

1 QUINN EMANUEL URQUHART & SULLIVAN, LLP

Lance Yang (SBN 260705)

2 lanceyang@quinnemanuel.com

865 South Figueroa Street, 10th Floor

3 Los Angeles, CA 90017

Tel: (213) 443-3000

4 Fax: (213) 443-3100

James Judah (SBN 257112)

5 jamesjudah@quinnemanuel.com

50 California Street, 22nd Floor

6 San Francisco, CA 94111

Tel: (415) 875-6600

7 Fax: (415) 875-6700

8 *Attorneys for Defendant, Google LLC*

9
10 **IN THE UNITED STATES DISTRICT COURT**
11 **FOR THE CENTRAL DISTRICT OF CALIFORNIA**

12 SONOS, INC.,

13 Plaintiff,

14 vs.

15 GOOGLE LLC,

16 Defendant.

CASE NO. 2:20-cv-00169-JAK
(DFM)

17
18 **DEFENDANT GOOGLE LLC'S FIRST AMENDED INVALIDITY**
19 **CONTENTIONS**
20
21
22
23
24
25
26
27
28

1	I.	GENERAL STATEMENT AND RESERVATION OF RIGHTS	4
2	A.	General Reservation of Rights	4
3	II.	ASSERTED CLAIMS	5
4	III.	SONOS' INFRINGEMENT CONTENTIONS	6
5	IV.	PRIORITY APPLICATIONS / PRIORITY DATE OF ASSERTED	
6		CLAIMS.....	6
7	V.	CLAIM CONSTRUCTION	7
8	VI.	ONGOING DISCOVERY AND DISCLOSURES.....	9
9	VII.	INVALIDITY CONTENTIONS.....	11
10	A.	Invalidity Contentions Pursuant to S.P.R. 2.5.1.....	11
11	1.	'949 Patent Prior Art.....	13
12	2.	'014 Patent Prior Art.....	21
13	3.	'959 Patent Prior Art.....	29
14	4.	'025 Patent Prior Art.....	34
15	5.	'953 Patent Prior Art.....	39
16	6.	'258 Patent Prior Art.....	44
17	7.	'715 Patent Prior Art.....	49
18	8.	'001 Patent Prior Art.....	54
19	9.	'896 Patent Prior Art.....	59
20	10.	'883 Patent Prior Art.....	67
21	B.	Invalidity Contentions Pursuant To S.P.R. 2.5.2 and 2.5.3.....	74
22	1.	Claim Charts.....	74
23	2.	Anticipation and Single Reference Obviousness.....	76
24	3.	Obviousness.....	79
25	C.	Invalidity Contentions Pursuant to S.P.R. 2.5.4 – 35 U.S.C. § 112....	193
26	1.	Enablement and Written Description	194
27	2.	Indefiniteness.....	214
28	D.	Invalidity Contentions Pursuant to S.P.R. 2.5.4 – 35 U.S.C. § 101....	228

1	1.	'949 Patent.....	228
2	2.	'014 Patent.....	230
3	3.	'959 Patent.....	232
4	4.	'025 Patent.....	233
5	5.	'953 Patent.....	235
6	6.	'258 Patent.....	237
7	7.	'715 Patent.....	240
8	8.	'001 Patent.....	242
9	9.	'896 Patent.....	244
10	10.	'883 Patent.....	246
11	VIII.	ADDITIONAL INVALIDITY/UNENFORCEABILITY CONTENTIONS	248
12	A.	Inequitable Conduct.....	248
13	B.	Lack of Inventorship Under 35.U.S.C. § 102	248
14	1.	'258 Patent.....	248
15	2.	'953 Patent.....	249
16	3.	'959 Patent.....	250
17	4.	'025 Patent.....	250
18	5.	'949 Patent.....	250
19	6.	'014 Patent.....	250
20	7.	'896 Patent.....	251
21	8.	'883 Patent.....	251
22	C.	Prosecution Laches	251
23	1.	'896 and '883 Patents.....	251
24	2.	'025 Patent.....	253
25	3.	'258, '953, '715, and '001 Patents	254
26	D.	Obviousness-type Double Patenting.....	256
27	1.	'014 Patent.....	256
28			

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

2. '715 Patent.....256

3. '001 Patent.....257

IX. GOOGLE’S DOCUMENT PRODUCTION 257

X. CONCLUSION 258

1 **DEFENDANT GOOGLE LLC’S INVALIDITY CONTENTIONS**

2 Pursuant to the Standing Patent Rules (“S.P.R.”) and the Court’s scheduling
3 order, Defendant Google LLC (“Google” or “Defendant”) hereby serves its First
4 Amended Invalidity Contentions, and accompanying document production on
5 Plaintiff Sonos, Inc. (“Sonos” or “Plaintiff”). Defendant contends that each of the
6 claims asserted by Sonos is invalid under at least 35 U.S.C. §§ 101, 102, 103, and/or
7 112.

8 **I. GENERAL STATEMENT AND RESERVATION OF RIGHTS**

9 **A. General Reservation of Rights**

10 These Contentions, along with the information and documents that Google
11 produces herewith, are based on information currently available to Google and
12 subject to further revision. Consistent with the S.P.R., Defendant reserves the right
13 to amend these Contentions should Sonos: (1) provide any information that it failed
14 to provide in its Infringement Contentions and accompanying disclosures or
15 otherwise properly produce; (2) amend its Infringement Contentions and
16 accompanying disclosures in any way; or (3) attempt to rely upon any information
17 during claim construction proceedings, at trial, in a hearing, or during a deposition
18 that it failed to provide in its Infringement Contentions and accompanying
19 disclosures or otherwise properly produce. Google further reserves the right to
20 amend these contentions based on claim construction positions taken by Sonos
21 and/or construction of claim terms adopted by the Court. Moreover, Google further
22 reserves the right to amend these contentions based on further discovery or Court
23 rulings (or any other related reason). This includes, for instance, the issuance of
24 subpoenas to third parties believed to have knowledge, documentation, and/or
25 corroborating evidence concerning some of the prior art listed below and/or
26 additional prior art. These third parties may include, without limitation, any relevant
27 authors, inventors, developers, designers, corporate designees with knowledge, or
28 assignees. Google provides these Contentions, as well as the accompanying

1 production of documents, for the sole purpose of complying with the S.P.R. and
2 related orders governing these proceedings.

3 **II. ASSERTED CLAIMS**

4 In this case, and based on Sonos' Infringement Contentions, served on
5 February 10, 2025, Sonos has asserted that Google infringes the following claims
6 ("Asserted Claims") of U.S. Patent Nos. 8,588,949 (the "'949 patent"); 7,571,014
7 (the "'014 patent"); 9,219,959 (the "'959 patent"); 10,966,025 (the "'025 patent");
8 10,209,953 (the "'953 patent"); 9,195,258 (the "'258 patent"); 10,031,715 (the
9 "'715 patent"); 11,080,001 (the "'001 patent"); 10,439,896 (the "'896 patent"); and
10 10,541,883 (the "'883 patent") (collectively, the "Patents-In-Suit" or "Asserted
11 Patents").

12 '949 patent: claims 1, 2, 4, 5, 8, 9, 11, and 12

13 '014 patent: claims 25, 32, 35, 38, 42, and 43

14 '959 patent: claims 5, 10, and 29

15 '025 patent: claims 1, 10, 12, 13, and 18

16 '953 patent: claims 7, 8, 12, 13, 14, 18, 22, 23, 24, 25, 28, 29, and 30

17 '258 patent: claims 17, 21, 22, 23, 24, and 26

18 '715 patent: claims 7, 9, 11, 13, 15, and 17

19 '001 patent: claims 12, 13, 14, 17, 18, 19, 20, 21, 22, 23, 24, 25, 28, 29, 30,
20 31, 32, and 33

21 '896 patent: claims 1, 5, 6, 8, 9, 12, 13, 15, 17, and 18

22 '883 patent: claims 1, 2, 4, 5, 9, 10, 11, 13, 14, 15, 16, 17, and 19

23 Google's Invalidity Contentions address only those claims asserted in Sonos'
24 Infringement Contentions, and claims upon which these claims depend. To the
25 extent that the Court or applicable rules permit Sonos to assert additional claims
26 against Google, Google reserves the right to disclose new or supplemental
27 contentions regarding such claims.
28

1 **III. SONOS' INFRINGEMENT CONTENTIONS**

2 Google provides these Contentions consistent with the schedule set forth in
3 the Court's March 11, 2025 Order (ECF No. 77) but does so without waiving any
4 right to receive from Sonos full, complete and detailed infringement disclosures as
5 required under the S.P.R. Defendant's compliance with the schedule currently in
6 place should not be viewed as a waiver of its right to seek relief regarding the
7 deficiencies in Sonos' disclosures.

8 Sonos' Infringement Contentions are deficient in numerous respects. Sonos'
9 Infringement Contentions lack the specificity required under the S.P.R. as would be
10 necessary to fairly provide Google notice of Sonos' theories, including without
11 limitation that Sonos fails to identify where each element of each asserted claim is
12 found within each accused product or instrumentality.

13 Google further specifically reserves the right to modify, amend, or
14 supplement its Contentions should Sonos be permitted to further modify, amend, or
15 supplement its Infringement Contentions or produce documents responsive to
16 Google's discovery requests.

17 **IV. PRIORITY APPLICATIONS / PRIORITY DATE OF ASSERTED**
18 **CLAIMS**

19 Google's Invalidity Contentions, including but not limited to identification of
20 prior art, rely in part on Sonos' contention that the Patents-in-Suit are entitled to
21 claim priority to the following applications:

22 '949 patent: June 5, 2004

23 '014 patent: June 5, 2004

24 '959 patent: April 8, 2011

25 '025 patent: January 25, 2011

26 '953 patent: April 1, 2004

27 '258 patent: April 1, 2004

28 '715 patent: July 28, 2003

1 '001 patent: July 28, 2003

2 '896 patent: June 5, 2004

3 '883 patent: June 5, 2004

4 The '025 patent is not entitled to the alleged January 25, 2011 priority date.
5 Indeed, during prosecution, Sonos admitted the earliest priority date is April 8,
6 2011. Applicant Arguments/Remarks Dated Oct. 7, 2020 at 11 (“Applicant submits
7 the claimed subject matter has a priority date at least as early as April 8, 2011[.]”).

8 The '896 and '883 patents are not entitled to a priority date before their own
9 filing dates at least because U.S. Pat. Appl. No. 15/091,113 to which the '896 and
10 '883 patents claim priority did not disclose connecting a “playback device” to “a
11 secure wireless local area network (WLAN) that is defined by an access point,” as
12 required by the claims of the '896 and '883 patents.

13 The '949 patent, at least claims 5 and 12, are not entitled to the claimed
14 priority date of June 5, 2004, because U.S. Pat. Appl. No. 10/861,653 filed June 5,
15 2004 does not disclose the subject matter of those claims.

16 Google reserves the right to amend these Contentions to the extent that Sonos
17 is permitted to claim priority to an earlier application, assert an earlier conception or
18 reduction to practice date than the priority application filing date, changes its alleged
19 priority dates, or if the Court determines that any of the Patents-in-Suit are not
20 entitled to claim priority to the earlier applications as asserted by Sonos.

21 **V. CLAIM CONSTRUCTION**

22 Claim construction proceedings for this action have not yet occurred.
23 Accordingly, Google reserves the right to modify, amend, and/or supplement its
24 Contentions following claim construction rulings from this Court, or to the extent
25 permitted by this Court. Google also reserves the right to modify, amend, and/or
26 supplement its Contentions upon Sonos’ alteration/clarification of any asserted
27 claim constructions, including as adopted by Sonos in its Infringement Contentions
28 or any amendment thereto.

1 Google's Contentions are based in part on its present understanding of Sonos'
2 Infringement Contentions. In some instances, Sonos' Infringement Contentions
3 contradict the teachings of the Patents-In-Suit, contradict the meaning of the claim
4 terms as would have been understood by a person of ordinary skill in the art, are
5 internally inconsistent, and/or are vague and conclusory concerning how the claim
6 limitations supposedly read on the accused products or activities. As a result,
7 Google is currently unable to fully discern Sonos' position regarding the
8 construction of the patent claim limitations or terms. To the extent that Sonos
9 supplements or amends its Infringement Contentions, Google reserves the right to
10 modify, amend, and/or supplement these Contentions.

11 Google's Contentions do not represent its agreement or view as to the
12 meaning of any claim term contained therein. To the extent that Google asserts that
13 prior art is anticipatory or renders obvious claims based on the construction
14 apparently applied by Sonos to the Asserted Claims, Google's Contentions are not—
15 and should not be interpreted as—adoptions or admissions as to the accuracy of that
16 scope or construction.

17 Nothing in Google's Contentions should be deemed an admission regarding
18 the scope of any claims or the proper construction of those claims or any terms
19 contained therein. Nor should anything contained herein be understood or deemed to
20 be an express or implied admission or contention with respect to the proper
21 construction of any terms in any asserted claim, or with respect to the alleged
22 infringement of that claim.

23 Unless otherwise stated herein, Google takes no position on any matter of
24 claim construction in these Contentions. Google reserves the right to propose any
25 claim construction they consider appropriate and to contest any claim construction
26 they consider inappropriate. Google also reserves the right to argue that certain
27 claim terms, phrases, and elements are indefinite, lack written description, are not
28 enabled and/or are otherwise invalid under 35 U.S.C. § 112.

1 Because of the uncertainty of claim construction, Google reserves the right to
2 further supplement or modify the positions and information in these Contentions,
3 including, without limitation, the prior art and grounds of invalidity set forth herein,
4 after the Asserted Claims have been construed, in accordance with the S.P.R. and
5 the Court's Orders.

6 **VI. ONGOING DISCOVERY AND DISCLOSURES**

7 Discovery in this case and Defendant's investigation, including Defendant's
8 search for prior art, are ongoing. Some of the relevant prior art and other
9 information is in the possession of third parties, and Google is in the process of
10 seeking discovery related to such prior art. For example, Defendant intends to
11 subpoena or otherwise seek discovery from third parties regarding at least the
12 following prior art systems, including from Barix Technology, Inc., ClearOne Inc.,
13 Consumer Technology Association, HP Inc., Stanford University, Bose Corporation,
14 Best Buy Co., Inc., Logitech Inc., SMC Networks, Inc., Belkin International, Inc.,
15 Linksys Holdings, Inc., Yamaha Corporation of America, Apple Inc., Smart
16 Systems Technologies, Inc., FMP, Inc., Nice North America, and others, in addition
17 to other systems that may be related to the Patents-In-Suit and printed publication
18 references disclosed in these contentions, and including of third-party inventors or
19 authors of prior art references. Google expressly reserves the right to amend or
20 modify these Contentions based on additional information obtained through
21 continued formal discovery or other means pursuant to Fed. R. Civ. P. 26(e).

