner, Philip) (Entered: 10/20/2016)
10/24/2016	185	NOTICE to Take Deposition of Mike Groeninger on November 2, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/24/2016	186	NOTICE to Take Deposition of Nick Millington on November 4, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/24/2016	187	NOTICE to Take Deposition of Tom Cullen on November 11, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/24/2016	188	NOTICE to Take Deposition of Sonos, Inc. Pursuant to Fed. R. Civ. P. 30(b)(6) on November 2, 2016, November 4, 2016 and November 11, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 10/24/2016)
10/31/2016	189	ANSWERING BRIEF in Opposition re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct filed by Sonos Inc..Reply Brief due date per Local Rules is 11/10/2016. (Attachments: # 1 Exhibit A-D)(Rovner, Philip) (Entered: 10/31/2016)
10/31/2016	190	NOTICE OF SERVICE of Plaintiff's Objections and Responses to Defendants' Notice of 30(b)(6) deposition filed by Sonos Inc..(Rovner, Philip) (Entered: 10/31/2016)
11/08/2016	191	NOTICE OF SERVICE of Plaintiff Sonos, Inc.'s Responses to Defendants' Third Set of Interrogatories (Nos. 14-16) to Plaintiff and Plaintiff Sonos, Inc.'s Objections and Responses to Defendants' Second Set of Requests for Production of Documents filed by Sonos Inc..(Rovner, Philip) (Entered: 11/08/2016)
11/10/2016	192	REPLY BRIEF re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC. (Flynn, Michael) (Entered: 11/10/2016)
11/10/2016	193	STIPULATION and Order Regarding Discovery by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC, D&M Holdings Inc.. (Flynn, Michael) (Entered: 11/10/2016)
11/11/2016	194	REQUEST for Oral Argument by Sonos Inc. re 176 MOTION for Leave to File an Amended Answer to Add the Defense of Inequitable Conduct. (Rovner, Philip) (Entered: 11/11/2016)
11/14/2016	195	SO ORDERED Granting (193 in 14-cv-1330-RGA, 37 in 16-cv-141-RGA) Stipulation and Order Regarding Discovery. Signed by Judge Richard G. Andrews on 11/14/2016. Associated Cases: 1:14-cv-01330-RGA, 1:16-cv-00141-RGA(nms) (Entered: 11/14/2016)
11/16/2016	196	NOTICE to Take Deposition of Jonathan Lang on December 8, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/16/2016)
11/16/2016	197	

		NOTICE to Take Deposition of Robert Lambourne on December 6, 2016 filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/16/2016)
11/18/2016	198	Amended NOTICE to Take Deposition of Martin R. Wachter on November 29, 2016, filed by Sonos Inc..(Rovner, Philip) Modified on 11/21/2016 (nms). (Entered: 11/18/2016)
11/18/2016	199	NOTICE OF SERVICE of Sonos, Inc.'s Second Amended Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff; Sonos, Inc.'s Amended Responses to Defendants' Second Set of Interrogatories (Nos. 12-13) to Plaintiff; and Sonos, Inc.'s Amended Responses to Defendants' Third Set of Interrogatories (Nos. 14-16) to Plaintiff filed by Sonos Inc..(Rovner, Philip) (Entered: 11/18/2016)
11/18/2016	200	NOTICE OF SERVICE of (1) Defendants' Sixth Amended Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Interrogatories; (2) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s First Set of Requests For Admission; (3) Defendants' Objections and Responses to Plaintiff Sonos, Inc.'s Requests for Admission to Defendants Directed to Authenticity of Documents; and (4) Defendants' Amended Objections and Responses to Plaintiff Sonos, Inc.'s Second Set of Interrogatories filed by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC.(Flynn, Michael) (Entered: 11/18/2016)
11/23/2016	201	[SEALED] Joint Claim Construction Brief, filed by Sonos Inc.. (Attachments: # 1 Exhibits 1-5, # 2 Exhibits 6-10, # 3 Exhibit 11 part 1, # 4 Exhibit 11 part 2, # 5 Exhibit 12, # 6 Exhibit 13 part 1, # 7 Exhibit 13 part 2, # 8 Exhibits 14-15, # 9 Exhibits 16-20, # 10 Exhibit 21)(Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	202	DECLARATION of Robert John Anders re 201 Joint Claim Construction Brief, by Sonos Inc.. (Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	203	DECLARATION of John M. Jackson re 201 Joint Claim Construction Brief, by Sonos Inc.. (Attachments: # 1 Exhibits 1-4)(Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	204	DECLARATION of Steven C. Visser re 201 Joint Claim Construction Brief, by Sonos Inc.. (Attachments: # 1 Exhibits A-B)(Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/23/2016	205	Supplemental DECLARATION of Steven C. Visser re 201 Joint Claim Construction Brief, by Sonos Inc.. (Rovner, Philip) Modified on 11/28/2016 (nms). (Entered: 11/23/2016)
11/28/2016	206	Official Transcript of hearing held on November 14, 2016 before Judge Andrews. Court Reporter/Transcriber Valerie Gunning,Telephone number (302) 573-6194. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 12/19/2016. Redacted Transcript Deadline set for 12/29/2016. Release of Transcript Restriction set for 2/27/2017. (vjg) (Entered: 11/28/2016)
11/30/2016	207	REDACTED VERSION of 201 Joint Claim Construction Brief, by Sonos Inc.. (Attachments: # 1 Exhibits 1-5, # 2 Exhibits 6-10, # 3 Exhibit 11 part 1, # 4 Exhibit 11 part 2, # 5 Exhibit 12, # 6 Exhibit 13 part 1, # 7 Exhibit 13 part 2, # 8 Exhibit 14, # 9 Exhibits 15-20, # 10 Exhibit 21)(Rovner, Philip) Modified on 11/30/2016 (nms). (Entered: 11/30/2016)
12/01/2016	208	NOTICE of Final Rejection Concerning U.S. Patent No. D559,197 in Ex Parte Reexamination by D&M Holdings Inc., D&M Holdings U.S. Inc., Denon Electronics (USA) LLC (Flynn, Michael) (Entered: 12/01/2016)
12/02/2016	209	Joint STIPULATION to Amend Scheduling Order by Sonos Inc.. (Rovner, Philip) (Entered: 12/02/2016)

12/05/2016	210	SO ORDERED Granting 209 Joint Stipulation to Amend Scheduling Order, filed by Sonos Inc.. Signed by Judge Richard G. Andrews on 12/5/2016. (nms) (Entered: 12/05/2016)
12/07/2016	211	NOTICE to Take Deposition of Kevin Zarow on December 16, 2016 filed by Sonos Inc..(Rovner, Philip) (Entered: 12/07/2016)
12/13/2016	212	ORAL ORDER: The Markman Hearing set for 12/14/2016, will now commence at 9:30 AM in Courtroom 6A. Ordered by Judge Richard G. Andrews on 12/13/2016. (nms) (Entered: 12/13/2016)
12/14/2016		Minute Entry for proceedings held before Judge Richard G. Andrews - Markman Hearing held on 12/14/2016. Appearances: P. Rovner, G. Lee, R. Shea, M. Boyea, A. Silverstein for Plaintiffs; M. Flynn, J. Jackson, M. Aeosta for Defendants. (Court Reporter Taneha Carroll - Hawkins Reporting Service.) (ksr,) (Entered: 12/15/2016)
12/20/2016	213	Official Transcript of Markman Hearing held on 12-14-16 before Judge Richard G. Andrews. Court Reporter/Transcriber Taneha Carroll. Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER. Redaction Request due 1/10/2017. Redacted Transcript Deadline set for 1/20/2017. Release of Transcript Restriction set for 3/20/2017. (lad) (Entered: 12/20/2016)

Copyright © 2016 LexisNexis CourtLink, Inc. All rights reserved.
*** THIS DATA IS FOR INFORMATIONAL PURPOSES ONLY ***



1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

7571014

Link to Claims Section

August 4, 2009

Method and apparatus for controlling multimedia players in a multi-zone system

INVENTOR: Lambourne, Robert A. - Santa Barbara, California, United States of America (US), United States of America () ; Millington, Nicholas A. J. - Santa Barbara, California, United States of America (US), United States of America ()

CERT-CORRECTION:
March 19, 2013 - a Certificate of Correction was issued for this patent (O.G. April 9, 2013)

APPL-NO: 861653 (10)

FILED-DATE: June 5, 2004

GRANTED-DATE: August 4, 2009

PRIORITY: June 5, 2004 - 10861653, United States of America (US)

ASSIGNEE-PRE-ISSUE:
June 5, 2004 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., SONOS, INC., 506 CHAPALA STREET, SANTA BARBARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 93101, Reel and Frame Number: 015443/0654
May 24, 2006 - SECURITY AGREEMENT, SILICON VALLEY BANK, 3003 TASMAN DRIVE, SANTA CLARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 95054, Reel and Frame Number: 017664/0836

ASSIGNEE-AT-ISSUE:
Sonos, Inc., Santa Barbara, California, United States of America (US), United States company or corporation (02)

ASSIGNEE-AFTER-ISSUE:
February 26, 2010 - RELEASE BY SECURED PARTY (SEE DOCUMENT FOR DETAILS)., SONOS, INC., 223 E. DE LA GUERRA, SANTA BARBARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 93101, Reel and

Frame Number: 023998/0778
June 8, 2012 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., SONOS, INC., 223 EAST DE LA GUERRA STREET, SANTA BARBARA, CALIFORNIA, UNITED STATES OF AMERICA (US), 93101, Reel and Frame Number: 028345/0881
November 15, 2015 - PATENT SECURITY AGREEMENT, JPMORGAN CHASE BANK, N.A., 10 S. DEARBORN STREET, CHICAGO, ILLINOIS, UNITED STATES OF AMERICA (US), 60603, Reel and Frame Number: 037112/0014
April 1, 2016 - SECURITY INTEREST (SEE DOCUMENT FOR DETAILS)., GORDON BROTHERS FINANCE COMPANY, 27TH FLOOR, 800 BOYLSTON STREET, BOSTON, MASSACHUSETTS, UNITED STATES OF AMERICA (US), 02199, Reel and Frame Number: 038329/0253

LEGAL-REP: Zheng, Joe

PUB-TYPE: August 4, 2009 - Patent without a pre-grant publication (B1)

PUB-COUNTRY: United States of America (US)

LEGAL-STATUS:

June 5, 2004 - ASSIGNMENT
May 24, 2006 - ASSIGNMENT
February 26, 2010 - ASSIGNMENT
February 26, 2010 - ASSIGNMENT
June 8, 2012 - ASSIGNMENT
February 4, 2013 - FEE PAYMENT
March 19, 2013 - CERTIFICATE OF CORRECTION
November 15, 2015 - ASSIGNMENT
April 1, 2016 - ASSIGNMENT
February 4, 2013 - Payment of Maintenance Fee, 4th Year, Large Entity.
February 5, 2013 - Entity Status Set to Undiscounted

FILING-LANG: English (EN) (ENG)

PUB-LANG: English (EN) (ENG)

REL-DATA:

Continuation-in-part of Ser. No. 10816217, April 1, 2004, PENDING

US-MAIN-CL: 700#94

US-ADDL-CL: 715#716

CL: 700, 715

SEARCH-FLD: 700#94, 715#716, 715#734, 715#735, 709#220, 709#221, 381#56

IPC-MAIN-CL: [8] G06F 017#00 (20060101) Advanced Inventive 20090804 (A F I B H US)

IPC-ADDL-CL: [8] G06F 003#00 (20060101) Advanced Inventive 20090804 (A L I B H US)

PRIM-EXMR: Kuntz, Curtis

ASST-EXMR: Sellers, Daniel R

REF-CITED:

5239458, August 24, 1993, Suzuki, United States of America (US), 700#83
5299266, March 29, 1994, Lumsden, United States of America (US), 381#119
5751819, May 12, 1998, Dorrough, United States of America (US), 381#56
7218708, May 15, 2007, Berezowski et al., United States of America (US), 379#37
20020109710, August 15, 2002, Holtz et al., United States of America (US), 345#723
20020124097, September 5, 2002, Isely et al., United States of America (US), 709#231
20020188762, December 12, 2002, Tomassetti et al., United States of America (US), 709#251
20030126211, July 3, 2003, Anttila et al., United States of America (US), 709#205
20040008852, January 15, 2004, Also et al., United States of America (US), 381#119
20040252400, December 16, 2004, Blank et al., United States of America (US), 360#70
20050047605, March 3, 2005, Lee et al., United States of America (US), 381#56
20070038999, February 15, 2007, Millington, United States of America (US), 718#100

ENGLISH-ABST:

Techniques for controlling zone group and zone group characteristics such as audio volume in a multi-zone system are disclosed. The multi-zone system includes a number of multimedia players, each preferably located in a zone. A controller may control the operations of all of the zone players remotely from any one of the zones. Two or more zone players may be dynamically grouped as a zone group for synchronized operations. According to one aspect of the techniques, a zone group configuration can be managed, updated, modified via an interactive user interface provided in a controlling device. The zone group configuration may be saved in one of zone players. According to another aspect of the techniques, the audio volume control of a zone group can be performed individually or synchronously as a group.

NO-OF-CLAIMS: 44

EXMPL-CLAIM: 16

NO-OF-FIGURES: 15

NO-DRWNG-PP: 14

PARENT-PAT-INFO:

CROSS-REFERENCE TO RELATED APPLICATION

[0001]This application is a continuation-in-part of U.S. patent application Ser. No. 10/816,217, filed Apr. 1, 2004, in the name of Nicholas A. J. Millington, and entitled "System and method for synchronizing operations among a plurality of independently clocked digital data processing devices" filed on Apr. 1, 2004.

SUMMARY:

BACKGROUND OF THE INVENTION

[0002]1. Field of the Invention

[0003]The invention is generally related to the area of audio technologies and human-computer interaction. In particular, the invention is related to method and apparatus for controlling or manipulating a plurality of multimedia players in a multi-zone system.

[0004]2. The Background of Related Art

[0005]An enduring passion for quality audio reproduction or system is continuing to drive demands from users. One of the demands includes an audio system in a house in which, for example, one could grill to classic rock on a patio while another one may cook up his/her own music selections in a kitchen. This is all at the same time while a teenager catches a ballgame in a family room, and another one blasts pop in a bedroom. And the best part of such audio system is that each family member does not need his or her own stereo system--one system gives everyone access to all the music sources.

[0006]Currently, one of the systems that can meet part of such demand is a conventional multi-zone audio system that usually includes a number of audio players. Each of the audio players has its own amplifier(s) and a set of speakers and typically installed in one place (e.g., a room). In order to play an audio source at one location, the audio source must be provided locally or from a centralized location. When the audio source is provided locally, the multi-zone audio system functions as a collection of many stereo systems, making source sharing difficult. When the audio source is provided centrally, the centralized location may include a juke box, many compact discs, an AM or FM radio, tapes, or others. To send an audio source to an audio player demanding such source, a cross-bar type of device is used to prevent the audio source from going to other audio players that may be playing other audio sources.

[0007]In order to achieve playing different audio sources in different audio players, the traditional multi-zone audio system is generally either hard-wired or controlled by a pre-configured and pre-programmed controller. While the pre-programmed configuration may be satisfactory in one situation, it may not be suitable for another situation. For example, a person would like to listen to broadcast news from his/her favorite radio station in a bedroom, a bathroom and a den while preparing to go to work in the morning. The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning, the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.

[0008]Other than the above mentioned problem, the control of the audio players as a group does not exist. For example, the audio volume of the audio players in the traditional multi-zone audio system needs to be adjusted one at a time, resulting in an inconvenient and non-homogenous audio environment.

[0009]There is, therefore, a need for solutions in a multi-zone audio system to control a plurality of audio players and their audio characteristics from one controlling device.

SUMMARY OF THE INVENTION

[0010]This section is for the purpose of summarizing some aspects of the present invention and to briefly introduce some preferred embodiments. Simplifications or omissions in this section as well as in the abstract or the title of this description may be made to avoid obscuring the purpose of this section, the abstract and the title. Such simplifications or omissions are not intended to limit the scope of the present invention.

[0011]In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player. According to one aspect of the present invention, the same audio source is selected to be played synchronously in a group of players via a controlling device operated by a user. The group may be flexibly formed in a dynamic manner. Within the group, any one of the audio sources may be chosen and made available to each of the players. All audio playback control operations such as pause/play, forward/rewind, next/previous track are synchronously controlled, while the audio volume adjustment may be applied to a selected player or all of the players in the group.

[0012]According to another aspect of the present invention, a configurable module is implemented in the controlling device that provides interactive graphic user interface for controlling playback of the audio source, grouping a plurality of players together, de-grouping a group or adjusting audio volume of individual players or a group of players.

[0013]According to yet another aspect of the present invention, a player in a group of players is configured to synchronously play an audio source by selecting a source, making the source available or retrieving the source if the source is not found locally

[0014]The present invention may be implemented in many forms including software, hardware or a combination of both. According to one embodiment, the present invention is directed to a method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players, selecting at least one of the players as a zone group head, displaying on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head, selecting one or more players from the at least some of the players to be a group being formed by the group head, and synchronizing all players in the group.

[0015]According to another embodiment, the present invention is a method for controlling a plurality of players, the method comprising displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such group, selecting one of the volume meters from the list, and adjusting the one of the volume meters as desired.

[0016]According to still another embodiment, the present invention is an apparatus for controlling a plurality of players, the apparatus comprises a screen, a screen driver commanding the screen, an input interface, a network interface, a memory for storing code for an application module, a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of: displaying on the screen a first list showing at least available players; selecting at least one of the players as a zone group head; displaying on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head; selecting one or more players from the at least some of the players to be a zone group being formed by the zone group head; and synchronizing all players in the zone group.

[0017]The operations further include displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such group; selecting one of the volume meters from the list; and adjusting the one of the volume meters as desired.

[0018]One of the objects, features, and advantages of the present invention is to remotely control a plurality of multimedia players in a multi-zone system, playing and controlling the audio source synchronously if the players are grouped together, or playing and controlling the audio source individually if the players are disassociated with each other.

[0019]Other objects, features, and advantages of the present invention will become apparent upon examining the following detailed description of an embodiment thereof, taken in conjunction with the attached drawings.

DRWDESC:

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

[0021]FIG. 1 shows an exemplary configuration in which the present invention may be practiced;

[0022]FIG. 2A shows an exemplary functional block diagram of a player in accordance with the present invention;

[0023]FIG. 2B shows an example of a controller that may be used to remotely control one of more players of FIG. 2A;

[0024]FIG. 2C shows an exemplary internal functional block diagram of a controller in accordance with one embodiment of the present invention;

[0025]FIGS. 3A and 3B illustrate a sequence of screen displays in accordance with one embodiment of the present invention for controlling a plurality of players;

[0026]FIG. 3C shows a sequence of screen displays in accordance with one embodiment of the present invention for alternatively controlling players;

[0027]FIGS. 4A and 4B show a sequence of screen displays in accordance with one embodiment of the present invention for controlling players regarding audio volume;

[0028]FIG. 5 shows a flowchart or process of controlling a plurality of zones players according to one embodiment of the present invention;

[0029]FIG. 6 shows a flowchart or process of controlling audio volume of a plurality of players in a zone group according to one embodiment of the present invention; and

[0030]FIGS. 7A-7D show a sequence of screen displays in accordance with one embodiment of the present invention on a computing device for alternatively controlling players.

DETDESC:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0031]The present invention pertains to techniques for controlling a plurality of players, grouping some of the players, manipulating audio characteristics of the players individually or in groups. The audio characteristics include, but are not limited to, audio volume, audio bass, and audio treble. The players, also referred to as zone players, are part of in a multi-zone system that may be installed in a complex with multiple zones. In general, each zone player is located in one of the zones. Each of the zone players in the multi-zone system is coupled to a data network to communicate not only with each other but with other devices. According to one aspect of the present invention, through a controlling device, not only can each of the zone players be individually controlled, but also two or more of the zone players may

be grouped as one or more groups and controlled as if they were a single unit. The audio playback for the zone players in a zone group can be synchronized.

[0032]According to another aspect of the techniques, a zone group configuration can be manipulated via a user interface provided in a controlling device. The user interface provides a mechanism to manage, create, delete or modify zone groups. All audio playback operations, such as pause/play, forward/rewind, next/previous track, are synchronized for the zone players in a zone group. The zone group configuration may be saved in any one of zone players for easy retrieval in any of the zones at anytime.

[0033]The detailed description of the present invention is presented largely in terms of procedures, steps, logic blocks, processing, or other symbolic representations that directly or indirectly resemble the operations of devices or systems that can be used on networks. These descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art.

[0034]Reference herein to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Further, the order of blocks in process flowcharts or diagrams representing one or more embodiments of the invention do not inherently indicate any particular order nor imply any limitations in the invention.

[0035]Referring now to the drawings, in which like numerals refer to like parts throughout the several views. FIG. 1 shows an exemplary configuration **100** in which the present invention may be practiced. The configuration may represent, but not be limited to, a part of a residential home, a business building or a complex with multiple zones. There are a number of multimedia players of which three examples **102**, **104** and **106** are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein.

[0036]As used herein, unless explicitly stated otherwise, an audio source or audio sources are in digital format and can be transported or streamed over a data network. To facilitate the understanding of the present invention, it is assumed that the configuration **100** represents a home. Thus, the zone player **102** and **104** may be located in two of the bedrooms respectively while the zone player **106** may be installed in a living room. All of the zone players **102**, **104** and **106** are coupled directly or indirectly to a data network **108**. In addition, a computing device **110** is shown to be coupled on the network **108**. In reality, any other devices such as a home gateway device, a storage device, or an MP3 player may be coupled to the network **108** as well.

[0037]The network **108** may be a wired network, a wireless network or a combination of both. In one example, all devices including the zone players **102**, **104** and **106** are coupled to the network **108** by wireless means based on an industry standard such as IEEE 802.11. In yet another example, all devices including the zone players **102**, **104** and **106** are part of a local area network that communicates with a wide area network (e.g., the Internet).

[0038]Many devices on the network **108** are configured to download and store audio sources. For example, the computing device **110** can download audio sources from the Internet and store the downloaded sources locally for sharing with other devices on the Internet or the network **108**. The computing device **110** can also be configured to receive streaming audio. Shown as a stereo system, the device **112** is configured to receive an analog audio source (e.g., from broadcasting) or retrieve a digital audio source (e.g., from a compact disk). The analog audio sources can be converted to digital audio sources. In accordance with the present invention, the audio source may be shared among the devices on the network **108**.

[0039]Two or more zone players may be grouped together to form a new zone group. Any combinations of zone players and an existing zone group may be grouped together. In one instance, a new zone group is formed by adding one

zone player to another zone player or an existing zone group. A first chosen zone player to form the new zone group may be referred to as a zone group head. Depending on implementation, all other zone players in the group are synchronized to play an audio source or a queue of sources being played or provided by the zone group head or any one zone player in the group may be selected to synchronize others. For example, when the zone player **106** is added to the zone player **102** to form a new zone group, the zone players **102** is the zone group head of the new zone group. Both players will synchronously playback audio sources that are accessible to any one of the zone players in the multi-zone system. In one embodiment, the audio source being played or provided by the zone player **102** will be also played in the zone player **106**. In another embodiment, the audio source being played or provided by the newly added zone player **106** will be played in all players in the group.

[0040]In spite of an existing zone group including the zone players **102** or **106**, it is still possible to add another zone player (e.g., player **104**) to the existing zone group containing the zone players **102** and **106**. In one embodiment, when this zone group is selected to play an audio source, the zone players **102** and **106** will synchronize with the zone player **104**, playing whatever the zone player **104** is playing or ready to play. In another embodiment, when this zone group is selected to play an audio source, the zone player **104** will synchronize with the zone players **102** and **106**, playing whatever the zone players **102** and **106** are playing or ready to play. In an exemplary deployment, a zone group includes the zone players **102**, **104** and **106** located in a bedroom, a kitchen and a bathroom of a house, respectively. When an audio source is played in the zone group, the playback is synchronized among the zone players **102**, **104** and **106** in the group. As a result, a user may hear the same music or song regardless of whether the user is in the bedroom, the kitchen or the bathroom.

[0041]Many devices on the network **108** may be configured to control operations of the zone players **102**, **104** and **106**. In particular, one or more controlling devices **140** and **142** are used to control zone players **102**, **104** and **106** as shown in FIG. 1. The controlling devices **140** and **142** are preferably portable and remotely control the zone players via wireless means (e.g., infrared, radio, wireless standard IEEE 802.11b or 802.11g). In one embodiment, besides controlling an individual zone player, the controlling device **140** or **142** is configured to manage audio sources and audio characteristics of all the zone players regardless where the controlling device **140** or **142** is located in a house or a confined complex.

[0042]Referring now to FIG. 2A, there is shown an exemplary functional block diagram of a zone player **200** in accordance with the present invention. The zone player **200** includes a network interface **202**, a processor **204**, a memory module **206**, an audio processing circuit **210**, a digital signal processing module **212**, an audio amplifier **214** and a RF interface **216**. The network interface **202** facilitates a data flow between a data network (i.e., the data network **108** of FIG. 1) and the zone player **200** and typically executes a special set of rules (i.e., a protocol) to send data back and forth. One of the common protocols is TCP/IP (Transmission Control Protocol/Internet Protocol) commonly used in the Internet. In general, a network interface manages the assembling of an audio source or file into smaller packets that are transmitted over the data network or reassembles received packets into the original source or file. In addition, the network interface **202** handles the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player **200**.

[0043]The network interface **202** may include one or both of a wireless interface **216** and a wired interface **217**. The wireless interface **216**, also referred to as a RF interface, provides network interface functions by a wireless means for the zone player **200** to communicate with other devices in accordance with a communication protocol (such as the wireless standard IEEE 802.11a, 802.11b or 802.11g). The wired interface **217** provides network interface functions by a wired means (e.g., an Ethernet cable). In one embodiment, a zone player, referred to as an access zone player, includes both of the interfaces **216** and **217**, and other zone players include only the RF interface **216**. Thus these other zone players communicate with other devices on a network or retrieve audio sources via the access zone player. The processor **204** is configured to control the operation of other parts in the zone player **200**. The memory **206** may be loaded with one or more software modules that can be executed by the processor **204** to achieve desired tasks. According to one aspect of the present invention, a software module implementing one embodiment of the present invention is executed, the processor **204** operates in accordance with the software module in reference to a saved zone

group configuration characterizing a zone group created by a user, the zone player **200** is caused to retrieve an audio source from another zone player or a device on the network.

[0044]According to one embodiment of the present invention, the memory **206** is used to save one or more saved zone configuration files that may be retrieved for modification at any time. Typically, a saved zone group configuration file is transmitted to a controller (e.g., the controlling device **140** or **142** of FIG. 1) when a user operates the controlling device. The zone group configuration provides an interactive user interface so that various manipulations or control of the zone players may be performed.

[0045]The audio processing circuit **210** resembles most of the circuitry in an audio playback device and includes one or more digital-to-analog converters (DAC), an audio preprocessing part, an audio enhancement part or a digital signal processor and others. In operation, when an audio source is retrieved via the network interface **202**, the audio source is processed in the audio processing circuit **210** to produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier **214** for playback on speakers. In addition, the audio processing circuit **210** may include necessary circuitry to process analog signals as inputs to produce digital signals for sharing with other devices on a network.

[0046]Depending on an exact implementation, the digital signal processing module **212** may be implemented within the audio processing circuit **210** or as a combination of hardware and software. The audio amplifier **214** is typically an analog circuit that powers the provided analog audio signals to drive one or more speakers.

[0047]Referring now to FIG. 2B, there is shown an example of a controller **240**, which may correspond to the controlling device **140** or **142** of FIG. 1. The controller **240** may be used to facilitate the control of multi-media applications, automation and others in a complex. In particular, the controller **240** is configured to facilitate a selection of a plurality of audio sources available on the network, controlling operations of one or more zone players (e.g., the zone player **200**) through a RF interface corresponding to the RF interface **216** of FIG. 2A. According to one embodiment, the wireless means is based on an industry standard (e.g., infrared, radio, wireless standard IEEE 802.11a, 802.11b or 802.11g). When a particular audio source is being played in the zone player **200**, a picture, if there is any, associated with the audio source may be transmitted from the zone player **200** to the controller **240** for display. In one embodiment, the controller **240** is used to synchronize more than one zone players by grouping the zone players in a group. In another embodiment, the controller **240** is used to control the volume of each of the zone players in a zone group individually or together.

[0048]The user interface for the controller **240** may include some of a screen **242** (e.g., a LCD screen) and a set of functional buttons as follows: a "zones" button **244**, a "back" button **246**, a "music" button **248**, a scroll wheel **250**, "ok" button **252**, a set of transport control buttons **254**, a mute button **262**, a volume up/down button **264**, a set of soft buttons **266** corresponding to the labels **268** displayed on the screen **242**.

[0049]The screen **242** displays various screen menus in response to a user's selection. In one embodiment, the "zones" button **244** activates a zone management screen or "Zone Menu", which is described in more details below. The "back" button **246** may lead to different actions depending on the current screen. In one embodiment, the "back" button triggers the current screen display to go back to a previous one. In another embodiment, the "back" button negates the user's erroneous selection. The "music" button **248** activates a music menu, which allows the selection of an audio source (e.g., a song) to be added to a zone player's music queue for playback.

[0050]The scroll wheel **250** is used for selecting an item within a list, whenever a list is presented on the screen **242**. When the items in the list are too many to be accommodated in one screen display, a scroll indicator such as a scroll bar or a scroll arrow is displayed beside the list. When the scroll indicator is displayed, a user may rotate the scroll wheel **250** to either choose a displayed item or display a hidden item in the list. The "ok" button **252** is use to confirm the user selection on the screen **242**.

[0051]There are three transport buttons **254**, which are used to control the effect of the currently playing song. For example, the functions of the transport buttons may include play/pause and forward/rewind a song, move forward to a next song track, or move backward to a previous track. According to one embodiment, pressing one of the volume control buttons such as the mute button **262** or the volume up/down button **264** activates a volume panel. More detailed description of the volume panel will be discussed below. In addition, there are three soft buttons **266** that can be activated in accordance with the labels **268** on the screen **242**. It can be understood that, in a multi-zone system, there may be multiple audio sources being played. The music transport functions described herein shall apply selectively to one of the sources when a corresponding one of the zone players or zone groups is selected.

[0052]FIG. 2C illustrates an internal functional block diagram of an exemplary controller **270**, which may correspond to the controller **240** of FIG. 2B. The screen **272** on the controller **270** may be a LCD screen. The screen **272** communicates with and is commanded by a screen driver **274** that is controlled by a microcontroller (e.g., a processor) **276**. The memory **282** may be loaded with one or more application modules **284** that can be executed by the microcontroller **276** with or without a user input via the user interface **278** to achieve desired tasks. In one embodiment, an application module is configured to facilitate grouping a number of selected zone players into a zone group and synchronizing the zone players for one audio source. In another embodiment, an application module is configured to control together the audio volumes of the zone players in a zone group. In operation, when the microcontroller **276** executes one of the application modules **284**, the screen driver **274** generates control signals to drive screen **272** to display an application specific user interface accordingly, more of which will be described below.

[0053]The controller **270** includes a network interface **280** referred to as a RF interface **280** that facilitates wireless communication with a zone player via a corresponding RF interface thereof. In one embodiment, the commands such as volume control and audio playback synchronization are sent via the RF interfaces. In another embodiment, a saved zone group configuration is transmitted between a zone player and a controller via the RF interfaces. The controller **270** may control one or more zone players, such as **102**, **104** and **106** of FIG. 1. Nevertheless, there may be more than one controllers, each in a zone (e.g., a room) and configured to control any one and all of the zone players.

[0054]In one embodiment, a user creates a zone group including at least two zone players from the controller **240** that sends signals or data to one of the zone players. As all the zone players are coupled on a network, the received signals in one zone players can cause other zone players in the group to be synchronized so that all the zone players in the group playback an identical audio source or a list of identical audio sources. Similarly, when a user increases the audio volume of the group from the controller, the signals or data of increasing the audio volume for the group are sent to one of the zone players and causes other zone players in the group to be increased together in volume and in same scale.

[0055]According to one implementation, an application module is loaded in memory **282** for zone group management. When a predetermined key (e.g. the "zones" button **244**) is activated on the controller **240**, the application module is executed in the microcontroller **276**. The input interface **278** coupled to and controlled by the microcontroller **276** receives inputs from a user. A "Zone Menu" is then displayed on the screen **272**. The user may start grouping zone players into a zone group by activating a "Link Zones" or "Add Zone" soft button, or de-grouping a zone group by activating an "Unlink Zones" or "Drop Zone" button. The detail of the zone group manipulation will be further discussed below.