22 Google further reserves the right to revise, amend, or supplement these
23 Contentions, including by identifying, charting, and relying on additional
24 information, references, systems, and devices, should Google's further search and
25 analysis yield additional information, references, systems, or devices, consistent
26 with the S.P.R. and the Federal Rules of Civil Procedure. In addition, Google
27 reserves the right to supplement, amend, and/or alter the positions taken and
28 information disclosed in these Contentions including, without limitation, the prior

1 art and grounds of invalidity set forth herein under 35 U.S.C. §§ 101, 102, 103 or
2 112, to take into account information or defenses that may come to light as a result
3 of Google's discovery efforts; additional information obtained as to the priority
4 date(s) of the asserted claim; testimony or documents produced by a party or non-
5 party; and positions that Sonos may take concerning infringement or invalidity
6 issues. For example, Google may seek further discovery from third parties believed
7 to have knowledge, documentation, or corroborating evidence concerning prior art
8 references, including prior art listed in the Exhibits hereto. Such third parties may
9 include, without limitation, the authors, inventors, assignees, owners, or developers
10 of the references and technologies listed in these disclosures.

11 Defendant further reserve the right to rely upon prior art cited in the file
12 histories of the Patents-In-Suit and related patent applications, including post-
13 issuance proceedings, as invalidating references or to show the state of the art.
14 Defendant further reserve the right to rely upon additional prior art to show the state
15 of the art. Defendant further intend to rely on inventor admissions, and admissions
16 by Sonos and others providing testimony on behalf of Sonos (e.g., experts),
17 concerning the scope of the prior art relevant to the Patents-In-Suit found in, *inter*
18 *alia*: the patent prosecution history for the Patents-In-Suit and any related patents or
19 patent applications, including post-issuance proceedings; any deposition testimony
20 of the named inventors on the Patents-In-Suit; and the papers filed and any evidence
21 submitted by Sonos in connection with this litigation, prior litigations, and other
22 proceedings involving the Patents-in- Suit. Google incorporates by reference the
23 relevant testimony of any fact witnesses who are deposed, provide declarations, or
24 otherwise testify in this lawsuit.

25 Based on the publicly available version of the Initial Determination, Google
26 also incorporates by reference any allegations concerning invalidity or
27 unenforceability of the Patents-In- Suit, in Inv. No. 337-TA-1191. Documents that
28 formed the basis for Google's invalidity and unenforceability arguments in Inv. No.

1 337-TA-1191 have not yet been produced in this litigation, and thus Google cannot
2 rely on those documents in this litigation at this time. Specifically, while some
3 members of Google’s legal team have historically had access to documents
4 containing Confidential Business Information (“CBI”) produced by Sonos and third
5 parties in the ITC investigation, the protective order in the ITC investigation
6 precludes those members of Google’s legal team from sharing any knowledge
7 gained from those documents with others or using that knowledge in this litigation.
8 Google anticipates, however, to raise all invalidity and unenforceability arguments
9 based on those raised in Inv. No. 337-TA-1191 also in this litigation, in addition to
10 any new defenses raised for the first time in this litigation, and thus incorporates its
11 positions from Inv. No. 337-TA-1191 by reference into these Contentions. To the
12 extent Sonos contends that Google was obligated to expressly disclose any
13 invalidity or unenforceability arguments from the ITC investigation that partially or
14 fully relied on CBI produced in the ITC investigation in these contentions, members
15 of Sonos’ legal team who participated in the ITC investigation are already aware of
16 all those arguments. Accordingly, at a minimum, there is no prejudice from
17 Google’s careful observation of the requirements of the protective order in the ITC
18 investigation and avoidance of reliance on any knowledge gained from CBI
19 produced in the ITC investigation.

20 **VII. INVALIDITY CONTENTIONS**

21 **A. Invalidity Contentions Pursuant to S.P.R. 2.5.1**

22 Pursuant to S.P.R. 2.5.1, and as detailed below and in the attached Exhibits,
23 Google contends that the Asserted Claims of the Patents-In-Suit are invalid as
24 anticipated and/or obvious, either expressly or inherently as understood by a person
25 having ordinary skill in the art, under 35 U.S.C. §§ 102 and 103 over at least the
26 following prior art. To the extent that any prior art listed herein is not identified as
27 prior art that anticipates and/or renders obvious an Asserted Claim, Google intends
28

1 to rely on the reference as background and as evidence of the state of the art at the
2 time of Sonos' alleged invention.

3 In addition to the references identified below, the prior art references and
4 systems identified below, and the "References Cited" on the face of the Patents-In-
5 Suit, may render obvious alone or in combination with any other reference cited
6 herein the asserted claim of the Patents-In-Suit; provide background and context
7 pertinent to the teachings and interpretation of the prior art referenced by the claim
8 charts identified above; and may also be indicative of the relevant state of the art
9 and/or the knowledge of one of ordinary skill in the art at the time of inventions of
10 the Patents-In-Suit, such that it demonstrates, for example, the lack of invention
11 between the asserted claim and the prior art as well as teachings, suggestions and
12 motivations to combine. The prior art is exemplary only and is not in any way
13 intended to limit the scope of what one of ordinary skill in the art would have
14 understood at the time of the alleged invention.

15 Furthermore, along with the references disclosed in these contentions, the
16 exhibits thereto, the Patent-In-Suit and its prosecution history, and the common
17 sense and understanding of those in the relevant field at the time of the alleged
18 invention, invalidity may be demonstrated by the live testimony of relevant
19 witnesses, who will be identified in accordance with the case schedule and as
20 discovery in this matter proceeds. Such witnesses may be used, among other
21 purposes, to discuss issues of prior art systems, prior art references, and the
22 knowledge of one of ordinary skill in the art at the time of the alleged invention. As
23 noted above, Google intends to seek third party discovery regarding certain prior art
24 systems, in addition to other systems that may be related to the Patents-In-Suit and
25 printed publication references disclosed in these contentions.

26 Google reserves the right to rely upon additional prior art, information,
27 testimony, and/or knowledge to demonstrate what one of ordinary skill in the art
28

would have understood prior to the date of the alleged invention of the asserted claim of the Patents-In-Suit.

1. '949 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
949-2	Isely	Dec. 29, 2000	Sept. 5, 2002
949-5	Geiwitz	Oct. 22, 2001	May 15, 2003
949-6	Allen	June 15, 1999	March 9, 2004

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
949-1	Bose	Before Jan. 6, 2000	Bose Corporation
949-3	Cd3o	Before Jan. 9, 2003	Cd3o, Inc.
949-4	Russound	Before Oct. 1, 2003	FMP, Inc. d/b/a Russound

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 949-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '949 patent.

Reference¹	Relevant Date
5761320	June 2, 1998
7657224	May 6, 2003
KR20030011128	February 6, 2003
20030220705	May 24, 2002
20020124097	September 5, 2002
6741708	October 27, 2000
6336219	January 1, 2002

¹ Numeral only entries relate to U.S. patent/applications. For example, "5761320" means U.S. Patent No. 5761320, unless otherwise indicated.

1	Reference¹	Relevant Date
2	5182522	January 26, 1993
3	20020072816	June 13, 2002
4	7123731	March 7, 2001
5	60379313	June 2, 2003
6	2005013155	May 8, 2003
7	20040131192	September 20, 2003
8	6131130	October 10, 2000
9	6469633	October 22, 2002
10	8483853	September 11, 2007
11	20030103088	June 5, 2003
12	5182552	January 26, 1993
13	7197148	September 9, 2002
14	7831054	June 28, 2005
15	7987294	October 16, 2007
16	6038614	March 14, 2000
17	20030167335	September 4, 2003
18	20030063755	April 3, 2003
19	6653899	November 25, 2003
20	20020101357	August 1, 2002
21	8477958	February 26, 2001
22	20030231208	December 18, 2003
23	20060072489	October 11, 2001
24	6127941	October 3, 2000
25	20020078293	June 20, 2002
26	20040183827	March 17, 2003
27	5990884	November 23, 1999
28	7505889	December 5, 2002
	6778073	June 26, 2001
	7146260	April 24, 2001
	5946343	August 31, 1999
	7558224	July 29, 2003
	6654720	May 9, 2000
	“Home theater systems that are a real blast” (Associated Press)	January 6, 2000
	“Sears reveals plans for new Eatons stores” (Canada Stock Watch)	October 26, 2000
	“The Goods: What’s New, What’s Hot” (Atlanta Journal and Constitution)	November 9, 2000

Reference¹	Relevant Date
"Bose® Lifestyle® 50 System, Owner's Guide" (Bose)	October 17, 2001
"Bose® Lifestyle® Powered Speaker System, Owner's Guide" (Bose)	December 20, 2001
"The Bose® Lifestyle® Amplifier, Owner's Guide" (Bose)	January 4, 2002
"Outfitting your personal fortress of solitude" (Newark Star-Ledger)	March 14, 2002
"Exstreamer Technical Description v1.5" (Barix AG)	October 2002
"Exstreamer Instruction Manual v1.5" (Barix AG)	October 2002
"cd3o Network MP3 Player Product Manual" (cd3o)	2003
"TECHNOLOGY GETS SIMPLER AND SMARTER" (Milwaukee Journal Sentinel)	January 14, 2003
"The toys of summer: Some cool tools that will get you through the lazy days" (Network World)	September 1, 2003
"C-Media Xear 3d Sound Solution User Manual, Rev. 2.1" (C-Media)	May 21, 2002
"Intel 478 Mainboard User's Manual, Revision 1.0" (Intel)	March 27, 2003
"MSI 865PE Neo2 ATX Mainboard Manual, Version 1.1" (MSI)	April 2003
"C-Media CM102-A/102S USB 2CH Audio Controller Data Sheet, Version 1.4" (C-Media)	May 21, 2003
"Xear 3D User Manual, Revision 1.0" (C-Media)	January 2004
"Electronic House Expo Announces 2005 Multi-Room Audio/Video Award Winners" (Wireless News)	November 18, 2005
"Crestron's Adagio Entertainment System With New AMS Processor Wins Awards at CEDIA" (Audio World)	September 29, 2006

Reference¹	Relevant Date
“CEDIA Abuzz With Trends” (Computer Reseller News)	October 9, 2006
“Crestron Industry Awards” (Crestron)	2006
“Crestron Industry Awards” (Crestron)	2007
“CEA Announces 2007 Mark of Excellence Award Winners” (Business Wire)	March 10, 2007
“Life in the iPad” (LA Times)	March 15, 2007
“Crestron Adagio Product Brochure” (Crestron)	April 2007
“Crestron Adagio® AMS Media System Operations Guide” (Crestron)	May 2008
“Electronics Systems Allow Homeowners to Automate Abode” (Sinocast)	December 9, 1998
“IBM Home Director Owner’s Manual, Second Edition” (IBM)	May 1999
“Wired homes coming into the mainstream: Home Director adds intelligence to your residence” (Edmonton Journal)	July 24, 1998
“Builders making most of advanced wiring” (Washington Times)	March 2, 2001
“Home Director Announces Availability of AudioPoint Receiver” (PR Newswire)	September 27, 2002
“SIRIUS, XM COMPANIES FLOOD CEDIA WITH NEW PRODUCTS” (Satellite Week)	September 15, 2003
“Electronic House Expo Fall 2003 Exhibitor Profiles” (Business Wire)	November 11, 2003
“Netstreams Product Catalog 2003/2004” (Netstreams)	2003/2004
“Electronic House Expo Spring 2004 Exhibitor Profiles” (Business Wire)	March 10, 2004
“InfoComm 2004 Exhibitors” (Vol. 7 Issue 5) (University Business)	May 1, 2004
“Netstreams Musica MUR2E Network Interface” (Netstreams)	2004

Reference¹	Relevant Date
"Netstreams Musica Data Sheet" (Netstreams)	2004
"Netstreams Music Network Interface" (Netstreams)	2005
"Omnifi DMS1 Wi-Fi Media Receiver" (Sound & Vision)	October 20, 2003
"D-Link to Supply Omnifi With Exclusive New Antenna For Streaming Audio Throughout the House D-Link's DWL120R Antenna to be Marketed With Omnifi's DMS1 Home Digital Media Streamer" (PR Newswire)	January 8, 2004
"IDG'S PC World Announces Winners of the 2004 World Class Awards" (PR Newswire)	June 2, 2004
"Slim Devices Introduces Squeezebox" (PR Newswire)	November 18, 2003
"Slim Devices Introduces Slimserver" (PR Newswire)	November 18, 2003
"Squeezebox Network Music Player Owner's Manual" (Slim Devices)	2003
"Squeezebox Owner's Guide" (Logitech)	2007
"Digital Audio Terminal MCX-A10 Owner's Manual" (Yamaha)	November 4, 2003
"Digital Audio Server MCX-1000 Owner's Manual" (Yamaha)	2002
"SOUND AND FURY THE LATEST IN VOLUME AND VIDEO AT S.F. HOME ENTERTAINMENT SHOW" (SF Chronicle)	June 6, 2003
"Yamaha Announces the World's First Wireless Home Music System" (Japan Corporate News)	August 11, 2003
"Yamaha Musiccast: An easy way to spread music around your home" (Popular Science)	December 1, 2003
"Sonic divide crumbles" (Herald Sun (Australia))	September 5, 2001

Reference¹	Relevant Date
"Fresh Gadgets" (The Age (Australia))	September 7, 2001
"Yamaha Personal Receiver RP-U200 Operation Manual & Setup Manual" (Yamaha)	April 11, 2001
"Sound Advice" (Jazz Times)	November 2000
"Electronic Awards" (Incentive)	June 2001
"From a remote control house-monitoring system to a brand-new helicopter, there's something for everyone" (SF Examiner)	December 19, 2001
"Reviewer's Choice Awards" (Sound & Vision)	December 2000
"Wireless Home Networks — DECT, Bluetooth, HomeRF, and Wireless LANs" (Amit Dhir)	March 21, 2001
"UWB technology for wireless video networking" (Aiello, Lo, Taylor)	June 11, 2001
"In-home wireless networking: an entertainment perspective" (D. Evans, Electronics & Communication Engineering Journal, Vol. 13, Issue 5 213-19)	October 2001
"Sony shows off range of home LANs (Stephen Lawson)	December 15, 2000
"Digital Home Working Group to seek platform compatibility (Yoshiko Hara)	June 27, 2003
IEEE Communications Magazine, "Home Networks: A Standards Perspective" (Bill Rose)	December 2001
"UPnP™ Device Architecture 1.0, Version 1.0.1, 06 May 2003" (ISO)	May 6, 2003
"Institutive Security Initiation Using Location-Limited Channels" (Kari Kostiainen)	April 2004
"The IEEE 802.11e MAC for Quality of Service in Wireless LANs" (H.L. Truong, G. Vannuccini, IBM Research)	2003
"A GLIMPSE OF THE DIGITAL FUTURE TECHNOLOGY EXECS	January 7, 2000