[0056]As described above, the input interface **278** includes a number of function buttons as well as a screen graphical user interface. It should be pointed out that the controller **240** in FIG. 2B is not the only controlling device that may practice the present invention. Other devices that provide the equivalent control functions (e.g., a computing device, a hand-held device) may also be configured to practice the present invention. In the above description, unless otherwise specifically described, it is clear that keys or buttons are generally referred to as either the physical buttons or soft buttons, enabling a user to enter a command or data.

[0057]FIGS. 3A and 3B illustrate a sequence of screens in accordance with one embodiment of the present

invention for manipulating a plurality of zone players for an exemplary four-zone distributed audio system. There are four zone players in four zones and referred to as: "Zone 1", "Zone 2", "Zone 3" and "Zone 4".

[0058]FIG. 3A shows a grouping process. A first "Zone Menu" **302** shows a first list **303** of available zone players. One of the zone players or existing zone group is selected as a zone group head **304**, which is indicated with uniformly highlighted texts. It is noted the highlighted texts may also be expressed as grouped icons, concatenated texts or other representations of a current selection on the screen. The highlighted texts react to a user's scrolling selection (e.g., via a scroll wheel **250** of FIG. 2B). Also shown as one of the bottom labels on the first "Zone Menu" **302** is the "Link Zones" or "Add Zone" label **306** that corresponds to a soft button (e.g., soft button **266** of FIG. 2B). A scroll indicator is displayed beside the first display **302** when the number of items is too many to be accommodated in one display.

[0059]When the soft button corresponding to "Link Zones" or "Add Zone" **306** is activated, a second "Zone Menu" **308** is displayed. A second list shows eligible zone groups or zone players **309** for the zone group head **304**. Since "Zone 2" has been selected as the zone group head to form a zone group, the eligible zone groups and zone players are now "Zone 1", "Zone 3" and "Zone 4". As shown as highlighted texts, the zone player (Zone 4) **310** is selected to be grouped with the zone group head (Zone 2) **304** to form a new zone group.

[0060]After the user confirms the selection, the newly formed zone group configuration is updated and the audio source can be played synchronously for all of the zone players in the newly formed zone group as shown in FIG. 3A. The first "Zone menu" **312** is displayed again with the newly formed zone group **314** as one of the choices along with other available zone players. Depending on implementation, any zone players that have been used in a group may or may not be used in another group. As shown in FIG. 3A, the zone players **2** and **4** are in a zone group started by the zone player **2**, the zone player **4** (even the zone player **2**) can be in another zone group, for example, while a player in a living room is grouped with a player in a dinning room, the same player in the living room can be grouped with a player in a family room.

[0061]In another embodiment, a display shows a list of available zone players for grouping. An interactive graphic interface allows a user to interactively select some of the available zone players that are automatically grouped. Anyone of the selected zone players in the group may be elected to be a group head such that other players in the group are synchronized to follow the group head.

[0062]According to one embodiment, the synchronization of all zone players in the new zone group is achieved with the following steps: 1) choosing an audio source from one of the zone players in the group, 2) checking if the chosen audio source is available locally on each of the zone players, 3) retrieving the audio source from another device (e.g., other zone players) which has the audio source via the data network, if the audio source is not available locally, and 4) playing the audio source on each of the zone players synchronously. In another embodiment, the audio source in the group or player to be added is chosen as default for other zone players. As shown in FIG. 3A, the audio source for "Zone 4" is track **10** with artist D. Accordingly, the zone player "Zone 2" will play track **10** with artist D synchronously with "Zone 4" after the new zone group is formed.

[0063]FIG. 3B shows a de-grouping process in reference to FIG. 3A.1. A first "Zone Menu" **322** shows a first list **323** of available zone players and zone groups, if there is any. One of the zone groups ("Zone 2+Zone 4") to be de-grouped is selected as shown in highlight texts **324**. When the "Unlink Zones" or "Drop Zone" soft button **326** is activated, the second "Zone Menu" **328** displays a list **329** that shows all of the member zone players in the selected zone group. One of the zone players **330** (Zone 4) in the selected zone group is chosen to be disassociated from the zone group **324**. When the de-grouping is confirmed by user, the "Zone Menu" **332** is presented to reflect the de-grouping of a zone group (e.g., "Zone 2") **334**. When zone players are grouped together, all of the zone players play the same audio source synchronously. If a zone player is disassociated or dropped from the zone group, the remaining zone players in the zone group continue playing the audio source. In the "Zone Menu" **332**, it shows the zone player (Zone 4) has no music **336** after the disassociation from the zone group, while the remaining player (Zone 2) continues to play the same music--track **10** with artist D.

[0064]Referring now to FIG. 3C, there shows a sequence of screens depicting alternative steps of creating a zone group. An exemplary five-zone audio system is used to describe these alternative steps. There are five zone players located in a living room, a dining room, a kitchen, an office and a master bedroom. It is assumed that three of the five rooms, the living room, the dining room and the kitchen, are grouped to form a zone group called "LivingRoom+DiningRoom+Kitchen". The Screen display **350** shows that an audio source called "Counting Crows" **352** is being played on all the zone players in the group. When a user activates the "music" button **248** on a controller **240** of FIG. 2B, the screen display **360** shows a "Music Menu" page which shows a list of choices **362**. One of the choices is "Play Music From Other Rooms" **364**. When the user selects this option, the screen display **370** for "Play Same Music As Other Rooms" displays a list **372** of eligible rooms or zone players to be grouped with the current group "Living Room+Dining Room+Kitchen". In this example the eligible rooms are Office **374** and Master Bedroom **376**. It is assumed that the "Office" **374** which is indicated with the highlighted bar is chosen. As a result, the zone player "Office" is grouped with the original zone group to become a new group called "LivingRoom+DiningRoom+Kitchen+Office" as shown in screen display **380**. And the audio source "Miles Davis" **382** from the zone player "Office" is played synchronously on all zone players in the new group.

[0065]Referring now to FIGS. 4A and 4B, there is shown a sequence of screens in accordance with one embodiment of the present invention for controlling audio volume of zone players in a zone group. These screens are activated and displayed when one of the volume control buttons is activated. According to one embodiment, the volume control buttons are "mute" button **262** and "volume up/down" button **264** on the controller **240** of FIG. 2B.

[0066]FIG. 4A shows that the current active zone player is in a living room of a house. The "Volume" panel **410** is displayed for the current zone player "Living Room". A volume meter **412** is included to indicate a volume adjustment made by a user. A mute icon **414** is shown when the "mute" button is activated while the audio is on.

[0067]FIG. 4B shows that the current active zone group includes five rooms: living room, dining room, kitchen, den and study. A "Volume" panel **430** for the zone group is displayed for the convenience of a user. In the display, a plurality of volume meters **431** is shown. One of the volume meters is for the entire zone group **432**. Other volume meters are for all the zone players in the group, one for each room or zone player. A scroll indicator is shown as a downward arrow **436** that indicates the screen is too small to hold all volume meters in one screen display. There are more hidden choices that can be viewed by scrolling down. The scrolling cursor **436** is highlighted (e.g., Den **434**). As a user scrolls down the list of volume meters **431**, the contents on "Volume" panel **440** includes the volume meter of the next zone player on the list (e.g., Study **444**). Similarly, when the scroll indicator is an upward arrow **442**, other hidden choices within the list can be viewed by scrolling up.

[0068]When a user adjusts the audio volume, only the highlighted zones or zone players are affected. If the highlighted selection is one zone player, the audio adjustment will only apply to that particular chosen player. If multiple zone players are selected, the adjustment applies to all of the chosen players similar to the volume adjustment to the group volume meter described below. The audio volume of all zone players in the zone group will be affected, if the highlighted selection is at the volume meter of the entire group **432**. Any audio volume adjustment to the zone group applies to all of the zone players equally within the entire zone group. Depending on implementation, the relative difference of the audio volume among zone players in the group remains unchanged either in percentage or graphic strength.

[0069]FIG. 5 shows a flowchart or process **500** of implementing one embodiment of the present invention for manipulating zone players. The process **500**, which is preferably understood in conjunction with the previous figures especially with FIGS. 2B, 2C, 3A and 3B, may be implemented in software, hardware, or a combination of both. According to one embodiment, an application module implementing the process **500** is embedded in a controller, for example, the device **240** of FIG. 2C. The module may be loaded in the memory **282** to be executed by the microcontroller (processor) **276** and operating in conjunction with user input commands via the input interface **278**.

[0070]The process **500** starts with a display at **502** showing a list of zone players or existing zone groups, if there

are any. When the available zone players and zone groups in the list is too long to be presented on the display, a scroll indicator will be displayed beside the list. A user may access the hidden items within the list by scrolling either upward or downward. At **503**, the process **500** splits into two branches based on the following tasks: 1) grouping a plurality of zone players to form a zone group, or 2) de-grouping a zone group.

[0071]If the process **500** performs the grouping task, the process moves onto **504**. The user selects one of the zone players as a zone group head or the zone groups from the list. Once the selection is made and a key is activated (e.g., a soft button **306** as shown in FIG. 3A), a new list (e.g., screen **308** as shown in FIG. 3A) showing all of the zone players and zone groups that are eligible to be grouped with the selection at **504** is displayed at **508**. In one embodiment as shown in FIG. 3A, when the zone player "Zone **2**" is selected as the zone group head in a four-zone audio system, the eligible zone players are all other zone players ("Zone **1**", "Zone **3**" and "Zone **4**") except for the zone player "Zone **2**". At **510**, the end user is then given the option to select one or more of the eligible zone players (e.g., "Zone **4**" in FIG. 3A) or one of the eligible zone groups to be grouped into the selection at **504**.

[0072]At **512**, the user has the option to confirm to accept or to discard the selection made at **510**. When a confirmation is made, the process **500** creates the zone group by synchronizing all of the zone players in the zone group at **514**. In one embodiment, the synchronization is performed first to determine the audio source in the selected player to be grouped (e.g., Zone **4** in FIG. 3A). Then the audio source is transmitted to all other zone players in the same zone group before playing the audio source synchronously. In the meantime, this newly formed zone group configuration is updated. For example, the zone group configuration is saved to the memory **206** on the zone player **200** of FIG. 2A via the wireless communication. After the zone player in the newly formed zone group has been synchronized, the process **500** moves back to **502**. An updated list of available zone players and zone groups is displayed. As an example shown in "Zone Menu" **312** of FIG. 3A, the newly formed zone group is listed as one of the items.

[0073]Going back to **512**, if the selection made at **510** can not be confirmed or is to be discarded, the process **500** goes back to **502** without updating any zone group configuration. In this case, the original list is intact (e.g., "Zone Menu" **302** of FIG. 3A).

[0074]Going back to the grouping task test at **503**, when the process **500** performs the de-grouping task, the process **500** moves to **524**. A user selects one zone group from the first list. Once the selection is made, a list (e.g., screen **328** as shown in FIG. 3B) showing all of the zone players in the selected zone group is displayed at **528**. In one embodiment as shown in FIG. 3B, "Zone **2**+Zone **4**" is the selected zone group, the zone players in the selected zone group are "Zone **2**" and "Zone **4**". At **530**, the end user selects one or more of the zone players (e.g., Zone **4**) from the list to be disassociated from the zone group. At **532**, the user has the option to confirm or to discard the selection made at **530**.

[0075]When the selection is confirmed, the process **500** updates the selected zone group by disassociating the zone player from the zone group at **534**. As a result of the disassociation, the audio source being played in the zone group is no longer available to the disassociated zone player. In the meantime, the updated zone group configuration is saved. For example, the zone configuration is saved to the memory **206** on the zone player **200** (FIG. 2A). After the zone player has been disassociated, the process **500** moves back to **502**. The list of available zone players and zone groups is displayed. This time the newly updated zone group is listed as one of the items (e.g., "Zone Menu" **332** of FIG. 3B).

[0076]Going back to **532**, if the selection made at **530** is to be discarded, the process **500** moves back to **502** directly without updating the zone group configuration. In this case, the original list is presented (e.g., "Zone Menu" **322** of FIG. 3B).

[0077]Referring now to FIG. 6, there is shown a flowchart or process **600** of controlling audio volume of a plurality of zone players in a zone group. The process **600**, which is preferably understood in conjunction with the previous figures especially with FIGS. 2B, 2C, 4A and 4B, may be implemented in software, hardware, or a combination of both. According to one embodiment, an application module implementing the process **600** is embedded in a controller, for example, the device **240** of FIG. 2C. The module may be loaded in the memory **282** to be executed by the

microcontroller (processor) **276** and operating in conjunction with user input commands. In one embodiment, the module is configured to control the audio volume of a group of zone players. It should be noted that zone group and a group of zone players are used interchangeably in the description for FIG. 6.

[0078]At **605**, the process **600** starts when one of the volume control buttons, for example, "mute" button **262** or "volume up/down" button **264**, on the controller **240** of FIG. 2B, is activated. The process **600** splits into two branches depending on whether a single zone player or a group of zone players is to be controlled at **610**.

[0079]If it is for a single zone player, a volume meter (e.g., "Volume" panel **410** in FIG. 4A) is presented at **612**. At **614**, the end user has option to adjust the volume for the zone player with one of the volume control buttons. The volume control signals are sent from the controller **240** (FIG. 2C) to the zone player **200** (FIG. 2A). In one embodiment, the volume panel displays a moving volume meter showing an increasing or decreasing bar as the audio volume of the selected zone player is adjusted up or down. In another embodiment, the mute icon is shown instead of a volume meter, when the "mute" button is activated while the audio is on.

[0080]At **616**, the process **600** is waiting for a user's command. If a predetermined amount of time (e.g., 1 second) has lapsed, the process **600** ends, which means the user is not going to change the volume. Otherwise, the process **600** goes back to **612** waiting for another action from the end user.

[0081]Referring back to **610**, if process **600** is for a group of zone players, then the process **600** moves to the zone group branch at **622**, in which a plurality of volume meters is presented. The plurality of volume meters includes one for each of the zone players in the zone group, plus one more for the entire zone group. In one embodiment as shown in FIG. 4B, a "Volume" panel **430** for a plurality of zone players in a zone group is presented. When the screen is too small to display all the zone players, a scroll indicator is displayed beside the list of the volume meters to indicate that there are hidden volume meters. At **624**, the user selects one of the volume meters. At **626**, the audio volume is adjusted with one of the volume control buttons. When the volume adjustment is made to one of the zone players, only the selected zone player is affected. The audio volume of the rest of the zone players remains unchanged. However, when the volume adjustment is made to the zone group, the entire group will respond to the volume adjustment in an identical scale. In one embodiment, the identical scale is based on percentage of the audio volume. In another embodiment, the identical scale is based on graphic representation of the volume meter.

[0082]In one embodiment, an end user increases the audio volume for the zone group by 5%. The volume for each of the zone players in the zone group will be increased by 5%, and the relative volume loudness difference among each of the zone players remains unchanged. In another embodiment, if a user had muted one of the zone players of the zone group, the volume of all other zone players would have been unchanged.

[0083]The group audio volume is calculated based on a predetermined formula. In one embodiment, the group audio volume is the averaged value of the audio volume of all the zone players within the zone group. In another embodiment, the median value may be chosen as the group audio volume. The user uses a scrolling device (e.g., scroll wheel **250** of FIG. 2B) to select a zone player or the entire zone group and then adjust the volume with one of the volume control buttons.

[0084]At **628**, the process **600** is waiting for a user's command. If a predetermined amount of time has lapsed, the process **600** ends, which means the user is not going to change the volume of the zone group. Otherwise, the process **600** goes back to **622** waiting for another action from the end user.

[0085]FIGS. 7A-7D are a series of screenshots according to one embodiment of the present invention on a computing device on a network. The computing device may correspond to the device **110** of FIG. 1 and be configured to control operations of the zone players installed in a complex. With a larger screen of the computing device than that of a portable controller, the graphic user interface on the larger screen appears different from that, for example, shown in FIGS. 3A-4B, the underlying principle nevertheless does not depart from the above description for the portable

controller. A user is able to control any one or all of the zone players from the computing device. FIG. 7A shows all individual available zone players with the one in the Dining Room being selected to play a track entitled "A Charlie Brown Christmas". FIG. 7B shows a pop-up window listing remaining available players to be grouped with the one in the Dining Room. Depending on a desirable group, the user can select from the remaining available players to be grouped with the one in the Dining Room to form a zone group. FIG. 7C shows, as a result, the players in the Dining Room and the living room are in one group and play synchronously a song entitled "Christmas time is here". FIG. 7D shows the control of some exemplary acoustic characteristics of the zone players in a group with the volume being controlled.

[0086]The present invention can be implemented in many ways, each of which may yield one or more of the following benefits, advantages or features. One of them is a mechanism provided to enable a user to remotely control audio characteristics of the zone players either as a group or as an individual player. Second, an interactive graphic user interface is provided to enable a user to manage, create, delete or modify zone groups. Another one of the benefits, advantages or features is to provide a user interface to facilitate a user to control audio characteristics of an individual zone player or a group of zone players. Other benefits, advantages or features can be appreciated by those skilled in the art given the detailed description herein.

[0087]While the present invention has been described with reference to specific embodiments, the description is illustrative of the invention and is not to be construed as limiting the invention. Various modifications to the present invention can be made to the preferred embodiments by those skilled in the art without departing from the true spirit and scope of the invention as defined by the appended claim. For example, the present invention can be implemented in a multi-zone multimedia system providing other than audio entertainment. Accordingly, the scope of the present invention is defined by the appended claims rather than the forgoing description of embodiments.

ENGLISH-CLAIMS:

Return to Top of Patent

We claim:

1. A method for controlling a plurality of players, the method comprising:

- displaying on a screen a first list showing at least available players;
- displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
- forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and
- synchronizing all players in the zone group;
-

adjusting a volume meter represented by an averaged value of audio volumes of the slayers in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of slayers synchronously in accordance with an adjustment made by a user.

2. The method of claim 1, wherein the first list becomes scrollable, when the available players do not fit in the screen.

3. The method of claim 1, wherein said synchronizing all players in the zone group comprises:

- determining an audio source for the zone group;
- making the audio source available to each of the players in the zone group; and
- playing the audio source synchronously in all players in the zone group.

4. The method of claim 3, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by the zone group head.

5. The method of claim 3, wherein said of determining an audio source for the zone comprises selecting the audio source being played or ready to be played by one of the players in the zone group.

6. The method of claim 3, wherein said making of the audio source available comprises:

- determining whether the audio source is available locally; and
- retrieving the audio source from a device on a network, if the audio source is not available locally.

7. The method of claim 6, wherein said making of the audio source available comprises:

- determining the audio source from one of the players in the zone group; and
- causing the audio source available to every other player in the zone group.

8. The method of claim 1, wherein said synchronizing of all players in the zone group comprises:

* -

causing all players in the zone group to play an identical audio source; and

* -

presenting the zone group in a manner that indicates a grouping.

9. The method of claim 8, wherein the manner includes one or more of highlighting, colors, explicit texts and graphs.

10. The method of claim 1, wherein the first list further shows at least one zone group.

11. The method of claim 10, wherein the zone group includes at least two players.

12. The method of claim 9, wherein a configuration of the zone group is stored in at least one of the players or a controller for remotely controlling one or more of the players, the configuration including information on how the two players are grouped.

13. The method of claim 8, further including:

* -

selecting the zone group to be de-grouped from the first list;

* -

displaying on the screen another list showing all the players within the zone group to be de-grouped;

* -

selecting one or more players from the another list; and

* -

disassociating the selected players from the zone group.

14. The method of claim 13, wherein said disassociating the selected players comprises making the selected players available for grouping with a zone group.

15. The method of claim 13, wherein the another list becomes scrollable, when all the players within the zone group to be de-grouped do not fit in the screen.

16. A method for controlling a plurality of players, the method comprising:

* -

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and

* -

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes

changing a volume of each of the group of slayers synchronously in accordance with an adjustment made by a user.

17. The method of claim 16, wherein said adjusting the one of the volume meters includes:

* -

causing the audio volume to be adjusted in accordance with an adjustment to the volume meter; or

* -

causing the audio volume to be off, when a mute button is activated while the audio volume is on; and

* -

causing the audio volume to be on, when a mute button is activated while the audio volume is off.

18. The method of claim 16, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.

19. The method of claim 16, further comprising maintaining relative volume loudness difference among each of the players in the group.

20. The method of claim 16, further comprising playing an identical audio source in the group of players.

21. The method of claim 20, wherein the audio source is retrieved in form of audio data packets over the network.

22. The method of claim 21, wherein at least part of the audio source is retrieved or being streamed from one of the players.

23. The method of claim 16, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.

24. The method of claim 16, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing a predetermined unit change in volume for

ever action by a user.

25. An apparatus for controlling a plurality of players, the apparatus comprising:

- a screen;
- a screen driver commanding the screen;
- an input interface;
- a network interface;
- a memory for storing code for an application module;
- a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:
  - displaying on a screen a first list showing at least available players;
  - displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;
  - synchronizing all players in the zone group in accordance with the zone group head; and
  - adjusting a volume meter represented by an averaged value of audio volumes of the slayers in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

26. The apparatus of claim 25, wherein the first list becomes scrollable, when the available players do not fit in the screen.

27. The apparatus of claim 25, wherein said synchronizing all players in the zone group comprises:

- determining an audio source for the zone group;
- making the audio source available to each of the players in the zone group; and
- playing the audio source synchronously in all players in the zone group.

28. The apparatus of claim 27, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by the zone group head.

29. The apparatus of claim 27, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by one of the players in the zone group.

30. The apparatus of claim 27, wherein said making the audio source available comprises:

- determining whether the audio source is available locally; and
- retrieving the audio source from a device on a network, if the audio source is not available locally.

31. The apparatus of claim 27, wherein said making the audio source available comprises:

- determining the audio source from one of the players in the zone group; and
- causing the audio source available to every other player in the zone group.

32. The apparatus of claim 25, wherein said synchronizing all players in the zone group comprises:

-

causing all players in the zone group to play an identical audio source; and

- presenting the zone group in a manner that indicates a grouping.

33. The apparatus of claim 32, wherein the manner includes one or more of highlighting, colors, explicit texts and graphs in the screen.

34. The apparatus of claim 25, wherein the first list further shows at least one zone group.

35. The apparatus of claim 25, wherein the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

- selecting the zone group to be de-grouped from the first list;
- displaying on the screen an another list showing all the players within the zone group to be de-grouped;
- selecting one or more players from the another list; and
- disassociating the selected players from the zone group.

36. The apparatus of claim 35, wherein said disassociating the selected players comprises making the selected players available for grouping with a zone group.

37. The apparatus of claim 35, wherein the another list becomes scrollable, when all the players within the zone group to be de-grouped do not fit in the screen.

38. An apparatus for manipulating a plurality of players, the apparatus comprising:

- a screen;
- a screen driver commanding the screen;
-

an input interface;

- a network interface;

- a memory for storing code for an application module;

- a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:
  - displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and
  - adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the slayers in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

39. The apparatus of claim 38, wherein said adjusting the one of the volume meters includes:

- causing the audio volume to be adjusted in accordance with an adjustment to the volume meter; or
- causing the audio volume to be off, when a mute button is activated while the audio volume is on; and
- causing the audio volume to be on, when a mute button is activated while the audio volume is off.

40. The apparatus of claim 38, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes:

changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

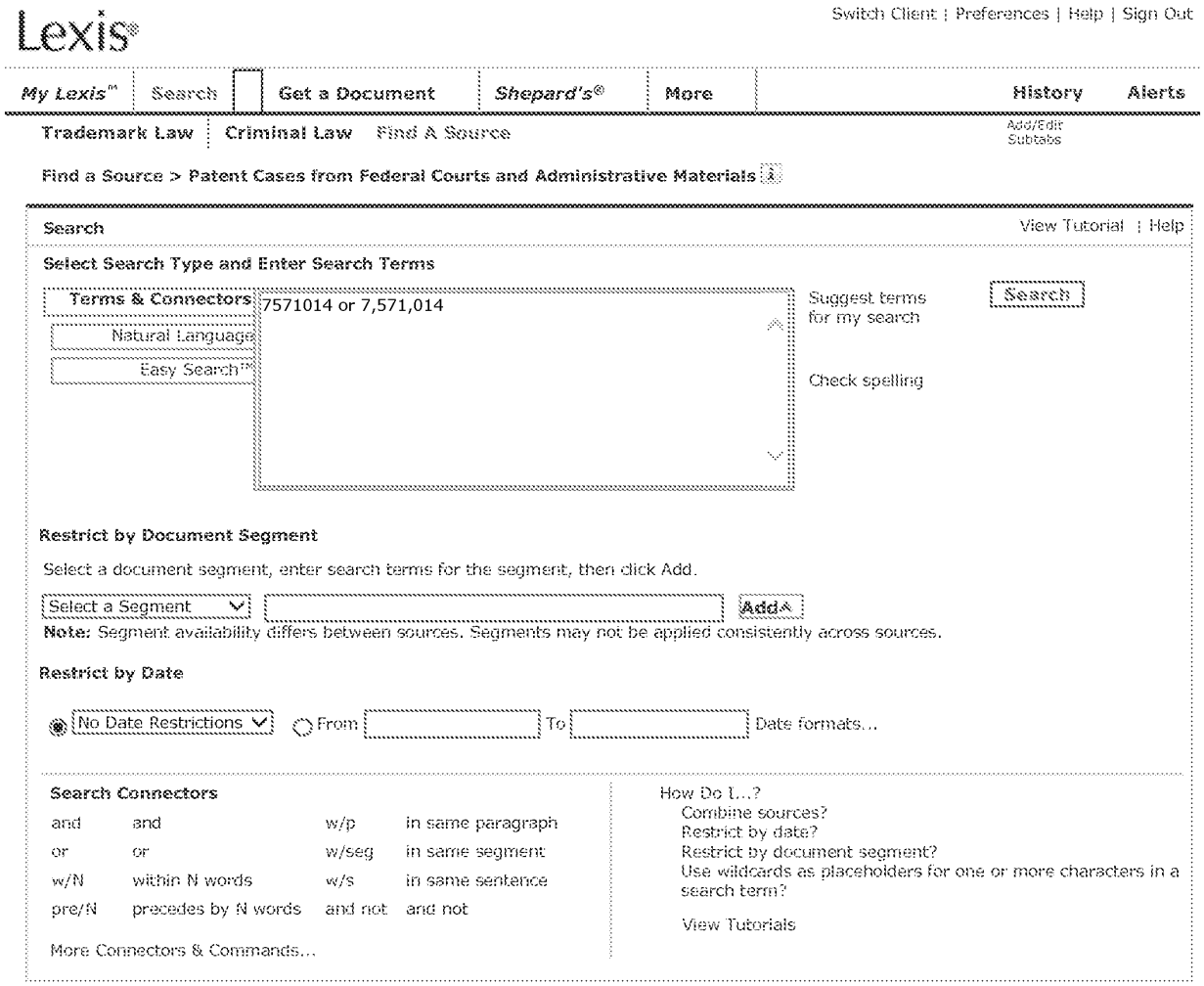
41. The apparatus of claim 38, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.

42. The apparatus of claim 38, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of maintaining relative volume loudness difference among each of the players in the group.

43. The apparatus of claim 38, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.

44. The apparatus of claim 38, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing a predetermined unit change in volume for ever action by a user.

LOAD-DATE: December 17, 2016


Lexis
Switch Client | Preferences | Help | Sign Out
My Lexis™ Search Get a Document Shepard's® More History Alerts
Trademark Law Criminal Law Find A Source
Add/Edit Subtabs
Find a Source > Patent Cases from Federal Courts and Administrative Materials
Search
View Tutorial | Help
Select Search Type and Enter Search Terms
Terms & Connectors
Natural Language
Easy Search™
7571014 or 7,571,014
Suggest terms for my search
Search
Check spelling
Restrict by Document Segment
Select a document segment, enter search terms for the segment, then click Add.
Select a Segment
Add
Note: Segment availability differs between sources. Segments may not be applied consistently across sources.
Restrict by Date
No Date Restrictions
From
To
Date formats...
Search Connectors
and and
or or
w/N within N words
pre/N precedes by N words
w/p in same paragraph
w/seg in same segment
w/s in same sentence
and not and not
More Connectors & Commands...
How Do I...?
Combine sources?
Restrict by date?
Restrict by document segment?
Use wildcards as placeholders for one or more characters in a search term?
View Tutorials
LexisNexis
About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2016 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™

No Documents Found

No documents were found for your search terms

"7571014 or 7,571,014"

Click "Save this search as an Alert" to schedule your search to run in the future.

- OR -

Click "Search Using Natural Language" to run your search as Natural Language search.

- OR -

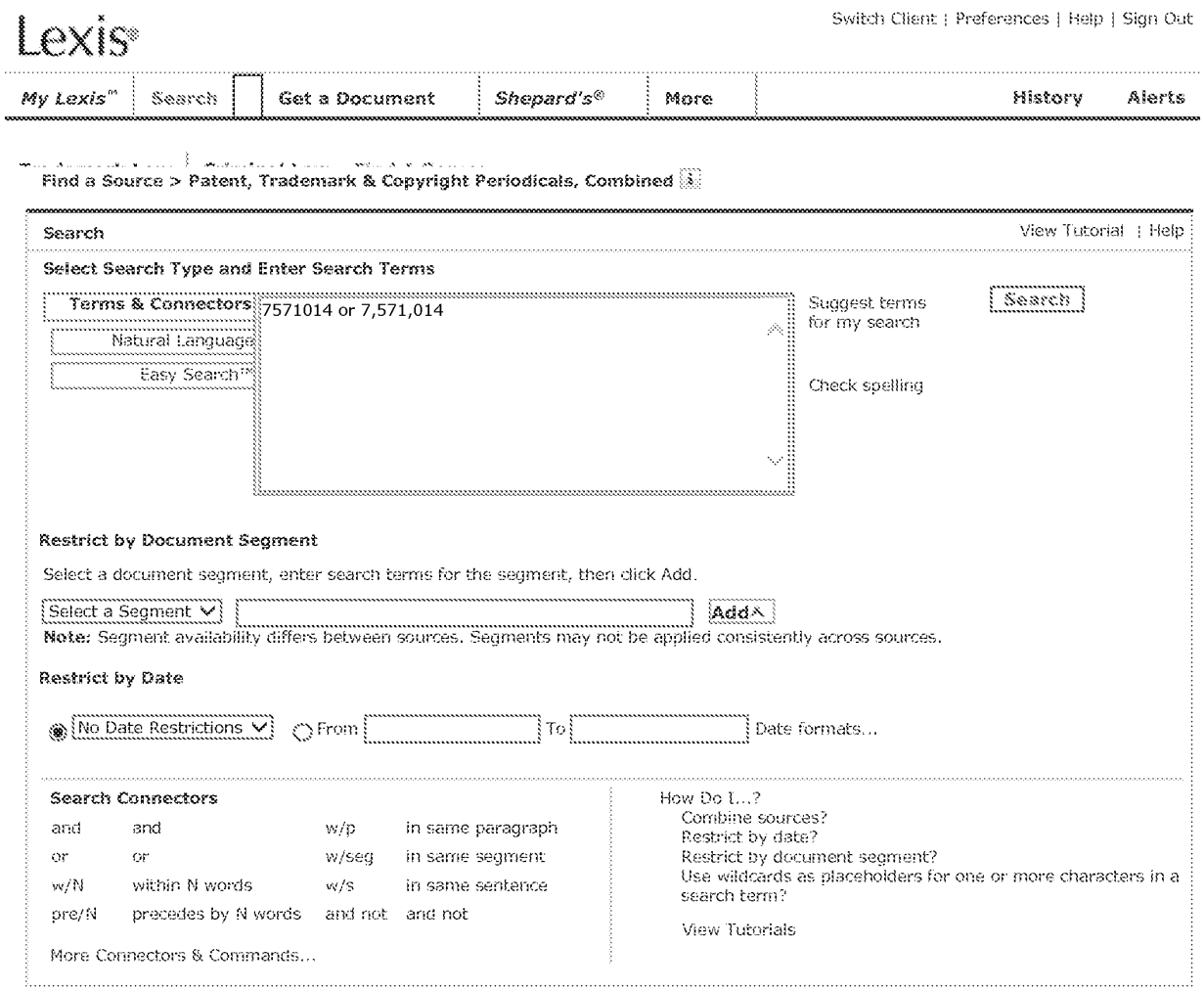
Click "Edit Search" to return to the search form and modify your search.

Suggestions:

- Check for spelling errors.
- Remove some search terms.
- Use more common search terms, such as those listed in "Suggested Words and Concepts."
- Use a less restrictive date range.
- Use "OR" in between terms to search for one term or the other.

Save this Search as an Alert **Search Using Natural Language** **Edit Search**

LexisNexis® About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2016 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™



LexisNexis® About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2016 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™

No Documents Found

No documents were found for your search terms

"7571014 or 7,571,014"

Click "Save this search as an Alert" to schedule your search to run in the future.

- OR -

Click "Search Using Natural Language" to run your search as Natural Language search.