Reference¹	Relevant Date
PLAY PROGNOSTICATORS AT LAS VEGAS SHOW” (David Boraks, Charlotte Observer)	
“CES showcases Internet everywhere” (Cameron Crouch, CNN)	January 7, 2000
“Wi-Fi Goes Hi-Fi” (Om Malik, MIT Technology Review)	April 18, 2003
ZX135 : Installation Manual (LA Audio)	April 2003
“Residential Distributed Audio Wiring Practices” (Leviton Networking Solutions)	July 3, 2001
“DACsys2000 Manual Version 2.00” (DACsys2000)	2001
Barix Exstreamer (Barix Technology, Inc.)	On information and belief, as least as of April 6, 2013
Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
cd3o Network MP3 Player (cd3o)	On information and belief, as early as January 14, 2003
C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
Creston Adagio (Creston Electronics, Inc.)	On information and belief, as early as November 18, 2005
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
Netstreams Musica (Netstreams and ClearOne)	On information and belief, as early as May 9, 2002
Omnifi DMS1 Wi-Fi Media Receiver (Omnifi/Rockford Fostage)	On information and belief, as early as October 20, 2003
Logitech Squeezebox (Logitech Inc.)	On information and belief, as least as of May 19, 2002
Yamaha MusicCAST System (Yamaha Corporation of America)	On information and belief, as least as of June 6, 2003
Yamaha Personal Receiver (Yamaha Corporation of America)	On information and belief, as least as of September 5, 2001
Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003

Reference¹	Relevant Date
UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
Escient Fireball (Escient)	On information and belief, as least as of October 2003
Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002
RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of Feb. 19, 1999
ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001
7391791	November 27, 2003
20060287746	December 21, 2006
5761320	June 2, 1998
7269338	December 11, 2001
WO2003093950	November 13, 2003
20050090915	October 22, 2002
20020072816	June 13, 2002
5086385	February 4, 1992
CocoonTech Forum Thread ²	February 10, 2004
20050195986	March 3, 2004
20030142814	July 31, 2003
20040176141	February 5, 2004
20040003051	June 27, 2002
20040117044	December 13, 2002
20030216958	Nov. 20, 2003
8462961	May 27, 2005
7561932	August 19, 2003
JP2004140531	October 16, 2002
JPH0548421	June 25, 1993
JP2002164754	June 7, 2002
KR200247762	October 29, 2001
JPH09166991	December 15, 1995
KR200302580	January 30, 2003

² <https://cocoontech.com/threads/how-to-control-multiple-winamp-audio-zones.171/>

Reference¹	Relevant Date
20040117044	December 13, 2002
20050239396	March 26, 2004
20030142814	July 31, 2003
GB2362739	November 28, 2001
7561932	August 19, 2003
JP2004112677	April 8, 2004
7043032	June 15, 1999
7424117	August 25, 2003
20040199277	April 4, 2003
20050031129	October 10, 2003
DE10227038	June 26, 2003
KR100265712	July 15, 1999
JP2000156850	June 6, 2000

2. '014 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
014-2	Isely	Dec. 29, 2000	Sept. 5, 2002
014-5	Geiwitz	Oct. 22, 2001	May 15, 2003
014-6	Allen	June 15, 1999	March 9, 2004

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
014-1	Bose	Before Jan. 6, 2000	Bose Corporation
014-3	Cd3o	Before January 9, 2003	Cd3o, Inc.
014-4	Russound	Before Oct. 1, 2003	FMP, Inc. d/b/a Russound

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 014-B.

1 In addition, Google reserves the right to rely upon at least the following
2 additional prior art to demonstrate the state of the art at the time of the alleged
3 invention the '014 patent.

4	Reference ³	Relevant Date
5	5761320	June 2, 1998
6	7657224	May 6, 2003
7	KR20030011128	February 6, 2003
8	20030220705	May 24, 2002
9	20020124097	September 5, 2002
10	6741708	October 27, 2000
11	6336219	January 1, 2002
12	5182522	January 26, 1993
13	20020072816	June 13, 2002
14	7123731	March 7, 2001
15	60379313	June 2, 2003
16	2005013155	May 8, 2003
17	20040131192	September 20, 2003
18	6131130	October 10, 2000
19	6469633	October 22, 2002
20	8483853	September 11, 2007
21	20030103088	June 5, 2003
22	5182552	January 26, 1993
23	7197148	September 9, 2002
24	7831054	June 28, 2005
25	7987294	October 16, 2007
26	6038614	March 14, 2000
27	20030167335	September 4, 2003
28	20030063755	April 3, 2003
	6653899	November 25, 2003
	20020101357	August 1, 2002
	8477958	February 26, 2001
	20030231208	December 18, 2003
	20060072489	October 11, 2001
	6127941	October 3, 2000
	20020078293	June 20, 2002
	20040183827	March 17, 2003

3 Numeral only entries relate to U.S. patent/applications. For example,
"5761320" means U.S. Patent No. 5761320, unless otherwise indicated.

1	Reference ³	Relevant Date
2	5990884	November 23, 1999
3	7505889	December 5, 2002
4	6778073	June 26, 2001
5	7146260	April 24, 2001
6	5946343	August 31, 1999
7	7558224	July 29, 2003
8	6654720	May 9, 2000
9	"Home theater systems that are a real blast" (Associated Press)	January 6, 2000
10	"Sears reveals plans for new Eatons stores" (Canada Stock Watch)	October 26, 2000
11	"The Goods: What's New, What's Hot" (Atlanta Journal and Constitution)	November 9, 2000
12	"Bose® Lifestyle® 50 System, Owner's Guide" (Bose)	October 17, 2001
13	"Bose® Lifestyle® Powered Speaker System, Owner's Guide" (Bose)	December 20, 2001
14	"The Bose® Lifestyle® Amplifier, Owner's Guide" (Bose)	January 4, 2002
15	"Outfitting your personal fortress of solitude" (Newark Star-Ledger)	March 14, 2002
16	"Exstreamer Technical Description v1.5" (Barix AG)	October 2002
17	"Exstreamer Instruction Manual v1.5" (Barix AG)	October 2002
18	"cd3o Network MP3 Player Product Manual" (cd3o)	2003
19	"TECHNOLOGY GETS SIMPLER AND SMARTER" (Milwaukee Journal Sentinal)	January 14, 2003
20	"The toys of summer: Some cool tools that will get you through the lazy days" (Network World)	September 1, 2003
21	"C-Media Xear 3d Sound Solution User Manual, Rev. 2.1" (C-Media)	May 21, 2002
22	"Intel 478 Mainboard User's Manual, Revision 1.0" (Intel)	March 27, 2003
23	"MSI 865PE Neo2 ATX Mainboard Manual, Version 1.1" (MSI)	April 2003

1	Reference³	Relevant Date
2	"C-Media CM102-A/102S USB 2CH	May 21, 2003
3	Audio Controller Data Sheet, Version	
4	1.4" (C-Media)	
5	"Xear 3D User Manual, Revision 1.0"	January 2004
6	(C-Media)	
7	"Electronic House Expo Announces	November 18, 2005
8	2005 Multi-Room Audio/Video Award	
9	Winners" (Wireless News)	
10	"Crestron's Adagio Entertainment	September 29, 2006
11	System With New AMS Processor Wins	
12	Awards at CEDIA" (Audio World)	
13	"CEDIA Abuzz With Trends"	October 9, 2006
14	(Computer Reseller News)	
15	"Crestron Industry Awards" (Creston)	2006
16	"Crestron Industry Awards" (Creston)	2007
17	"CEA Announces 2007 Mark of	March 10, 2007
18	Excellence Award Winners" (Business	
19	Wire)	
20	"Life in the iPad" (LA Times)	March 15, 2007
21	"Crestron Adagio Product Brochure"	April 2007
22	(Creston)	
23	"Crestron Adagio® AMS Media System	May 2008
24	Operations Guide" (Creston)	
25	"Electronics Systems Allow	December 9, 1998
26	Homeowners to Automate Abode"	
27	(Sinocast)	
28	"IBM Home Director Owner's Manual,	May 1999
29	Second Edition" (IBM)	
30	"Wired homes coming into the	July 24, 1998
31	mainstream: Home Director adds	
32	intelligence to your residence"	
33	(Edmonton Journal)	
34	"Builders making most of advanced	March 2, 2001
35	wiring" (Washington Times)	
36	"Home Director Announces Availability	September 27, 2002
37	of AudioPoint Receiver" (PR Newswire)	
38	"SIRIUS, XM COMPANIES FLOOD	September 15, 2003
39	CEDIA WITH NEW PRODUCTS"	
40	(Satellite Week)	

1	Reference³	Relevant Date
2	“Electronic House Expo Fall 2003 Exhibitor Profiles” (Business Wire)	November 11, 2003
3	“Netstreams Product Catalog 2003/2004” (Netstreams)	2003/2004
4	“Electronic House Expo Spring 2004 Exhibitor Profiles” (Business Wire)	March 10, 2004
5	“InfoComm 2004 Exhibitors” (Vol. 7 Issue 5) (University Business)	May 1, 2004
6	“Netstreams Musica MUR2E Network Interface” (Netstreams)	2004
7	“Netstreams Musica Data Sheet” (Netstreams)	2004
8	“Netstreams Music Network Interface” (Netstreams)	2005
9	“Omnifi DMS1 Wi-Fi Media Receiver” (Sound & Vision)	October 20, 2003
10	“D-Link to Supply Omnifi With Exclusive New Antenna For Streaming Audio Throughout the House D-Link's DWL120R Antenna to be Marketed With Omnifi's DMS1 Home Digital Media Streamer” (PR Newswire)	January 8, 2004
11	“IDG'S PC World Announces Winners of the 2004 World Class Awards” (PR Newswire)	June 2, 2004
12	“Slim Devices Introduces Squeezebox” (PR Newswire)	November 18, 2003
13	“Slim Devices Introduces Slimserver” (PR Newswire)	November 18, 2003
14	“Squeezebox Network Music Player Owner’s Manual” (Slim Devices)	2003
15	“Squeezebox Owner’s Guide” (Logitech)	2007
16	“Digital Audio Terminal MCX-A10 Owner’s Manual” (Yamaha)	November 4, 2003
17	“Digital Audio Server MCX-1000 Owner’s Manual” (Yamaha)	2002
18	“SOUND AND FURY THE LATEST IN VOLUME AND VIDEO AT S.F.	June 6, 2003

1	Reference³	Relevant Date
2	HOME ENTERTAINMENT SHOW” (SF Chronicle)	
3	“Yamaha Announces the World's First 4 Wireless Home Music System” (Japan Corporate News)	August 11, 2003
5	“Yamaha Musiccast: An easy way to 6 spread music around your home” (Popular Science)	December 1, 2003
7	“Sonic divide crumbles” (Herald Sun 8 (Australia))	September 5, 2001
9	“Fresh Gadgets” (The Age (Australia))	September 7, 2001
10	“Yamaha Personal Receiver RP-U200 Operation Manual & Setup Manual” (Yamaha)	April 11, 2001
11	“Sound Advice” (Jazz Times)	November 2000
12	“Electronic Awards” (Incentive)	June 2001
13	“From a remote control house- 14 monitoring system to a brand-new helicopter, there’s something for everyone” (SF Examiner)	December 19, 2001
15	“Reviewer’s Choice Awards” (Sound & 16 Vision)	December 2000
17	“Wireless Home Networks — DECT, Bluetooth, HomeRF, and Wireless 18 LANs” (Amit Dhir)	March 21, 2001
19	“UWB technology for wireless video networking” (Aiello, Lo, Taylor)	June 11, 2001
20	“In-home wireless networking: an 21 entertainment perspective” (D. Evans, Electronics & Communication 22 Engineering Journal, Vol. 13, Issue 5 23 213-19)	October 2001
24	“Sony shows off range of home LANs (Stephen Lawson)	December 15, 2000
25	“Digital Home Working Group to seek platform compatibility (Yoshiko Hara)	June 27, 2003
26	IEEE Communications Magazine, 27 “Home Networks: A Standards Perspective” (Bill Rose)	December 2001

1	Reference ³	Relevant Date
2	“UPnP™ Device Architecture 1.0, Version 1.0.1, 06 May 2003” (ISO)	May 6, 2003
3	“Institutive Security Initiation Using Location-Limited Channels” (Kari 4 Kostiainen)	April 2004
5	“The IEEE 802.11e MAC for Quality of 6 Service in Wireless LANs” (H.L. Truong, G. Vannuccini, IBM Research)	2003
7	“A GLIMPSE OF THE DIGITAL 8 FUTURE TECHNOLOGY EXECS PLAY PROGNOSTICATORS AT LAS 9 VEGAS SHOW” (David Boraks, Charlotte Observer)	January 7, 2000
10	“CES showcases Internet everywhere” 11 (Cameron Crouch, CNN)	January 7, 2000
12	“Wi-Fi Goes Hi-Fi” (Om Malik, MIT Technology Review)	April 18, 2003
13	ZX135 : Installation Manual (LA Audio)	April 2003
14	“Residential Distributed Audio Wiring 15 Practices” (Leviton Networking Solutions)	July 3, 2001
16	“DACsys2000 Manual Version 2.00” 17 (DACsys2000)	2001
18	Barix Exstreamer (Barix Technology, Inc.)	On information and belief, as least as of April 6, 2013
19	Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
20	cd3o Network MP3 Player (cd3o)	On information and belief, as early as January 14, 2003
21	C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
22	Creston Adagio (Creston Electronics, 23 Inc.)	On information and belief, as early as November 18, 2005
24	IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
25	Netstreams Musica (Netstreams and 26 ClearOne)	On information and belief, as early as May 9, 2002
27	Omnifi DMS1 Wi-Fi Media Receiver 28 (Omnifi/Rockford Fosgate)	On information and belief, as early as October 20, 2003

1	Reference ³	Relevant Date
2	Logitech Squeezebox (Logitech Inc.)	On information and belief, as least as of May 19, 2002
3	Yamaha MusicCAST System (Yamaha Corporation of America)	On information and belief, as least as of June 6, 2003
4	Yamaha Personal Receiver (Yamaha Corporation of America)	On information and belief, as least as of September 5, 2001
5	Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003
6	UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
7	Escient Fireball (Escient)	On information and belief, as least as of October 2003
8	Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
9	Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002
10	RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of Feb. 19, 1999
11	ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
12	DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001
13	7391791	November 27, 2003
14	20060287746	December 21, 2006
15	5761320	June 2, 1998
16	7269338	December 11, 2001
17	WO2003093950	November 13, 2003
18	20050090915	October 22, 2002
19	20020072816	June 13, 2002
20	5086385	February 4, 1992
21	CocoonTech Forum Thread ⁴	February 10, 2004
22	20050195986	March 3, 2004
23	20030142814	July 31, 2003
24	20040176141	February 5, 2004
25	20040003051	June 27, 2002
26	20040117044	December 13, 2002
27	20030216958	Nov. 20, 2003

28 ⁴ <https://cocoontech.com/threads/how-to-control-multiple-winamp-audio-zones.171/>

Reference³	Relevant Date
8462961	May 27, 2005
7561932	August 19, 2003
JP2004140531	October 16, 2002
JPH0548421	June 25, 1993
JP2002164754	June 7, 2002
KR200247762	October 29, 2001
JPH09166991	December 15, 1995
KR200302580	January 30, 2003
20040117044	December 13, 2002
20050239396	March 26, 2004
20030142814	July 31, 2003
GB2362739	November 28, 2001
7561932	August 19, 2003
JP2004112677	April 8, 2004
7043032	June 15, 1999
7424117	August 25, 2003
20040199277	April 4, 2003
20050031129	October 10, 2003
DE10227038	June 26, 2003
KR100265712	July 15, 1999
JP2000156850	June 6, 2000

3. '959 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
959-1	Ramsay	Jan. 7, 2009	Nov. 25, 2010
959-3	McCarty	Mar. 2, 2004	Sept. 8, 2005
959-4	Litback	June 1, 2006	Mar. 8, 2007
959-5	Sasaski	Dec. 10, 2004	July 14, 2005

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
959-2	Rocketfish	October 23, 2009	BestBuy Co.