- OR -

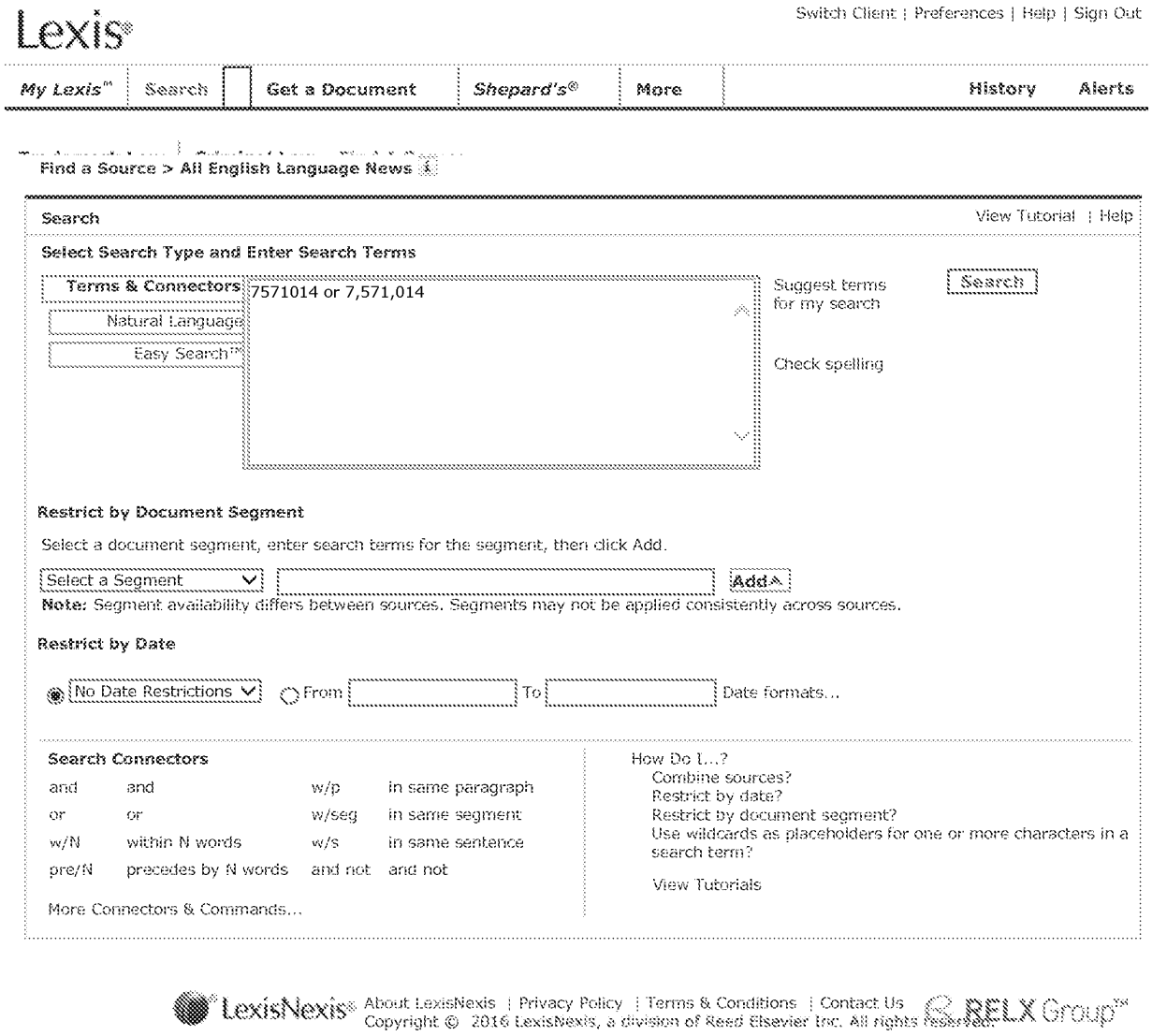
Click "Edit Search" to return to the search form and modify your search.

Suggestions:

- Check for spelling errors.
- Remove some search terms.
- Use more common search terms, such as those listed in "Suggested Words and Concepts."
- Use a less restrictive date range.
- Use "OR" in between terms to search for one term or the other.

Save this Search as an Alert **Search Using Natural Language** **Edit Search**

LexisNexis® About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2016 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™


Lexis
Switch Client | Preferences | Help | Sign Out
My Lexis™ Search Get a Document Shepard's® More History Alerts
Find a Source > All English Language News
Search
View Tutorial | Help
Select Search Type and Enter Search Terms
Terms & Connectors
Natural Language
Easy Search™
7571014 or 7,571,014
Suggest terms for my search
Check spelling
Search
Restrict by Document Segment
Select a document segment, enter search terms for the segment, then click Add.
Select a Segment
Add
Note: Segment availability differs between sources. Segments may not be applied consistently across sources.
Restrict by Date
No Date Restrictions
From
To
Date formats...
Search Connectors
and and
or or
w/N within N words
pre/N precedes by N words
w/p in same paragraph
w/seg in same segment
w/s in same sentence
and not and not
More Connectors & Commands...
How Do I...?
Combine sources?
Restrict by date?
Restrict by document segment?
Use wildcards as placeholders for one or more characters in a search term?
View Tutorials
LexisNexis
About LexisNexis | Privacy Policy | Terms & Conditions | Contact Us
Copyright © 2016 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.
RELX Group™

1. Consumer Electronics Daily, October 23, 2014 Thursday, TOP NEWS, 840 words, Sonos Sues D&M Holdings, Alleging Denon HEOS Multiroom System Infringes Sonos Patents

... HEOS speakers -- infringes on U.S. Patent No. 7,571,014, "Method and Apparatus for Controlling Multimedia Players in ...

2. Consumer Electronics Daily, October 23, 2014 Thursday, TOP NEWS, 840 words, Sonos Sues D&M Holdings, Alleging Denon HEOS Multiroom System Infringes Sonos Patents

... HEOS speakers -- infringes on U.S. Patent No. 7,571,014, "Method and Apparatus for Controlling Multimedia Players in ...

3. US Fed News, August 7, 2009 Friday 11:42 AM EST, , 204 words, Patent No. 7,571,014 Issued on Aug. 4, Assigned to Sonos for Multimedia Players Controlling Apparatus (California Inventors), ALEXANDRIA, Va.

... multimedia players. The inventors were issued U.S. Patent No. 7,571,014 on Aug. 4.

Patent Assignment Abstract of Title

Total Assignments: 6

Application #: 10861653 **Filing Dt:** 06/05/2004 **Patent #:** 7571014 **Issue Dt:** 08/04/2009
PCT #: NONE **Intl Reg #:** **Publication #:** NONE **Pub Dt:**
Inventors: Robert A. Lambourne, Nicholas A. J. Millington
Title: METHOD AND APPARATUS FOR CONTROLLING MULTIMEDIA PLAYERS IN A MULTI-ZONE SYSTEM

Assignment: 1

Reel/Frame: 015443 / 0654 **Received:** 06/15/2004 **Recorded:** 06/05/2004 **Mailed:** 12/14/2004 **Pages:** 2
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: LAMBOURNE, ROBERT A. **Exec Dt:** 06/05/2004
Assignee: SONOS, INC.
506 CHAPALA STREET
SANTA BARBARA, CALIFORNIA 93101
Correspondent: SVPA
JOE ZHENG
7394 WILDFLOWER WAY
CUPERTINO, CA 95014

Assignment: 2

Reel/Frame: 017664 / 0836 **Received:** 05/24/2006 **Recorded:** 05/24/2006 **Mailed:** 05/24/2006 **Pages:** 10
Conveyance: SECURITY AGREEMENT
Assignor: SONOS, INC. **Exec Dt:** 05/16/2006
Assignee: SILICON VALLEY BANK
3003 TASMAN DRIVE
SANTA CLARA, CALIFORNIA 95054
Correspondent: CBCINNOVIS DBA FEDERAL RESEARCH
1023 FIFTEENTH STREET, NW, STE 401
ATTN: OLEH HERELIUK
WASHINGTON, DC 20005

Assignment: 3

Reel/Frame: 028345 / 0881 **Received:** 06/08/2012 **Recorded:** 06/08/2012 **Mailed:** 06/12/2012 **Pages:** 2
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignors: LAMBOURNE, ROBERT A. **Exec Dt:** 08/29/2008
MILLINGTON, NICHOLAS A. J. **Exec Dt:** 08/29/2008
Assignee: SONOS, INC.
223 EAST DE LA GUERRA STREET
SANTA BARBARA, CALIFORNIA 93101
Correspondent: HANLEY, FLIGHT & ZIMMERMAN
150 S WACKER DRIVE
SUITE 2100
CHICAGO, IL 60606

Assignment: 4

Reel/Frame: 023998 / 0778 **Received:** 02/26/2010 **Recorded:** 02/26/2010 **Mailed:** 03/01/2010 **Pages:** 2
Conveyance: RELEASE BY SECURED PARTY (SEE DOCUMENT FOR DETAILS).
Assignor: SILICON VALLEY BANK **Exec Dt:** 02/24/2010
Assignee: SONOS, INC.
223 E. DE LA GUERRA
SANTA BARBARA, CALIFORNIA 93101
Correspondent: UCC DIRECT
ATTN: 14080632
187 WOLF ROAD, SUITE 101
ALBANY, NY 12205

Assignment: 5

Reel/Frame: 037112 / 0014 **Received:** 11/15/2015 **Recorded:** 11/15/2015 **Mailed:** 11/24/2015 **Pages:** 55

Conveyance: PATENT SECURITY AGREEMENT

Assignor: SONOS, INC. **Exec Dt:** 10/28/2015

Assignee: JPMORGAN CHASE BANK, N.A.
10 S. DEARBORN STREET
CHICAGO, ILLINOIS 60603

Correspondent: MORGAN, LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20004

Assignment: 6

Reel/Frame: 038329 / 0253 **Received:** 04/01/2016 **Recorded:** 04/01/2016 **Mailed:** 04/21/2016 **Pages:** 78

Conveyance: SECURITY INTEREST (SEE DOCUMENT FOR DETAILS).

Assignor: SONOS, INC. **Exec Dt:** 03/30/2016

Assignee: GORDON BROTHERS FINANCE COMPANY
800 BOYLSTON STREET
27TH FLOOR
BOSTON, MASSACHUSETTS 02199

Correspondent: CHOATE HALL & STEWART LLP
2 INTERNATIONAL PLACE
BOSTON, MA 02110

Search Results as of: 12/22/2016 03:22 PM

If you have any comments or questions concerning the data displayed, contact PRD / Assignments at 571-272-3350. v.2.5
Web interface last modified: Aug 20, 2015 v.2.5

US007571014B1

(12) **United States Patent**
Lambourne et al.

(10) **Patent No.: US 7,571,014 B1**
(45) **Date of Patent: Aug. 4, 2009**

(54) **METHOD AND APPARATUS FOR CONTROLLING MULTIMEDIA PLAYERS IN A MULTI-ZONE SYSTEM**

(75) Inventors: **Robert A. Lambourne**, Santa Barbara, CA (US); **Nicholas A. J. Millington**, Santa Barbara, CA (US)

(73) Assignee: **Sonos, Inc.**, Santa Barbara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1091 days.

(21) Appl. No.: **10/861,653**

(22) Filed: **Jun. 5, 2004**

Related U.S. Application Data

(63) Continuation-in-part of application No. 10/816,217, filed on Apr. 1, 2004.

(51) **Int. Cl.**
G06F 17/00 (2006.01)
G06F 3/00 (2006.01)

(52) **U.S. Cl.** **700/94**; 715/716

(58) **Field of Classification Search** 700/94; 715/716, 734, 735; 709/220, 221; 381/56
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,239,458	A *	8/1993	Suzuki	700/83
5,299,266	A *	3/1994	Lumsden	381/119
5,751,819	A *	5/1998	Dorrough	381/56
7,218,708	B2 *	5/2007	Berezowski et al.	379/37
2002/0109710	A1 *	8/2002	Holtz et al.	345/723
2002/0124097	A1 *	9/2002	Isely et al.	709/231
2002/0188762	A1 *	12/2002	Tomassetti et al.	709/251
2003/0126211	A1 *	7/2003	Anttila et al.	709/205
2004/0008852	A1 *	1/2004	Also et al.	381/119
2004/0252400	A1 *	12/2004	Blank et al.	360/70
2005/0047605	A1 *	3/2005	Lee et al.	381/56
2007/0038999	A1 *	2/2007	Millington	718/100

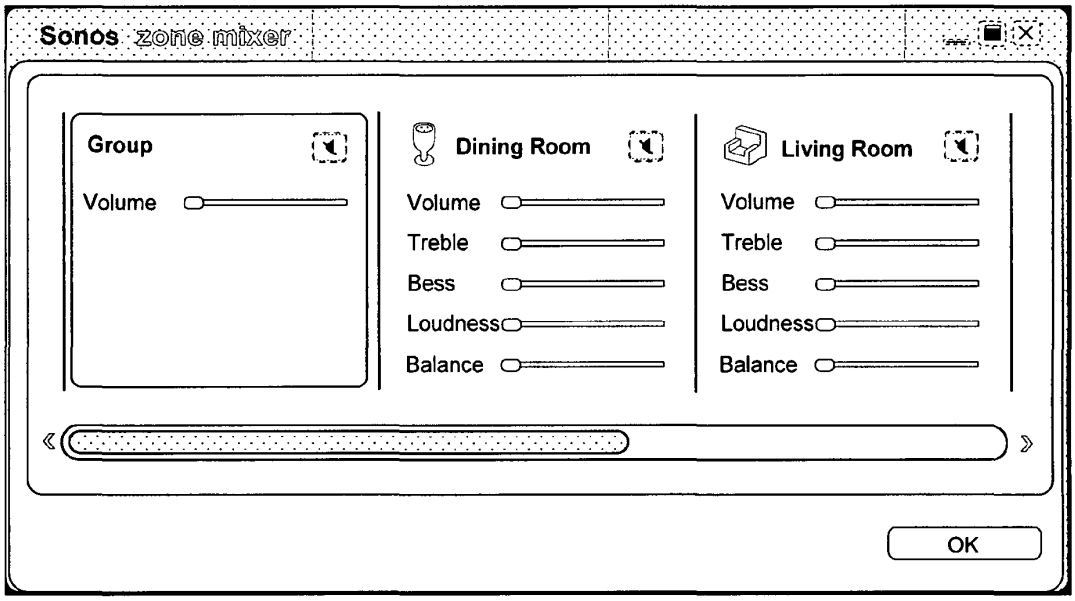
* cited by examiner

Primary Examiner—Curtis Kuntz
Assistant Examiner—Daniel R Sellers
(74) *Attorney, Agent, or Firm*—Joe Zheng

(57) **ABSTRACT**

Techniques for controlling zone group and zone group characteristics such as audio volume in a multi-zone system are disclosed. The multi-zone system includes a number of multimedia players, each preferably located in a zone. A controller may control the operations of all of the zone players remotely from any one of the zones. Two or more zone players may be dynamically grouped as a zone group for synchronized operations. According to one aspect of the techniques, a zone group configuration can be managed, updated, modified via an interactive user interface provided in a controlling device. The zone group configuration may be saved in one of zone players. According to another aspect of the techniques, the audio volume control of a zone group can be performed individually or synchronously as a group.

44 Claims, 14 Drawing Sheets



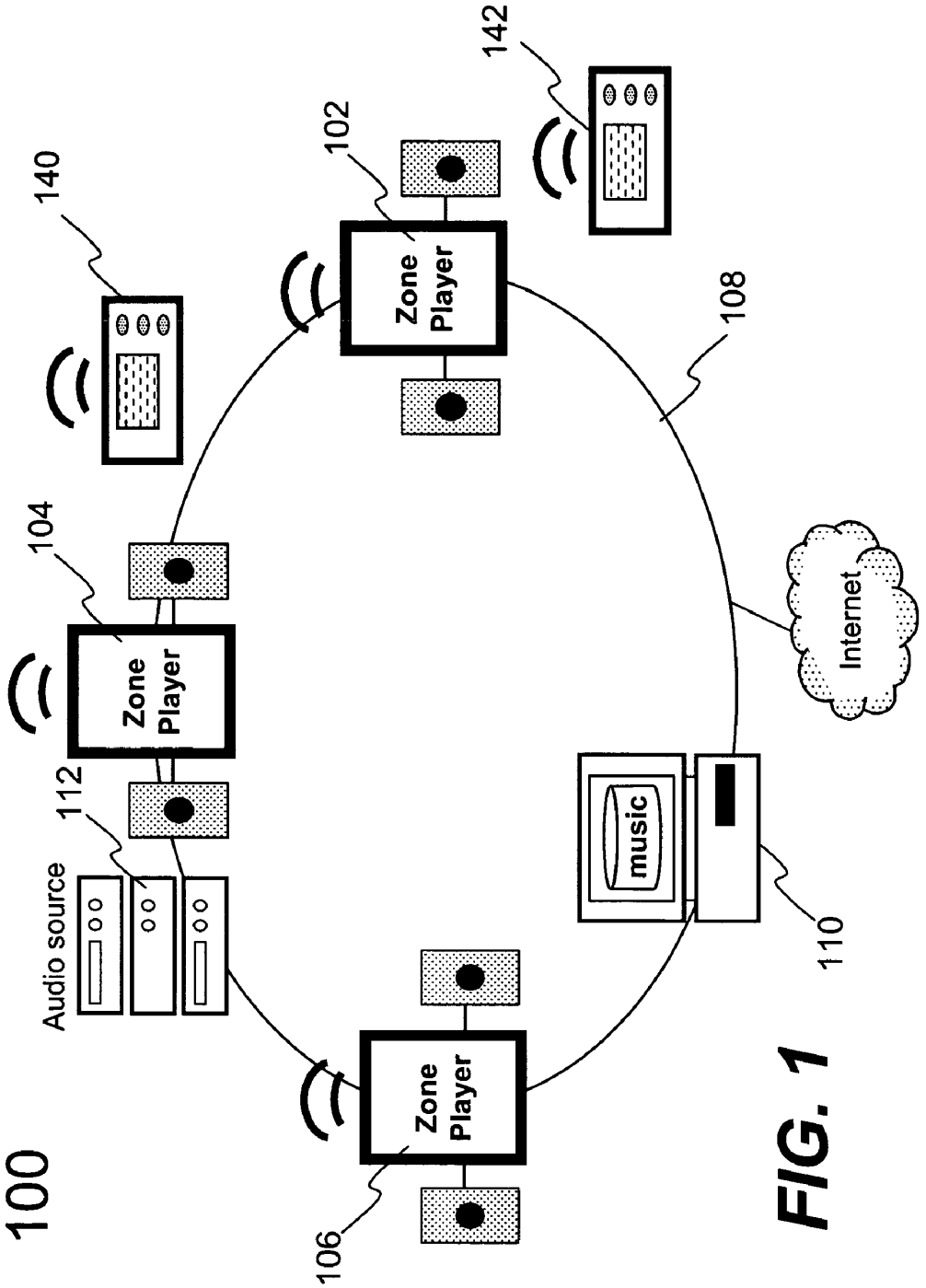

100
Zone Player
102
Zone Player
104
Zone Player
106
140
142
108
Internet
music
110
112
Audio source

FIG. 1

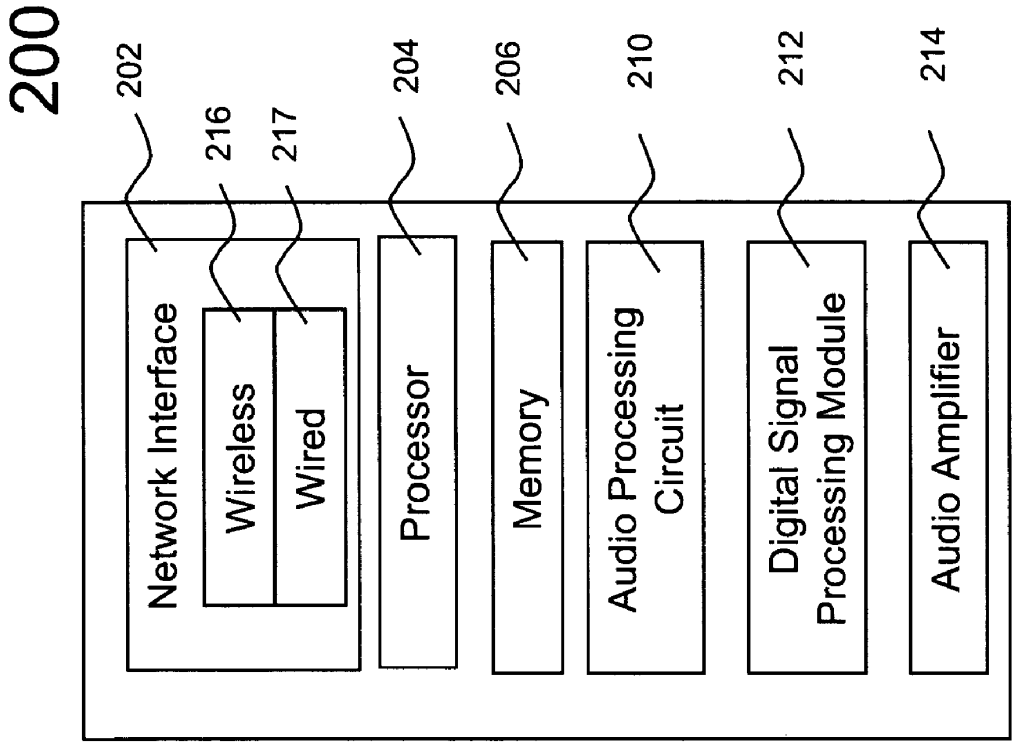

200
202
216
217
204
206
210
212
214
Network Interface
Wireless
Wired
Processor
Memory
Audio Processing Circuit
Digital Signal Processing Module
Audio Amplifier

FIG. 2A

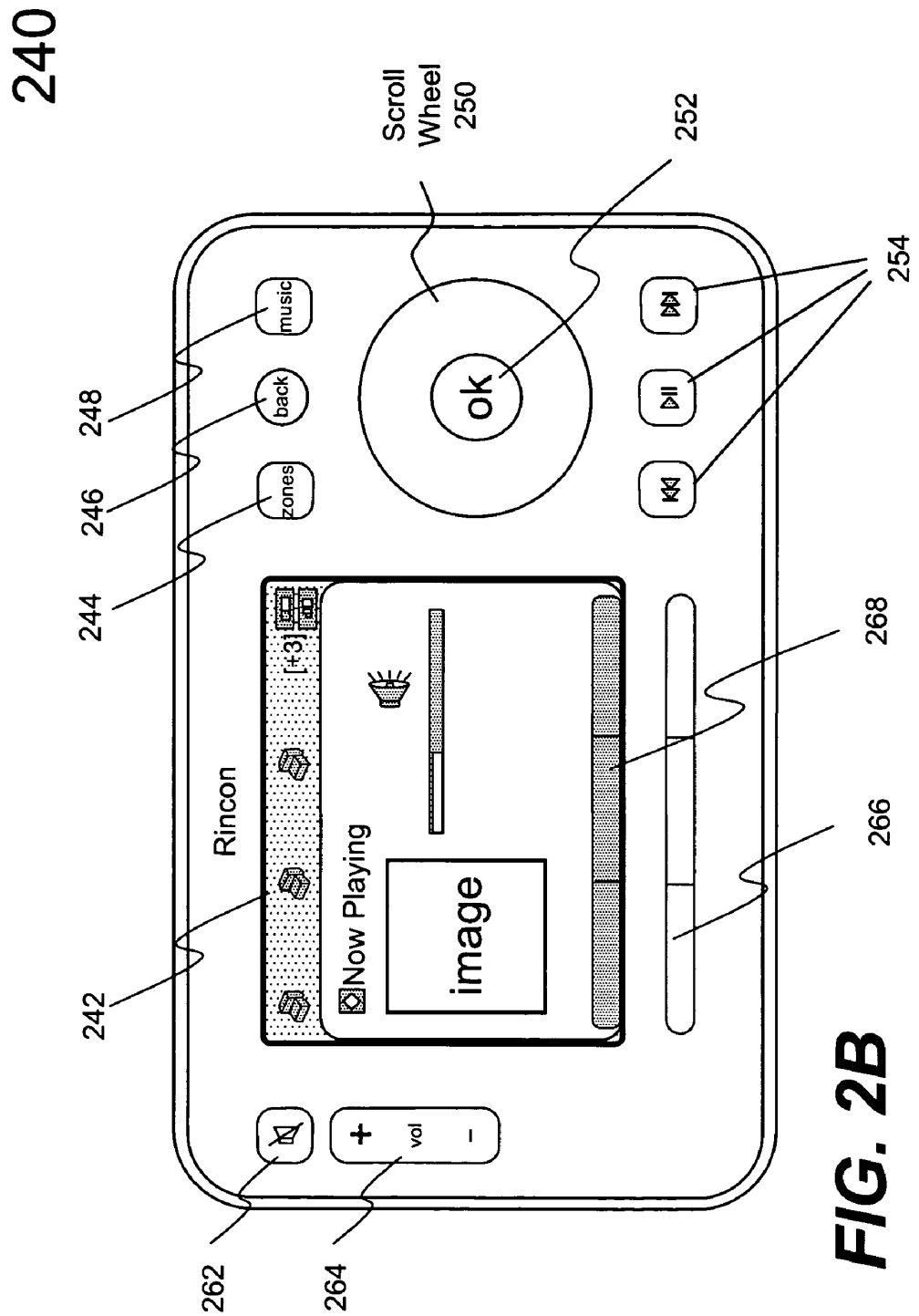

240
Scroll Wheel 250
252
254
248
246
244
242
268
266
262
264
music
back
zones
ok
Rincon
Now Playing
image
vol
+
-

FIG. 2B

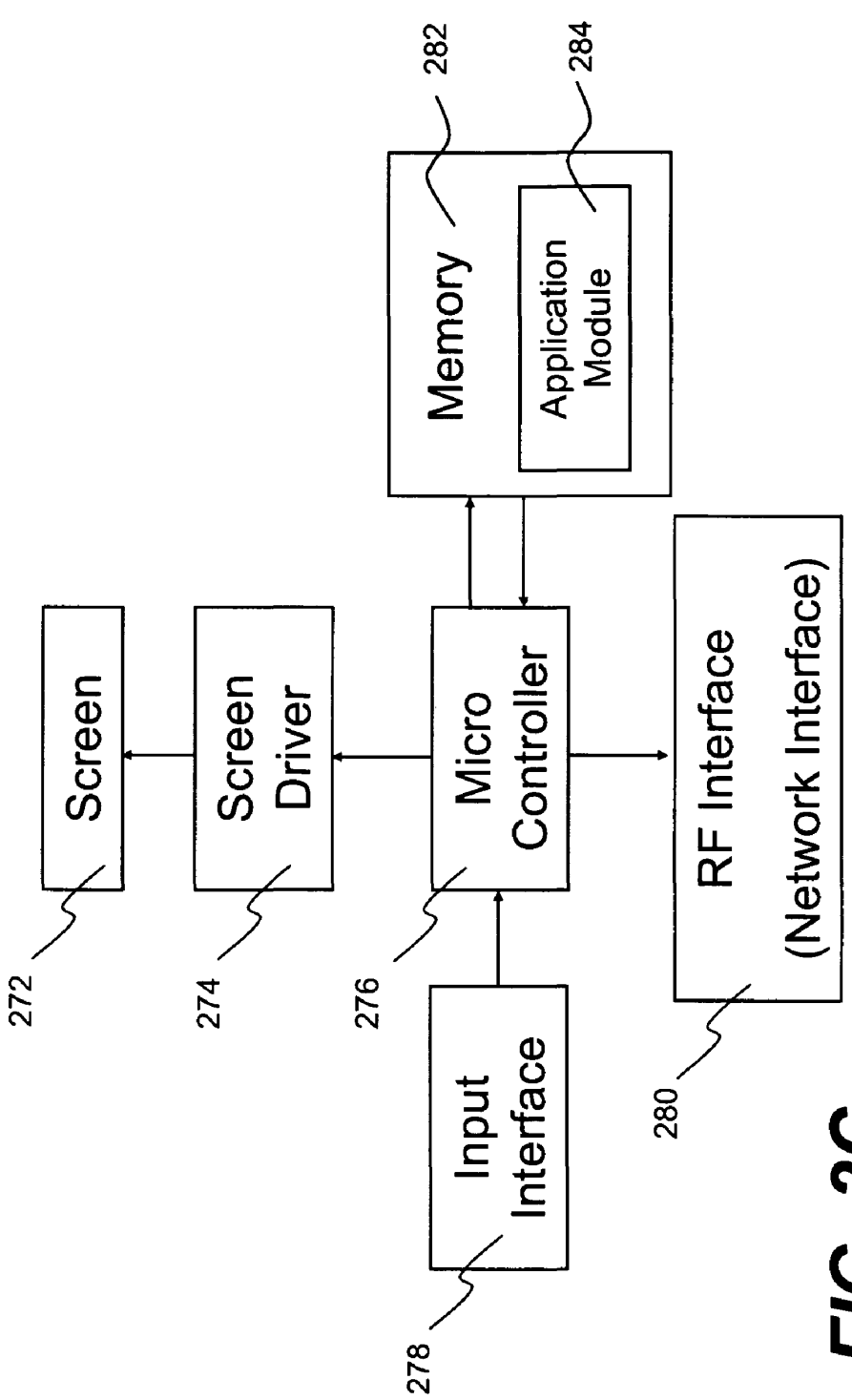

270
282
284
Memory
Application Module
Screen
Screen Driver
Micro Controller
RF Interface (Network Interface)
Input Interface
272
274
276
278
280

FIG. 2C

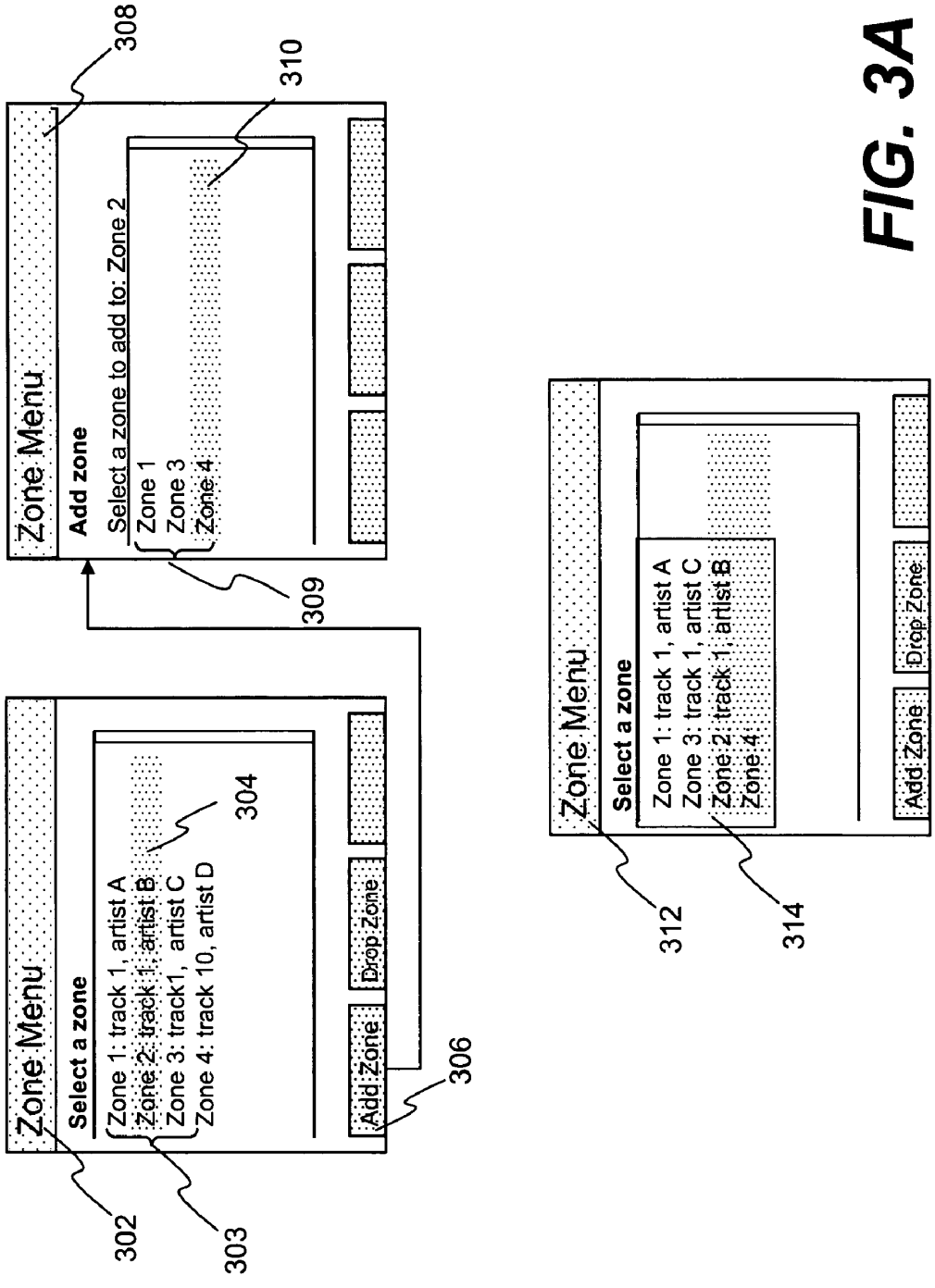

Zone Menu
Select a zone
Zone 1: track 1, artist A
Zone 2: track 1, artist B
Zone 3: track1, artist C
Zone 4: track 10, artist D
Add Zone
Drop Zone
302
303
304
306
Zone Menu
Add zone
Select a zone to add to: Zone 2
Zone 1
Zone 3
Zone 4
308
309
310
Zone Menu
Select a zone
Zone 1: track 1, artist A
Zone 3: track 1, artist C
Zone 2: track 1, artist B
Zone 4
Add Zone
Drop Zone
312
314

FIG. 3A

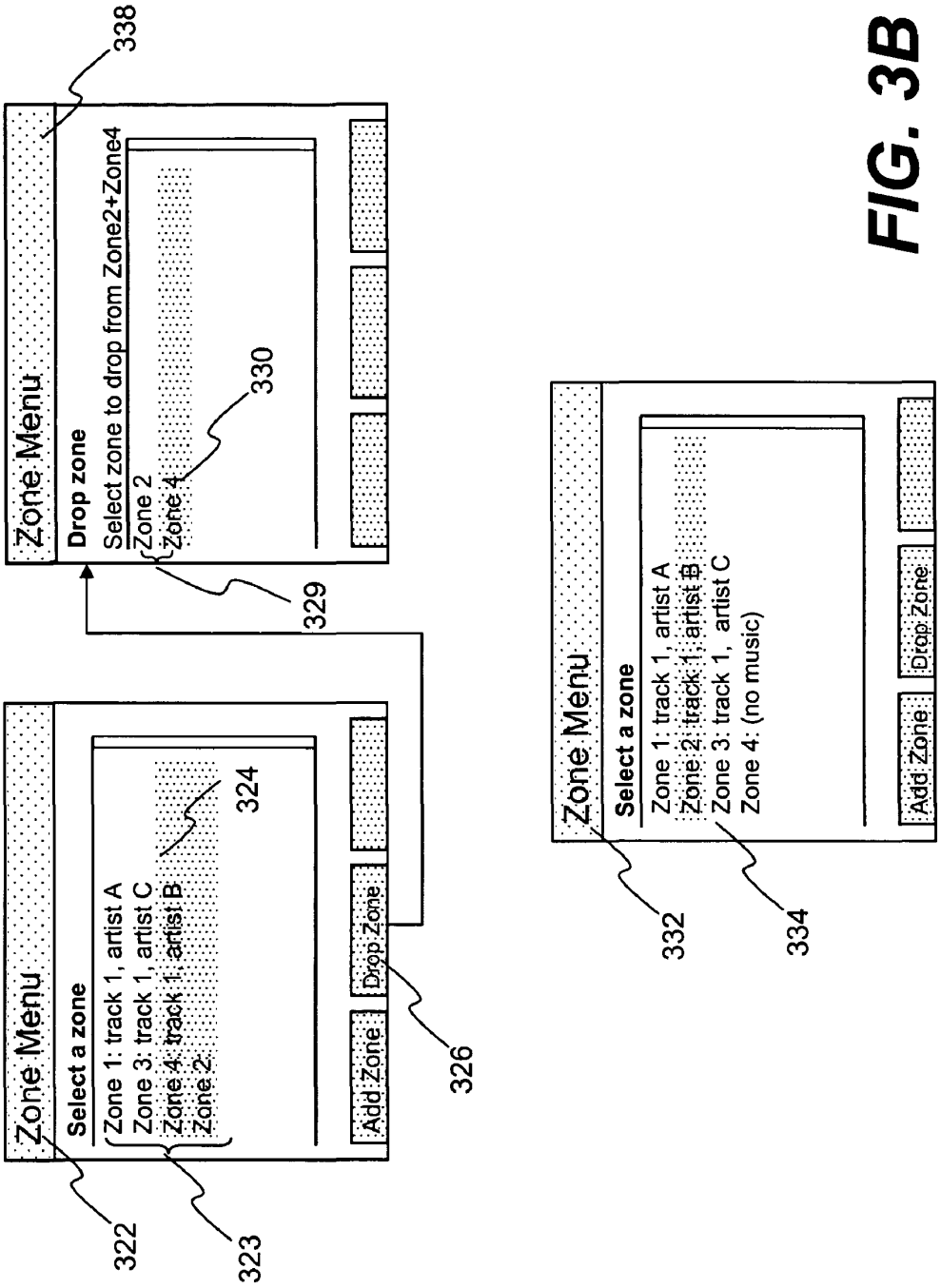

Zone Menu
Select a zone
Zone 1: track 1, artist A
Zone 3: track 1, artist C
Zone 4: track 1, artist B
Zone 2
Add Zone
Drop Zone
322
323
324
326
Zone Menu
Drop zone
Select zone to drop from Zone2+Zone4
Zone 2
Zone 4
329
330
338
Zone Menu
Select a zone
Zone 1: track 1, artist A
Zone 2: track 1, artist B
Zone 3: track 1, artist C
Zone 4: (no music)
Add Zone
Drop Zone
332
334

FIG. 3B

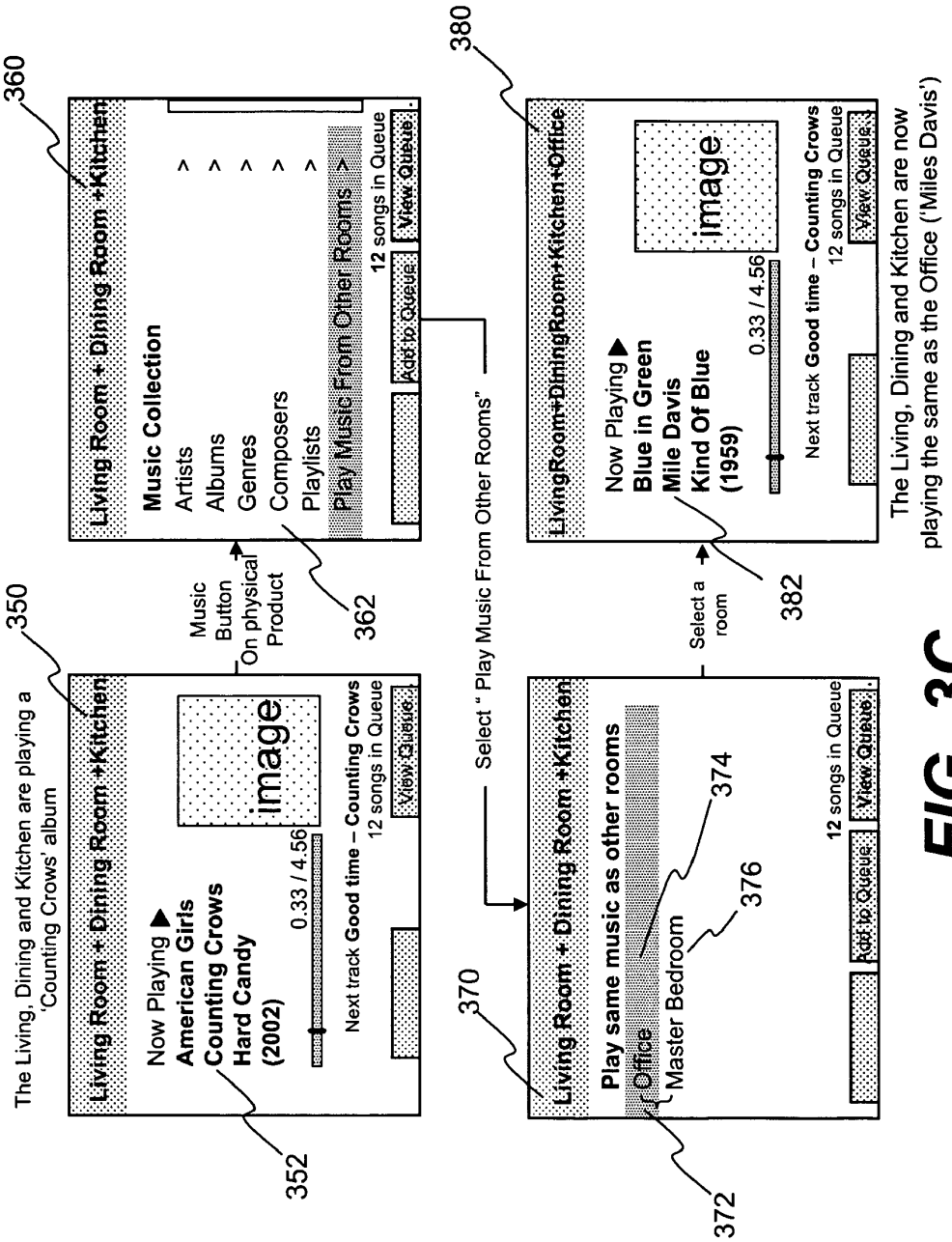

360
Living Room + Dining Room +Kitchen
Music Collection
Artists
Albums
Genres
Composers
Playlists
Play Music From Other Rooms
12 songs in Queue
View Queue
Add to Queue
Music Button On physical Product
362
380
LivingRoom+DiningRoom+Kitchen+Office
Now Playing
Blue in Green
Mile Davis
Kind Of Blue
(1959)
image
0.33 / 4.56
Next track Good time – Counting Crows
12 songs in Queue
View Queue
The Living, Dining and Kitchen are now playing the same as the Office ('Miles Davis')
Select " Play Music From Other Rooms"
350
The Living, Dining and Kitchen are playing a 'Counting Crows' album
Living Room + Dining Room +Kitchen
Now Playing
American Girls
Counting Crows
Hard Candy
(2002)
image
0.33 / 4.56
Next track Good time – Counting Crows
12 songs in Queue
View Queue
352
370
Living Room + Dining Room +Kitchen
Play same music as other rooms
Office
Master Bedroom
374
376
372
Select a room
382
12 songs in Queue
Add to Queue
View Queue

FIG. 3C

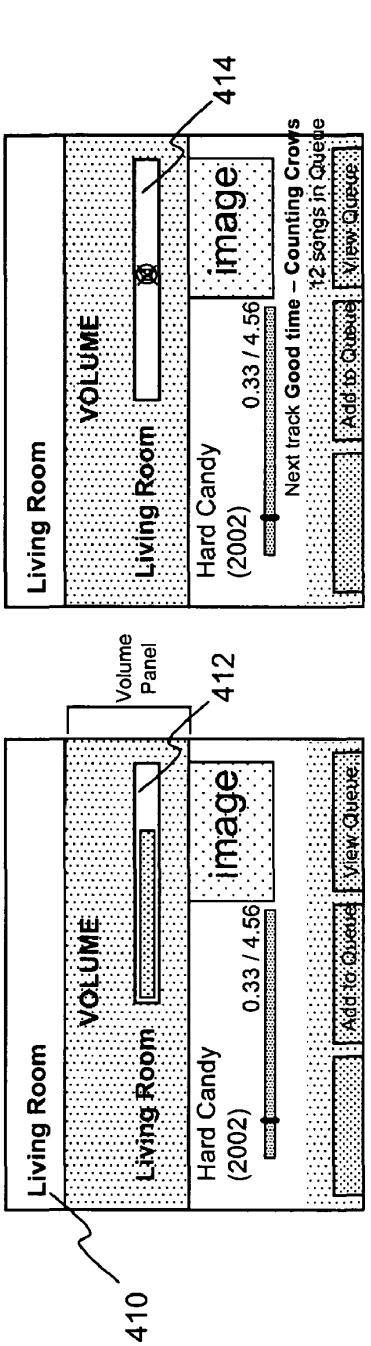

Living Room
VOLUME
Living Room
Hard Candy
(2002)
0.33 / 4.56
image
Add to Queue
View Queue
Volume Panel
412
414
410
Next track Good time – Counting Crows
12 songs in Queue

FIG. 4A

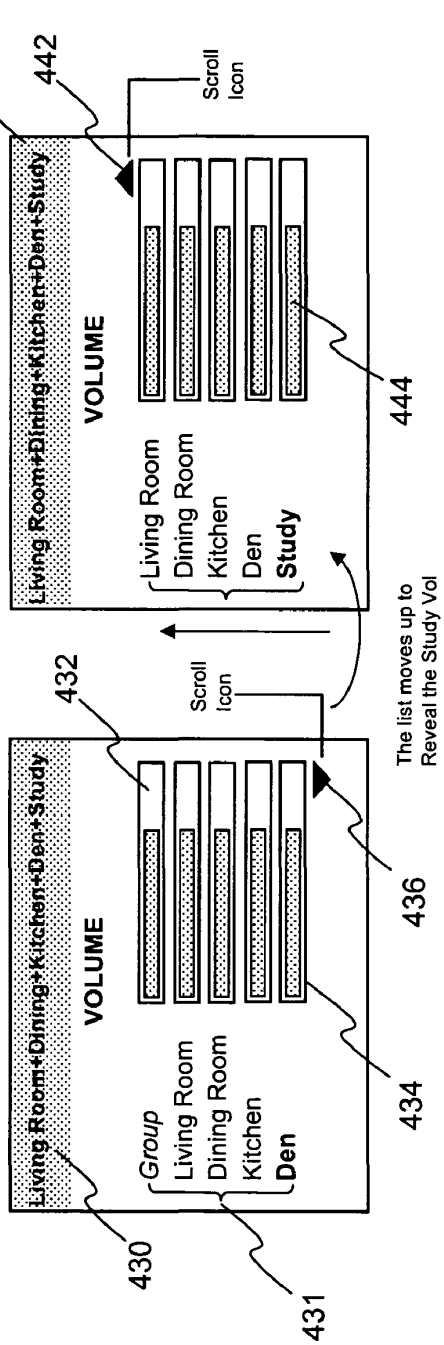

Living Room+Dining+Kitchen+Den+Study
VOLUME
Group
Living Room
Dining Room
Kitchen
Den
Study
Scroll Icon
The list moves up to Reveal the Study Vol
430
431
432
434
436
440
442
444

FIG. 4B

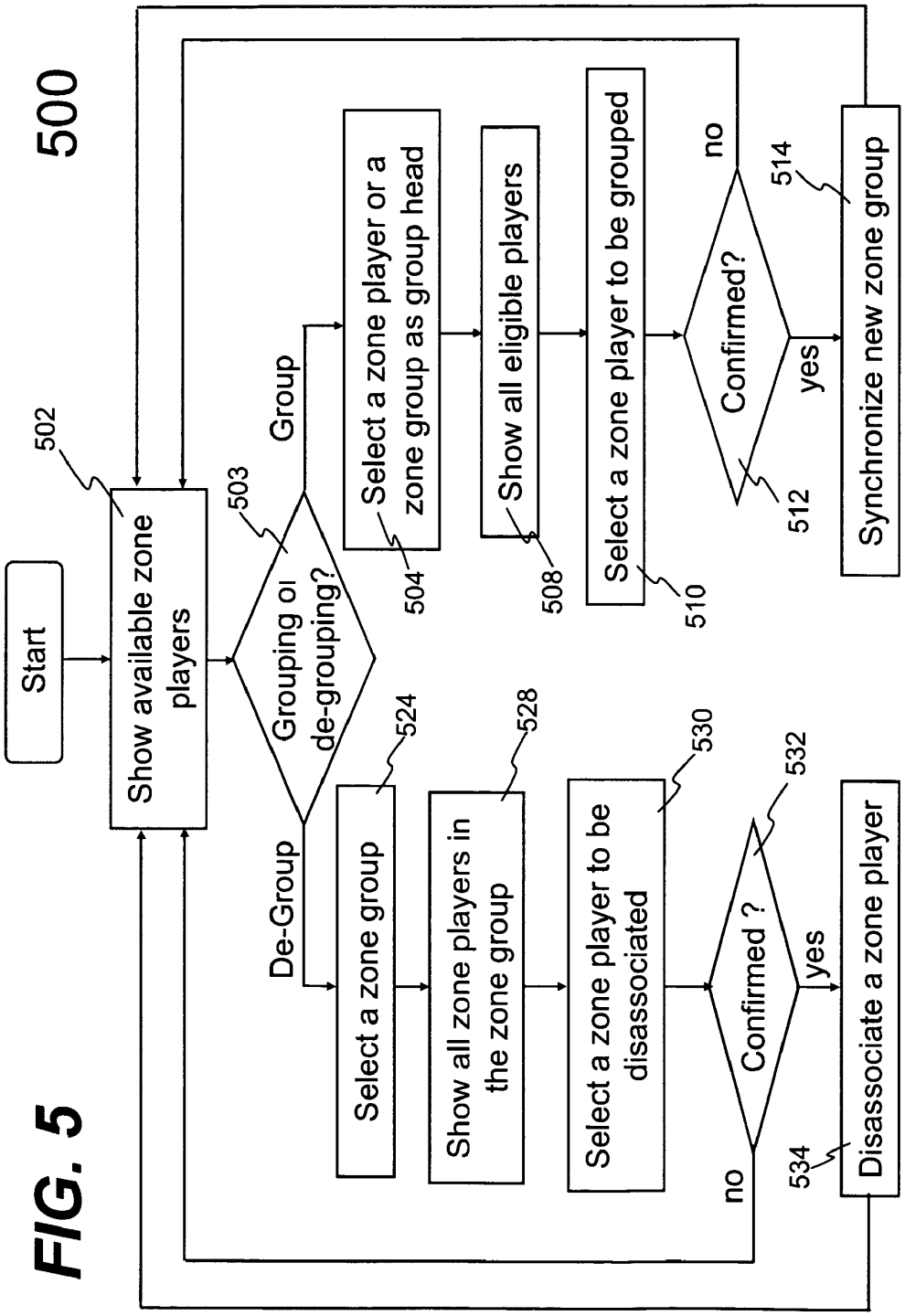

500
Start
Show available zone players
502
Grouping or de-grouping?
503
Group
De-Group
Select a zone player or a zone group as group head
504
Show all eligible players
508
Select a zone player to be grouped
510
Confirmed?
512
no
yes
514
Synchronize new zone group
Select a zone group
524
Show all zone players in the zone group
528
Select a zone player to be disassociated
530
Confirmed ?
532
no
yes
534
Disassociate a zone player

FIG. 5

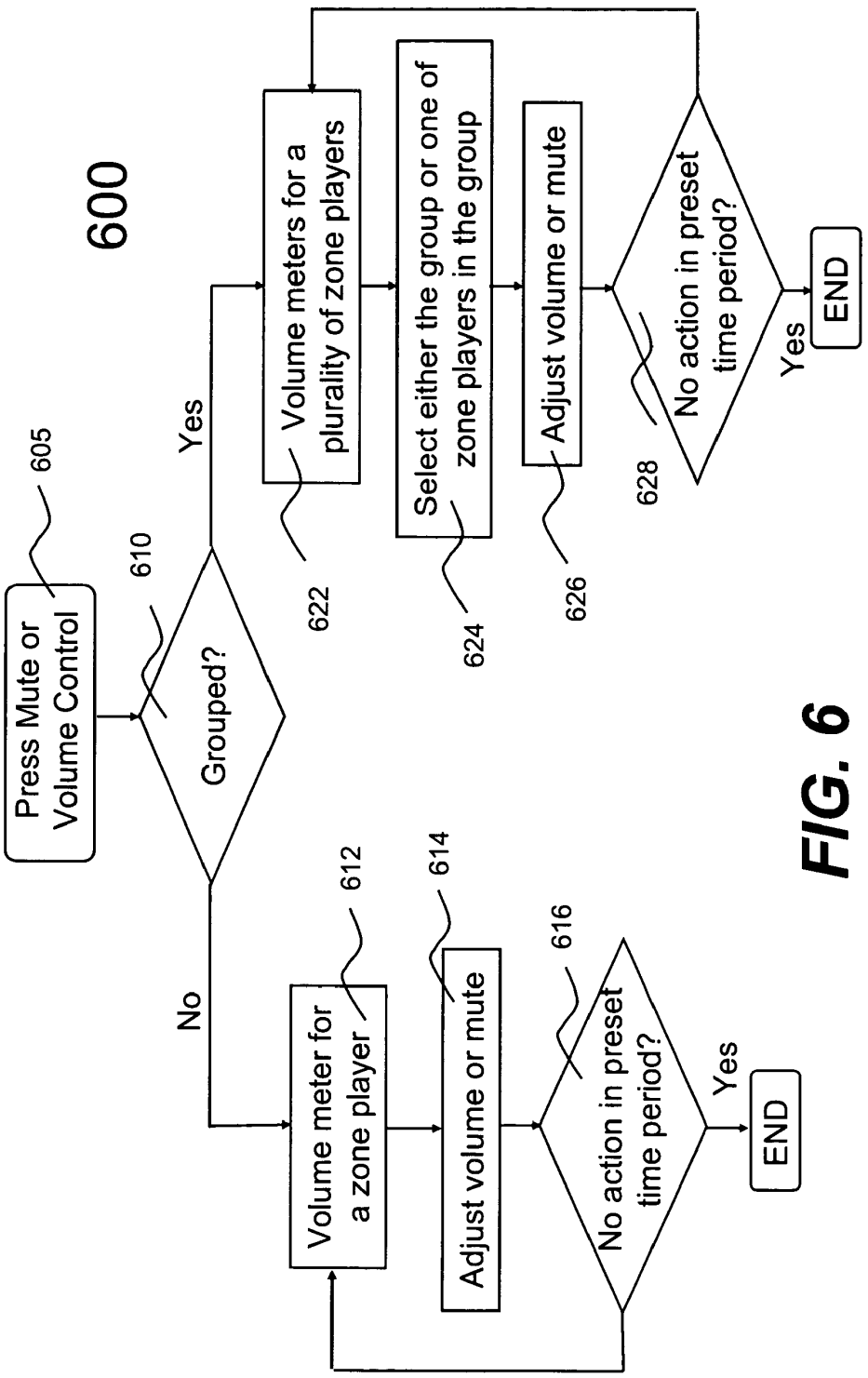

600
Press Mute or Volume Control
605
Grouped?
610
Yes
No
Volume meters for a plurality of zone players
622
Select either the group or one of zone players in the group
624
Adjust volume or mute
626
No action in preset time period?
628
Yes
END
Volume meter for a zone player
612
Adjust volume or mute
614
No action in preset time period?
616
Yes
END

FIG. 6

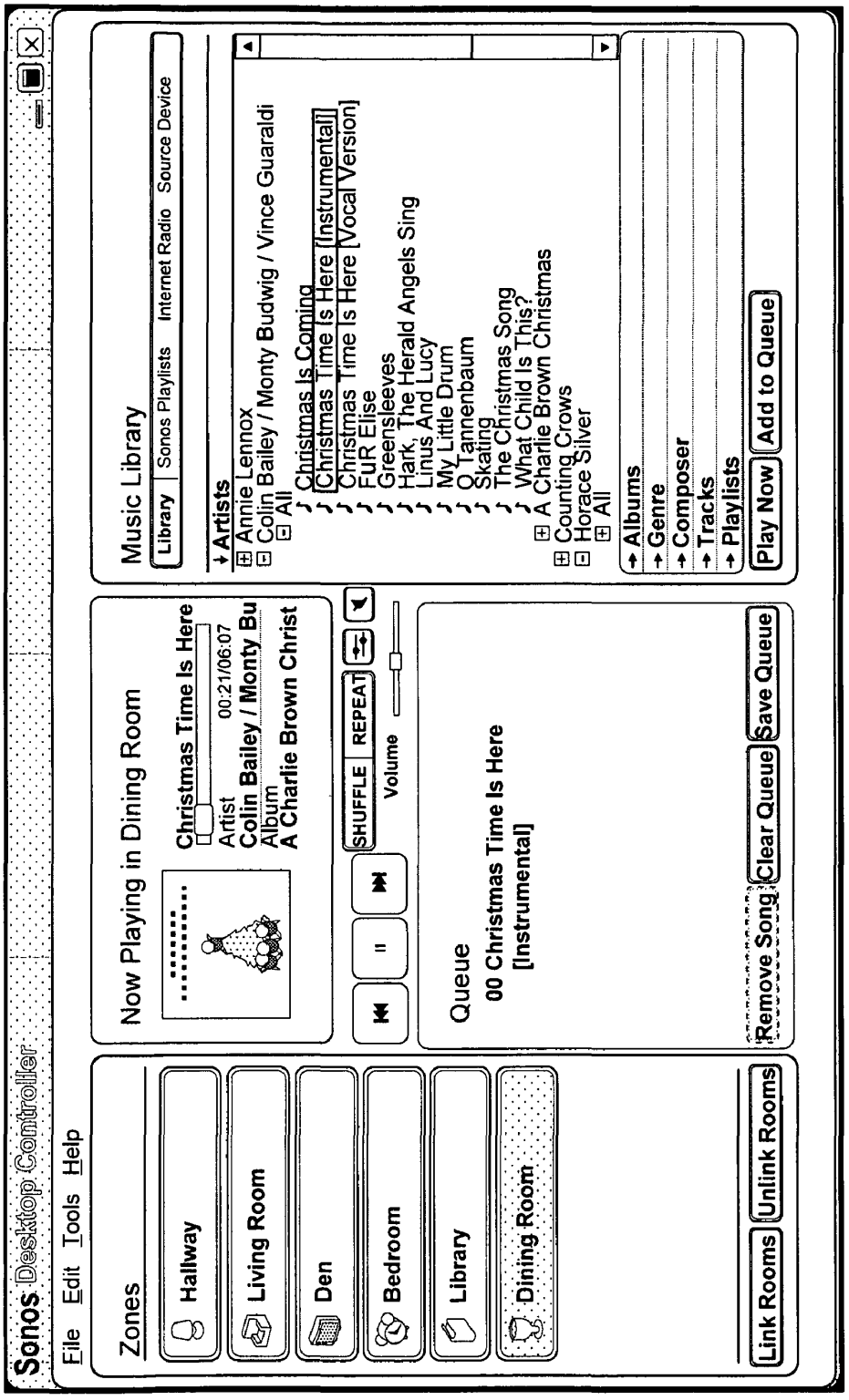

Sonos Desktop Controller
File Edit Tools Help
Zones
Hallway
Living Room
Den
Bedroom
Library
Dining Room
Link Rooms
Unlink Rooms
Now Playing in Dining Room
Christmas Time Is Here
Artist Colin Bailey / Monty Bu
Album A Charlie Brown Christ
00:21/06:07
SHUFFLE
REPEAT
Volume
Queue
00 Christmas Time Is Here
[Instrumental]
Remove Song
Clear Queue
Save Queue
Music Library
Library
Sonos Playlists
Internet Radio
Source Device
Artists
Annie Lennox
Colin Bailey / Monty Budwig / Vince Guaraldi
All
Christmas Is Coming
Christmas Time Is Here [Instrumental]
Christmas Time Is Here [Vocal Version]
FUR Elise
Greensleeves
Hark, The Herald Angels Sing
Linus And Lucy
My Little Drum
O Tannenbaum
Skating
The Christmas Song
What Child Is This?
A Charlie Brown Christmas
Counting Crows
Horace Silver
All
Albums
Genre
Composer
Tracks
Playlists
Play Now
Add to Queue

FIG. 7A

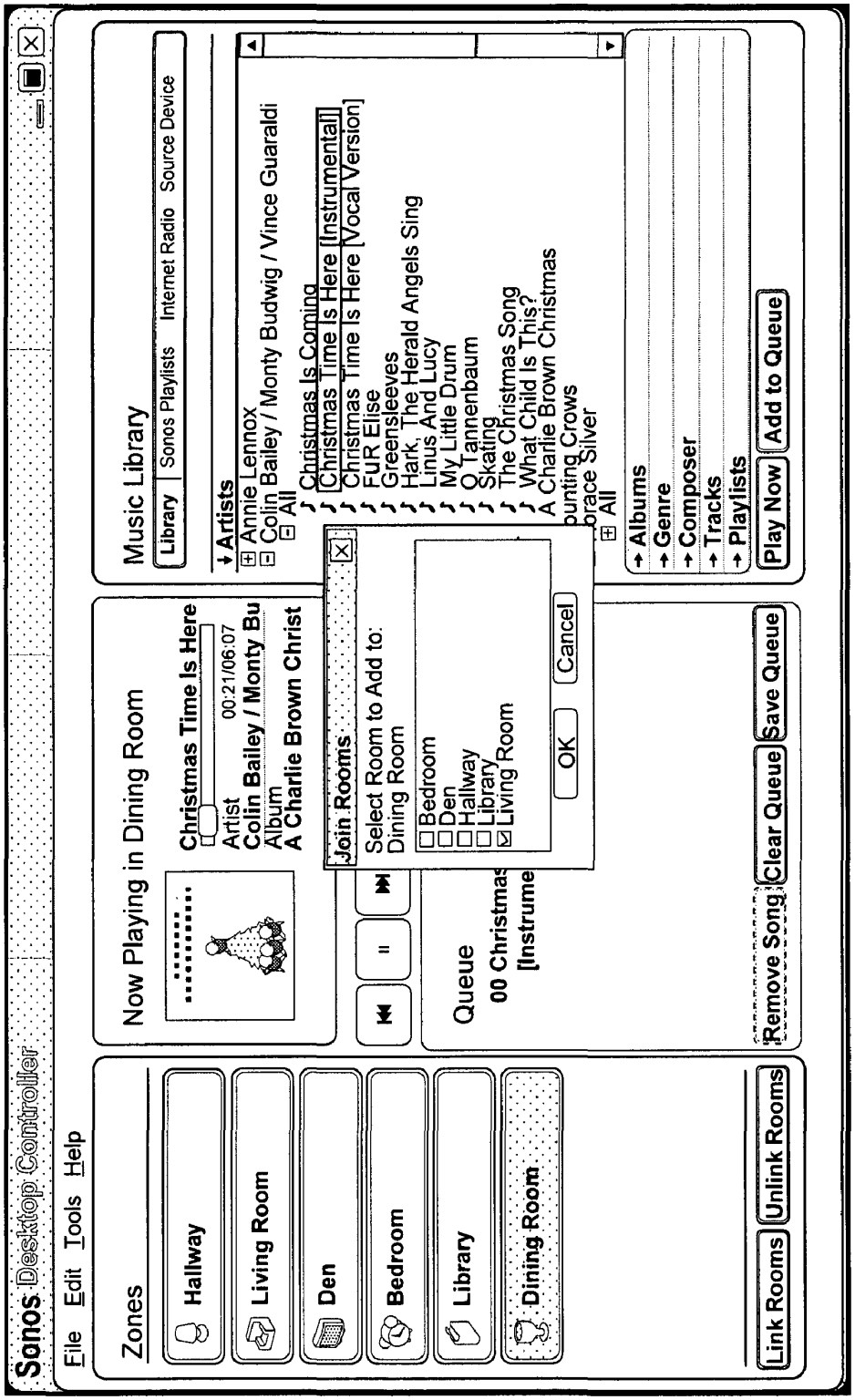

Sonos Desktop Controller
File Edit Tools Help
Zones
Hallway
Living Room
Den
Bedroom
Library
Dining Room
Link Rooms
Unlink Rooms
Now Playing in Dining Room
Christmas Time Is Here
Artist
Colin Bailey / Monty Bu
Album
A Charlie Brown Christ
00:21/06:07
Queue
00 Christmas
[Instrume
Remove Song
Clear Queue
Save Queue
Join Rooms
Select Room to Add to:
Dining Room
Bedroom
Den
Hallway
Library
Living Room
OK
Cancel
Music Library
Library
Sonos Playlists
Internet Radio
Source Device
Artists
Annie Lennox
Colin Bailey / Monty Budwig / Vince Guaraldi
All
Christmas Is Coming
Christmas Time Is Here [Instrumental]
Christmas Time Is Here [Vocal Version]
FUR Elise
Greensleeves
Hark, The Herald Angels Sing
Linus And Lucy
My Little Drum
O Tannenbaum
Skating
The Christmas Song
What Child Is This?
A Charlie Brown Christmas
bunting Crows
brace Silver
All
Albums
Genre
Composer
Tracks
Playlists
Play Now
Add to Queue