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
959-6	Sonos Zoneplayer S5	November 20, 2009	Plaintiff

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 959-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '959 patent.

Reference ⁵	Relevant Date
5361381	Nov. 1, 1994
5406634	Apr. 11, 1995
5910990	Jun. 8, 1999
6195435	Feb. 27, 2001
6704421	Mar. 9, 2004
6859538	Feb. 22, 2005
7096169	Aug. 22, 2006
7123731	Oct. 17, 2006
7215649	May 8, 2007
7295548	Nov. 13, 2007
7483538	Jan. 27, 2009
7561697	Jul. 14, 2009
7634093	Dec. 15, 2009
7653344	Jan. 26, 2010
7688989	Mar. 30, 2010
7792311	Sep. 7, 2010
7853341	Dec. 14, 2010
7899656	Mar. 1, 2011
7907736	Mar. 15, 2011
7987294	Jul. 26, 2011
8050203	Nov. 1, 2011
8290173	Oct. 16, 2012

⁵ Numeral only entries relate to U.S. patent/applications. For example "5761320" means U.S. Patent No. 5761320 unless otherwise indicated.

1	Reference⁵	Relevant Date
2	8311226	Nov. 13, 2012
3	8423893	Apr. 16, 2013
4	8442239	May 14, 2013
5	8509463	Aug. 13, 2013
6	8638647	Jan. 28, 2014
7	8688431	Apr. 1, 2014
8	8768252	Jul. 1, 2014
9	9014833	Apr. 21, 2015
10	9560448	Jan. 31, 2017
11	8155335	Apr. 10, 2012
12	20010050991	Dec. 13, 2001
13	20020072816	Jun. 13, 2002
14	20020083172	Jun. 27, 2002
15	20020083342	Jun. 27, 2002
16	20020112084	Aug. 15, 2002
17	20020124097	Sep. 5, 2002
18	20020137505	Sep. 26, 2002
19	20030023411	Jan. 30, 2003
20	20030046703	Mar. 6, 2003
21	20030185400	Oct. 2, 2003
22	20040014426	Jan. 22, 2004
23	20040037433	Feb. 26, 2004
24	20050100174	May 12, 2005
25	20050177256	Aug. 11, 2005
26	20060281409	Dec. 14, 2006
27	20070087686	Apr. 19, 2007
28	20080273714	Nov. 6, 2008
	20090060219	Mar. 5, 2009
	20090087000	Apr. 2, 2009
	20090169030	Jul. 2, 2009
	20110222701	Sep. 15, 2011
	20120148075	Jun. 14, 2012
	WO2009086599	Jul. 16, 2009
	WO2008046530A2	Apr. 24, 2008
	Soundolier Manual (Mitek Corporation)	2006
	Model AW877 Installation and Operation Manual (Acoustic Research)	2007
	Model AW871 Installation and Operation Manual (Acoustic Research)	2007

Reference⁵	Relevant Date
Advanced Audio Distribution Profile Specification (Bluetooth)	Apr. 16, 2007
The Bose® Lifestyle® SA-2 and SA-3 Stereo Amplifier Owner's Guide (Bose Corporation)	2004
The Bose® Lifestyle® 50 System Owner's Guide (Bose Corporation)	Oct. 17, 2001
BridgeCo Wireless Loudspeaker (BridgeCo)	Oct. 10, 2003
Model AW871 Installation and Operation Manual (Acoustic Research)	2003
ExtronNews Issue 16.2 (Extron)	2005
AccessEZ Demonstration Network Home Audio and Video System Installation Manual (Audio Authority)	June 2000
High Fidelity – Special Speaker Issue (High Fidelity)	October 1980
A Methodological Critique of Local Room Equalization Techniques (Howe et al.)	1991
IS809B Wireless Speaker System User's Guide (Digital Products International)	2010
Parrot DS1120 User Manual (Parrot)	2007
Parrot DS1120 User Guide (Parrot)	2008
Phillips Application Book (Hull et al.)	Oct. 1970
Rocketfish RF-WS01/WS01- W/WS02 User Guide (Bestbuy)	2008
Rocketfish RF-RBWS02 User Guide (Bestbuy)	2009
Murph, Rocketfish Wireless Whole Home Audio System Cuts the Cord on All Your Speakers (Engadget)	Oct. 23, 2009
SI-1230 Systems Integration Amplifier Installation & Operation Guide (Niles Audio Corporation)	2009
Sony Home Theater System Operating Instructions (Sony Corporation)	2007

Reference⁵	Relevant Date
Model PA635 Installation Instructions (Xantech Corporation)	2001
Two Speakers Are Better Than 5.1 (Kraemer)	May 1, 2001
Home THX Audio System Room Equalization Manual Rev. 1.5 (Lucas Film)	1995
Barix Exstreamer (Barix Technology, Inc.)	On information and belief, as least as of April 6, 2013
Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
cd3o Network MP3 Player (cd3o)	On information and belief, as early as January 14, 2003
C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
Crestron Adagio (Crestron)	On information and belief, as early as November 18, 2005
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
Netstreams Musica (Netstreams and ClearOne)	On information and belief, as early as May 9, 2002
Omnifi DMS1 Wi-Fi Media Receiver (Omni/Rockford Fosgate)	On information and belief, as early as October 20, 2003
Logitech Squeezebox (Logitech Inc.)	On information and belief, as least as of May 19, 2002
Yamaha MusicCAST System (Yamaha Corporation of America)	On information and belief, as least as of June 6, 2003
Yamaha Personal Receiver (Yamaha Corporation of America)	On information and belief, as least as of September 5, 2001
Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003
UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
Escient Fireball (Escient)	On information and belief, as least as of October 2003
Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002

Reference⁵	Relevant Date
RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of Feb. 19, 1999
ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001
20090279722	November 12 2009
20070055399	March 8 2007
20070149261	June 28 2007
20070263879	November 15 2007
JP2008277906	November 13 2008
EP0971558	January 12 2000
8150460	June 16 2006
20030083024	May 1 2003
KR20080004145	September 25 2008
20070147640	June 28 2007
20090097688	April 16 2009
20080205664	August 28 2008
7346332	January 27 2005
7593533	June 5 2008
20050289224	December 29 2005
“Yamaha DME Owner’s Manual Version 3.5” (Yamaha Corporation)	2004

4. '025 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
025-1	Ramsay	Jan. 7, 2009	Nov. 25, 2010
025-3	McCarty	Mar. 2, 2004	Sept. 8, 2005
025-4	Litback	June 1, 2006	Mar. 8, 2007
025-5	Sasaski	Dec. 10, 2004	July 14, 2005

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
025-2	Rocketfish	October 23, 2009	BestBuy Co.
025-6	Sonos Zoneplayer S5	November 20, 2009	Plaintiff

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 025-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '025 patent.

Reference ⁶	Relevant Date
5361381	Nov. 1, 1994
5406634	Apr. 11, 1995
5910990	Jun. 8, 1999
6195435	Feb. 27, 2001
6704421	Mar. 9, 2004
6859538	Feb. 22, 2005
7096169	Aug. 22, 2006
7123731	Oct. 17, 2006
7215649	May 8, 2007
7295548	Nov. 13, 2007
7483538	Jan. 27, 2009
7561697	Jul. 14, 2009
7634093	Dec. 15, 2009
7653344	Jan. 26, 2010
7688989	Mar. 30, 2010
7792311	Sep. 7, 2010
7853341	Dec. 14, 2010
7899656	Mar. 1, 2011
7907736	Mar. 15, 2011
7987294	Jul. 26, 2011
8050203	Nov. 1, 2011

⁶ Numeral only entries relate to U.S. patent/applications. For example "5761320" means U.S. Patent No. 5761320 unless otherwise indicated.

1	Reference ⁶	Relevant Date
2	8290173	Oct. 16, 2012
3	8311226	Nov. 13, 2012
4	8423893	Apr. 16, 2013
5	8442239	May 14, 2013
6	8509463	Aug. 13, 2013
7	8638647	Jan. 28, 2014
8	8688431	Apr. 1, 2014
9	8768252	Jul. 1, 2014
10	9014833	Apr. 21, 2015
11	9560448	Jan. 31, 2017
12	8155335	Apr. 10, 2012
13	20010050991	Dec. 13, 2001
14	20020072816	Jun. 13, 2002
15	20020083172	Jun. 27, 2002
16	20020083342	Jun. 27, 2002
17	20020112084	Aug. 15, 2002
18	20020124097	Sep. 5, 2002
19	20020137505	Sep. 26, 2002
20	20030023411	Jan. 30, 2003
21	20030046703	Mar. 6, 2003
22	20030185400	Oct. 2, 2003
23	20040014426	Jan. 22, 2004
24	20040037433	Feb. 26, 2004
25	20050100174	May 12, 2005
26	20050177256	Aug. 11, 2005
27	20060281409	Dec. 14, 2006
28	20070087686	Apr. 19, 2007
	20080273714	Nov. 6, 2008
	20090060219	Mar. 5, 2009
	20090087000	Apr. 2, 2009
	20090169030	Jul. 2, 2009
	20110222701	Sep. 15, 2011
	20120148075	Jun. 14, 2012
	WO2009086599	Jul. 16, 2009
	WO2008046530A2	Apr. 24, 2008
	Soundolier Manual (Mitek Corporation)	2006
	Model AW877 Installation and Operation Manual (Acoustic Research)	2007

1	Reference⁶	Relevant Date
2	Model AW871 Installation and Operation Manual (Acoustic Research)	2007
3	Advanced Audio Distribution Profile Specification (Bluetooth)	Apr. 16, 2007
4	The Bose® Lifestyle® SA-2 and SA-3 Stereo Amplifier Owner's Guide (Bose Corporation)	2004
5	The Bose® Lifestyle® 50 System Owner's Guide (Bose Corporation)	Oct. 17, 2001
6	BridgeCo Wireless Loudspeaker (BridgeCo)	Oct. 10, 2003
7	Model AW871 Installation and Operation Manual (Acoustic Research)	2003
8	ExtroNews Issue 16.2 (Extron)	2005
9	AccessEZ Demonstration Network Home Audio and Video System Installation Manual (Audio Authority)	June 2000
10	High Fidelity – Special Speaker Issue (High Fidelity)	October 1980
11	A Methodological Critique of Local Room Equalization Techniques (Howe et al.)	1991
12	IS809B Wireless Speaker System User's Guide (Digital Products International)	2010
13	Parrot DS1120 User Manual (Parrot)	2007
14	Parrot DS1120 User Guide (Parrot)	2008
15	Phillips Application Book (Hull et al.)	Oct. 1970
16	Rocketfish RF-WS01/WS01- W/WS02 User Guide (Bestbuy)	2008
17	Rocketfish RF-RBWS02 User Guide (Bestbuy)	2009
18	Murph, Rocketfish Wireless Whole Home Audio System Cuts the Cord on All Your Speakers (Engadget)	Oct. 23, 2009
19	SI-1230 Systems Integration Amplifier Installation & Operation Guide (Niles Audio Corporation)	2009
20	Sony Home Theater System Operating Instructions (Sony Corporation)	2007
21		
22		
23		
24		
25		
26		
27		
28		

1	Reference⁶	Relevant Date
2	Model PA635 Installation Instructions (Xantech Corporation)	2001
3	Two Speakers Are Better Than 5.1 (Kraemer)	May 1, 2001
4	Home THX Audio System Room Equalization Manual Rev. 1.5 (Lucas 5 Film)	1995
6	Barix Exstreamer (Barix Technology, 7 Inc.)	On information and belief, as least as of April 6, 2013
8	Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
9	cd3o Network MP3 Player (cd3o)	On information and belief, as early as January 14, 2003
10	C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
11	Crestron Adagio (Crestron)	On information and belief, as early as November 18, 2005
12	IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
13	Netstreams Musica (Netstreams and 15 ClearOne)	On information and belief, as early as May 9, 2002
16	Omnifi DMS1 Wi-Fi Media Receiver (Omni/Rockford Fosgate)	On information and belief, as early as October 20, 2003
17	Logitech Squeezebox (Logitech Inc.)	On information and belief, as least as of May 19, 2002
18	Yamaha MusicCAST System (Yamaha 19 Corporation of America)	On information and belief, as least as of June 6, 2003
20	Yamaha Personal Receiver (Yamaha 21 Corporation of America)	On information and belief, as least as of September 5, 2001
22	Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003
23	UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
24	Escient Fireball (Escient)	On information and belief, as least as of October 2003
25	Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
26	Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002
27		
28		

Reference⁶	Relevant Date
RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of Feb. 19, 1999
ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001
20090279722	November 12 2009
20070055399	March 8 2007
20070149261	June 28 2007
20070263879	November 15 2007
JP2008277906	November 13 2008
EP0971558	January 12 2000
8150460	June 16 2006
20030083024	May 1 2003
KR20080004145	September 25 2008
20070147640	June 28 2007
20090097688	April 16 2009
20080205664	August 28 2008
7346332	January 27 2005
7593533	June 5 2008
20050289224	December 29 2005
“Yamaha DME Owner’s Manual Version 3.5” (Yamaha Corporation)	2004

5. '953 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
953-1	Janevski	December 11, 2001	September 11, 2007
953-2	Balassanian	December 17, 2002	June 24, 2008
953-3	Goldberg	December 4, 2006	June 21, 2007
953-4	Kono	May 2, 2002	November 14, 2003

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
953-5	Squeezebox	April 10, 2003	Logitech Inc.
953-6	Yamaha	2003	Yamaha Corp. of America
953-7	Barix	April 6, 2003	Barix AG and/or Barix Technology, Inc.
953-8	p4sync	April 9, 2002	Ryan Barrett and/or Stanford University
953-9	NetStreams Musica	May 9, 2002	ClearOne Inc., NetStreams LLC, Michael Braithwaite, and/or Herman Cardenas

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 953-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '953 patent.