FIG. 7B

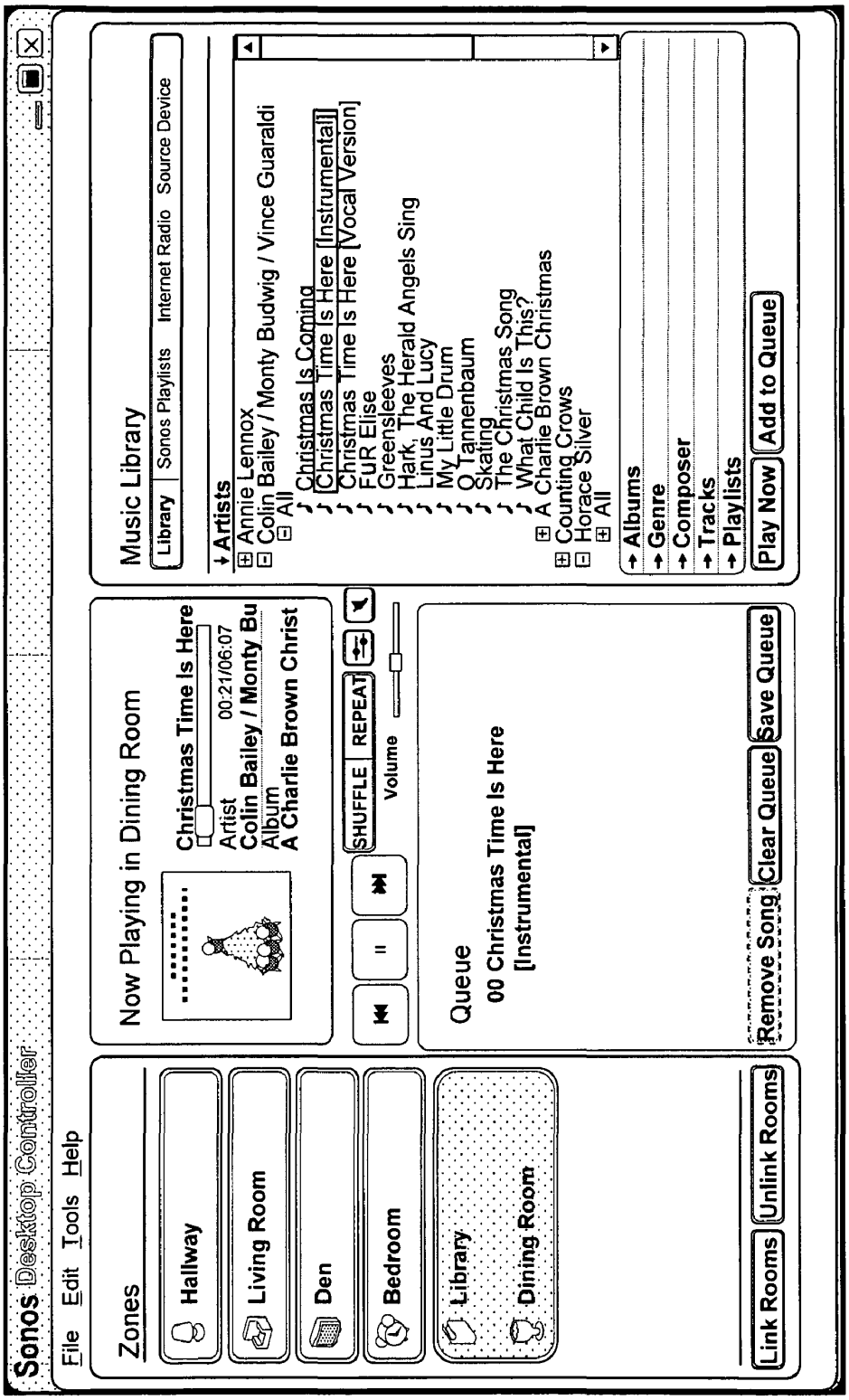

Sonos Desktop Controller
File Edit Tools Help
Zones
Hallway
Living Room
Den
Bedroom
Library
Dining Room
Link Rooms
Unlink Rooms
Now Playing in Dining Room
Christmas Time Is Here
Artist
Colin Bailey / Monty Bu
Album
A Charlie Brown Christ
00:21/06:07
SHUFFLE
REPEAT
Volume
Queue
00 Christmas Time Is Here
[Instrumental]
Remove Song
Clear Queue
Save Queue
Music Library
Library
Sonos Playlists
Internet Radio
Source Device
Artists
Annie Lennox
Colin Bailey / Monty Budwig / Vince Guaraldi
All
Christmas Is Coming
Christmas Time Is Here [Instrumental]
Christmas Time Is Here [Vocal Version]
FUR Elise
Greensleeves
Hark, The Herald Angels Sing
Linus And Lucy
My Little Drum
O Tannenbaum
Skating
The Christmas Song
What Child Is This?
A Charlie Brown Christmas
Counting Crows
Horace Silver
All
Albums
Genre
Composer
Tracks
Playlists
Play Now
Add to Queue

FIG. 7C

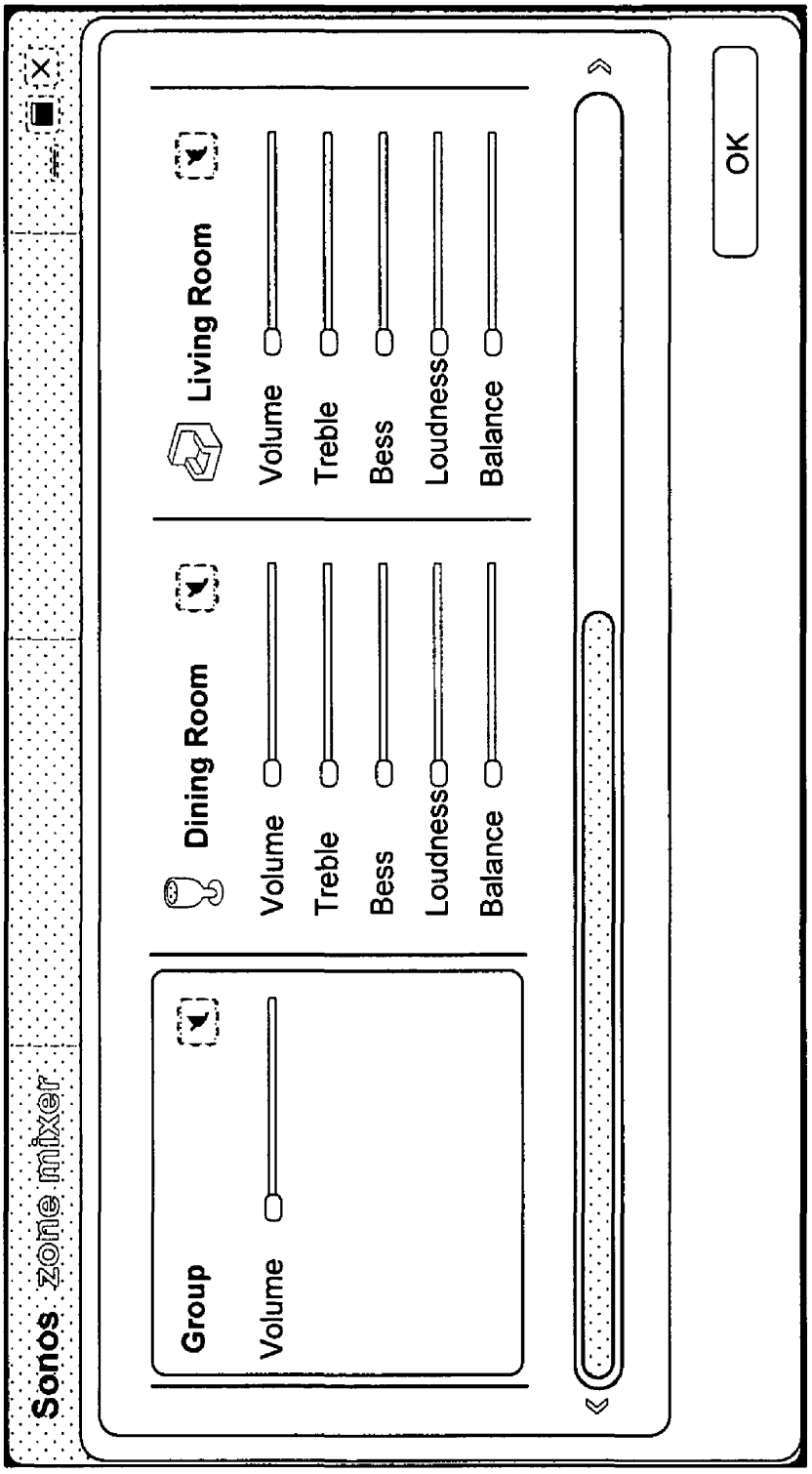

Sonos zone mixer
Group
Volume
Dining Room
Volume
Treble
Bess
Loudness
Balance
Living Room
Volume
Treble
Bess
Loudness
Balance
OK

FIG. 7D

METHOD AND APPARATUS FOR CONTROLLING MULTIMEDIA PLAYERS IN A MULTI-ZONE SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of U.S. patent application Ser. No. 10/816,217, filed Apr. 1, 2004, in the name of Nicholas A. J. Millington, and entitled "System and method for synchronizing operations among a plurality of independently clocked digital data processing devices" filed on Apr. 1, 2004.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention is generally related to the area of audio technologies and human-computer interaction. In particular, the invention is related to method and apparatus for controlling or manipulating a plurality of multimedia players in a multi-zone system.

2. The Background of Related Art

An enduring passion for quality audio reproduction or system is continuing to drive demands from users. One of the demands includes an audio system in a house in which, for example, one could grill to classic rock on a patio while another one may cook up his/her own music selections in a kitchen. This is all at the same time while a teenager catches a ballgame in a family room, and another one blasts pop in a bedroom. And the best part of such audio system is that each family member does not need his or her own stereo system—one system gives everyone access to all the music sources.

Currently, one of the systems that can meet part of such demand is a conventional multi-zone audio system that usually includes a number of audio players. Each of the audio players has its own amplifier(s) and a set of speakers and typically installed in one place (e.g., a room). In order to play an audio source at one location, the audio source must be provided locally or from a centralized location. When the audio source is provided locally, the multi-zone audio system functions as a collection of many stereo systems, making source sharing difficult. When the audio source is provided centrally, the centralized location may include a juke box, many compact discs, an AM or FM radio, tapes, or others. To send an audio source to an audio player demanding such source, a cross-bar type of device is used to prevent the audio source from going to other audio players that may be playing other audio sources.

In order to achieve playing different audio sources in different audio players, the traditional multi-zone audio system is generally either hard-wired or controlled by a pre-configured and pre-programmed controller. While the pre-programmed configuration may be satisfactory in one situation, it may not be suitable for another situation. For example, a person would like to listen to broadcast news from his/her favorite radio station in a bedroom, a bathroom and a den while preparing to go to work in the morning. The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning, the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.

Other than the above mentioned problem, the control of the audio players as a group does not exist. For example, the audio volume of the audio players in the traditional multi-zone audio system needs to be adjusted one at a time, resulting in an inconvenient and non-homogenous audio environment.

There is, therefore, a need for solutions in a multi-zone audio system to control a plurality of audio players and their audio characteristics from one controlling device.

SUMMARY OF THE INVENTION

This section is for the purpose of summarizing some aspects of the present invention and to briefly introduce some preferred embodiments. Simplifications or omissions in this section as well as in the abstract or the title of this description may be made to avoid obscuring the purpose of this section, the abstract and the title. Such simplifications or omissions are not intended to limit the scope of the present invention.

In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player. According to one aspect of the present invention, the same audio source is selected to be played synchronously in a group of players via a controlling device operated by a user. The group may be flexibly formed in a dynamic manner. Within the group, any one of the audio sources may be chosen and made available to each of the players. All audio playback control operations such as pause/play, forward/rewind, next/previous track are synchronously controlled, while the audio volume adjustment may be applied to a selected player or all of the players in the group.

According to another aspect of the present invention, a configurable module is implemented in the controlling device that provides interactive graphic user interface for controlling playback of the audio source, grouping a plurality of players together, de-grouping a group or adjusting audio volume of individual players or a group of players.

According to yet another aspect of the present invention, a player in a group of players is configured to synchronously play an audio source by selecting a source, making the source available or retrieving the source if the source is not found locally

The present invention may be implemented in many forms including software, hardware or a combination of both. According to one embodiment, the present invention is directed to a method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players, selecting at least one of the players as a zone group head, displaying on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head, selecting one or more players from the at least some of the players to be a group being formed by the group head, and synchronizing all players in the group.

According to another embodiment, the present invention is a method for controlling a plurality of players, the method comprising displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing

an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such group, selecting one of the volume meters from the list, and adjusting the one of the volume meters as desired.

According to still another embodiment, the present invention is an apparatus for controlling a plurality of players, the apparatus comprises a screen, a screen driver commanding the screen, an input interface, a network interface, a memory for storing code for an application module, a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of: displaying on the screen a first list showing at least available players; selecting at least one of the players as a zone group head; displaying on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head; selecting one or more players from the at least some of the players to be a zone group being formed by the zone group head; and synchronizing all players in the zone group.

The operations further include displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such group; selecting one of the volume meters from the list; and adjusting the one of the volume meters as desired.

One of the objects, features, and advantages of the present invention is to remotely control a plurality of multimedia players in a multi-zone system, playing and controlling the audio source synchronously if the players are grouped together, or playing and controlling the audio source individually if the players are disassociated with each other.

Other objects, features, and advantages of the present invention will become apparent upon examining the following detailed description of an embodiment thereof, taken in conjunction with the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. **1** shows an exemplary configuration in which the present invention may be practiced;

FIG. **2**A shows an exemplary functional block diagram of a player in accordance with the present invention;

FIG. **2**B shows an example of a controller that may be used to remotely control one of more players of FIG. **2**A;

FIG. **2**C shows an exemplary internal functional block diagram of a controller in accordance with one embodiment of the present invention;

FIGS. **3**A and **3**B illustrate a sequence of screen displays in accordance with one embodiment of the present invention for controlling a plurality of players;

FIG. **3**C shows a sequence of screen displays in accordance with one embodiment of the present invention for alternatively controlling players;

FIGS. **4**A and **4**B show a sequence of screen displays in accordance with one embodiment of the present invention for controlling players regarding audio volume;

FIG. **5** shows a flowchart or process of controlling a plurality of zones players according to one embodiment of the present invention;

FIG. **6** shows a flowchart or process of controlling audio volume of a plurality of players in a zone group according to one embodiment of the present invention; and

FIGS. **7**A-**7**D show a sequence of screen displays in accordance with one embodiment of the present invention on a computing device for alternatively controlling players.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention pertains to techniques for controlling a plurality of players, grouping some of the players, manipulating audio characteristics of the players individually or in groups. The audio characteristics include, but are not limited to, audio volume, audio bass, and audio treble. The players, also referred to as zone players, are part of in a multi-zone system that may be installed in a complex with multiple zones. In general, each zone player is located in one of the zones. Each of the zone players in the multi-zone system is coupled to a data network to communicate not only with each other but with other devices. According to one aspect of the present invention, through a controlling device, not only can each of the zone players be individually controlled, but also two or more of the zone players may be grouped as one or more groups and controlled as if they were a single unit. The audio playback for the zone players in a zone group can be synchronized.

According to another aspect of the techniques, a zone group configuration can be manipulated via a user interface provided in a controlling device. The user interface provides a mechanism to manage, create, delete or modify zone groups. All audio playback operations, such as pause/play, forward/rewind, next/previous track, are synchronized for the zone players in a zone group. The zone group configuration may be saved in any one of zone players for easy retrieval in any of the zones at anytime.

The detailed description of the present invention is presented largely in terms of procedures, steps, logic blocks, processing, or other symbolic representations that directly or indirectly resemble the operations of devices or systems that can be used on networks. These descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art.

Reference herein to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Further, the order of blocks in process flowcharts or diagrams representing one or more embodiments of the invention do not inherently indicate any particular order nor imply any limitations in the invention.

Referring now to the drawings, in which like numerals refer to like parts throughout the several views. FIG. **1** shows an exemplary configuration **100** in which the present invention may be practiced. The configuration may represent, but not be limited to, a part of a residential home, a business building or a complex with multiple zones. There are a number of multimedia players of which three examples **102**, **104** and **106** are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein.

As used herein, unless explicitly stated otherwise, an audio source or audio sources are in digital format and can be transported or streamed over a data network. To facilitate the understanding of the present invention, it is assumed that the configuration **100** represents a home. Thus, the zone player **102** and **104** may be located in two of the bedrooms respectively while the zone player **106** may be installed in a living room. All of the zone players **102**, **104** and **106** are coupled directly or indirectly to a data network **108**. In addition, a computing device **110** is shown to be coupled on the network **108**. In reality, any other devices such as a home gateway device, a storage device, or an MP3 player may be coupled to the network **108** as well.

The network **108** may be a wired network, a wireless network or a combination of both. In one example, all devices including the zone players **102**, **104** and **106** are coupled to the network **108** by wireless means based on an industry standard such as IEEE 802.11. In yet another example, all devices including the zone players **102**, **104** and **106** are part of a local area network that communicates with a wide area network (e.g., the Internet).

Many devices on the network **108** are configured to download and store audio sources. For example, the computing device **110** can download audio sources from the Internet and store the downloaded sources locally for sharing with other devices on the Internet or the network **108**. The computing device **110** can also be configured to receive streaming audio. Shown as a stereo system, the device **112** is configured to receive an analog audio source (e.g., from broadcasting) or retrieve a digital audio source (e.g., from a compact disk). The analog audio sources can be converted to digital audio sources. In accordance with the present invention, the audio source may be shared among the devices on the network **108**.

Two or more zone players may be grouped together to form a new zone group. Any combinations of zone players and an existing zone group may be grouped together. In one instance, a new zone group is formed by adding one zone player to another zone player or an existing zone group. A first chosen zone player to form the new zone group may be referred to as a zone group head. Depending on implementation, all other zone players in the group are synchronized to play an audio source or a queue of sources being played or provided by the zone group head or any one zone player in the group may be selected to synchronize others. For example, when the zone player **106** is added to the zone player **102** to form a new zone group, the zone players **102** is the zone group head of the new zone group. Both players will synchronously playback audio sources that are accessible to any one of the zone players in the multi-zone system. In one embodiment, the audio source being played or provided by the zone player **102** will be also played in the zone player **106**. In another embodiment, the audio source being played or provided by the newly added zone player **106** will be played in all players in the group.

In spite of an existing zone group including the zone players **102** or **106**, it is still possible to add another zone player (e.g., player **104**) to the existing zone group containing the zone players **102** and **106**. In one embodiment, when this zone group is selected to play an audio source, the zone players **102** and **106** will synchronize with the zone player **104**, playing whatever the zone player **104** is playing or ready to play. In another embodiment, when this zone group is selected to play an audio source, the zone player **104** will synchronize with the zone players **102** and **106**, playing whatever the zone players **102** and **106** are playing or ready to play. In an exemplary deployment, a zone group includes the zone players **102**, **104** and **106** located in a bedroom, a kitchen and a bathroom of a house, respectively. When an audio source is played in the zone group, the playback is synchronized among the zone players **102**, **104** and **106** in the group. As a result, a user may hear the same music or song regardless of whether the user is in the bedroom, the kitchen or the bathroom.

Many devices on the network **108** may be configured to control operations of the zone players **102**, **104** and **106**. In particular, one or more controlling devices **140** and **142** are used to control zone players **102**, **104** and **106** as shown in FIG. **1**. The controlling devices **140** and **142** are preferably portable and remotely control the zone players via wireless means (e.g., infrared, radio, wireless standard IEEE 802.11b or 802.11g). In one embodiment, besides controlling an individual zone player, the controlling device **140** or **142** is configured to manage audio sources and audio characteristics of all the zone players regardless where the controlling device **140** or **142** is located in a house or a confined complex.

Referring now to FIG. **2**A, there is shown an exemplary functional block diagram of a zone player **200** in accordance with the present invention. The zone player **200** includes a network interface **202**, a processor **204**, a memory module **206**, an audio processing circuit **210**, a digital signal processing module **212**, an audio amplifier **214** and a RF interface **216**. The network interface **202** facilitates a data flow between a data network (i.e., the data network **108** of FIG. **1**) and the zone player **200** and typically executes a special set of rules (i.e., a protocol) to send data back and forth. One of the common protocols is TCP/IP (Transmission Control Protocol/Internet Protocol) commonly used in the Internet. In general, a network interface manages the assembling of an audio source or file into smaller packets that are transmitted over the data network or reassembles received packets into the original source or file. In addition, the network interface **202** handles the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player **200**.

The network interface **202** may include one or both of a wireless interface **216** and a wired interface **217**. The wireless interface **216**, also referred to as a RF interface, provides network interface functions by a wireless means for the zone player **200** to communicate with other devices in accordance with a communication protocol (such as the wireless standard IEEE 802.11a, 802.11b or 802.11g). The wired interface **217** provides network interface functions by a wired means (e.g., an Ethernet cable). In one embodiment, a zone player, referred to as an access zone player, includes both of the interfaces **216** and **217**, and other zone players include only the RF interface **216**. Thus these other zone players communicate with other devices on a network or retrieve audio sources via the access zone player. The processor **204** is configured to control the operation of other parts in the zone player **200**. The memory **206** may be loaded with one or more software modules that can be executed by the processor **204** to achieve desired tasks. According to one aspect of the present invention, a software module implementing one embodiment of the present invention is executed, the processor **204** operates in accordance with the software module in reference to a saved zone group configuration characterizing a zone group created by a user, the zone player **200** is caused to retrieve an audio source from another zone player or a device on the network.

According to one embodiment of the present invention, the memory **206** is used to save one or more saved zone configuration files that may be retrieved for modification at any time. Typically, a saved zone group configuration file is transmitted to a controller (e.g., the controlling device **140** or **142** of FIG. **1**) when a user operates the controlling device. The zone

group configuration provides an interactive user interface so that various manipulations or control of the zone players may be performed.

The audio processing circuit **210** resembles most of the circuitry in an audio playback device and includes one or more digital-to-analog converters (DAC), an audio preprocessing part, an audio enhancement part or a digital signal processor and others. In operation, when an audio source is retrieved via the network interface **202**, the audio source is processed in the audio processing circuit **210** to produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier **214** for playback on speakers. In addition, the audio processing circuit **210** may include necessary circuitry to process analog signals as inputs to produce digital signals for sharing with other devices on a network.

Depending on an exact implementation, the digital signal processing module **212** may be implemented within the audio processing circuit **210** or as a combination of hardware and software. The audio amplifier **214** is typically an analog circuit that powers the provided analog audio signals to drive one or more speakers.

Referring now to FIG. **2**B, there is shown an example of a controller **240**, which may correspond to the controlling device **140** or **142** of FIG. **1**. The controller **240** may be used to facilitate the control of multi-media applications, automation and others in a complex. In particular, the controller **240** is configured to facilitate a selection of a plurality of audio sources available on the network, controlling operations of one or more zone players (e.g., the zone player **200**) through a RF interface corresponding to the RF interface **216** of FIG. **2**A. According to one embodiment, the wireless means is based on an industry standard (e.g., infrared, radio, wireless standard IEEE 802.11a, 802.11b or 802.11g). When a particular audio source is being played in the zone player **200**, a picture, if there is any, associated with the audio source may be transmitted from the zone player **200** to the controller **240** for display. In one embodiment, the controller **240** is used to synchronize more than one zone players by grouping the zone players in a group. In another embodiment, the controller **240** is used to control the volume of each of the zone players in a zone group individually or together.

The user interface for the controller **240** may include some of a screen **242** (e.g., a LCD screen) and a set of functional buttons as follows: a "zones" button **244**, a "back" button **246**, a "music" button **248**, a scroll wheel **250**, "ok" button **252**, a set of transport control buttons **254**, a mute button **262**, a volume up/down button **264**, a set of soft buttons **266** corresponding to the labels **268** displayed on the screen **242**.

The screen **242** displays various screen menus in response to a user's selection. In one embodiment, the "zones" button **244** activates a zone management screen or "Zone Menu", which is described in more details below. The "back" button **246** may lead to different actions depending on the current screen. In one embodiment, the "back" button triggers the current screen display to go back to a previous one. In another embodiment, the "back" button negates the user's erroneous selection. The "music" button **248** activates a music menu, which allows the selection of an audio source (e.g., a song) to be added to a zone player's music queue for playback.

The scroll wheel **250** is used for selecting an item within a list, whenever a list is presented on the screen **242**. When the items in the list are too many to be accommodated in one screen display, a scroll indicator such as a scroll bar or a scroll arrow is displayed beside the list. When the scroll indicator is displayed, a user may rotate the scroll wheel **250** to either choose a displayed item or display a hidden item in the list. The "ok" button **252** is use to confirm the user selection on the screen **242**.

There are three transport buttons **254**, which are used to control the effect of the currently playing song. For example, the functions of the transport buttons may include play/pause and forward/rewind a song, move forward to a next song track, or move backward to a previous track. According to one embodiment, pressing one of the volume control buttons such as the mute button **262** or the volume up/down button **264** activates a volume panel. More detailed description of the volume panel will be discussed below. In addition, there are three soft buttons **266** that can be activated in accordance with the labels **268** on the screen **242**. It can be understood that, in a multi-zone system, there may be multiple audio sources being played. The music transport functions described herein shall apply selectively to one of the sources when a corresponding one of the zone players or zone groups is selected.

FIG. **2**C illustrates an internal functional block diagram of an exemplary controller **270**, which may correspond to the controller **240** of FIG. **2**B. The screen **272** on the controller **270** may be a LCD screen. The screen **272** communicates with and is commanded by a screen driver **274** that is controlled by a microcontroller (e.g., a processor) **276**. The memory **282** may be loaded with one or more application modules **284** that can be executed by the microcontroller **276** with or without a user input via the user interface **278** to achieve desired tasks. In one embodiment, an application module is configured to facilitate grouping a number of selected zone players into a zone group and synchronizing the zone players for one audio source. In another embodiment, an application module is configured to control together the audio volumes of the zone players in a zone group. In operation, when the microcontroller **276** executes one of the application modules **284**, the screen driver **274** generates control signals to drive screen **272** to display an application specific user interface accordingly, more of which will be described below.

The controller **270** includes a network interface **280** referred to as a RF interface **280** that facilitates wireless communication with a zone player via a corresponding RF interface thereof. In one embodiment, the commands such as volume control and audio playback synchronization are sent via the RF interfaces. In another embodiment, a saved zone group configuration is transmitted between a zone player and a controller via the RF interfaces. The controller **270** may control one or more zone players, such as **102**, **104** and **106** of FIG. **1**. Nevertheless, there may be more than one controllers, each in a zone (e.g., a room) and configured to control any one and all of the zone players.

In one embodiment, a user creates a zone group including at least two zone players from the controller **240** that sends signals or data to one of the zone players. As all the zone players are coupled on a network, the received signals in one zone players can cause other zone players in the group to be synchronized so that all the zone players in the group playback an identical audio source or a list of identical audio sources. Similarly, when a user increases the audio volume of the group from the controller, the signals or data of increasing the audio volume for the group are sent to one of the zone players and causes other zone players in the group to be increased together in volume and in same scale.

According to one implementation, an application module is loaded in memory **282** for zone group management. When a predetermined key (e.g. the "zones" button **244**) is activated on the controller **240**, the application module is executed in the microcontroller **276**. The input interface **278** coupled to and controlled by the microcontroller **276** receives inputs

from a user. A "Zone Menu" is then displayed on the screen **272**. The user may start grouping zone players into a zone group by activating a "Link Zones" or "Add Zone" soft button, or de-grouping a zone group by activating an "Unlink Zones" or "Drop Zone" button. The detail of the zone group manipulation will be further discussed below.

As described above, the input interface **278** includes a number of function buttons as well as a screen graphical user interface. It should be pointed out that the controller **240** in FIG. **2**B is not the only controlling device that may practice the present invention. Other devices that provide the equivalent control functions (e.g., a computing device, a hand-held device) may also be configured to practice the present invention. In the above description, unless otherwise specifically described, it is clear that keys or buttons are generally referred to as either the physical buttons or soft buttons, enabling a user to enter a command or data.

FIGS. **3**A and **3**B illustrate a sequence of screens in accordance with one embodiment of the present invention for manipulating a plurality of zone players for an exemplary four-zone distributed audio system. There are four zone players in four zones and referred to as: "Zone **1**", "Zone **2**", "Zone **3**" and "Zone **4**".

FIG. **3**A shows a grouping process. A first "Zone Menu" **302** shows a first list **303** of available zone players. One of the zone players or existing zone group is selected as a zone group head **304**, which is indicated with uniformly highlighted texts. It is noted the highlighted texts may also be expressed as grouped icons, concatenated texts or other representations of a current selection on the screen. The highlighted texts react to a user's scrolling selection (e.g., via a scroll wheel **250** of FIG. **2**B). Also shown as one of the bottom labels on the first "Zone Menu" **302** is the "Link Zones" or "Add Zone" label **306** that corresponds to a soft button (e.g., soft button **266** of FIG. **2**B). A scroll indicator is displayed beside the first display **302** when the number of items is too many to be accommodated in one display.

When the soft button corresponding to "Link Zones" or "Add Zone" **306** is activated, a second "Zone Menu" **308** is displayed. A second list shows eligible zone groups or zone players **309** for the zone group head **304**. Since "Zone **2**" has been selected as the zone group head to form a zone group, the eligible zone groups and zone players are now "Zone **1**", "Zone **3**" and "Zone **4**". As shown as highlighted texts, the zone player (Zone **4**) **310** is selected to be grouped with the zone group head (Zone **2**) **304** to form a new zone group.

After the user confirms the selection, the newly formed zone group configuration is updated and the audio source can be played synchronously for all of the zone players in the newly formed zone group as shown in FIG. **3**A. The first "Zone menu" **312** is displayed again with the newly formed zone group **314** as one of the choices along with other available zone players. Depending on implementation, any zone players that have been used in a group may or may not be used in another group. As shown in FIG. **3**A, the zone players **2** and **4** are in a zone group started by the zone player **2**, the zone player **4** (even the zone player **2**) can be in another zone group, for example, while a player in a living room is grouped with a player in a dinning room, the same player in the living room can be grouped with a player in a family room.

In another embodiment, a display shows a list of available zone players for grouping. An interactive graphic interface allows a user to interactively select some of the available zone players that are automatically grouped. Anyone of the selected zone players in the group may be elected to be a group head such that other players in the group are synchronized to follow the group head.

According to one embodiment, the synchronization of all zone players in the new zone group is achieved with the following steps: 1) choosing an audio source from one of the zone players in the group, 2) checking if the chosen audio source is available locally on each of the zone players, 3) retrieving the audio source from another device (e.g., other zone players) which has the audio source via the data network, if the audio source is not available locally, and 4) playing the audio source on each of the zone players synchronously. In another embodiment, the audio source in the group or player to be added is chosen as default for other zone players. As shown in FIG. **3**A, the audio source for "Zone **4**" is track **10** with artist D. Accordingly, the zone player "Zone **2**" will play track **10** with artist D synchronously with "Zone **4**" after the new zone group is formed.

FIG. **3**B shows a de-grouping process in reference to FIG. **3**A.**1**. A first "Zone Menu" **322** shows a first list **323** of available zone players and zone groups, if there is any. One of the zone groups ("Zone **2**+Zone **4**") to be de-grouped is selected as shown in highlight texts **324**. When the "Unlink Zones" or "Drop Zone" soft button **326** is activated, the second "Zone Menu" **328** displays a list **329** that shows all of the member zone players in the selected zone group. One of the zone players **330** (Zone **4**) in the selected zone group is chosen to be disassociated from the zone group **324**. When the de-grouping is confirmed by user, the "Zone Menu" **332** is presented to reflect the de-grouping of a zone group (e.g., "Zone **2**") **334**. When zone players are grouped together, all of the zone players play the same audio source synchronously. If a zone player is disassociated or dropped from the zone group, the remaining zone players in the zone group continue playing the audio source. In the "Zone Menu" **332**, it shows the zone player (Zone **4**) has no music **336** after the disassociation from the zone group, while the remaining player (Zone **2**) continues to play the same music—track **10** with artist D.

Referring now to FIG. **3**C, there shows a sequence of screens depicting alternative steps of creating a zone group. An exemplary five-zone audio system is used to describe these alternative steps. There are five zone players located in a living room, a dining room, a kitchen, an office and a master bedroom. It is assumed that three of the five rooms, the living room, the dining room and the kitchen, are grouped to form a zone group called "LivingRoom+DiningRoom+Kitchen". The Screen display **350** shows that an audio source called "Counting Crows" **352** is being played on all the zone players in the group. When a user activates the "music" button **248** on a controller **240** of FIG. **2**B, the screen display **360** shows a "Music Menu" page which shows a list of choices **362**. One of the choices is "Play Music From Other Rooms" **364**. When the user selects this option, the screen display **370** for "Play Same Music As Other Rooms" displays a list **372** of eligible rooms or zone players to be grouped with the current group "Living Room+Dining Room+Kitchen". In this example the eligible rooms are Office **374** and Master Bedroom **376**. It is assumed that the "Office" **374** which is indicated with the highlighted bar is chosen. As a result, the zone player "Office" is grouped with the original zone group to become a new group called "LivingRoom+DiningRoom+Kitchen+Office" as shown in screen display **380**. And the audio source "Miles Davis" **382** from the zone player "Office" is played synchronously on all zone players in the new group.

Referring now to FIGS. **4**A and **4**B, there is shown a sequence of screens in accordance with one embodiment of the present invention for controlling audio volume of zone players in a zone group. These screens are activated and displayed when one of the volume control buttons is acti-

vated. According to one embodiment, the volume control buttons are "mute" button **262** and "volume up/down" button **264** on the controller **240** of FIG. **2**B.

FIG. **4**A shows that the current active zone player is in a living room of a house. The "Volume" panel **410** is displayed for the current zone player "Living Room". A volume meter **412** is included to indicate a volume adjustment made by a user. A mute icon **414** is shown when the "mute" button is activated while the audio is on.

FIG. **4**B shows that the current active zone group includes five rooms: living room, dining room, kitchen, den and study. A "Volume" panel **430** for the zone group is displayed for the convenience of a user. In the display, a plurality of volume meters **431** is shown. One of the volume meters is for the entire zone group **432**. Other volume meters are for all the zone players in the group, one for each room or zone player. A scroll indicator is shown as a downward arrow **436** that indicates the screen is too small to hold all volume meters in one screen display. There are more hidden choices that can be viewed by scrolling down. The scrolling cursor **436** is highlighted (e.g., Den **434**). As a user scrolls down the list of volume meters **431**, the contents on "Volume" panel **440** includes the volume meter of the next zone player on the list (e.g., Study **444**). Similarly, when the scroll indicator is an upward arrow **442**, other hidden choices within the list can be viewed by scrolling up.

When a user adjusts the audio volume, only the highlighted zones or zone players are affected. If the highlighted selection is one zone player, the audio adjustment will only apply to that particular chosen player. If multiple zone players are selected, the adjustment applies to all of the chosen players similar to the volume adjustment to the group volume meter described below. The audio volume of all zone players in the zone group will be affected, if the highlighted selection is at the volume meter of the entire group **432**. Any audio volume adjustment to the zone group applies to all of the zone players equally within the entire zone group. Depending on implementation, the relative difference of the audio volume among zone players in the group remains unchanged either in percentage or graphic strength.

FIG. **5** shows a flowchart or process **500** of implementing one embodiment of the present invention for manipulating zone players. The process **500**, which is preferably understood in conjunction with the previous figures especially with FIGS. **2**B, **2**C, **3**A and **3**B, may be implemented in software, hardware, or a combination of both. According to one embodiment, an application module implementing the process **500** is embedded in a controller, for example, the device **240** of FIG. **2**C. The module may be loaded in the memory **282** to be executed by the microcontroller (processor) **276** and operating in conjunction with user input commands via the input interface **278**.

The process **500** starts with a display at **502** showing a list of zone players or existing zone groups, if there are any. When the available zone players and zone groups in the list is too long to be presented on the display, a scroll indicator will be displayed beside the list. A user may access the hidden items within the list by scrolling either upward or downward. At **503**, the process **500** splits into two branches based on the following tasks: 1) grouping a plurality of zone players to form a zone group, or 2) de-grouping a zone group.

If the process **500** performs the grouping task, the process moves onto **504**. The user selects one of the zone players as a zone group head or the zone groups from the list. Once the selection is made and a key is activated (e.g., a soft button **306** as shown in FIG. **3**A), a new list (e.g., screen **308** as shown in FIG. **3**A) showing all of the zone players and zone groups that are eligible to be grouped with the selection at **504** is displayed at **508**. In one embodiment as shown in FIG. **3**A, when the zone player "Zone **2**" is selected as the zone group head in a four-zone audio system, the eligible zone players are all other zone players ("Zone **1**", "Zone **3**" and "Zone **4**") except for the zone player "Zone **2**". At **510**, the end user is then given the option to select one or more of the eligible zone players (e.g., "Zone **4**" in FIG. **3**A) or one of the eligible zone groups to be grouped into the selection at **504**.

At **512**, the user has the option to confirm to accept or to discard the selection made at **510**. When a confirmation is made, the process **500** creates the zone group by synchronizing all of the zone players in the zone group at **514**. In one embodiment, the synchronization is performed first to determine the audio source in the selected player to be grouped (e.g., Zone **4** in FIG. **3**A). Then the audio source is transmitted to all other zone players in the same zone group before playing the audio source synchronously. In the meantime, this newly formed zone group configuration is updated. For example, the zone group configuration is saved to the memory **206** on the zone player **200** of FIG. **2**A via the wireless communication. After the zone player in the newly formed zone group has been synchronized, the process **500** moves back to **502**. An updated list of available zone players and zone groups is displayed. As an example shown in "Zone Menu" **312** of FIG. **3**A, the newly formed zone group is listed as one of the items.

Going back to **512**, if the selection made at **510** can not be confirmed or is to be discarded, the process **500** goes back to **502** without updating any zone group configuration. In this case, the original list is intact (e.g., "Zone Menu" **302** of FIG. **3**A).

Going back to the grouping task test at **503**, when the process **500** performs the de-grouping task, the process **500** moves to **524**. A user selects one zone group from the first list. Once the selection is made, a list (e.g., screen **328** as shown in FIG. **3**B) showing all of the zone players in the selected zone group is displayed at **528**. In one embodiment as shown in FIG. **3**B, "Zone **2**+Zone **4**" is the selected zone group, the zone players in the selected zone group are "Zone **2**" and "Zone **4**". At **530**, the end user selects one or more of the zone players (e.g., Zone **4**) from the list to be disassociated from the zone group. At **532**, the user has the option to confirm or to discard the selection made at **530**.

When the selection is confirmed, the process **500** updates the selected zone group by disassociating the zone player from the zone group at **534**. As a result of the disassociation, the audio source being played in the zone group is no longer available to the disassociated zone player. In the meantime, the updated zone group configuration is saved. For example, the zone configuration is saved to the memory **206** on the zone player **200** (FIG. **2**A). After the zone player has been disassociated, the process **500** moves back to **502**. The list of available zone players and zone groups is displayed. This time the newly updated zone group is listed as one of the items (e.g., "Zone Menu" **332** of FIG. **3**B).

Going back to **532**, if the selection made at **530** is to be discarded, the process **500** moves back to **502** directly without updating the zone group configuration. In this case, the original list is presented (e.g., "Zone Menu" **322** of FIG. **3**B).

Referring now to FIG. **6**, there is shown a flowchart or process **600** of controlling audio volume of a plurality of zone players in a zone group. The process **600**, which is preferably understood in conjunction with the previous figures especially with FIGS. **2**B, **2**C, **4**A and **4**B, may be implemented in software, hardware, or a combination of both. According to one embodiment, an application module implementing the

process **600** is embedded in a controller, for example, the device **240** of FIG. **2**C. The module may be loaded in the memory **282** to be executed by the microcontroller (processor) **276** and operating in conjunction with user input commands. In one embodiment, the module is configured to control the audio volume of a group of zone players. It should be noted that zone group and a group of zone players are used interchangeably in the description for FIG. **6**.

At **605**, the process **600** starts when one of the volume control buttons, for example, "mute" button **262** or "volume up/down" button **264**, on the controller **240** of FIG. **2**B, is activated. The process **600** splits into two branches depending on whether a single zone player or a group of zone players is to be controlled at **610**.

If it is for a single zone player, a volume meter (e.g., "Volume" panel **410** in FIG. **4**A) is presented at **612**. At **614**, the end user has option to adjust the volume for the zone player with one of the volume control buttons. The volume control signals are sent from the controller **240** (FIG. **2**C) to the zone player **200** (FIG. **2**A). In one embodiment, the volume panel displays a moving volume meter showing an increasing or decreasing bar as the audio volume of the selected zone player is adjusted up or down. In another embodiment, the mute icon is shown instead of a volume meter, when the "mute" button is activated while the audio is on.

At **616**, the process **600** is waiting for a user's command. If a predetermined amount of time (e.g., 1 second) has lapsed, the process **600** ends, which means the user is not going to change the volume. Otherwise, the process **600** goes back to **612** waiting for another action from the end user.

Referring back to **610**, if process **600** is for a group of zone players, then the process **600** moves to the zone group branch at **622**, in which a plurality of volume meters is presented. The plurality of volume meters includes one for each of the zone players in the zone group, plus one more for the entire zone group. In one embodiment as shown in FIG. **4**B, a "Volume" panel **430** for a plurality of zone players in a zone group is presented. When the screen is too small to display all the zone players, a scroll indicator is displayed beside the list of the volume meters to indicate that there are hidden volume meters. At **624**, the user selects one of the volume meters. At **626**, the audio volume is adjusted with one of the volume control buttons. When the volume adjustment is made to one of the zone players, only the selected zone player is affected. The audio volume of the rest of the zone players remains unchanged. However, when the volume adjustment is made to the zone group, the entire group will respond to the volume adjustment in an identical scale. In one embodiment, the identical scale is based on percentage of the audio volume. In another embodiment, the identical scale is based on graphic representation of the volume meter.

In one embodiment, an end user increases the audio volume for the zone group by 5%. The volume for each of the zone players in the zone group will be increased by 5%, and the relative volume loudness difference among each of the zone players remains unchanged. In another embodiment, if a user had muted one of the zone players of the zone group, the volume of all other zone players would have been unchanged.

The group audio volume is calculated based on a predetermined formula. In one embodiment, the group audio volume is the averaged value of the audio volume of all the zone players within the zone group. In another embodiment, the median value may be chosen as the group audio volume. The user uses a scrolling device (e.g., scroll wheel **250** of FIG. **2**B) to select a zone player or the entire zone group and then adjust the volume with one of the volume control buttons.

At **628**, the process **600** is waiting for a user's command. If a predetermined amount of time has lapsed, the process **600** ends, which means the user is not going to change the volume of the zone group. Otherwise, the process **600** goes back to **622** waiting for another action from the end user.

FIGS. **7**A-**7**D are a series of screenshots according to one embodiment of the present invention on a computing device on a network. The computing device may correspond to the device **110** of FIG. **1** and be configured to control operations of the zone players installed in a complex. With a larger screen of the computing device than that of a portable controller, the graphic user interface on the larger screen appears different from that, for example, shown in FIGS. **3**A-**4**B, the underlying principle nevertheless does not depart from the above description for the portable controller. A user is able to control any one or all of the zone players from the computing device. FIG. **7**A shows all individual available zone players with the one in the Dining Room being selected to play a track entitled "A Charlie Brown Christmas". FIG. **7**B shows a pop-up window listing remaining available players to be grouped with the one in the Dining Room. Depending on a desirable group, the user can select from the remaining available players to be grouped with the one in the Dining Room to form a zone group. FIG. **7**C shows, as a result, the players in the Dining Room and the living room are in one group and play synchronously a song entitled "Christmas time is here". FIG. **7**D shows the control of some exemplary acoustic characteristics of the zone players in a group with the volume being controlled.

The present invention can be implemented in many ways, each of which may yield one or more of the following benefits, advantages or features. One of them is a mechanism provided to enable a user to remotely control audio characteristics of the zone players either as a group or as an individual player. Second, an interactive graphic user interface is provided to enable a user to manage, create, delete or modify zone groups. Another one of the benefits, advantages or features is to provide a user interface to facilitate a user to control audio characteristics of an individual zone player or a group of zone players. Other benefits, advantages or features can be appreciated by those skilled in the art given the detailed description herein.

While the present invention has been described with reference to specific embodiments, the description is illustrative of the invention and is not to be construed as limiting the invention. Various modifications to the present invention can be made to the preferred embodiments by those skilled in the art without departing from the true spirit and scope of the invention as defined by the appended claim. For example, the present invention can be implemented in a multi-zone multimedia system providing other than audio entertainment. Accordingly, the scope of the present invention is defined by the appended claims rather than the forgoing description of embodiments.

We claim:

1. A method for controlling a plurality of players, the method comprising:

displaying on a screen a first list showing at least available players;

displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;

forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

synchronizing all players in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the slayers in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of slayers synchronously in accordance with an adjustment made by a user.

2. The method of claim **1**, wherein the first list becomes scrollable, when the available players do not fit in the screen.

3. The method of claim **1**, wherein said synchronizing all players in the zone group comprises:

determining an audio source for the zone group;

making the audio source available to each of the players in the zone group; and

playing the audio source synchronously in all players in the zone group.

4. The method of claim **3**, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by the zone group head.

5. The method of claim **3**, wherein said of determining an audio source for the zone comprises selecting the audio source being played or ready to be played by one of the players in the zone group.

6. The method of claim **3**, wherein said making of the audio source available comprises:

determining whether the audio source is available locally; and

retrieving the audio source from a device on a network, if the audio source is not available locally.

7. The method of claim **6**, wherein said making of the audio source available comprises:

determining the audio source from one of the players in the zone group; and

causing the audio source available to every other player in the zone group.

8. The method of claim **1**, wherein said synchronizing of all players in the zone group comprises:

causing all players in the zone group to play an identical audio source; and

presenting the zone group in a manner that indicates a grouping.

9. The method of claim **8**, wherein the manner includes one or more of highlighting, colors, explicit texts and graphs.

10. The method of claim **1**, wherein the first list further shows at least one zone group.

11. The method of claim **10**, wherein the zone group includes at least two players.

12. The method of claim **9**, wherein a configuration of the zone group is stored in at least one of the players or a controller for remotely controlling one or more of the players, the configuration including information on how the two players are grouped.

13. The method of claim **8**, further including:

selecting the zone group to be de-grouped from the first list;

displaying on the screen another list showing all the players within the zone group to be de-grouped;

selecting one or more players from the another list; and

disassociating the selected players from the zone group.

14. The method of claim **13**, wherein said disassociating the selected players comprises making the selected players available for grouping with a zone group.

15. The method of claim **13**, wherein the another list becomes scrollable, when all the players within the zone group to be de-grouped do not fit in the screen.

16. A method for controlling a plurality of players, the method comprising:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of slayers synchronously in accordance with an adjustment made by a user.

17. The method of claim **16**, wherein said adjusting the one of the volume meters includes:

causing the audio volume to be adjusted in accordance with an adjustment to the volume meter; or

causing the audio volume to be off, when a mute button is activated while the audio volume is on; and

causing the audio volume to be on, when a mute button is activated while the audio volume is off.

18. The method of claim **16**, further comprising adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.

19. The method of claim **16**, further comprising maintaining relative volume loudness difference among each of the players in the group.

20. The method of claim **16**, further comprising playing an identical audio source in the group of players.

21. The method of claim **20**, wherein the audio source is retrieved in form of audio data packets over the network.

22. The method of claim **21**, wherein at least part of the audio source is retrieved or being streamed from one of the players.

23. The method of claim **16**, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.

24. The method of claim **16**, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing a predetermined unit change in volume for ever action by a user.

25. An apparatus for controlling a plurality of players, the apparatus comprising:

a screen;

a screen driver commanding the screen;

an input interface;

a network interface;

a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a first list showing at least available players;

displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head;

synchronizing all players in the zone group in accordance with the zone group head; and

adjusting a volume meter represented by an averaged value of audio volumes of the slayers in the group, wherein said adjusting of the volume meter includes

changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

26. The apparatus of claim **25**, wherein the first list becomes scrollable, when the available players do not fit in the screen.

27. The apparatus of claim **25**, wherein said synchronizing all players in the zone group comprises:

determining an audio source for the zone group;

making the audio source available to each of the players in the zone group; and

playing the audio source synchronously in all players in the zone group.

28. The apparatus of claim **27**, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by the zone group head.

29. The apparatus of claim **27**, wherein said determining an audio source for the zone comprises selecting the audio source being played or ready to be played by one of the players in the zone group.

30. The apparatus of claim **27**, wherein said making the audio source available comprises:

determining whether the audio source is available locally; and

retrieving the audio source from a device on a network, if the audio source is not available locally.

31. The apparatus of claim **27**, wherein said making the audio source available comprises:

determining the audio source from one of the players in the zone group; and

causing the audio source available to every other player in the zone group.

32. The apparatus of claim **25**, wherein said synchronizing all players in the zone group comprises:

causing all players in the zone group to play an identical audio source; and

presenting the zone group in a manner that indicates a grouping.

33. The apparatus of claim **32**, wherein the manner includes one or more of highlighting, colors, explicit texts and graphs in the screen.

34. The apparatus of claim **25**, wherein the first list further shows at least one zone group.

35. The apparatus of claim **25**, wherein the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

selecting the zone group to be de-grouped from the first list;

displaying on the screen an another list showing all the players within the zone group to be de-grouped;

selecting one or more players from the another list; and

disassociating the selected players from the zone group.

36. The apparatus of claim **35**, wherein said disassociating the selected players comprises making the selected players available for grouping with a zone group.

37. The apparatus of claim **35**, wherein the another list becomes scrollable, when all the players within the zone group to be de-grouped do not fit in the screen.

38. An apparatus for manipulating a plurality of players, the apparatus comprising:

a screen;

a screen driver commanding the screen;

an input interface;

a network interface;

a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the slayers in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

39. The apparatus of claim **38**, wherein said adjusting the one of the volume meters includes:

causing the audio volume to be adjusted in accordance with an adjustment to the volume meter; or

causing the audio volume to be off, when a mute button is activated while the audio volume is on; and

causing the audio volume to be on, when a mute button is activated while the audio volume is off.

40. The apparatus of claim **38**, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes:

changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

41. The apparatus of claim **38**, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of adjusting the one of the volume meters for the group of players in a predetermined manner that appears that the group of players are being adjusted at the same time.

42. The apparatus of claim **38**, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of maintaining relative volume loudness difference among each of the players in the group.

43. The apparatus of claim **38**, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.

44. The apparatus of claim **38**, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing a predetermined unit change in volume for ever action by a user.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 7,571,014 B1
APPLICATION NO. : 10/861653
DATED : August 4, 2009
INVENTOR(S) : Robert A. Lambourne and Nicholas A. J. Millington

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the claims:

Claim 1, column 15, line 2, delete "slayers" and replace with --players--

Claim 16, column 16, line 10, delete "slayers" and replace with --players--

Claim 24, column 16, line 42, delete "ever" and replace with --every--

Claim 25, column 16, line 66, delete "slayers" and replace with --players--

Claim 38, column 18, line 21, delete "slayers" and replace with --players--

Claim 44, column 18, line 59, delete "ever" and replace with --every--

Signed and Sealed this
Nineteenth Day of March, 2013

Teresa Stanek Rea
Acting Director of the United States Patent and Trademark Office

TABLE OF CONTENTS

I. REEXAMINATION REQUEST 1

II. CONCURRENT LITIGATION 3

III. SONOS MUST REVIVE THE '653 APPLICATION BEFORE THE PATENT OFFICE CAN REEXAMINE THE '014 PATENT 4

IV. OVERVIEW OF THE '014 PATENT AND PROSECUTION HISTORY 9

1. The '653 Application was filed on June 5, 2004 with 47 claims. 9

2. The Examiner rejected the claims in the First Office action over an earlier filed Sonos application that lacked a common inventor. 10

3. In order to overcome the rejection, Sonos amended inventorship and added a priority claim. 11

4. The Examiner again rejected the claims in a second non-final Office action 12

A. Berezowski 12

B. Tomassetti 13

C. Isely 15

5. The new claims submitted by Sonos in response to the first Office Action were allowed on June 6, 2009, but the Examiner was not clear on the record regarding why the claims were allowable. 19

V. PATENTS AND PRINTED PUBLICATIONS RELIED UPON OR REFERRED TO 22

VI. DISCUSSION OF THE ART AND SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY 22

A. Claim limitations 22

B. The UPnP Standard and Microsoft UPnP 25

C. The UPnP Standard and Microsoft UPnP presents a substantial new question of patentability 32

D. Isely 33

E. Isely, either alone or with the UPnP Standard, Microsoft UPnP and NexSys, presents a substantial new question of patentability 37

F. Berezowski, Tomassetti, Isely, the UPnP Standard, Microsoft UPnP and NexSys presents a substantial new question of patentability....39

G. Crest Audio NexSys Software, Version 3.0....41

VII. CONCLUSION....43

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Robert A. Lambourne, et al.
In re U.S. Patent No.: 7,571,014
Ex Parte Reexam No.:(New)
Filing Date: Herewith
Docket No.: 131131.00049.004
For: Method and apparatus for controlling multimedia players in a multi-zone system

MAIL STOP: Ex Parte Reexam
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

REQUEST FOR EX PARTE REEXAMINATION

I. REEXAMINATION REQUEST

Reexamination under 35 U.S.C. §§ 302-307 and 37 C.F.R. § 1.510 is requested of Claims 1, 8, 16, 18, 21 and 38 (collectively, the "Challenged Claims") of United States Patent No. 7,571,014 which issued August 4, 2009 to Robert A. Lambourne and Nicholas A. J. Millington (the '014 Patent) from U.S. Application No. 10/861,653 (the "'653 Application").

A threshold issue to this request is whether the Office has authority to consider the request, because the '653 Application was abandoned under 35 U.S.C. § 122(b)(2)(B)(iii) prior to issuance of the '014 Patent, as explained further below. If Sonos does not file a petition to revive the '653 Application under 37 CFR § 1.137, then the Office does not have authority to decide this request and must issue a decision that states that the request was not considered because the '653 Application is abandoned.

If Sonos successfully petitions to revive the '653 Application under 37 C.F.R. § 1.137, then Requestors seek reexamination of the Challenged Claims of the '014 Patent on the basis of:

a) Universal Plug and Play ("UPnP") AV Architecture:1 For UPnP™ Version 1.0, June 25, 2002 ("UPnP AV")

b) RenderingControl:1 Service Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Rendering Control")

c) MediaServer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Media Server");

d) Universal Plug and Play Device Architecture V. 1.0, June 8, 2000 ("UPnP Architecture")

e) MediaRenderer:1 Device Template Version 1.01 For UPnP™ Version 1.0, June 25, 2002 ("UPnP Media Renderer"),

(where UPnP AV, UPnP Rendering Control, UPnP Media Server, UPnP Media Renderer and UPnP Architecture are collectively referred to as "the UPnP Standard");

f) Microsoft, Universal Plug and Play (UPnP) Client Support, August 2001 at pg. 11 ("Microsoft UPnP");

g) U.S. 2002/0124097 to Isely et al. ("Isely");

h) U.S. 7,218,708 B2, to Berezowski et al. ("Berezowski"),

i) U.S. 2002/0188762 to Tomassetti et al. ("Tomassetti"), and

j) Crest Audio, NexSys version 3.0 Software Manual ("NexSys") (all collectively, the "Asserted Art").

A Substantial New Question of Patentability, as to the Challenged Claims of the '014 Patent, is raised by the Asserted Art, as required by 37 C.F.R. § 1.510(b)(1). A detailed explanation of the pertinence and manner of applying the Asserted Art to the Challenged Claims for which reexamination is requested is also included in this request, as required by 37 C.F.R. § 1.510(b)(2). Specifically, each item or combination of items of the Asserted Art not only raises a Substantial New Question of Patentability, but also anticipates the Challenged Claims of the '014

Patent under 35 U.S.C. 102(b), or renders claims the Challenged Claims of the '014 Patent obvious under 35 U.S.C. 103(a), as shown below:

1. The UPnP Standard with Microsoft UPnP under 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) – claims 1, 8, 16, 18, 21 and 38

2. Isely (with the UPnP Standard and Microsoft UPnP) under 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) – claims 1, 8, 16, 18, 21 and 38

3. Berezowski, Tomassetti and Isely, as applied in the Office action mailed February 18, 2009 during the original prosecution of the '014 Patent, and as acquiesced to by Sonos, with the UPnP Standard, Microsoft UPnP and NexSys under 35 § U.S.C. 103(a) – claims 1, 8, 16, 18, 21 and 38

Accordingly, Requestors respectfully request that the Director order reexamination of the '014 Patent under 37 C.F.R. § 1.525(a), if and only if Sonos files a petition to revive the '653 Application under 37 C.F.R. § 1.137 and the Office grants that petition. Otherwise, Requestors respectfully request a statement that the '653 Application is abandoned and that the request for reexamination cannot be granted.

II. CONCURRENT LITIGATION

The '014 Patent is presently being asserted by the assignee, Sonos, Inc., against D&M Holdings Inc. and others in litigation pending in the United States District Court for the District of Delaware, C.A. No. 14-1330 (RGA) (the "Concurrent Litigation"), which was filed on October 21, 2014. In the Concurrent Litigation, Sonos has claimed to have invented the concept of networked audio devices. As shown in this reexamination request, numerous prior art references that were known to Sonos show that claim to be false.

III. SONOS MUST REVIVE THE '653 APPLICATION BEFORE THE PATENT OFFICE CAN REEXAMINE THE '014 PATENT

Sonos must file a petition to revive under 37 C.F.R. 1.137 before the '014 Patent can qualify for ex parte reexamination under 35 U.S.C. § 302, because the '653 Application stands abandoned under 35 U.S.C. § 122(b)(2)(B)(iii) as of August 16, 2004. In particular, the '014 Patent was abandoned during prosecution under 35 U.S.C. § 122(b)(2)(B)(iii), as discussed below, so it is not presently a patent for the purposes of 35 U.S.C. § 302, which states that any "person at any time may file a request for reexamination by the Office of any claim of a **patent** . . ." However, 35 U.S.C. § 302 does not state that a person may file a request for reexamination of an abandoned application. As such, the Office will not have the authority to reexamine the '014 Patent as long as the '653 Application remains abandoned under 35 U.S.C. § 122(b)(2)(B)(iii). This is not an issue outside of the scope of reexamination, but rather a threshold issue prior to considering the request for reexamination, because the Office does not have jurisdiction to reexamine an abandoned application.[1]

It is noted that M.P.E.P. 711.03(c)(II)(A)(5) states that "[s]ince the Office cannot ascertain whether an application is abandoned under 35 U.S.C. 122(b)(2)(B)(iii), the Office may continue to process and examine the application until the Office is notified of applicant's failure to meet the forty-five days' notice requirement of 35 U.S.C. 122(b)(2)(B)(iii). Therefore, the filing of a petition under 37 CFR 1.137 to revive such an application will not operate to stay any period for reply that may be running against the application. Applicants may use form PTO/SB/64a to file a petition for revival under 37 CFR 1.137." The Office has now been notified

[1] For example, Sonos could obtain an adverse outcome without reviving, and could then revive and argue that the adverse outcome was not legally binding because the Office lacked authority to reexamine the abandoned application. This is likely, given that Sonos has been notified of the abandonment in the Concurrent Litigation and has failed to act yet, and apparently intends to argue in the concurrent litigation that it complied with its obligations under 35 U.S.C. 122(b)(2)(B)(iii), even though the Office was never notified of the filing of an application that resulted in the publication of the materials from the unpublished '653 Application that were subsequently used to reject the claims of the '653 Application.

of the failure of Sonos to meet the forty-five day notice requirement of 35 U.S.C. 122(b)(2)(B)(iii), and therefore should not continue to process and reexamine the '014 Patent unless and until Sonos files a petition for revival under 37 CFR 1.137 that is accepted by the Office.

The '653 Application was filed on June 5, 2004, with a non-publication request that stated "the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing." In the First Office action mailed June 27, 2008 (the "First Office Action"), the Office rejected the pending claims of the '653 Application in part over U.S. Patent Application Publication No. 2007/0038999 to Nicholas Millington ("Millington"), which was the publication of U.S. application 10/816,217, filed April 1, 2004 (the '217 Application). In particular, the Office found that Millington disclosed the following elements of the claimed invention of claim 1 of the '653 Application at pages 3-4 of the First Office action:

- A method for controlling a plurality of players, the method comprising:
- displaying on a screen a first list showing at least available players;
- displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
- forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group . . .; and
- synchronizing all players in the zone group . . .

In regards to claim 27, the Office found at page 8 of the First Office action that Millington disclosed the following elements of the claimed invention:

- An apparatus for controlling a plurality of players, the apparatus comprising:
- a screen;
- a screen driver commanding the screen;
- an input interface;
- a network interface;
- displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group, wherein any one of the players in the group serves as a zone group head; and
- synchronizing all players in the zone group in accordance with the zone group head.

In addition, the Office also found that Millington alone disclosed the limitations of filed claims 3-7, 10, 11, 13, 14, 18, 19, 22, 23, 24, 42, 43, 29-33, 36-38. As such, the Office has established that Millington, which was filed on April 1, 2004 and which was published on February 15, 2007, disclosed numerous inventions of the '653 Application, as otherwise Millington could not be cited as prior art against those claim limitations.

35 U.S.C. § 122(b)(2)(B)(i) states in pertinent part that if "an applicant makes a request upon filing, certifying that the invention disclosed in the application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing, the application shall not be published as provided in paragraph (1).". 35 U.S.C. § 100(a) states that the "term 'invention' means invention or discovery," and 35 U.S.C. § 100(j) states that the "term 'claimed invention'

means the subject matter defined by a claim in a patent or an application for a patent.". As such, the term "invention" as used in 35 U.S.C. 100 et seq. is broader than the term "claimed invention," and encompasses any discovery disclosed in the application, and not just the claimed inventions.

35 U.S.C. § 122(b)(2)(B)(iii) further states in pertinent part that if "an applicant who has made a request under clause (i) but who subsequently files, in a foreign country or under a multilateral international agreement specified in clause (i), an application directed to the invention disclosed in the application filed in the Patent and Trademark Office, shall notify the Director of such filing not later than 45 days after the date of the filing of such foreign or international application. A failure of the applicant to provide such notice within the prescribed period shall result in the application being regarded as abandoned.". Thus, an application will become abandoned if the applicant 1) subsequently files 2) an application ***directed to the invention*** disclosed in the application that was filed in the Patent and Trademark Office for which non-publication was requested. 35 U.S.C. § 122(b)(2)(B)(iii) does not require disclosure of every element of every claimed invention, because to do so would allow an applicant to easily circumvent the requirements of the law by omitting minor portions of the claimed subject matter in the unpublished U.S. application from the published application in a foreign country.

Millington was filed on April 1, 2004, and claimed priority to U.S. Provisional Application no. 60/490,768, which was filed on July 28, 2003. Sonos subsequently filed PCT/US04/23102 on July 2, 2004 (the "Millington PCT Application"), which was after the June 5, 2004 filing date of the '653 Application. As such, the filing of the Millington PCT Application was the filing of an application directed to the invention of the '653 Application, which triggered the requirement of 35 U.S.C. § 122(b)(2)(B)(iii) for Sonos to file a notice to the Director within

45 days. No such notice was filed, and the '653 Application is therefore abandoned under 35 U.S.C. § 122(b)(2)(B)(iii). It is noted that 35 U.S.C. § 122(b)(2)(B)(v) provides for publication of only those portions of the specification that are common in cases such as this, such that the failure of Sonos to notify the Director cannot be excused on the grounds that the disclosure of the Millington PCT Application is not identical to the disclosure of the '653 Application. At least those sections that provided the basis for the rejection of the claims of the '653 Application over Millington should have been the subject of notice and publication under 35 U.S.C. § 122(b)(2)(B)(iii).

The fact that the Examiner rejected most of the claim limitations of claims 1, 3-7, 10, 11, 13, 14, 18, 19, 22, 23, 24, 27, 42, 43, 29-33, 36-38 over Millington establishes that the subsequent filing of the Millington PCT application was a violation of 35 U.S.C. § 122(b)(2)(B)(iii). The Office lacks the jurisdiction to institute ex parte reexamination of an abandoned application, and can only institute ex parte reexamination of an issued patent. 35 U.S.C. § 302. As such, the Office cannot consider this request unless or until Sonos files a petition to withdraw the holding of abandonment under 37 C.F.R. § 1.137, with a statement that the entire delay in filing the notice required under 35 U.S.C. § 122(b)(2)(B)(iii) until the filing of a grantable petition pursuant to 37 C.F.R. § 1.137 was unintentional.[2] In that regard, the Requester notes that Counsel for Sonos was notified of these facts on September 14, 2016, but has not yet taken any action to address the abandonment of the '653 Application. Therefore, the Director should require additional information from Sonos regarding this delay if Sonos does not provide an adequate explanation, because it appears that any delay since at least October, 2016

[2] The petition could easily be filed by Sonos after it receives the service copy of this request, and before the Office must make a decision whether to grant the request, unless it is not possible for Sonos to provide a statement that the entire delay in filing the notice required under 35 U.S.C. § 122(b)(2)(B)(iii) until the filing of a grantable petition pursuant to 37 C.F.R. § 1.137 was unintentional.

was intentional, assuming that a reasonably diligent party should have been able to file a petition within several weeks of being notified of the abandonment of the '653 Application.

It is also noted that Sonos has a strong financial incentive not to acknowledge that the '653 Application is abandoned, because the abandonment of the '653 Application and Sonos's failure to recognize that abandonment and to timely petition to revive the '653 Application and the associated '014 Patent will have substantial adverse monetary consequences in the Concurrent Litigation, including the loss of the ability to collect damages for any alleged infringement and the loss of the ability to claim priority to the '014 Patent for any other asserted patents that rely on the '014 Patent for priority. For these reasons, Sonos apparently refuses to acknowledge that the '653 Application is abandoned by force of law. Petitioners therefore respectfully request that the Office refuse to grant this request for ex parte reexamination until such time as the '653 Application is successfully revived.