Reference ⁷	Relevant Date
7392102	April 23, 2002
7710941	November 4, 2003
20020018458	September 7, 2001
6751228	March 21, 2000
EP1202490	October 30, 2001
20040114607	April 3, 2003
5313524	October 21, 1992
20020124097	December 29, 2000
5808662	November 8, 1995

⁷ Numeral only entries relate to U.S. patent/applications. For example, "5761320" means U.S. Patent No. 5761320, unless otherwise indicated

1	Reference⁷	Relevant Date
2	“IEEE (Std. No. 1588-2002)” (IEEE)	October 31, 2002
3	20010012757	March 1, 2001
4	7421478	March 7, 2002
5	WO9912319	September 4, 1997
6	7274761	June 21, 2001
7	JP2003163691	November 28, 2001
8	20040224638	April 25, 2003
9	20050131558	May 8, 2003
10	7716375	June 5, 2003
11	20020072816	December 7, 2000
12	6757517	May 10, 2001
13	6778493	February 7, 2000
14	7162315	December 18, 1998
15	20030002849	June 28, 2001
16	7206367	July 10, 2001
17	7295548	November 27, 2002
18	20020150053	April 17, 2001
19	20020131398	March 13, 2001
20	6741708	October 27, 2000
21	20030066094	September 29, 2001
22	20040203936	October 21, 2002
23	20020129128	March 7, 2001
24	7162315	December 18, 1998
25	20030050058	September 13, 2001
26	7076204	July 3, 2002
27	20030014679	March 30, 2001
28	5487067	February 1, 1994
	20070009124	June 7, 2004
	20040001516	June 27, 2002
	JP2004140531	October 16, 2002
	JPH09166991	December 15, 1995
	KR100307589	August 29, 1998
	20050193249	November 22, 2004
	20020150261	February 26, 2001
	20050111676	November 26, 2003
	20050113947	November 20, 2003
	5761601	August 9, 1993
	6703940	June 15, 1999
	20040003051	June 27, 2002

Reference⁷	Relevant Date
20030216958	May 15, 2002
“Performance of the Communication Layers of TCP/IP with the Myrinet Gigabit LAN” (Barak et al.)	1999
“Wide Area Audio Synchronisation” (Barham)	November 1995
“Exstreamer Instruction Manual v1.5 (Barix AG)	October 2002
“Exstreamer Product Sheet v1.0” (Barix AG)	September 2002
“Exstreamer Technical Description v1.5” (Barix AG)	October 2002
“Specification of the Bluetooth System” (Bluetooth)	December 1, 1999
“cd3o Audio Stream Protocol Version 18” (cd3o Inc.)	March 9, 2004
“cd3o Product Manual” (cd3o Inc.	2003
“A Distributed Real-Time MPEG Video Audio Player” (Cen)	1995
“A System Supporting Flexible Distributed Real-Time Music Processing” (Dannenberg)	2001
“Remote Access to Interactive Media” (Dannenberg)	June 1996
“Enhancing Internet Streaming with Cueing Protocols” (Hewlett Packard)	December 2000
“TCP/IP Network Administration (3rd Edition)” (Hunt)	2002
“IEEE Std 1588™-2002” (IEEE)	November 8, 2002
“Security Issues of Contemporary Multimedia Implementations: The Case of Sonos and SonosNet” (Kavalaris et al.)	2014
“On the Importance Of Exact Synchronization for Distributed Audio Signal Processing” (Lienhart)	November 2002
“NetStreams Product Catalog” (NetStreams)	2003

Reference⁷	Relevant Date
"NetStreams Musica Data Sheet" (NetStreams)	2004
"NetStreams Musica Integration & Design Guide" (NetStreams)	2004
"NetStreams Musica R2E Network Interface" (NetStreams)	2004
"An Extended TCP/IP Protocol Over the Local Area Network for DCCS" (Park et al.)	1997
"A Method to Improve the Robustness of MPEG Video Applications over Wireless Networks" (Pillai)	2000
"Feedback 'Techniques for Continuity and Synchronization in Multimedia Information Retrieval" (Rangan)	April 1995
"Multimedia conferencing over ISDN and IP networks using ITU-T H-series recommendations: architecture, control and coordination" (Reid)	1999
"An Adaptive Protocol for Synchronizing Media Streams" (Rothermel)	1997
"Synchronization in Joint-Viewing Environments" (Rothermel)	1992
"Squeezebox Owner's Manual" (Slim Devices)	2003
"Digital Audio Terminal MCX-A10 Owner's Manual" (Yamaha)	June 4, 2003
Digital Audio Server MCX-1000 Owner's Manual (Yamaha)	2002
Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
cd3o Network MP3 Player (cd3o)	On information and belief, as early as January 14, 2003
C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
Creston Adagio (Creston Electronics, Inc.)	On information and belief, as early as November 18, 2005

Reference⁷	Relevant Date
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
Omnifi DMS1 Wi-Fi Media Receiver (Omnifi/Rockford Fosgate)	On information and belief, as early as October 20, 2003
Yamaha Personal Receiver (Yamaha Corporation of America)	On information and belief, as least as of September 5, 2001
Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003
UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
Escient Fireball (Escient)	On information and belief, as least as of October 2003
Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002
RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of February 19, 1999
ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001

6. '258 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
258-1	Janevski	December 11, 2001	September 11, 2007
258-2	Balassanian	December 17, 2002	June 24, 2008
258-3	Goldberg	December 4, 2006	June 21, 2007
258-4	Kono	May 2, 2002	November 14, 2003

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
258-5	Squeezebox	April 10, 2003	Logitech Inc.
258-6	Yamaha	2003	Yamaha Corp. of America
258-7	Barix	April 6, 2003	Barix AG and/or Barix Technology, Inc.
258-8	p4sync	April 9, 2002	Ryan Barrett and/or Stanford University
258-9	NetStreams Musica	May 9, 2002	ClearOne Inc., NetStreams LLC, Michael Braithwaite, and/or Herman Cardenas

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 258-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '258 patent.

Reference ⁸	Relevant Date
7392102	April 23, 2002
7710941	November 4, 2003
20020018458	September 7, 2001
6751228	March 21, 2000
EP1202490	October 30, 2001
20040114607	April 3, 2003
5313524	October 21, 1992
20020124097	December 29, 2000

⁸ Numeral only entries relate to U.S. patent/applications. For example, "5761320" means U.S. Patent No. 5761320, unless otherwise indicated

1	Reference⁸	Relevant Date
2	5808662	November 8, 1995
3	“IEEE (Std. No. 1588-2002)” (IEEE)	October 31, 2002
4	20010012757	March 1, 2001
5	7421478	March 7, 2002
6	WO9912319	September 4, 1997
7	7274761	June 21, 2001
8	JP2003163691	November 28, 2001
9	20040224638	April 25, 2003
10	20050131558	May 8, 2003
11	7716375	June 5, 2003
12	20020072816	December 7, 2000
13	6757517	May 10, 2001
14	6778493	February 7, 2000
15	7162315	December 18, 1998
16	20030002849	June 28, 2001
17	7206367	July 10, 2001
18	7295548	November 27, 2002
19	20020150053	April 17, 2001
20	20020131398	March 13, 2001
21	6741708	October 27, 2000
22	20030066094	September 29, 2001
23	20040203936	October 21, 2002
24	20020129128	March 7, 2001
25	7162315	December 18, 1998
26	20030050058	September 13, 2001
27	7076204	July 3, 2002
28	20030014679	March 30, 2001
29	5487067	February 1, 1994
30	20070009124	June 7, 2004
31	20040001516	June 27, 2002
32	JP2004140531	October 16, 2002
33	JPH09166991	December 15, 1995
34	KR100307589	August 29, 1998
35	20050193249	November 22, 2004
36	20020150261	February 26, 2001
37	20050111676	November 26, 2003
38	20050113947	November 20, 2003
39	5761601	August 9, 1993
40	6703940	June 15, 1999

1	Reference⁸	Relevant Date
2	20040003051	June 27, 2002
3	20030216958	May 15, 2002
4	“Performance of the Communication Layers of TCP/IP with the Myrinet Gigabit LAN” (Barak et al.)	1999
5	“Wide Area Audio Synchronisation” (Barham)	November 1995
6	“Exstreamer Instruction Manual v1.5 (Barix AG)	October 2002
7	“Exstreamer Product Sheet v1.0” (Barix AG)	September 2002
8	“Exstreamer Technical Description v1.5” (Barix AG)	October 2002
9	“Specification of the Bluetooth System” (Bluetooth)	December 1, 1999
10	“cd3o Audio Stream Protocol Version 18” (cd3o Inc.)	March 9, 2004
11	“cd3o Product Manual” (cd3o Inc.	2003
12	“A Distributed Real-Time MPEG Video Audio Player” (Cen)	1995
13	“A System Supporting Flexible Distributed Real-Time Music Processing” (Dannenberg)	2001
14	“Remote Access to Interactive Media” (Dannenberg)	June 1996
15	“Enhancing Internet Streaming with Cueing Protocols” (Hewlett Packard)	December 2000
16	“TCP/IP Network Administration (3rd Edition)” (Hunt)	2002
17	“IEEE Std 1588™-2002” (IEEE)	November 8, 2002
18	“Security Issues of Contemporary Multimedia Implementations: The Case of Sonos and SonosNet” (Kavalaris et al.)	2014
19	“On the Importance Of Exact Synchronization for Distributed Audio Signal Processing” (Lienhart)	November 2002
20	“NetStreams Product Catalog” (NetStreams)	2003

1	Reference⁸	Relevant Date
2	"NetStreams Musica Data Sheet" (NetStreams)	2004
3	"NetStreams Musica Integration & Design Guide" (NetStreams)	2004
4	"NetStreams Musica R2E Network Interface" (NetStreams)	2004
5	"An Extended TCP/IP Protocol Over the Local Area Network for DCCS" (Park et 6 al.)	1997
7	"A Method to Improve the Robustness of MPEG Video Applications over 8 Wireless Networks" (Pillai)	2000
9	"Feedback 'Techniques for Continuity and Synchronization in Multimedia 10 Information Retrieval" (Rangan)	April 1995
11	"Multimedia conferencing over ISDN and IP networks using ITU-T H-series 12 recommendations: architecture, control 13 and coordination" (Reid)	1999
14	"An Adaptive Protocol for Synchronizing Media Streams" 15 (Rothermel)	1997
16	"Synchronization in Joint-Viewing 17 Environments" (Rothermel)	1992
18	"Squeezebox Owner's Manual" (Slim 19 Devices)	2003
20	"Digital Audio Terminal MCX-A10 Owner's Manual" (Yamaha)	June 4, 2003
21	Digital Audio Server MCX-1000 Owner's Manual (Yamaha)	2002
22	Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as 23 January 6, 2000
24	cd3o Network MP3 Player (cd3o)	On information and belief, as early as 25 January 14, 2003
26	C-Media Xear System (C-Media)	On information and belief, as early as 27 May 21, 2002
28	Creston Adagio (Creston Electronics, Inc.)	On information and belief, as early as November 18, 2005

Reference⁸	Relevant Date
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
Omnifi DMS1 Wi-Fi Media Receiver (Omnifi/Rockford Fosgate)	On information and belief, as early as October 20, 2003
Yamaha Personal Receiver (Yamaha Corporation of America)	On information and belief, as least as of September 5, 2001
Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003
UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
Escient Fireball (Escient)	On information and belief, as least as of October 2003
Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002
RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of February 19, 1999
ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001

7. '715 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
715-1	Janevski	December 11, 2001	September 11, 2007
715-2	Balassanian	December 17, 2002	June 24, 2008
715-3	Goldberg	December 4, 2006	June 21, 2007
715-4	Kono	May 2, 2002	November 14, 2003

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
715-5	Squeezebox	April 10, 2003	Logitech Inc.
715-6	Yamaha	2003	Yamaha Corp. of America
715-7	Barix	April 6, 2003	Barix AG and/or Barix Technology, Inc.
715-8	p4sync	April 9, 2002	Ryan Barrett and/or Stanford University
715-9	NetStreams Musica	May 9, 2002	ClearOne Inc., NetStreams LLC, Michael Braithwaite, and/or Herman Cardenas

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 715-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '715 patent.

Reference ⁹	Relevant Date
7392102	April 23, 2002
7710941	November 4, 2003
20020018458	September 7, 2001
6751228	March 21, 2000
EP1202490	October 30, 2001
20040114607	April 3, 2003
5313524	October 21, 1992
20020124097	December 29, 2000

⁹ Numeral only entries relate to U.S. patent/applications. For example, "5761320" means U.S. Patent No. 5761320, unless otherwise indicated

1	Reference⁹	Relevant Date
2	5808662	November 8, 1995
3	“IEEE (Std. No. 1588-2002)” (IEEE)	October 31, 2002
4	20010012757	March 1, 2001
5	7421478	March 7, 2002
6	WO9912319	September 4, 1997
7	7274761	June 21, 2001
8	JP2003163691	November 28, 2001
9	20040224638	April 25, 2003
10	20050131558	May 8, 2003
11	7716375	June 5, 2003
12	20020072816	December 7, 2000
13	6757517	May 10, 2001
14	6778493	February 7, 2000
15	7162315	December 18, 1998
16	20030002849	June 28, 2001
17	7206367	July 10, 2001
18	7295548	November 27, 2002
19	20020150053	April 17, 2001
20	20020131398	March 13, 2001
21	6741708	October 27, 2000
22	20030066094	September 29, 2001
23	20040203936	October 21, 2002
24	20020129128	March 7, 2001
25	7162315	December 18, 1998
26	20030050058	September 13, 2001
27	7076204	July 3, 2002
28	20030014679	March 30, 2001
	5487067	February 1, 1994
	20070009124	June 7, 2004
	20040001516	June 27, 2002
	JP2004140531	October 16, 2002
	JPH09166991	December 15, 1995
	KR100307589	August 29, 1998
	20050193249	November 22, 2004
	20020150261	February 26, 2001
	20050111676	November 26, 2003
	20050113947	November 20, 2003
	5761601	August 9, 1993
	6703940	June 15, 1999

Reference⁹	Relevant Date
20040003051	June 27, 2002
20030216958	May 15, 2002
“Performance of the Communication Layers of TCP/IP with the Myrinet Gigabit LAN” (Barak et al.)	1999
“Wide Area Audio Synchronisation” (Barham)	November 1995
“Exstreamer Instruction Manual v1.5 (Barix AG)	October 2002
“Exstreamer Product Sheet v1.0” (Barix AG)	September 2002
“Exstreamer Technical Description v1.5” (Barix AG)	October 2002
“Specification of the Bluetooth System” (Bluetooth)	December 1, 1999
“cd3o Audio Stream Protocol Version 18” (cd3o Inc.)	March 9, 2004
“cd3o Product Manual” (cd3o Inc.	2003
“A Distributed Real-Time MPEG Video Audio Player” (Cen)	1995
“A System Supporting Flexible Distributed Real-Time Music Processing” (Dannenberg)	2001
“Remote Access to Interactive Media” (Dannenberg)	June 1996
“Enhancing Internet Streaming with Cueing Protocols” (Hewlett Packard)	December 2000
“TCP/IP Network Administration (3rd Edition)” (Hunt)	2002
“IEEE Std 1588 TM -2002” (IEEE)	November 8, 2002
“Security Issues of Contemporary Multimedia Implementations: The Case of Sonos and SonosNet” (Kavalaris et al.)	2014
“On the Importance Of Exact Synchronization for Distributed Audio Signal Processing” (Lienhart)	November 2002
“NetStreams Product Catalog” (NetStreams)	2003