IV. OVERVIEW OF THE '014 PATENT AND PROSECUTION HISTORY

1. The '653 Application was filed on June 5, 2004 with 47 claims.

The '653 Application was filed on June 5, 2004 with independent claims 1, 16, 27 and 40, and with 47 total claims. The independent claims relevant to this request are claims 1, 16 and 40, which are shown below:

> 1. A method for controlling a plurality of players, the method comprising:
> displaying on a screen a first list showing at least available players;
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and
> synchronizing all players in the zone group.

16. A method for controlling a plurality of players, the method comprising:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected.

40. An apparatus for manipulating a plurality of players, the apparatus comprising:

a screen;

a screen driver commanding the screen;

an input interface;

a network interface;

a memory for storing code for an application module;

a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

adjusting one of the volume meters as desired after one of the volume meters from the list is selected.

Claims 1 and 16 did not change their numbering after allowance and issue, but claim 40 was renumbered as claim 38. In addition, claim 19 was renumbered as claim 18 and claim 23 was renumbered as claim 21.

2. <u>The Examiner rejected the claims in the First Office action over an earlier filed Sonos application that lacked a common inventor.</u>

In the First Office action, the Office rejected claims 1-15 and 27-39 under 35 U.S.C. 103(a) over U.S. Patent application publication 2007/0038999 A1 to Millington ("Millington"), in view of US 7,218,708 to Berezowski, et al. ("Berezowski"). Claims 16, 18, 19, 22-24, 40, 42, and 43 were rejected under 35 U.S.C. 103(a) over Millington and Berezowski and further in view of U.S. 5,239,458 to Suzuki. Claims 21 and 45 were objected as depending from a rejected base

claim, but were indicated to be allowable if amended to include all of the limitations of the base claim from which they depended and any intervening claims.

3. <u>In order to overcome the rejection, Sonos amended inventorship and added a priority claim.</u>

In response to the rejection of the claims over Millington, Sonos elected to amend the inventorship of the '653 Application to include Nicholas A. J. Millington as an inventor, and then added a priority claim to the '217 Application, which was the application associated with the Millington reference. These actions by Sonos establish that Sonos acquiesced to the rejection of the claims of the '653 Application, both in that the cited references disclosed the relevant claim limitations, and also in that it would be obvious to combine those references. Sonos cannot dispute these points at this time, either to argue that the rejections over Millington were improper for the purposes of overcoming the abandonment of the '653 Application, or to argue that the claims as originally presented were improperly rejected during reexamination, if it is instituted.

As noted in *TorPharm Inc. v. Ranbaxy Pharms.*, Inc., 336 F.3d 1322, 1330 (Fed. Cir. 2003), "in ascertaining the scope of an issued patent, the public is entitled to equate an inventor's acquiescence to the examiner's narrow view of patentable subject matter with abandonment of the rest. Such acquiescence may be found where the patentee narrows his or her claims by amendment, *Lemelson v. General Mills, Inc.*, 968 F.2d 1202, 1288-89 (Fed. Cir. 1992), or lets stand an examiner's restrictive interpretation of a claim, *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 978-79 (Fed. Cir. 1999).". The extraordinary steps of amending the '653 Application to add Millington as an inventor and to add a priority claim to the '217 Application go well beyond merely amending the claims, and amount to letting stand an examiner's restrictive interpretation of a claim. Sonos cannot now argue that Millington does not disclose the limitations that were previously identified by the Office, or that the combination of Millington

with Berezowski or Suzuki was improper, as that would amount to an improper broadening of the claims during reexamination. This principle of acquiescence is also important for this ex parte reexamination request with respect to the rejection of the claims over Berezowski, Tomassetti and Isely, and the Office should not allow Sonos to broaden the claims by arguing that these combinations of prior art are not obvious, or that they do not disclose the claim limitations that Sonos previously acquiesced to.

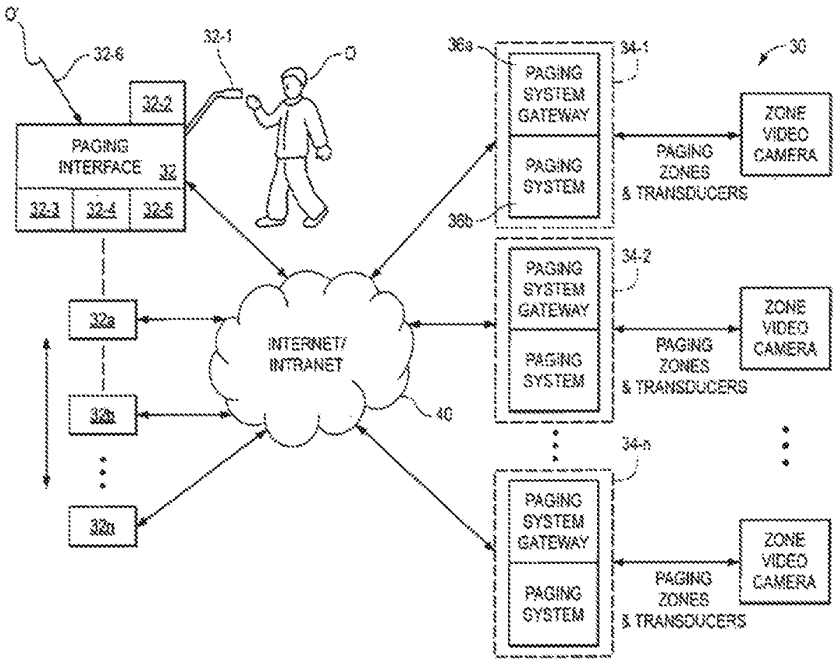
4. <u>The Examiner again rejected the claims in a second non-final Office action</u>

On February 18, 2009, the Office rejected claims 1-15 and 27-39 over Berezowski in view of US 2002/0188762 to Tomassetti ("Tomassetti"), and claims 16, 18-20, 22-26, 40, 42-44, 46, and 47 under 35 U.S.C. 103(a) as being unpatentable over the combination of Berezowski and Tomassetti as applied to claim 1 above, and further in view of US 2002/0124097 A1 to Isely ("Isely"). These references are further described below, for the convenience of the Office.

A. Berezowski

Berezowski discloses an Internet facilitated emergency and general paging system that includes network connected paging systems 34 that can be wirelessly connected, and a paging interface 32 that is used to control the paging systems 34, as shown in Fig. 2 of Berezowski:

FIG. 2



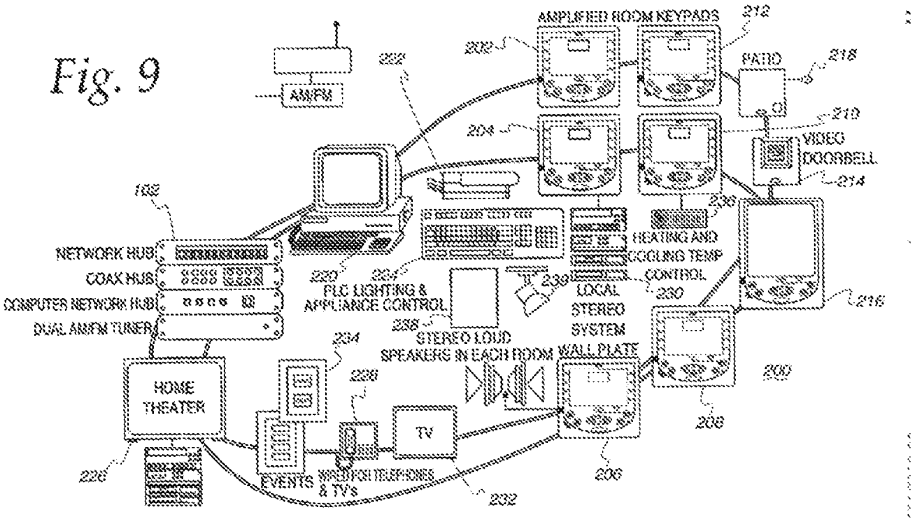
The Examiner found that Berezowski discloses many of the claim limitations, including displaying on a screen a first list showing at least available players (5:57 – 6:13), displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head, forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group and synchronizing all players in the zone group. Office action dated February 28, 2009 at pg. 3.

B. Tomassetti

Like Berezowski, Tomassetti discloses a paging system that includes augmented audiovisual functionality. While Sonos has argued in many of the ex parte reexamination proceedings filed against patents asserted in the Concurrent Litigation that the claims of those

patents are not applicable to paging systems,[3] this argument fails for several reasons. First, Sonos acquiesced to those rejections, and cannot now argue that those references are not applicable or that the rejections were improper. Second, the claims in those patents, as the Challenged Claims in the '014 Patent, are extremely broad and abstract, and do not require any specific networking protocols or functionality, such as wireless networks. Third, even if such limitations were added, those limitations were well known in the prior art, and there was nothing inventive in 2004 in recognizing that audio data could be wirelessly transmitted to other devices using wireless networking standards.

Fig. 9



The Examiner found that Tomassetti discloses that any node in the network of Tomassetti can be configured as a source or destination at [0019], and synchronization of audio within a zone at [0005], [0009]-[0012] and [0016]-[0019]. It is noted that Tomassetti does not explicitly disclose that the network 100 can be a wireless network, but Sonos acquiesced to the combination of Tomassetti with Berezowski, and cannot now argue that the failure of Tomassetti

[3] E.g., see U.S. 8,588,949, U.S. 9,202,509 and U.S. 9,219,959.

to explicitly disclose a wireless network has any bearing on the combination of Tomassetti with Berezowski to render the claims as present obvious.

C. Isely

Isely discloses systems and methods for dynamic distribution of audio signals at a site based on defined zones within the site. Isely, Abstract. Isely discloses networked audio devices 105, and a controller 125 that "tells the network audio devices 105 the 'channel' to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation.". [0039]. The channels are for multi-channel sound, where "a pair of channels is used to drive the left and right stereo channels for a pair of speakers, resulting in support for up to six zones with a 12 channel system.". [0005]. As such, each "of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence.". Figure 1 of Isely shows these features:

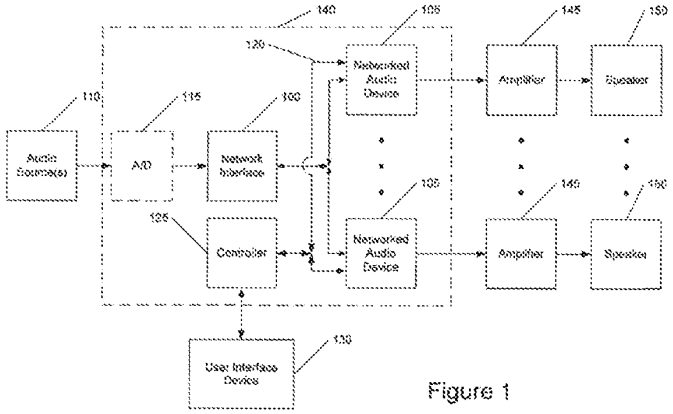


Figure 1

As described at [0039] of Isely, "the controller 125 essentially tells the network audio devices 105 the 'channel' to which they should tune. The controller 125 makes this designation

based on the user designation from the user device 130 to provide dynamic zone aggregation.". The user interface device 130 must therefore be able to receive a user designation of a channel for a networked audio device 105. The Examiner found that Isely teaches a zone audio player [abstract], a volume level to represent each player in a designated zone [0011]-[0012)], volume levels with unique relationships associated with a zone [0047]-[0049], [0053], [0056] and [0057], and that it would have been "obvious to display on a screen (such as the LCD taught by Tomassetti) the volume meters representing one of the unique relationships in the zone for the purpose of providing better ambiance, and that therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Berezowski, Tomassetti, and Isely for the purpose of providing better ambiance.". Office action mailed February 18, 2009 as pgs. 10-11.

However, while the Examiner properly rejected some of the claims. over Berezowski, Tomassetti and Isely, as subsequently acquiesced to by Sonos, the Examiner did not appreciate that Isely disclosed that the players of Isely were configured for UPnP (which was created to allow wireless devices to connect with each other for seamless networking and data transfer, including enabling user interface functionality). See Isely at [0041]. As discussed below, Sonos designed the commercial implementation of the devices described in the '014 Patent using the UPnP standard as a blueprint, but failed to disclose the UPnP Standard to the Patent Office, or that best mode to the public. The. UPnP standard is prior art to the '014 Patent, and shown below, provides an independent basis for invalidating the Challenged Claims of the '014 Patent. Compliance with this standard requires devices that meet all of the claim limitations of the Challenged Claims, as discussed further below.

In response to the new rejections, Sonos further acquiesced to all of the new rejections, and amended the claims to overcome the rejection. In particular, the claims relevant to this ex parte reexamination request were amended as shown below:

> 1. (amended) A method for controlling a plurality of players, the method comprising:
>
> displaying on a screen a first list showing at least available players;
>
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and
>
> synchronizing all players in the zone group**;**
>
> **adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user**.
>
> 16. (amended) A method for controlling a plurality of players, the method comprising:
>
> displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and
>
> adjusting one of the volume meters as desired after one of the volume meters from the list is selected**, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user**.
>
> 40. (amended) An apparatus for manipulating a plurality of players, the apparatus comprising:
>
> a screen;
>
> a screen driver commanding the screen;
>
> an input interface;
>
> a network interface;
>
> a memory for storing code for an application module;
>
> a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:
>
> displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and

> another one of the volume meters representing an audio volume of a group of players, if there is such a group; and
>
> adjusting one of the volume meters as desired after one of the volume meters from the list is selected**, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user**.

As such, Sonos did not contest the finding that the unamended claim limitations were present in the cited art, but instead acquiesced to the rejections of the claims and amended the claims to overcome the rejections, by allegedly including the limitations of allowed claims 21 and 45 and any intervening claims. However, that amendment was not in fact made.

The claimed subject matter that was indicated to be allowable that was added to claim 16 was in claims 18 and 21:

> 18. The method of claim 16, wherein the one of the volume meters from the list
> selected is for the group of players, and wherein said adjusting the one of the volume meters includes:
>
> changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user;

(the Examiner never rejected claim 18 for lacking a period).

> 21. The method of claim 18, wherein the one of the volume meters from the list selected is represented by an averaged value of audio volumes of the players in the group.

While claim 16 was properly amended to include these limitations, claim 16 included a limitation that was not present in claim 1, namely, "a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group.". Claim 1 thus fails to include all of the limitations that were indicated to be allowable in claim 21, because claim 21 depended from claim 16, which included those additional limitations.

Likewise, the claimed subject matter that was indicated to be allowable that was added to claim 40 was in claims 44 and 45:

> 44. The apparatus of claim 40, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of maintaining relative volume loudness difference among each of the players in the group.
>
> 45. The apparatus of claim 44, wherein the one of the volume meters from the list selected is represented by an averaged value of audio volumes of the players in the group.

Unlike the amendments to claim 16, the amendments to claim 40 did not include all of the limitations from claims 44 and 45. In particular, "maintaining relative volume loudness difference among each of the players in the group" was not included in either claim 40 or in claim 1. Thus, only claim 16 was amended in accordance with the indication of allowable subject matter from the First Office action, and claims 1 and 40 were not amended to include allowable subject matter.

5. The new claims submitted by Sonos in response to the first Office Action were allowed on June 6, 2009, but the Examiner was not clear on the record regarding why the claims were allowable.

In the Notice of Allowance mailed June 6, 2009, the Examiner provided reasons for allowing the claims. In regards to each of claims 1, 16 and 40 the Examiner stated that "the prior art does not teach or reasonably suggest an average volume level to represent volumes of the players in the group, wherein an average volume level of a player is analogous to the volume gain of a player.". However, claims 1, 16 and 40 includes no limitations directed to an average volume level of a player or a volume gain of a player, and this statement thus has no relevance to the claim language of claims 1, 16 and 40. As shown above, the limitation that was added to claim 1 was "adjusting a volume meter represented by an averaged value of audio volumes of the

players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user," and the limitation that was added to claims 16 and 40 was "wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.". As such, it is unclear exactly what the Examiner understood to be allowable, or why that subject matter was allowable, but the presence of the "adjusting" term appears to have been important, even though it was not addressed.

The Examiner provided some additional explanation, stating that "Dorrough, US 5,751,819 A, teaches level meters, which can display averages (see abstract and column 4, lines 44-59). However, the average level display is not the same as the average gain. Dorrough is concerned with simplifying a recording engineer's job in setting volume gain, and not displaying the average volume gain of tracks, or channels, or even players in a group.". This is correct, and Dorrough discloses meters for displaying the average level of a single signal, and not an average value for multiple signals, or a control for adjusting such a level, as claimed in the Challenged Claims of the '014 Patent.

The Examiner further stated "Lee et al., US 2005/0047605 A1, teaches a similar concept to Dorrough. Lee et al. teaches a power display unit representing the power in a group of channels (see ¶ 0016 and 0024). Lee et al. is concerned with a visual display to represent the average fluctuation in volume, or power, in multiple channels and is not concerned with representing the average volume gain of multiple channels or players in a group.". This is correct, and it is noted that [0024] of Lee discloses that "one light-emitting display element of

the multiple light-emitting display elements 40, 42, 44 may display one or more selected from the group consisting of a right channel power, a center channel power, a left channel power, an average of right and left channel powers, and an average of multiple channels power levels." Thus, Lee discloses a volume or power meter that only displays average power, but which is not used to adjust the volume gain of multiple players, as is claimed in the Challenged Claims of the '014 Patent.

As such, it appears that the Examiner was focusing on the claimed ability to adjust a volume meter that changes a volume of each of the group of players synchronously in accordance with an adjustment made by a user, as opposed to a volume meter that simply displays such changes, and indicated that claims were allowable only because the Examiner believed that the prior art did not disclose adjusting changes to an average volume level for a group of channels, only displaying average power levels for devices. This makes sense, because a meter that displays power that is provided to a device or a group of devices that generate audio sound waves having an associated volume will display anything that is provided to it, so it must be the ability to adjust what is being provided that the Examiner understood to be the distinction between the prior art and the claims, not the display of what is being provided.

In that regard, it is noted that the Examiner's understanding of Isely is set forth at page 10 of the Office action mailed February 18, 2009, and states that "Isely teaches a zone audio player (see abstract). Specifically, Isely teaches a volume level to **represent** each player in a designated zone (see ¶ 0011-0012). Isely also teaches volume levels with unique relationships associated with a zone (see ¶ 0047-0049, 0053, 0056, and 0057).". The Examiner did not rely on any other teachings of Isely, and thus clearly expressed that Isely was believed to be limited to **representation** of volume levels. However, other sections of Isely disclose more than just

representation of player volume levels, they also teach the synchronous **adjustment** of a "characteristic" of multiple players, where the "characteristic" is the average volume level of multiple players. These sections are discussed below. As such, the Examiner failed to appreciate that Isely discloses control functionality that includes adjusting one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user, because Isely discloses that control functionality as control of a "characteristic" and not control of a volume. The sections of Isely that provide this disclosure and which were not addressed by the Examiner are discussed further below, in regards to Isely.

V. PATENTS AND PRINTED PUBLICATIONS RELIED UPON OR REFERRED TO

A copy of every patent or printed publication relied upon above or referred to herein is discussed in detail in one of the following appendices. Further, each patent and printed publication set forth below or discussed in the appendices has also been either provided or cited on the attached modified Form PTO/SB/42.

APPENDIX NO.	REFERENCE
A.	The UPnP Standard and Microsoft UPnP
B.	Isely (in conjunction with the UPnP Standard, Microsoft UPnP and NexSys)
C.	Berezowski, Tomassetti, Isely, the UPnP Standard, Microsoft UPnP and NexSys

VI. DISCUSSION OF THE ART AND SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

A. Claim limitations

During ex parte reexamination, as during original prosecution, the claims must be "given their broadest reasonable interpretation consistent with the specification," *Phillips v. AWH Corp.*,

415 F.3d 1303, 1316 (Fed. Cir. 2005). The following claim constructions are used in the request for ex parte reexamination, and are believed to be consistent with the broadest reasonable interpretation for the reasons provided. Based on Sonos' prior handling of both ex parte prosecution and ex parte reexamination matters, it is likely that they will argue that the claims are limited in some manner, either by the specification, or by demonstrating commercial versions of Sonos products and arguing that such commercial versions of products embody the claims, but in most cases, the commercial versions of Sonos products contain numerous new features that are not disclosed in Sonos patent applications.[4] The Office should scrutinize any such arguments by Sonos to ensure that the broadest reasonable interpretation of any claim terms does not cause them to read on the prior art, such as the UPnP Standard documents.

1. "playback device" – the specification of the '014 patent does not provide any special definition of a "playback device," so the ordinary meaning of the term applies. In this regard, it is noted that Sonos has argued in the Concurrent Litigation that a playback device should be construed to mean **"a data network device configured to process and output audio," where "audio" can be encoded audio data and not sound waves**. See PLAINTIFF SONOS, INC.'S OPENING CLAIM CONSTRUCTION BRIEF, at page 3, which is provided with the accompanying Information Disclosure Statement to this request.

The construction of "playback device" is relevant to whether Isely alone discloses the claimed playback devices. For example, the Examiner stated at pages 3-4 of the Office action mailed February 18, 2009 that:

> Berezowski teaches a zone group started with the source node, after one or more players from at least some of the destinations, or players, are selected to join the

[4] For example, the '014 Patent does not disclose a stand-alone player like the Sonos Play 1, Play 3 or Play 5, but instead discloses a unit that has adjunct speakers that are plugged into it, which is presently marketed as the Sonos Connect, but Sonos has displayed only the Play 5 in the past when demonstrating its alleged inventions to Examiners. The Play 5 was not commercially sold until November 2015.

> zone group (see column 5, line 66 - column 6, line 13 implies that a zone is created by at least one player being added as a destination). Berezowski does not appear to teach the selection of a zone group head or synchronization. Tomassetti teaches a multi-zone entertainment network (see abstract). Specifically, Tomassetti teaches that any node can become a source or a destination (see ¶ 0019). Therefore, it would have been obvious for one of ordinary skill at the time to select one of the players as a zone group head.

However, Berezowski discloses at 4:28-31 that "[i]nterface 32 enables operator O to **select** one or more remote paging systems and zone(s) therein to transmit live audio, via transducer 32-1 to the select zone(s) in real-time.". As such, while Sonos acquiesced to the combination of Berezowski and Tomassetti as rendering obvious claim 1 as originally presented in regards to the limitation of selecting a player as a zone group head, and to Berezowski disclosing a source node 32 that is a playback device, it is unclear why the Examiner did not understand that Berezowski alone also disclosed selection of a source node 32 as a zone group head. However, based upon the prosecution history, the broadest reasonable construction of the term "playback device" should cover either the source node 32 of Berezowski, the local nodes 118 and remote nodes 120 of Tomassetti, or audio sources 110 and audio devices 105/205/305/405 of Isely, all of which comply with the proposed construction from Sonos in the Concurrent Litigation.

2. "volume meter" – **a volume control that displays a volume**. As discussed above, the term "volume meter" has a meaning in the art that relates to only the display of a volume metric, and the Examiner appears to have allowed the claims of the '014 Patent based on an understanding the claimed volume meter included adjustment functionality that was not disclosed in the prior art. However, as also described above, this understanding was in error, and Isely also disclosed the control of a "characteristic" that could include a master volume control, and then when the master volume control and the separate controlled channels were initiated

from a zero level, that adjusting the master volume control would cause a volume meter to be adjusted that represented an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user. As such, the proper broadest reasonable interpretation of this claim term is relevant as to whether Isely alone discloses the claimed volume meters.

B. The UPnP Standard and Microsoft UPnP

The UPnP standard provides an architecture for peer to peer network connectivity that was specifically tailored to provide the functions claimed in the '014 Patent. For example, in regards to the limitations of claim 1 of displaying on a screen a first list showing at least available players; displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head; and forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group, UPnP AV discloses a system architecture at page 5 that is identical to the architecture disclosed in the '014 Patent:

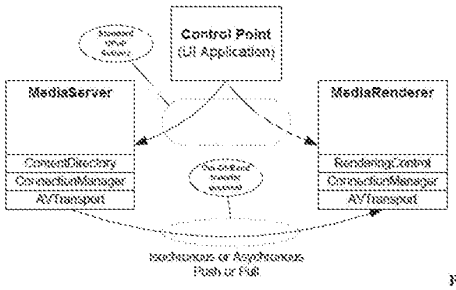


Figure 3

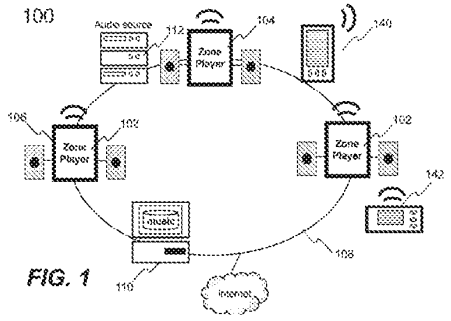


FIG. 1

As can be seen in this side-by-side comparison, controlling devices 140 and 142 directly correspond to the UPnP Control Point, the audio source 112 corresponds directly to the UPnP

Media Server, and the zone players 102, 104 and 106 correspond directly to the UPnP Media Renderer. Sonos publicly disclosed that Sonos products were compliant with the UPnP Standard during the prosecution of the '014 Patent, see, e.g., https://en.community.sonos.com/advanced-setups-229000/upnp-and-sonos-questions-4545, which is provided with the accompanying Information Disclosure Statement to this request, yet Sonos did not disclose the use of UPnP as an embodiment in the specification of the '014 Patent, and never disclosed the UPnP Standard to the Examiner of the '014 Patent during the prosecution of the '014 Patent.

UPnP AV further discloses at page 9 that "Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered.". Thus, the UPnP Standard discloses displaying on a screen a first list showing at least available players (media servers); and displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head (media renderers). It is noted that as of the date of issue of the UPnP Standard, common operating systems such as Microsoft Windows and Linux provided support for the UPnP Standard, including the ability to locate and display available media servers and media renderers. See Microsoft UPnP, pg. 2 ("Windows can participate in the UPnP network and make UPnP enabled devices and services that are connected to the network available to the user of the Windows system. Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services. The Internet Connection Sharing (ICS) service uses UPnP to announce the

availability of the service to other computers on the network, which are running UPnP clients."); and the Linux SDK for UPnP Devices v 1.2, which is provided with the accompanying Information Disclosure Statement to this request. As such, while the UPnP Standard might not explicitly disclose operating system functionality, it was written by people with knowledge of such functionality (including Microsoft employees), and implicitly included such operating system functionality within the scope of the standard.[5]

Likewise, in regards to "forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group," the UPnP Standard discloses that a UPnP Control Point can be used to establish a connection between a first device with a UPnP Media server and a Second Device with a UPnP Media Renderer, to create a "zone group.". For example, UPnP Media Server discloses at page 7 that "the Control Point uses the ConnectionManager::PrepareFor Connection() action on each device to inform the device that the specified protocol/format are about to be used. Depending on which transfer protocol was selected, the PrepareForConnection() action on either the MediaServer or MediaRenderer will return an AVTransport InstanceID to the Control Point.". Thus, the UPnP Standard discloses this limitation also.

The next limitation of claim 1, "synchronizing all players in the zone group," is also disclosed by the UPnP Standard. For example, UPnP AV discloses the use of Isochronous-Push Transfer Protocols (IEC 61883/IEEE 1394) at page 5, stating that when "using an isochronous transfer protocol (e.g. IEC 61883/IEEE 1394), the underlying transfer mechanism provides real-time content transfer between the MediaServer and MediaRenderer. This ensures that individual packets of content are transferred within a certain (relatively small) period of time. This real-time

[5] In that regard, it is noted that Inventor Millington was a Microsoft employee from June 1998 to April 2003, immediately before leaving to found Sonos. https://www.linkedin.com/in/nickmillington

behavior allows the MediaRenderer to provide the user with smooth-flowing rendering of the content without implementing a read-ahead buffer. In this environment, the flow of the content is controlled by the MediaServer. The MediaRenderer immediately renders the content that it receives from the MediaServer." Further details regarding this isochronous-push transfer embodiment is provided at UPnP AV pages 12, 13, 18, 21.[6]

The last limitation of claim 1, "adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user," is also disclosed by the UPnP Standard. For example, UPnP Rendering Control discloses at page 16 that A_ARG_TYPE_Channel is a variable that "is used to identify a particular channel of an audio output stream," and that such channels include the normal stereo and surround channels ("A channel cluster is the collection of all channels, including the Master channel, within an audio stream. . . . A single channel (mono) cluster has only one channel – the Master channel. A two-channel (stereo) cluster has three channels – the Master channel, the Left Front channel, and the Right Front channel.") At page 41, UPnP Rendering Control discloses that "audio content is typically composed of one or more channels (e.g. a left and right channel). The Rendering Control service allows Control Points to control each of these channels independently or as a whole.". Thus separate devices can receive separate channels, and the channels can be controlled independently or as a whole.

At start up, a UPnP Control Point adjusts a volume meter for the master channel from a zero setting, which also represents an averaged value of audio volumes of the players in the group, which are also at the zero setting. Adjusting of the master volume meter includes

[6] Wireless implementations of IEEE 1394 are prior art to the '014 Patent, see, e.g., Wireless Home Networks — DECT, Bluetooth, HomeRF, and Wireless LANs, Xilinx White Paper WP 135, March 21, 2001, which is provided with the accompanying Information Disclosure Statement to this request.

changing a volume of each of the group of players in the channel group synchronously, in accordance with an adjustment made by a user. The UPnP Standard also explicitly discloses an example that involves the synchronized adjustment of an average volume level for a plurality of players. See UPnP Rendering Control, pgs. 41-42:

"Set the volume of the audio content (as a whole) to the quietest (non-silent) setting:

• Invoke the SetVolume() action with the Channel parameter set to 'Master' and the DesiredVolume parameter set to 1.

Set the volume of the audio content (as a whole) 20 'notches/steps' higher than the current setting

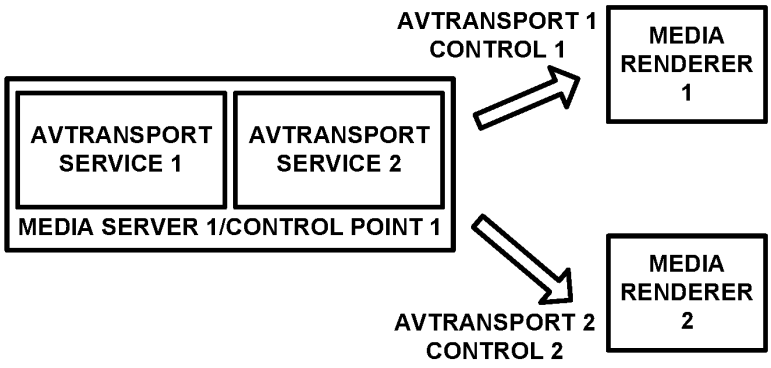
• Invoke the GetVolume() action with the Channel parameter set to 'Master'. As a result of the previous example, the CurrentVolume out parameter returns a value of 1 indicating that the audio content is being rendered at volume position 1 i.e. the quietest non-silence setting supported by the device.

• Invoke the SetVolume() action with the Channel parameter set to "Master" and the DesiredVolume parameter set to 21 (1 + 20). This corresponds to the 20th quietest setting supported by the device."

In this example, the audio content as a whole (including all channels) is being adjusted through a UPnP Control Point by first being set to the same average minimum value and then being increased to the same average level of the 20th quietest setting. The different channels of the audio can be played through network-enabled speakers, see UPnP AV, pg. 6 ("The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a

musiccontrolled water fountain, etc."). The UPnP Standard thus discloses every limitation of claim 1 of the '014 Patent.

The UPnP standard was developed by the industry to provide a generic user interface for media rendering devices. See, e.g. UPnP Media Server at page 7 ("MediaServer devices are used in conjunction with one or more MediaRenderer device(s) to allow a Control Point to discover entertainment (AV) content (e.g. video, music, images, etc) on the MediaServer and to render that content on any appropriate MediaRenderer within the home network."); UPnP Rendering Control at page 6 ("audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl:1 service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports."). The UPnP Standard explicitly discloses the control of multi-channel audio, and Control Points for user control and adjustment of any rendering attribute that a device supports (see UPnP Rendering Control, page 1), including control of channel spatial positions, such as Left Front, Right Front and so forth (see UPnP Rendering Control, page 16). The UPnP Standard also explicitly discloses that multiple media renderers can be controlled by a single media server. For example, UPnP Av discloses at page 7 that "[m]ultiple (virtual) instances of the AVTransport service allow the MediaServer to support multiple Renderers at the same time.". In accordance with this disclosure, a combined UPnP Media Server and UPnP Control Point with multiple virtual instances of the AV Transport service can support multiple other UPnP Media Renderer devices in a zone group, such as by providing audio and controls:



The two AV Transport Services can be started at the same time for the same source, resulting in synchronized playback. The two channels can include a master a left front channel and a right front channel that have an associated master channel, such that the master channel volume control can be used to synchronously control the volume of the master and the left front channel and the right front channel.