Reference⁹	Relevant Date
"NetStreams Musica Data Sheet" (NetStreams)	2004
"NetStreams Musica Integration & Design Guide" (NetStreams)	2004
"NetStreams Musica R2E Network Interface" (NetStreams)	2004
"An Extended TCP/IP Protocol Over the Local Area Network for DCCS" (Park et al.)	1997
"A Method to Improve the Robustness of MPEG Video Applications over Wireless Networks" (Pillai)	2000
"Feedback 'Techniques for Continuity and Synchronization in Multimedia Information Retrieval" (Rangan)	April 1995
"Multimedia conferencing over ISDN and IP networks using ITU-T H-series recommendations: architecture, control and coordination" (Reid)	1999
"An Adaptive Protocol for Synchronizing Media Streams" (Rothermel)	1997
"Synchronization in Joint-Viewing Environments" (Rothermel)	1992
"Squeezebox Owner's Manual" (Slim Devices)	2003
"Digital Audio Terminal MCX-A10 Owner's Manual" (Yamaha)	June 4, 2003
Digital Audio Server MCX-1000 Owner's Manual (Yamaha)	2002
Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
cd3o Network MP3 Player (cd3o)	On information and belief, as early as January 14, 2003
C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
Creston Adagio (Creston Electronics, Inc.)	On information and belief, as early as November 18, 2005

Reference⁹	Relevant Date
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
Omnifi DMS1 Wi-Fi Media Receiver (Omnifi/Rockford Fosgate)	On information and belief, as early as October 20, 2003
Yamaha Personal Receiver (Yamaha Corporation of America)	On information and belief, as least as of September 5, 2001
Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003
UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
Escient Fireball (Escient)	On information and belief, as least as of October 2003
Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002
RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of February 19, 1999
ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001

8. '001 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
001-1	Janevski	December 11, 2001	September 11, 2007
001-2	Balassanian	December 17, 2002	June 24, 2008
001-3	Goldberg	December 4, 2006	June 21, 2007
001-4	Kono	May 2, 2002	November 14, 2003

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
001-5	Squeezebox	April 10, 2003	Logitech Inc.
001-6	Yamaha	2003	Yamaha Corp. of America
001-7	Barix	April 6, 2003	Barix AG and/or Barix Technology, Inc.
001-8	p4sync	April 9, 2002	Ryan Barrett and/or Stanford University
001-9	NetStreams Musica	May 9, 2002	ClearOne Inc., NetStreams LLC, Michael Braithwaite, and/or Herman Cardenas

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 001-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '001 patent.

Reference ¹⁰	Relevant Date
7392102	April 23, 2002
7710941	November 4, 2003
20020018458	September 7, 2001
6751228	March 21, 2000
EP1202490	October 30, 2001
20040114607	April 3, 2003
5313524	October 21, 1992
20020124097	December 29, 2000
5808662	November 8, 1995

¹⁰ Numeral only entries relate to U.S. patent/applications. For example, "5761320" means U.S. Patent No. 5761320, unless otherwise indicated

1	Reference¹⁰	Relevant Date
2	“IEEE (Std. No. 1588-2002)” (IEEE)	October 31, 2002
3	20010012757	March 1, 2001
4	7421478	March 7, 2002
5	WO9912319	September 4, 1997
6	7274761	June 21, 2001
7	JP2003163691	November 28, 2001
8	20040224638	April 25, 2003
9	20050131558	May 8, 2003
10	7716375	June 5, 2003
11	20020072816	December 7, 2000
12	6757517	May 10, 2001
13	6778493	February 7, 2000
14	7162315	December 18, 1998
15	20030002849	June 28, 2001
16	7206367	July 10, 2001
17	7295548	November 27, 2002
18	20020150053	April 17, 2001
19	20020131398	March 13, 2001
20	6741708	October 27, 2000
21	20030066094	September 29, 2001
22	20040203936	October 21, 2002
23	20020129128	March 7, 2001
24	7162315	December 18, 1998
25	20030050058	September 13, 2001
26	7076204	July 3, 2002
27	20030014679	March 30, 2001
28	5487067	February 1, 1994
29	20070009124	June 7, 2004
30	20040001516	June 27, 2002
31	JP2004140531	October 16, 2002
32	JPH09166991	December 15, 1995
33	KR100307589	August 29, 1998
34	20050193249	November 22, 2004
35	20020150261	February 26, 2001
36	20050111676	November 26, 2003
37	20050113947	November 20, 2003
38	5761601	August 9, 1993
39	6703940	June 15, 1999
40	20040003051	June 27, 2002

1	Reference¹⁰	Relevant Date
2	20030216958	May 15, 2002
3	"Performance of the Communication	1999
4	Layers of TCP/IP with the Myrinet	
5	Gigabit LAN" (Barak et al.)	
6	"Wide Area Audio Synchronisation"	November 1995
7	(Barham)	
8	"Exstreamer Instruction Manual v1.5	October 2002
9	(Barix AG)	
10	"Exstreamer Product Sheet v1.0" (Barix	September 2002
11	AG)	
12	"Exstreamer Technical Description v1.5"	October 2002
13	(Barix AG)	
14	"Specification	December 1, 1999
15	of the Bluetooth System" (Bluetooth)	
16	"cd3o Audio Stream Protocol Version	March 9, 2004
17	18" (cd3o Inc.)	
18	"cd3o Product Manual" (cd3o Inc.)	2003
19	"A Distributed Real-Time MPEG Video	1995
20	Audio Player" (Cen)	
21	"A System Supporting Flexible	2001
22	Distributed Real-Time Music	
23	Processing" (Dannenberg)	
24	"Remote Access to Interactive Media"	June 1996
25	(Dannenberg)	
26	"Enhancing Internet Streaming with	December 2000
27	Cueing Protocols" (Hewlett Packard)	
28	"TCP/IP Network Administration (3rd	2002
29	Edition)" (Hunt)	
30	"IEEE Std 1588™-2002" (IEEE)	November 8, 2002
31	"Security Issues of Contemporary	2014
32	Multimedia Implementations: The Case	
33	of Sonos and SonosNet" (Kavalaris et	
34	al.)	
35	"On the Importance Of Exact	November 2002
36	Synchronization for Distributed Audio	
37	Signal Processing" (Lienhart)	
38	"NetStreams Product Catalog"	2003
39	(NetStreams)	

1	Reference¹⁰	Relevant Date
2	"NetStreams Musica Data Sheet" (NetStreams)	2004
3	"NetStreams Musica Integration & Design Guide" (NetStreams)	2004
4	"NetStreams Musica R2E Network Interface" (NetStreams)	2004
5	"An Extended TCP/IP Protocol Over the Local Area Network for DCCS" (Park et 6 al.)	1997
7	"A Method to Improve the Robustness of MPEG Video Applications over 8 Wireless Networks" (Pillai)	2000
9	"Feedback 'Techniques for Continuity and Synchronization in Multimedia 10 Information Retrieval" (Rangan)	April 1995
11	"Multimedia conferencing over ISDN and IP networks using ITU-T H-series 12 recommendations: architecture, control and coordination" (Reid)	1999
13	"An Adaptive Protocol for Synchronizing Media Streams" 14 (Rothermel)	1997
15	"Synchronization in Joint-Viewing Environments" (Rothermel)	1992
16	"Squeezebox Owner's Manual" (Slim 17 Devices)	2003
18	"Digital Audio Terminal MCX-A10 Owner's Manual" (Yamaha)	June 4, 2003
19	Digital Audio Server MCX-1000 Owner's Manual (Yamaha)	2002
20	Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
21	cd3o Network MP3 Player (cd3o)	On information and belief, as early as January 14, 2003
22	C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
23	Creston Adagio (Creston Electronics, 24 Inc.)	On information and belief, as early as November 18, 2005

Reference¹⁰	Relevant Date
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998
Omnifi DMS1 Wi-Fi Media Receiver (Omnifi/Rockford Fosgate)	On information and belief, as early as October 20, 2003
Yamaha Personal Receiver (Yamaha Corporation of America)	On information and belief, as least as of September 5, 2001
Apple AirPort Express System (Apple Inc.)	On information and belief, as least as of June 7, 2003
UPnP Standard (UPnP)	On information and belief, as least as of June 7, 1999
Escient Fireball (Escient)	On information and belief, as least as of October 2003
Denon AVRs (Denon Electronics)	On information and belief, as least as of August 3, 2000
Xantech Model MRC44 System (Xantech)	On information and belief, as least as of 2002
RVL-6 Modular Multi-Room Controller (Niles Audio)	On information and belief, as least as of February 19, 1999
ZR-8630AV MultiZone Audio/Video Receiver (Niles Audio)	On information and belief, as least as of June 11, 2003
DP-0206 Digital Signal Processor (TOA Electronics, Inc.)	On information and belief, as least as of 2001

9. '896 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
896-2	Chesire	March 19, 2002	September 25, 2003
896-6	Gassho	November 7, 2002	May 15, 2003
896-7	Mathews	March 15, 2013	October 17, 2013
896-8	Rector	May 9, 2002	November 13, 2003

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
896-1	cd3o	Before January 9, 2003	cd3o
896-3	BridgeCo	Before September 16, 2003	BridgeCo AG and/or SMC Networks
896-4	Creative	Before September 30, 2003	Creative Technology
896-5	Linksys	Before July 14, 2003	Linksys
896-9	Airport Express	Before September 25, 2002	Apple
896-10	Yamaha	Before January 9, 2003	Yamaha
896-11	Chromecast	Before July 24, 2013	Google

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 896-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '896 patent.

Reference ¹¹	Relevant Date
20020174243	May 16, 2001
20020124097	December 29, 2000
7397791	December 17, 2002
20030083024	July 3, 2002
20030100335	November 26, 2002
8797926	June 4, 2004
"Specification of the Bluetooth System (Covered Core Package version: 1.2)" (Bluetooth)	November 5, 2003

¹¹ Numeral only entries relate to U.S. patent/applications. For example, "5761320" means U.S. Patent No. 5761320, unless otherwise indicated

1	Reference¹¹	Relevant Date
2	7313384	October 31, 2002
3	20030100335	November 26, 2002
4	20030181203	March 19, 2002
5	7275156	September 5, 2003
6	7454619	September 5, 2003
7	7581096	September 5, 2003
8	7757076	April 30, 2004
9	7937089	September 5, 2003
10	20050129240	December 15, 2003
11	8797926	June 4, 2004
12	7308489	May 29, 2003
13	7643894	May 8, 2003
14	20030220705	May 24, 2002
15	20020124097	December 9, 2000
16	7483538	March 2, 2004
17	7123731	March 7, 2001
18	6741708	October 27, 2000
19	20070142944	December 4, 2006
20	60379313	May 9, 2002
21	7710941	November 4, 2003
22	7392102	April 23, 2002
23	7391791	December 17, 2002
24	7269338	December 11, 2001
25	5761320	June 26, 1995
26	20020072816	December 7, 2000
27	6336219	July 21, 1999
28	KR 20030011128A	January 8, 2003
	5808662	November 8, 1995
	6757517	May 10, 2001
	6778493	February 7, 2000
	7162315	June 15, 2004
	20030050058	September 13, 2001
	20030002849	June 28, 2001
	7076204	July 3, 2002
	7206367	July 10, 2001
	6131130	December 10, 1997
	8156337	April 3, 2006
	20050100166	November 10, 2003
	7392387	February 26, 2007

Reference¹¹	Relevant Date
7185199	August 30, 2002
20030126211	December 12, 2001
7308489	May 29, 2003
7643894	May 8, 2003
“Specification of the Bluetooth System” (Bluetooth)	December 1, 1999
“Squeezebox Owner’s Manual” (Slim Devices)	2003
“SMCWW-AG EZ-Stream Universal Wireless Multimedia Receiver User Guide” (SMC Networks)	2004
“SMCWMR-ARG EZ-Stream Universal Wireless Multimedia Receiver User Guide” (SMC Networks)	2003
“Wireless-B Media Adapter User Guide” (Linksys)	July 18, 2003
“Wireless-B Media Link for Music User Guide” (Cisco)	2004
“Wireless-B Media Adapter User Guide” (Cisco)	Sept. 18, 2003
“Wireless PC Link Quick Installation” (Phillips)	2004
“Remote Control MP3 Music from Your PC ... Wirelessly” (Phillips)	2004
“Wireless PC Link Micro MCW770 Custom Installation” (Phillips)	2004
“EpsonNet 802.11b Wireless Print Server User’s Guide” (EPSON)	2002
“EPSON Stylus C80WN Setup and Installation” (EPSON)	2001
“SoundBlaster Wireless Music User’s Guide” (Creative)	2003
“Audio Stream Protocol” (cd3o)	March 9, 2004
“Product Manual” (cd3o)	2003
“Audio Control Protocol” (cd3o)	September 18, 2003
“Multi-Player Synchronization” (various)	January 15-25, 2004
“Multiple stereos -- multiple cd30s -- same music?” (various)	November 2-19, 2003

Reference¹¹	Relevant Date
"AirPort Express Setup Guide" (Apple)	May 20, 2004
"Wireless Audio Adapter User Manual" (BridgeCo)	January 7, 2004
"BridgeCo Wireless Speakers Product Information" (BridgeCo)	October 10, 2003
"Vision" (BridgeCo)	October 18, 2003
"Digital Audio Terminal MCX-A10 Owner's Manual" (Yamaha)	June 4, 2003
"Digital Audio Server MCX-1000 Owner's Manual" (Yamaha)	2002
"IEEE 802.11-1999" (IEEE)	1999
"Transmission Control Protocol, RFC 793" (Information Science Institute, USC)	September 1981
"The TLS Protocol Version 1.0, RFC 2246" (T. Dierks et al.)	January 1999
"Universal Serial Bus Specification Revision 2.0" (Compaq et al.)	April 27, 2000
"Near Field Communication White Paper" (ECMA)	February 2004
"Developer Connection – About" (Apple)	2003
"Developer Connection – Publishing Network Services" (Apple)	2003
"Developer Connection – Resolving and Using Network Services" (Apple)	2003
"Universal Plug and Play in Windows XP" (Microsoft)	July 2001
"UPnP AV Architecture: 0.83" (Microsoft)	June 12, 2002
"A Simple Network Management Protocol (SNMP)" (J. Case et al.)	May 1990
"Autoconfiguration for IP Networking" (Guttman)	June 2001
"Zeroconf Host Profile Applicability Statement" (Guttman)	July 20, 2001
"Simple Service Discovery Protocol 1.0" (Yaron Y. Goland et al.)	October 28, 1999

Reference¹¹	Relevant Date
"Hypertext Transfer Protocol -- HTTP/1.1, RFC 2616" (R. Fielding et al.)	June 1999
"IEEE 802.3-2002" (IEEE)	2002
"Omnifi DMS1 Wi-Fi Media Receiver" (Sound and Vision)	October 20, 2003
"Bose® Lifestyle® 50 System, Owner's Guide" (Bose)	October 17, 2001
"Bose® Lifestyle® Powered Speaker System, Owner's Guide" (Bose)	December 20, 2001
"The Bose® Lifestyle® Amplifier, Owner's Guide" (Bose)	January 4, 2002
"Home theater systems that are a real blast" (Associated Press)	January 6, 2000
"Netstreams Product Catalog 2003/2004" (Netstreams)	2003/2004
"Netstreams Musica Data Sheet" (Netstreams)	2004
"NetStreams Musica R2E Network Interface" (Netstreams)	2004
"Exstreamer Technical Description v1.5" (Barix AG)	October 2002
"Exstreamer Instruction Manual v1.5" (Barix AG)	October 2002
"C-Media Xear 3d Sound Solution User Manual, Rev. 2.1" (C-Media)	May 21, 2002
"Crestron Adagio Product Brochure" (Crestron)	April 2007
"Intel 478 Mainboard User's Manual, Revision 1.0" (Intel)	March 27, 2003
"Xear 3D User Manual, Revision 1.0" (C-Media)	January 2004
"Slim Devices Introduces Squeezebox" (PR Newswire)	November 18, 2003
"Synchronizing MP3 Playback" (Barrett)	December 29, 2002
"Step-by-step P4 Connection" (Barrett)	2002
"P4 Proposal" (Barrett)	April 9, 2002

Reference¹¹	Relevant Date
“Wireless Home Networks – DECT, Bluetooth, HomeRF, and Wireless LANs” (Dhir)	2000
“UWB Technology for Wireless Video Networking” (M. Ho et al.)	2001
“In-home wireless networking: an entertainment perspective” (D. Evans)	October 2001
“Sony shows off range of home LANs” (Lawson)	December 15, 2000
“Digital Home Working Group to seek platform compatibility” (Hara)	June 27, 2003
“DNLA White Paper, Use Case Scenarios” (DNLA)	June 2004
“Home Networks: A Standards Perspective” (Rose)	December 2001
“UPnP™ Device Architecture 1.0, Version 1.0.1” (UPnP Forum)	May 6, 2003
“Authentication and Authorization in Universal Plug and Play Home Networks” (Kangas)	2002
“Wi-Fi Hotspot Networks Sprout Like Mushrooms” (IEEE)	September 2002
“IM-based Subscriber Authentication for Wireless Local Area Networks” (Tsai et al.)	2003
“EAP-TLS Smartcards, from Dream to Reality” (Urien et al.)	August 9, 2004
“Institutive Security Initiation Using Location-Limited Channels” (Kostianinen)	April 2004
“Secure Wireless Gateway” (Godber et al.)	September 2002
Barix Exstreamer (Barix Technology, Inc.)	On information and belief, as least as of April 6, 2013
p4sync (Stanford University)	On information and belief, as least as of April 9, 2002
cd30 C200 & C300 (as sold, or when run using scripts discussed in GOOG-	On information and belief, as least as of January 14, 2003

Reference¹¹	Relevant Date
SONOSITC-PA-00013347 or GOOG-SONOSITC-PA-00013351) (cd3o)	
SMC Networks EZ-Stream Universal Wireless Multimedia Receiver SMCWMR-AG (SMC Networks Inc.)	On information and belief, as least as of November 3, 2003
SMC Networks EZ-Stream Wireless Audio Adapter SMCWAA-B (SMC Networks Inc.)	On information and belief, as least as of January 7, 2004
Philips Wireless PC Link Micro System (MCW770) (Koninklijke Philips N.V. and Philips North America Corporation)	On information and belief, as least as of January 6, 2004
Linksys Wireless-B Media Adapter WMA11B (Cisco Systems, Inc.)	On information and belief, as least as of July 14, 2003
Hewlett Packard HP Deskjet 5800 Series (HP Inc.)	On information and belief, as least as of October 13, 2003
EPSON EpsonNet 802.11b Wireless Print Server (Seiko Epson Corporation and Epson America, Inc.)	On information and belief, as least as of January 14, 2002
Creative SoundBlaster Wireless Music (Creative Technology Ltd.)	On information and belief, as least as of October 1, 2003
BridgeCo Wireless Audio Adapter (BridgeCo)	On information and belief, as least as of January 7, 2004
Apple AirPort Express 802.11g (1st Generation) (Apple Inc.)	On information and belief, as least as of May 5, 2004
Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as January 6, 2000
C-Media Xear System (C-Media)	On information and belief, as early as May 21, 2002
Crestron Adagio (Crestron Electronics)	On information and belief, as early as November 18, 2005
Netstreams Musica (Netstreams and ClearOne)	On information and belief, as early as May 9, 2002
Logitech Squeezebox (Logitech Inc.)	On information and belief, as least as of May 19, 2002
Yamaha MusicCAST System (Yamaha Corporation of America)	On information and belief, as least as of June 6, 2003
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998

10. '883 Patent Prior Art

Charted Prior Art Patents / Published Applications			
Exhibit (Chart)	Reference	Filing Date	Date of Issuance or Publication
883-2	Cheshire	March 19, 2002	September 25, 2003
883-6	Gassho	November 7, 2002	May 15, 2003
883-7	Mathews	March 15, 2013	October 17, 2013
883-8	Rector	May 9, 2002	November 13, 2003

Charted Prior Art Systems			
Exhibit (Chart)	Item Offered for Sale or Publicly Used and Known	Date of Sale or Public Use/ Knowledge	Person or Entity
883-1	cd3o	Before January 9, 2003	cd3o
883-3	BridgeCo	Before September 16, 2003	BridgeCo AG and/or SMC Networks
883-4	Creative	Before September 30, 2003	Creative Technology
883-5	Linksys	Before July 14, 2003	Linksys
883-9	Airport Express	Before September 25, 2002	Apple
883-10	Yamaha	Before January 9, 2003	Yamaha
883-11	Chromecast	Before July 24, 2013	Google

Google has also identified additional prior art demonstrating the obviousness of the asserted claims in Exhibit 883-B.

In addition, Google reserves the right to rely upon at least the following additional prior art to demonstrate the state of the art at the time of the alleged invention the '883 patent.

1	Reference ¹²	Relevant Date
2	20020174243	May 16, 2001
3	20020124097	December 29, 2000
4	7397791	December 17, 2002
5	20030083024	July 3, 2002
6	20030100335	November 26, 2002
7	8797926	June 4, 2004
8	“Specification of the Bluetooth System (Covered Core Package version: 1.2)” (Bluetooth)	November 5, 2003
9	7313384	October 31, 2002
10	20030100335	November 26, 2002
11	20030181203	March 19, 2002
12	7275156	September 5, 2003
13	7454619	September 5, 2003
14	7581096	September 5, 2003
15	7757076	April 30, 2004
16	7937089	September 5, 2003
17	20050129240	December 15, 2003
18	8797926	June 4, 2004
19	7308489	May 29, 2003
20	7643894	May 8, 2003
21	20030220705	May 24, 2002
22	20020124097	December 9, 2000
23	7483538	March 2, 2004
24	7123731	March 7, 2001
25	6741708	October 27, 2000
26	20070142944	December 4, 2006
27	60379313	May 9, 2002
28	7710941	November 4, 2003
	7392102	April 23, 2002
	7391791	December 17, 2002
	7269338	December 11, 2001
	5761320	June 26, 1995
	20020072816	December 7, 2000
	6336219	July 21, 1999
	KR 20030011128A	January 8, 2003

¹² Numeral only entries relate to U.S. patent/applications. For example, “5761320” means U.S. Patent No. 5761320, unless otherwise indicated

1	Reference ¹²	Relevant Date
2	5808662	November 8, 1995
3	6757517	May 10, 2001
4	6778493	February 7, 2000
5	7162315	June 15, 2004
6	20030050058	September 13, 2001
7	20030002849	June 28, 2001
8	7076204	July 3, 2002
9	7206367	July 10, 2001
10	6131130	December 10, 1997
11	8156337	April 3, 2006
12	20050100166	November 10, 2003
13	7392387	February 26, 2007
14	7185199	August 30, 2002
15	20030126211	December 12, 2001
16	7308489	May 29, 2003
17	7643894	May 8, 2003
18	"Specification of the Bluetooth System" (Bluetooth)	December 1, 1999
19	"Squeezebox Owner's Manual" (Slim Devices)	2003
20	"SMCWW-AG EZ-Stream Universal Wireless Multimedia Receiver User Guide" (SMC Networks)	2004
21	"SMCWMR-ARG EZ-Stream Universal Wireless Multimedia Receiver User Guide" (SMC Networks)	2003
22	"Wireless-B Media Adapter User Guide" (Linksys)	July 18, 2003
23	"Wireless-B Media Link for Music User Guide" (Cisco)	2004
24	"Wireless-B Media Adapter User Guide" (Cisco)	Sept. 18, 2003
25	"Wireless PC Link Quick Installation" (Phillips)	2004
26	"Remote Control MP3 Music from Your PC ... Wirelessly" (Phillips)	2004
27	"Wireless PC Link Micro MCW770 Custom Installation" (Phillips)	2004
28		

1	Reference¹²	Relevant Date
2	"EpsonNet 802.11b Wireless Print Server User's Guide" (EPSON)	2002
3	"EPSON Stylus C80WN Setup and Installation" (EPSON)	2001
4	"SoundBlaster Wireless Music User's Guide" (Creative)	2003
5	"Audio Stream Protocol" (cd3o)	March 9, 2004
6	"Product Manual" (cd3o)	2003
7	"Audio Control Protocol" (cd30)	September 18, 2003
8	"Multi-Player Synchronization" (various)	January 15-25, 2004
9	"Multiple stereos -- multiple cd30s -- same music?" (various)	November 2-19, 2003
10	"AirPort Express Setup Guide" (Apple)	May 20, 2004
11	"Wireless Audio Adapter User Manual" (BridgeCo)	January 7, 2004
12	"BridgeCo Wireless Speakers Product Information" (BridgeCo)	October 10, 2003
13	"Vision" (BridgeCo)	October 18, 2003
14	"Digital Audio Terminal MCX-A10 Owner's Manual" (Yamaha)	June 4, 2003
15	"Digital Audio Server MCX-1000 Owner's Manual" (Yamaha)	2002
16	"IEEE 802.11-1999" (IEEE)	1999
17	"Transmission Control Protocol, RFC 793" (Information Science Institute, USC)	September 1981
18	"The TLS Protocol Version 1.0, RFC 2246" (T. Dierks et al.)	January 1999
19	"Universal Serial Bus Specification Revision 2.0" (Compaq et al.)	April 27, 2000
20	"Near Field Communication White Paper" (ECMA)	February 2004
21	"Developer Connection -- About" (Apple)	2003
22	"Developer Connection -- Publishing Network Services" (Apple)	2003
23	"Developer Connection -- Resolving and Using Network Services" (Apple)	2003
24		
25		
26		
27		
28		

1	Reference¹²	Relevant Date
2	"Universal Plug and Play in Windows XP" (Microsoft)	July 2001
3	"UPnP AV Architecture: 0.83" (Microsoft)	June 12, 2002
4	"A Simple Network Management Protocol (SNMP)" (J. Case et al.)	May 1990
5	"Autoconfiguration for IP Networking" (Guttman)	June 2001
6	"Zeroconf Host Profile Applicability Statement" (Guttman)	July 20, 2001
7	"Simple Service Discovery Protocol 1.0" (Yaron Y. Goland et al.)	October 28, 1999
8	"Hypertext Transfer Protocol -- HTTP/1.1, RFC 2616" (R. Fielding et al.)	June 1999
9	"IEEE 802.3-2002" (IEEE)	2002
10	"Omnifi DMS1 Wi-Fi Media Receiver" (Sound and Vision)	October 20, 2003
11	"Bose® Lifestyle® 50 System, Owner's Guide" (Bose)	October 17, 2001
12	"Bose® Lifestyle® Powered Speaker System, Owner's Guide" (Bose)	December 20, 2001
13	"The Bose® Lifestyle® Amplifier, Owner's Guide" (Bose)	January 4, 2002
14	"Home theater systems that are a real blast" (Associated Press)	January 6, 2000
15	"Netstreams Product Catalog 2003/2004" (Netstreams)	2003/2004
16	"Netstreams Musica Data Sheet" (Netstreams)	2004
17	"NetStreams Musica R2E Network Interface" (Netstreams)	2004
18	"Exstreamer Technical Description v1.5" (Barix AG)	October 2002
19	"Exstreamer Instruction Manual v1.5" (Barix AG)	October 2002
20	"C-Media Xear 3d Sound Solution User Manual, Rev. 2.1" (C-Media)	May 21, 2002

1	Reference¹²	Relevant Date
2	"Creston Adagio Product Brochure" (Creston)	April 2007
3	"Intel 478 Mainboard User's Manual, Revision 1.0" (Intel)	March 27, 2003
4	"Xear 3D User Manual, Revision 1.0" (C-Media)	January 2004
5	"Slim Devices Introduces Squeezebox" (PR Newswire)	November 18, 2003
6	"Synchronizing MP3 Playback" (Barrett)	December 29, 2002
7	"Step-by-step P4 Connection" (Barrett)	2002
8	"P4 Proposal" (Barrett)	April 9, 2002
9	"Wireless Home Networks – DECT, Bluetooth, HomeRF, and Wireless LANs" (Dhir)	2000
10	"UWB Technology for Wireless Video Networking" (M. Ho et al.)	2001
11	"In-home wireless networking: an entertainment perspective" (D. Evans)	October 2001
12	"Sony shows off range of home LANs" (Lawson)	December 15, 2000
13	"Digital Home Working Group to seek platform compatibility" (Hara)	June 27, 2003
14	"DNLA White Paper, Use Case Scenarios" (DNLA)	June 2004
15	"Home Networks: A Standards Perspective" (Rose)	December 2001
16	"UPnP™ Device Architecture 1.0, Version 1.0.1" (UPnP Forem)	May 6, 2003
17	"Authentication and Authorization in Universal Plug and Play Home Networks" (Kangas)	2002
18	"Wi-Fi Hotspot Networks Sprout Like Mushrooms" (IEEE)	September 2002
19	"IM-based Subscriber Authentication for Wireless Local Area Networks" (Tsai et al.)	2003
20	"EAP-TLS Smartcards, from Dream to Reality" (Urien et al.)	August 9, 2004