As such, the UPnP Standard explicitly discloses a standardized format for use in creating user interface devices, such as controllers 140 and 142, for controlling media rendering devices, such as zone players 102, 104 and 106, to interface with media servers, such as audio sources 110 and 112. Whether the UPnP Standard in conjunction with common operating system functionality such as that disclosed in Microsoft UPnP is viewed as a single reference under 35 U.S.C. 102(b) or a combination of references under 35 U.S.C. 103(a), there can be no doubt that one of ordinary skill in the art would have been aware of these references and the fact that they could be readily combined to provide the claimed functionality of the Challenged Claims of the '014 Patent. Sonos did not invent any of what is disclosed in the UPnP Standard or the associated operating system functionality that existed to support the UPnP Standard, and any existing, amended or new claims of the '014 Patent that read on the UPnP standard are not allowable.

The UPnP Standard was developed by the Open Connectivity Foundation, which presently includes over 100 members, such as Microsoft, Sony, IBM, Dell, Samsung and D&M Holdings, the company that Sonos has accused of infringing the '014 Patents and other patents. But not Sonos. Even though Sonos did not contribute to the development of these industry standards, or even disclose the existence of these industry standards to the Examiner of the '014 Patent, it built products based on those standards, has obtained claims that cover these industry standards and now seeks to assert those claims against the very members that helped to create the market that Sonos now exploits and that those standards serve. While the requester has identified exemplary citations from the UPnP Standard and operating system user guidance, to the extent that Sonos attempts to amend the claims to encompass devices that are compliant with the UPnP Standard or any other industry standards, the Office should not allow them to do so again. The Office should require Sonos to provide additional information regarding its use of the UPnP Standards to develop the claimed inventions of the '014 Patent, including any exposure of the inventors and other Sonos personnel to the UPnP Standards.

C. The UPnP Standard and Microsoft UPnP presents a substantial new question of patentability

The UPnP Standard and Microsoft UPnP is prior art to the '014 Patent under 35 U.S.C. 102(b), but might be considered a combination of related documents under 35 U.S.C. 103(a), such as the combination of separate standards documents or in conjunction with Microsoft UPnP, but one of ordinary skill would have understood that these various UPnP materials and commercially available operating system functionality could be readily combined. The UPnP Standard, either alone or with Microsoft UPnP, discloses every limitation of the Challenged Claims of the '014 Patent, as shown and discussed in Appendix A. The UPnP Standard and Microsoft UPnP was not considered by the Examiner of the '653 Application, and even though it

was known to Sonos during the prosecution of the '653 Application and was used by Sonos to implement the commercial embodiments of the claims of the '014 Patents, it was not disclosed to the Examiner. Requester respectfully requests that the Office consider the charted exemplary disclosure provided in Appendix A when determining whether the UPnP Standard provides a substantial new question of patentability, as well as other materials from the provided copies of the UPnP Standards and Microsoft UPnP, if that should be necessary.

D. Isely

As discussed above, Isely discloses systems and methods for dynamic distribution of audio signals at a site based on defined zones within the site. Isely, Abstract. The audio device 205 discussed at [0044] of Isely has a network interface, performs decoding of encoded stereo data, equalization, left and right channelization and other common functions associated with MP3 decoders, and can function as either a UPnP Media Server or a UPnP Media Renderer:

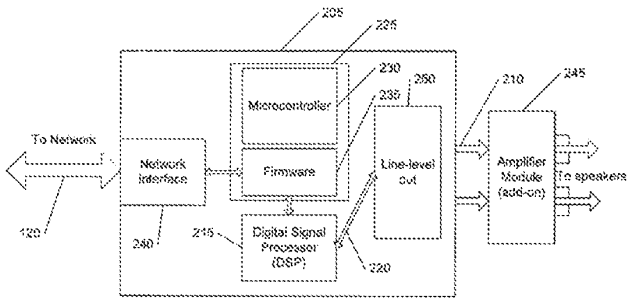


Figure 2

The presence of a network interface 240 in network device 205 means that network device 205 was synchronized with other network devices on network 120. In the concurrent litigation, Sonos appears to be accusing such commonplace prior art functionality of infringing elements of its patents, and appears to be asserting that Sonos invented the concept of networked devices that process audio data. The Office should require Sonos to fully disclose and explain its

infringement contentions in the pending litigation to understand how broadly Sonos is construing its claims, to ensure that Sonos does not continue to obtain claim coverage on prior art systems and methods.

Isely discloses that audio devices 105 can use UPnP protocols, such as those disclosed in the UPnP Standard. As discussed above, the UPnP Standard discloses every feature of the claims of the '014 Patent, and combined with the design of the audio devices 105/205/305/405, network interface 100, user interface device 130, digital audio source 330 and audio server 455/zone manager 415 of Isely, there is nothing left in the claims of the '014 Patent that is not explicitly or inherently disclosed in Isely, either alone or in combination with the UPnP Standard and Microsoft UPnP.

Isely also discloses a controller 125 that "tells the network audio devices 105 the 'channel' to which they should tune. The controller 125 makes this designation based on the user designation from the user device 130 to provide dynamic zone aggregation.". [0039]. The channels are for multi-channel sound, where "a pair of channels is used to drive the left and right stereo channels for a pair of speakers, resulting in support for up to six zones with a 12 channel system.". [0005]. As such, each "of the network attached audio devices 105 is associated with a group of audio equipment 145, 150. The respective groupings of audio equipment located at the site may, for example, each be associated with a different room in a residence." These audio devices can include a Digital Signal Processor 215, firmware 235, a microcontroller 230, line out level control 250 and a network interface 240, where the network can utilize the UDP Internet protocol over an Ethernet network or other common data networks that require networked devices to request transmission of data packets, such as a Transport Control Protocol (TCP). [0061]. In addition to the use of UDP, Ethernet and TCP, Isely also discloses the audio devices

105 are compliant with the UPnP Standard[7] and Jini [0041] and Real-time Transport Protocol (RTP) [0040], each of which are standards that were developed specifically to allow networked devices to autonomously interact with each other.

Grouping of playback devices for multicasting is explicitly disclosed at [0040] of Isely ("However, the present invention is not limited to this protocol. For UDP over Ethernet, a UDP definition may specify the multicast group. The underlying transport for the digital audio streams should also be UDP. The audio source may thus deliver time-stamped packets to the proper multicast group. One such protocol, which defines delivery of audio content using UDP, is the Real-time Transport Protocol (RTP) as defined in request for comments (RFC) 1889.")

Isely at [0020] (which was not relied on by the Examiner). states that a "relationship is defined between a characteristic of the audio signal for a reference audio device and for the selected addressable audio devices. The audio signal is distributed to the selected addressable audio devices based on the defined relationships and a **control** input associated with the characteristic.". Thus, the Examiner misunderstood that the relationship of the volume level of Isely was a **display** relationship with a zone, and not a **control** relationship that can be used to adjust multiple devices, such as a reference audio device and addressable audio devices in the zones. Isely describes this relationship in other sections that were not considered by the Examiner.

For example, Isely discloses at [0015] (which was not cited by the Examiner) that "the relationship between a characteristic of the audio signal for a reference audio device and ones of the addressable audio devices is a relative relationship. The relative relationship between the

[7] Isely refers to UPnP as a "salutation protocol," which appears to refer to the Salutation Consortium, see "Salutation Architectures and the newly defined service discovery protocols from Microsoft® and Sun®," The Salutation Consortium, June 6, 1999, which states that. "UPnP will be implemented for all Microsoft® Windows® platforms, for PCs and devices running under the Windows 98, Windows 2000, and Windows CE operating systems. Microsoft has made available UPnP specifications, an implementation guide, and sample source code at WinHEC 99."

reference audio device and ones of the addressable audio devices may be a proportional relationship and the relative relationship between the reference audio device and another of the addressable audio devices may be a static relationship.". Thus, where the reference audio device and all of the addressable audio devices are set at the same **average** volume level, such as at start up, and the volume for the reference audio device is adjusted, that average volume level for all of the associated addressable audio devices would also synchronously change, in accordance with the disclosure of Isely.

Isely next discloses at [0020] that an "audio signal is distributed to the selected addressable audio devices based on the defined relationships and a **control** input associated with the characteristic. An update to the **control** input is received from a user and the audio signal is distributed to the selected addressable audio devices based on the defined relationships and the update to the control input. The audio signal may be received as a digital audio stream and may be distributed over a local network of the zoned environment.". Again, Isely discloses in this section that was not considered by the Examiner that the audio signal is not just displayed but is controlled and adjusted, such as where all addressable audio devices start from the same average zero level and the average is increased or decreased synchronously with "a control input associated with the characteristic."

Isely further discloses at [0062] that a "relationship between a characteristic of the audio signal for a reference audio device and for a plurality of the addressable audio devices 305, 405 is defined (block 620). Such a relationship may be related to relative volume, equalization or other audio characteristics as described previously herein. Furthermore, such a relationship may be complex, proportional, or static as described previously herein," and further at [0063] that an "update to the **control** input specifying the characteristic(s) may be periodically received from a

user (block 640)." Thus, Isely discloses that a complex, proportional or static **control** relationship between volumes for a plurality of devices can be defined and adjusted by a user. This disclosure encompasses the common use case where all players in a zone and the reference audio device all start at the same average zero volume level, and where the control is used to increase the average volume level of all players.

The Examine thus erred, based on these specified passages of Isely that were not cited or discussed on the record by the Examiner during prosecution, and this explanation as to these overlooked portions would be considered important to a reasonable examiner. A reasonable examiner would have understood from these passages that the disclosure of Isely that is relevant to the adjustment of an average volume level of multiple devices was not limited to the portions of Isely that only disclose the display of "volume," but rather included portions of Isely that discuss control of "characteristics," because a characteristic can include a volume that is adjusted as part of a group from a minimum setting at startup, where the adjustment results in a synchronous change in the average volume level of the players.

E. Isely, either alone or with the UPnP Standard, Microsoft UPnP and NexSys, presents a substantial new question of patentability

Isely is prior art to the '014 Patent under 35 U.S.C. 102(b), and was used to reject the originally filed claims of the '014 Patent as a tertiary reference, in combination with Berezowski as a primary reference and Tomassetti as a secondary reference under 35 U.S.C. 103(a) during the original prosecution of the '014 Patent. "The substantial new question of patentability may be based on art previously considered by the Office if the reference is presented in a new light or a different way that escaped review during earlier examination.". M.P.E.P. 2216. Isely discloses every limitation of the '014 Patent, as shown and discussed in Appendix B, and is presented in a new light because the Examiner only understood Isely to disclose displaying a volume, and did

not understand that the "characteristics" of Isely that could be controlled and adjusted included the average volume of a group of players.

Isely is further presented in a new light because the various standards that are disclosed in Isely, such as the UPnP Standard, disclose the claimed functionality, but that was not understood by the Examiner, who was not provided with copies of the standards during the original examination. As shown in Appendix B (and as disclosed in more detail in Appendix A with respect to the UPnP Standard), these standards disclose all of the claimed functionality, and one of ordinary skill would be motivated to combine Isely with the UPnP Standard and Microsoft UPnP, because Isely explicitly discloses that it can be implemented using UPnP and one of ordinary skill would consider the teachings of the UPnP Standard and associated software such as the Windows XP operating system that provided UPnP support, when implementing Isely. Any device that is compliant with these standards meets the corresponding claim limitations, and is configured to perform the correspond method claim steps. Although Isely clearly discloses that the audio devices 105/205/305/405 of Isely are compatible with UPnP, it is acknowledged that the UPnP Standard included documents that were not released yet in the versions discussed herein as of the date on which Isely was filed (although they were likely being prepared at that time, and the inventors of Isely were affiliated with IBM, a current member of the Open Connectivity Foundation that developed the UPnP Standard). As such, to the extent that Isely in conjunction with the UPnP Standard is not considered to present a substantial new question of patentability under 35 U.S.C. 102(b), then it would be obvious to combine Isely with the UPnP Standard under 35 U.S.C. 103(a), because Isely explicitly discloses that the audio devices 105/205/305/405 of Isely are compliant with the UPnP Standard as of the date of filing of Isely,

and one of ordinary skill in the art would thus understand that Isely was designed to be compliant with those standards as they continued to develop.

In addition, as discussed below, NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an adjustment made by a user, and presents the zone group in a manner that indicates a grouping. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of Isely and the UPnP Standard, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications.

F. Berezowski, Tomassetti, Isely, the UPnP Standard, Microsoft UPnP and NexSys presents a substantial new question of patentability

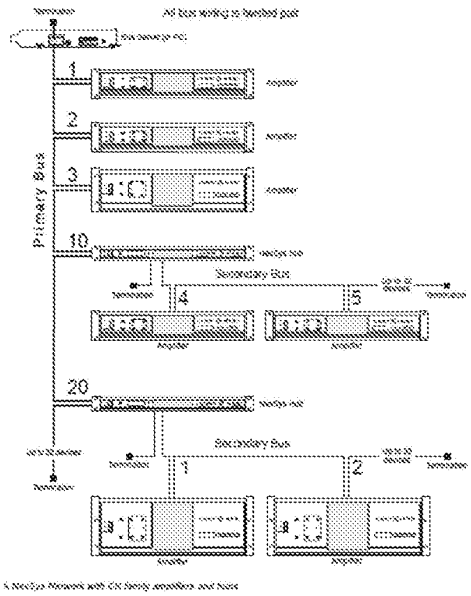
As discussed above, Isely discloses adjusting a characteristic/volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user in accordance with the characteristic, such as where the volume setting is the well-known master volume setting and the master volume and player volumes are increased at initialization from a zero setting. However, to the extent that it is considered that Isely fails to disclose certain elements of the claims, Sonos acquiesced to the rejection of the claims over the combinations of Berezowski and Tomassetti or of Berezowski, Tomassetti and Isely. In addition, to the extent that the Office does not agree that the Examiner misunderstood Isely to only disclose the display of volumes having a relationship to a zone, and did not understand that Isely also disclosed the control of a characteristic that included a volume

control, with the control of a reference audio device resulting in the control of selected addressable audio devices, then the UPnP Standard and Microsoft UPnP explicitly disclose a master channel that can be used to control additional channels, where different media renderer devices can be assigned to different channels, and where the master is used to synchronously adjust all of the associated channels of the channel group. It would be obvious to combine the UPnP Standard and Microsoft UPnP with the combination of Berezowski, Tomassetti and Isely, because Isely explicitly discloses the use of the UPnP as an exemplary embodiment of the disclosure of Isely, and Sonos acquiesced to the combination of Berezowski, Tomassetti, Isely. The combination of Berezowski, Tomassetti, Isely, the UPnP Standard and Microsoft UPnP is discussed in greater detail in Appendix C, in addition to the motivation to combine Berezowski, Tomassetti and Isely with the UPnP Standard and Microsoft UPnP.

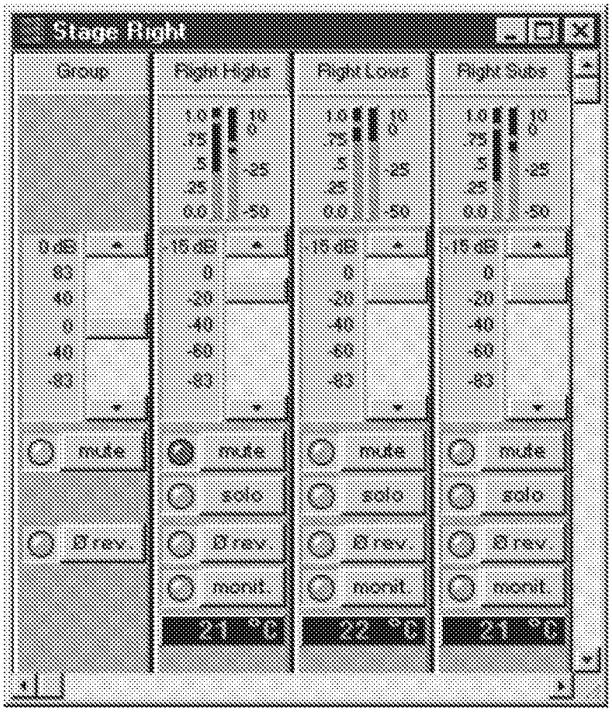
In addition, as discussed below, NexSys discloses a common user interface for representing a master volume with associated separate channels of a zone group, where the master control changes a volume of each of the zone group of channels/players synchronously in accordance with an adjustment made by a user, and presents the zone group in a manner that indicates a grouping. One of ordinary skill would use such common user interface controls to implement common control functionality for master and zone player volume controls of Berezowski, Tomassetti, Isely and the UPnP Standard, where the master represents an averaged value of the players in the zone group when the group is adjusted from the lowest setting, such as at startup, because such master and zone volume controls were commonly used on mixing boards in related applications.

G. Crest Audio NexSys Software, Version 3.0

Crest Audio is a manufacturer of power amplifiers, and provided the NexSys Software to allow users to control Crest Audio amplifiers with a personal computer. Page 3.2 of the NexSys Manual discloses an exemplary system in which the NexSys Software could be used:



While the NexSys system has certain similarities to the network structure disclosed in the '014 Patent, the most pertinent disclosure in the NexSys Manual relates to the control of different channels of audio data. In particular, the NexSys Manual discloses a group control that allows separate channels to be grouped together for common control, as shown on page 7.4:



The NexSys further discuses at page 9.3 in regards to the group control that "the fader ranges from +83dB to -83dB. It is a relative level to the amplifiers in its group. Positive changes here will have the same magnitude increase for every amplifier channel in the group. A negative change here will decrease each amplifier channel level in the group by the same amount. For instance, if the amp is set to -10, and the group level is raised +5, the amp level will increase by 5dB to a level of -5.". The exemplary embodiment shown in the figure from the NexSys manual shows that all three channels are at the same average level to the accuracy shown on the meter (21, 22 and 21), such that any change in the group level will result in a change to the average level. In addition, the channels are shown in a manner that indicates a grouping. The NexSys Manual thus shows group volume meters functionality that was not considered by the Examiner, and it would be obvious to combine the group volume meters of the NexSys Manual to implement the master volume control and channel volume control functions of the UPnP

Standard, Isely, Berezowski and/or Tomassetti, because one of ordinary skill would provide controls like the ones shown in the NexSys Manual to control multiple channels of audio in the same zone, as further discussed in Appendices B and C.

VII. CONCLUSION

For these reasons, Substantial New Questions of Patentability exist, and claims 1, 8, 16, 18, 21 and 38 of the '014 Patent do not satisfy the requirements of Title 35 U.S.C. §101 et seq. A Notice to this effect is requested, if a petition under 37 C.F.R. § 1.137 to revive the '653 Application is filed by Sonos and granted by the Office, otherwise, a Notice that reexamination has not been instituted because the '653 Application stands abandoned is requested.

Date: December 21, 2016

Respectfully submitted,

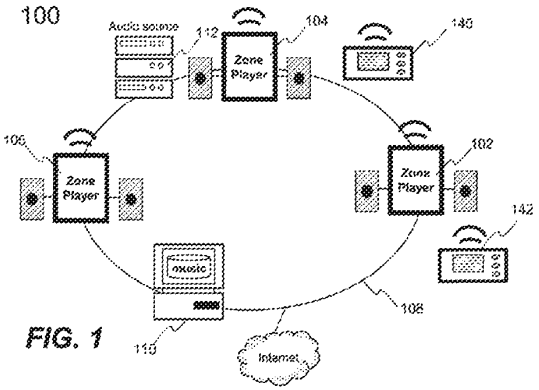
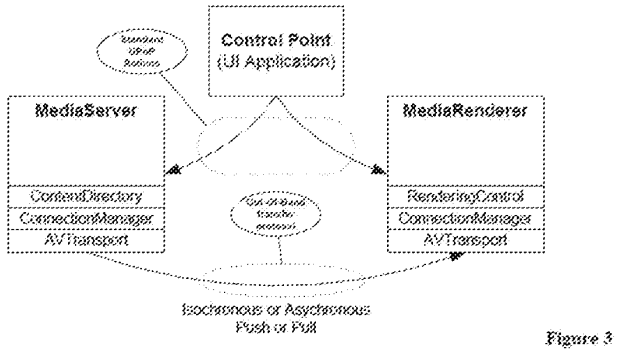
By:___ /Christopher J. Rourk/_____

Christopher J. Rourk
Registration No. 39,348
JACKSON WALKER LLP

ATTORNEYS FOR REQUESTORS

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
1. A method for controlling a plurality of players, the method comprising:	The UPnP Standard discloses a method for controlling a plurality of players (UPnP Media Renderers, which can also be combined with a UPnP Media Server in a single device, referred to herein as a "UPnP Combined Device"). The UPnP Standard was known to the inventors of the '014 Patent but was not disclosed to the Patent Office during the prosecution of the '014 Patent. An example of the manner in which Sonos copied the UPnP Standard can be seen from comparing Figure 1 of the '014 Patent with the system architecture diagram at UPnP AV, pg. 5:  '014 Patent, Fig. 1  UpnP AV, pg. 5 **<u>UPnP Control Point = '014 Controllers 140 and 142</u>** As can be seen above, the UPnP Standard discloses a control point that is equivalent to controllers 140 and 142 in the '014 Patent, a UPnP Media Server that is equivalent to audio source 110 and 112, and a UPnP Media Renderer that is equivalent to zone players 102, 104 and 106. The UPnP Control Point of the UPnP Standard can be implemented as an application operating on a "a wireless PDA-like device with a small display" (1P1), as well as an application operation on a person computer, tablet computer with a touch screen interface or other similar devices, and was provided for the purpose of controlling a plurality of UPnP Media Servers and UPnP Media Renderers. The UPnP Control Point can operate on a personal computer in conjunction with an operating system, such as Windows XP, which provided UPnP support. (1P4)

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	UPnP Media Server = '014 Audio Sources 110 and 112 and Zone Players 102, 104 and 106 Examples of a UPnP Media Server include a "VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." (1P2). The UPnP Media Server can also be combined with the UPnP Media Renderer (and with the UPnP Control Point, if desired), as was done with the zone players 102, 104 and 106 of the '014 Patent. (1P3) **UPnP Media Renderer = '014 Zone Players 102, 104 and 106** Examples of a UPnP Media Renderer include a "stereo" and "network enabled speakers." (1P1). In other words, '014 zone players 102, 104 and 106 provide a UPnP Combined Device, and can support multiple instantiations of those UPnP Media Servers and UPnP Media Renderers. The '014 controllers 140 and 142 are configured to act as UPnP Control Points, which can configure one of the zone players 102, 104 or 106 to be a UPnP Media Server, and to provide content to the others of zone players 102, 104 and 106 that are configured to be UPnP Media Renderers (the zone player that is the UPnP Media Server can also have a combined UPnP Media Renderer and can play local or remote content). 1P1. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 1P2. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 1P3. "As described in the above scenario, three distinct entities are involved: the Control Point, the source of the media content (called the "MediaServer"), and the sink for the content (called the "MediaRenderer"). Throughout the remainder of the document, all three entities are described as if they were independent devices on the network. Although this configuration may be common (i.e. a remote control, a VCR, and a TV), the AV Architecture supports arbitrary combinations of these entities within a single physical device. For example, a TV can be treated as a rendering device (e.g. a display). However, since most TVs contain a built-in tuner, the TV can also act as a server device because it could tune to a particular channel and send that content to a MediaRenderer (e.g. its local display or some remote device such as a tuner-less display). Similarly, many MediaServers and/or MediaRenderers may also include Control Point functionality. For example, an MP3 Renderer will likely have some UI controls (e.g. a small display and some buttons) that allow the user to control the playback of music." UPnP AV, pg. 5. 1P4. "Windows can also serve as a platform for building and running control point applications to control UPnP connected devices and services." Microsoft UPnP, pg. 2.

Appendix A

Invalidity of the Challenged Claims of the '014 Patent in view of the UPnP Standard and Microsoft UPnP

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
1A) displaying on a screen a first list showing at least available players;	The UPnP Standard discloses that UPnP Control Points display UPnP presentation pages, and that UPnP presentation pages are written in HTML version 3.0 or higher. (1A15). HTML includes list display mechanisms. The UPnP Standard also discloses a discovery service for locating devices that are players (such as devices that are combined UPnP Media Servers and UPnP Media Renderers) on the network and a user interface for displaying the discovered players at a UPnP Control Point in a manner that requires lists or other common display mechanisms. (1A1, 1A5, 1A6, 1A9, 1A11, 1A12) The UPnP Control Point display of discovered players (UPnP Media Renderers) in HTML could include lists, and the UPnP Standards disclose allowing users to select from available UPnP Media Servers and UPnP Media Renderers (1A4) using a UPnP Control Point, which also requires those devices to be listed on a display of the UPnP Control Point. Operating systems such as Windows XP also provided tools for UPnP Control Points to display a list of available UPnP Media servers (content sources) and UPnP Media Renderers (players) on a screen, such as in the form of icons, and Windows allows the user to configure icons as lists. (1A18, 1A19) Sonos has accused groups of icons on a screen as meeting the limitation of a list in the concurrent litigation. When there are multiple independent sets of rendering hardware associated with a UPnP Media Renderer device, such as separate speakers, the UPnP Standard instructs that the UPnP Control Point presents those as multiple instantiations of the UPnP Media Renderer device, each with its own rendering control and connection manager, which would require a list of those devices. (1A2, 1A3) Users interact with the UPnP Control Point through a user interface, which commonly uses a list for multiple items, such as a list of player URLs that can each be selected to allow a user to access player-specific controls for services. (1A7, 1A8) The UPnP Media Renderers (players) can be assigned "user friendly names," such as living room, kitchen, etc. (1A10). 1A1. "Most rendering devices contain a number of dynamically configurable attributes that affect how the current content is rendered. For example, video rendering devices, such as TVs, allow user control of display characteristics such as brightness and contrast, whereas audio rendering devices allow control of audio characteristics such as volume, balance, equalizer settings, etc. The RenderingControl:1 service is intended to provide Control Points with the ability to query and/or adjust any rendering attribute that the device supports. The RenderingControl:1 service enables a Control Point to: • Discover the set of attributes supported by the device. • Retrieve the current setting of any supported attribute • Change the setting of (e.g. control) any modifiable attribute • Restore the settings defined by a named Preset," UPnP Rendering Control, pg. 6.

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	1A2. "Note that a single physical device may include multiple logical devices. Multiple logical devices can be modeled as a single root device with embedded devices (and services) or as multiple root devices (perhaps with no embedded devices). In the former case, there is one UPnP device description for the root device, and that device description contains a description for all embedded devices. In the latter case, there are multiple UPnP device descriptions, one for each root device. A UPnP device description is written by a UPnP vendor. The description is in XML syntax and is usually based on a standard UPnP Device Template. A UPnP Device Template is produced by a UPnP Forum working committee; they derive the template from the UPnP Template Language, which was derived from standard constructions in XML. This section explains the format for a UPnP device description, UPnP Device Templates, and the part of the UPnP Template Language that covers devices." UPnP Architecture, pg. 14 1A3. "As described in the Media Renderer device template, a rendering device that contains multiple, independent rendering hardware (e.g. two independent display screen, or two independent sets of output speakers) shall be modeled as multiple instantiations of the MediaRenderer device, each with its own Rendering Control, Connection Manager, and (optional) AV Transport services. In other words, from an UPnP AV modeling point of view, each output on a physical rendering device is treated as a completely independent Media Rendering device. Refer to the Media Renderer device template for more information." UPnP Rendering Control, pg. 40. 1A4. "The most common task that end-users want to perform is to render (i.e. play) individual items of content on a specific rendering device. As shown in, Figure 3, a content playback scenario involves three distinct UPnP components: a MediaServer, a MediaRenderer, and a UPnP Control Point. These three components (each with a well-defined role) work together to accomplish the task. In this scenario, the MediaServer contains (entertainment) content that the user wants to render (e.g. display or listen to) on the MediaRenderer. The user interacts with the Control Point's UI to locate and select the desired content on the MediaServer and to select the target MediaRenderer. The MediaServer contains or has access to a variety of entertainment content, either stored locally or stored on an external device that is accessible via the MediaServer. The MediaServer is able to access its content and transmit it to another device via the network using some type of transfer protocol. The content exposed by the MediaServer may include arbitrary types of content including video, audio, and/or still images. The content is transmitted over the network using a transfer protocol and data format that is that is

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	understood by the MediaServer and MediaRenderer. MediaServers may support one or multiple transfer protocols and data formats for each content item or be able to convert the format of a given content item into another formats on the fly. Examples of a MediaServer include a VCR, CD/DVD player/jukebox, camera, camcorder, PC, set-top box, satellite receiver, audio tape player, etc." UPnP AV pg. 5. 1A5. "The MediaRenderer obtains content from a MediaServer via network. Examples of a MediaRenderer include TV, stereo, network-enabled speakers, MP3 players, Electronic Picture Frame (EPF), a musiccontrolled water fountain, etc. The type of content that a MediaRenderer can receive depends on the transfer protocols and data formats that it supports. Some MediaRenderers may only support one type of content (e.g. audio or still images), where as other MediaRenderers may support a wide variety of content including video, audio, still images.The Control Point coordinates and manages the operation of the MediaServer and MediaRenderer as directed by the user (e.g. play, stop, pause) in order to accomplish the desired task (e.g. play "MyFavorite" music). Additionally, the Control Point provides the UI (if any) for the user to interact with in order to control the operation of the device(s) (e.g. to select the desired content). The layout of the Control Point's UI and the functionality that it exposes is implementation dependent and determined solely by the Control Point's manufacturer. Some examples of a Control Point might include a TV with a traditional remote control or a wireless PDA-like device with a small display." UPnP AV pg. 6. 1A6. "5.3. Control Point Control Points coordinate the operation of the MediaServer and the MediaRenderer, usually in response to user interaction with the Control Point's UI. The following describes a generic Control Point algorithm that can be used to interact with a wide variety of MediaServer and MediaRenderer implementations. 1. Discover AV Devices: Using UPnP's Discovery mechanism, MediaServers and MediaRenderers in the home network are discovered. 2. Locate Desired Content: Using the Server's ContentDirectory::Browse() or Search() actions, a desired Content Item is located. The information returned by Browse()/Search() includes the transfer protocols and data formats that the MediaServer supports to transfer the content to the home network. 3. Get Renderer's Supported Protocols/Formats: Using the MediaRenderer's ConnectionManager::GetProtocolInfo() action a list of transfer protocols and data formats supported by the MediaRenderer is returned to the Control Point. 4. Compare/Match Protocols/Formats: The protocol/format information returned by the

U.S. 7,571,014	The UPnP Standard and Microsoft UPnP
	ContentDirectory for the desired Content Item is matched with the protocol/format information returned by the MediaRenderer's GetProtocolInfo() action. The Control Point selects a transfer protocol and data format that are supported by both the MediaServer and MediaRenderer. 5. Configure Server/Renderer: The device's ConnectionManager::PrepareForConnection() action (if implemented) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the specified transfer protocol and data format that was previously selected. Depending on the selected transfer protocol, either the MediaServer or MediaRenderer will return an AVTransport InstanceID. This InstanceID is used in conjunction with the device's AVTransport Service (i.e. the device returning the AVTransport InstanceID) to control the flow of the content (e.g. Play, Stop, Pause, Seek, etc). Additionally, the Renderer will return a Rendering Control InstanceID that is used by the Control Point to control the Rendering characteristics of the content. Note: Since PrepareForConnection() is an optional action, there may be situations in which either the MediaServer and/or MediaRenderer do not implement PrepareForConnection(). When this occurs and neither MediaServer nor MediaRenderer return an AVTransport InstanceID, the Control Point uses an InstanceID=0 to control the flow of the content. Refer to the ConnectionManager and AVTransport Service Templates for details [?]. 6. Select Desired Content: Using the AVTransport service (whose InstanceID is returned by either the Server or Renderer), invoke the SetAVTransportURI() action to identify the content item that needs to be transferred. 7. Start Content Transfer: Using the AVTransport service, invoke one of the transport control actions as desired by the user (e.g. Play, Stop, Seek, etc). 8. Adjust Rendering Characteristics: Using the MediaRenderer's Rendering Control service, invoke any rendering control actions as desired by the user (e.g. adjust brightness, contrast, volume, mute, etc). 9. Repeat: Select Next Content: Using either the AVTransport::SetAVTransportURI() or AVTransport::SetNextAVTRansportURI() actions, identify the next content item that is to be transferred from the same Server to the same Renderer. Repeat as needed. 10. Cleanup Server/Renderer: When the session is terminated and MediaServer and MediaRenderer are no longer needed in the context of the session, the MediaServer's and MediaRenderer's ConnectionMgr::ConnectionComplete() action is invoked to close the MediaServer's connection. Based on the interaction sequence shown above, the following diagram chronologically illustrates the typical interaction sequence between the three Control Point and the MediaServer and MediaRenderer." UpnP AV pgs. 9-10.