1	Reference¹²	Relevant Date
2	“Institutive Security Initiation Using	April 2004
3	Location-Limited Channels”	
4	(Kostianinen)	
5	“Secure Wireless Gateway” (Godber et	September 2002
6	al.)	
7	Barix Exstreamer (Barix Technology,	On information and belief, as least as of
8	Inc.)	April 6, 2013
9	p4sync (Stanford University)	On information and belief, as least as of
10		April 9, 2002
11	cd30 C200 & C300 (as sold, or when	On information and belief, as least as of
12	run using scripts discussed in GOOG-	January 14, 2003
13	SONOSITC-PA-00013347 or GOOG-	
14	SONOSITC-PA-00013351) (cd3o)	
15	SMC Networks EZ-Stream Universal	On information and belief, as least as of
16	Wireless Multimedia Receiver	November 3, 2003
17	SMCWMR-AG (SMC Networks Inc.)	
18	SMC Networks EZ-Stream Wireless	On information and belief, as least as of
19	Audio Adapter SMCWAA-B (SMC	January 7, 2004
20	Networks Inc.)	
21	Philips Wireless PC Link Micro System	On information and belief, as least as of
22	(MCW770) (Koninklijke Philips N.V.	January 6, 2004
23	and Philips North America Corporation)	
24	Linksys Wireless-B Media Adapter	On information and belief, as least as of
25	WMA11B (Cisco Systems, Inc.)	July 14, 2003
26	Hewlett Packard HP Deskjet 5800 Series	On information and belief, as least as of
27	(HP Inc.)	October 13, 2003
28	EPSON EpsonNet 802.11b Wireless	On information and belief, as least as of
	Print Server (Seiko Epson Corporation	January 14, 2002
	and Epson America, Inc.)	
	Creative SoundBlaster Wireless Music	On information and belief, as least as of
	(Creative Technology Ltd.)	October 1, 2003
	BridgeCo Wireless Audio Adapter	On information and belief, as least as of
	(BridgeCo)	January 7, 2004
	Apple AirPort Express 802.11g (1st	On information and belief, as least as of
	Generation) (Apple Inc.)	May 5, 2004
	Bose Lifestyle 50 (Bose Corporation)	On information and belief, as early as
		January 6, 2000
	C-Media Xear System (C-Media)	On information and belief, as early as
		May 21, 2002

Reference ¹²	Relevant Date
Creston Adagio (Creston Electronics)	On information and belief, as early as November 18, 2005
Netstreams Musica (Netstreams and ClearOne)	On information and belief, as early as May 9, 2002
Logitech Squeezebox (Logitech Inc.)	On information and belief, as least as of May 19, 2002
Yamaha MusicCAST System (Yamaha Corporation of America)	On information and belief, as least as of June 6, 2003
IBM Home Director (IBM)	On information and belief, as early as December 9, 1998

B. Invalidity Contentions Pursuant To S.P.R. 2.5.2 and 2.5.3

Subject to Google's reservations of rights, and with respect to each asserted claim of Sonos' Infringement Contentions, Google provides the following information required by S.P.R. 2.5.2 and 2.5.3.

1. Claim Charts

As set forth in Exhibits 949-1 through 949-06 and 949-B; Exhibits 014-1 through 014-06 and 014-B; Exhibits 959-1 through 959-06 and 959-B; Exhibits 025-1 through 025-06 and 025-B; Exhibits 953-1 through 953-9 and 953-B; Exhibits 258-1 through 258-9 and 258-B; Exhibits 715-1 through 715-9 and 715-B; Exhibits 001-1 through 001-9 and 001-B; Exhibits 896-1 through 896-11 and 896-B; Exhibits 883-1 through 883-11 and 883-B, and below, each of the charted references, and any products, devices, or processes used in the prior art that embody the subject matter disclosed in the references, invalidates one or more Asserted Claims of the Patents-in-Suit. To the extent any Exhibit concerns or refers to the operation, function, structure, or use of a product, system, or method, Google's contentions are based on information and belief.

While Google has identified at least one citation per element or limitation for each reference identified in the attached Exhibits, each and every disclosure of the same element or limitation in the same reference is not necessarily identified. In an

1 effort to focus the issues, Google cites exemplary relevant portions of identified
2 references, even where a reference may contain additional disclosure for a particular
3 claim element or limitation, and reserves all rights to rely on other portions of the
4 identified references to support its claims and/or defenses. Any reference to a figure
5 in cited text incorporates by reference the figure itself, and any citation to a figure
6 incorporates by reference any description of that figure in a reference. Similarly, any
7 reference to a cited part or portion of a document encompasses all figures and text
8 within the cited page or portion. Additionally, many of the prior art references are
9 related to, or counterparts of, patent applications and issued patents that contain
10 substantially the same subject matter (e.g., published U.S. patent applications, issued
11 U.S. patents, and foreign applications or issued patents). Any citation to or quotation
12 from any of these patent applications or patents, therefore, should be understood as
13 encompassing any parallel citation to the same subject matter in other related or
14 corresponding applications or patents. Supporting citations in the Invalidity Charts
15 are representative and do not necessarily represent every location where a particular
16 claim element may be found in the prior art reference. Google reserves the right to
17 rely on additional, or different, portions of the prior art other than those specifically
18 cited, and to supplement and/or amend these Invalidity Charts.

19 As noted above, these Invalidity Charts are based on Google's understanding
20 of the claim constructions applied by Sonos, even though Google does not
21 necessarily agree with those constructions and reserves the right to dispute them. To
22 the extent any limitation is deemed not to be met exactly by a prior art reference,
23 Google contends that the difference would have been obvious to a person of
24 ordinary skill in the art and within the knowledge of one skilled in the art at the time
25 of the alleged invention, so that the claimed invention would have been obvious
26 both in light of the single reference alone and/or in light of combined references.
27 Google does not admit or concede that the element is not expressly or inherently
28 disclosed by the reference at issue.

1 Much of the art identified in the attached Invalidity Charts reflects common
2 knowledge and the state of the art at the time of the earliest filing date of the
3 Patents-in-Suit. Google may rely on additional citations, references, expert
4 testimony, fact testimony and other corroborating evidence, and other material to
5 provide context and background illustrating the knowledge of a person of ordinary
6 skill in the art at the time of the claimed inventions and/or to aid in understanding
7 the cited portions of the references and/or cited features of the systems. Google may
8 also rely on expert testimony explaining relevant portions of references, relevant
9 hardware or software products or systems, and other discovery regarding these
10 subject matters. Additionally, Google may rely on other portions of any prior art
11 reference, whether or not identified in the Invalidity Charts, particularly those
12 produced in Google's accompanying production, for purposes of explaining the
13 background, general technical subject area, and the knowledge of a person of
14 ordinary skill in the art. In addition, Google may rely on all portions of the prior art
15 references that are identified in petitions for *inter partes* review or reexamination for
16 the Patents-in-Suit and/or related patents, as well as any obviousness combinations
17 identified in those documents.

18 2. Anticipation and Single Reference Obviousness

19 As set forth in the attached Exhibits and below, the following references
20 anticipate one or more of the Asserted Claims of the Patents-in-Suit by expressly or
21 inherently disclosing each and every limitation of that claim. To the extent Sonos
22 contends that any of these references do not expressly or inherently disclose any
23 limitation of any claim, they nevertheless anticipate because a POSITA would at
24 once envisage the claimed arrangement or combination of claim elements. To the
25 extent that Sonos contends that any of these references do not anticipate any
26 asserted claim, Google further contends each reference renders the asserted claim
27 obvious either in view of the reference alone or in combination with other references
28

and/or the knowledge of a person of ordinary skill in the art. A corresponding claim chart for each reference is attached hereto as indicated in the “Exhibit No.” column.

Exhibit No.	Reference	Patents and Claims
949-1	Bose	'949 patent, asserted claims
949-2	Isely	'949 patent, asserted claims
949-3	Cd3o	'949 patent, asserted claims
949-4	Russound	'949 patent, asserted claims
949-5	Geiwitz	'949 patent, asserted claims
949-6	Allen	'949 patent, asserted claims
014-1	Bose	'014 patent, asserted claims
014-2	Isely	'014 patent, asserted claims
014-3	Cd3o	'014 patent, asserted claims
014-4	Russound	'014 patent, asserted claims
014-5	Geiwitz	'014 patent, asserted claims
014-6	Allen	'014 patent, asserted claims
959-1	Ramsay	'959 patent, asserted claims
959-2	Rocketfish	'959 patent, asserted claims
959-3	McCarty	'959 patent, asserted claims
959-4	Litback	'959 patent, asserted claims
959-5	Sasaki	'959 patent, asserted claims
959-6	Sonos Zoneplayer S5	'959 patent, asserted claims
025-1	Ramsay	'025 patent, asserted claims
025-2	Rocketfish	'025 patent, asserted claims
025-3	McCarty	'025 patent, asserted claims
025-4	Litback	'025 patent, asserted claims
025-5	Sasaki	'025 patent, asserted claims
025-6	Sonos Zoneplayer S5	'025 patent, asserted claims
896-1	cd3o	'896 Patent, Asserted Claims
896-2	Chesire	'896 Patent, Asserted Claims
896-3	BridgeCo	'896 Patent, Asserted Claims
896-4	Creative	'896 Patent, Asserted Claims
896-5	Linksys	'896 Patent, Asserted Claims
896-6	Gassho	'896 Patent, Asserted Claims
896-7	Mathews	'896 Patent, Asserted Claims
896-8	Rector	'896 Patent, Asserted Claims
896-9	Airport Express	'896 Patent, Asserted Claims
896-10	Yamaha	'896 Patent, Asserted Claims
896-11	Chromecast	'896 Patent, Asserted Claims
883-1	cd3o	'883 Patent, Asserted Claims

1	Exhibit No.	Reference	Patents and Claims
2	883-2	Chesire	'883 Patent, Asserted Claims
3	883-3	BridgeCo	'883 Patent, Asserted Claims
4	883-4	Creative	'883 Patent, Asserted Claims
5	883-5	Linksys	'883 Patent, Asserted Claims
6	883-6	Gassho	'883 Patent, Asserted Claims
7	883-7	Mathews	'883 Patent, Asserted Claims
8	883-8	Rector	'883 Patent, Asserted Claims
9	883-9	Airport Express	'883 Patent, Asserted Claims
10	883-10	Yamaha	'883 Patent, Asserted Claims
11	883-11	Chromecast	'883 Patent, Asserted Claims
12	953-1	Janevski	'953 Patent, Asserted Claims
13	953-2	Balassanian	'953 Patent, Asserted Claims
14	953-3	Goldberg	'953 Patent, Asserted Claims
15	953-4	Kono	'953 Patent, Asserted Claims
16	953-5	Squeezebox	'953 Patent, Asserted Claims
17	953-6	Yamaha	'953 Patent, Asserted Claims
18	953-7	Barix	'953 Patent, Asserted Claims
19	953-8	p4sync	'953 Patent, Asserted Claims
20	953-9	NetStreams Musica	'953 Patent, Asserted Claims
21	258-1	Janevski	'258 Patent, Asserted Claims
22	258-2	Balassanian	'258 Patent, Asserted Claims
23	258-3	Goldberg	'258 Patent, Asserted Claims
24	258-4	Kono	'258 Patent, Asserted Claims
25	258-5	Squeezebox	'258 Patent, Asserted Claims
26	258-6	Yamaha	'258 Patent, Asserted Claims
27	258-7	Barix	'258 Patent, Asserted Claims
28	258-8	p4sync	'258 Patent, Asserted Claims
	258-9	NetStreams Musica	'258 Patent, Asserted Claims
	715-1	Janevski	'715 Patent, Asserted Claims
	715-2	Balassanian	'715 Patent, Asserted Claims
	715-3	Goldberg	'715 Patent, Asserted Claims
	715-4	Kono	'715 Patent, Asserted Claims
	715-5	Squeezebox	'715 Patent, Asserted Claims
	715-6	Yamaha	'715 Patent, Asserted Claims
	715-7	Barix	'715 Patent, Asserted Claims
	715-8	p4sync	'715 Patent, Asserted Claims
	715-9	NetStreams Musica	'715 Patent, Asserted Claims
	001-1	Janevski	'001 Patent, Asserted Claims
	001-2	Balassanian	'001 Patent, Asserted Claims

Exhibit No.	Reference	Patents and Claims
001-3	Goldberg	'001 Patent, Asserted Claims
001-4	Kono	'001 Patent, Asserted Claims
001-5	Squeezebox	'001 Patent, Asserted Claims
001-6	Yamaha	'001 Patent, Asserted Claims
001-7	Barix	'001 Patent, Asserted Claims
001-8	p4sync	'001 Patent, Asserted Claims
001-9	NetStreams Musica	'001 Patent, Asserted Claims

3. Obviousness

As further set forth in the attached Exhibits and below, each of the charted references, and any products, devices, or processes used in the prior art that embody the subject matter disclosed in the references, anticipates and/or renders obvious one or more Asserted Claims of the Patents-in-Suit. Each of the combinations of prior art references described or identified in Claim Charts and below renders the Asserted Claims of the Patents-in- Suit invalid under 35 U.S.C. § 103 for obviousness. Each prior art reference may be combined with one or more other prior art references to render obvious the Asserted Claims, as explained in more detail below. The disclosures of these references also may be combined with information known to persons skilled in the art at the time of the alleged invention and understood and supplemented in view of the common sense of persons skilled in the art at the time of the alleged invention, including any statements in the intrinsic record of the Patents-in-Suit and related applications.

Google expressly intends to combine one or more prior art references identified in the attached Exhibits with each other to address any further contentions from Sonos that a particular prior art reference supposedly lacks one or more elements of an Asserted Claim. In other words, Google contends that each charted prior art reference can be combined with each other charted prior art reference (individually or in combination) to the extent the prior art reference lacks or does not explicitly disclose an element or feature of an Asserted Claim. The obviousness

1 combinations described below are not to be construed to suggest that any reference
2 included in the combinations is not anticipatory. Further, to the extent that Sonos
3 contends that any of the anticipatory prior art fails to disclose one or more
4 limitations of the Asserted Claims, Google reserves the right to identify other prior
5 art references that, when combined with the anticipatory prior art, would render the
6 claims obvious despite an allegedly missing limitation.

7 To the extent not explicitly disclosed by the prior art, the Asserted Claims of
8 the Patents-in-Suit are nothing more than a combination of standard, conventional
9 elements already existing and well-known at the time of the purported invention,
10 combined according to known methods to achieve predictable results.

11 All of the following rationales support a finding of obviousness here:

- 12 (i) Combining prior art elements according to known methods to yield
13 predictable results;
- 14 (i) Simple substitution of one known element for another to obtain
15 predictable results;
- 16 (a) Use of known technique to improve similar devices (methods, or
17 products) in the same way;
- 18 (b) Applying a known technique to a known device (method, or product)
19 ready for improvement to yield predictable results;
- 20 (c) “Obvious to try”—choosing from a finite number of identified,
21 predictable solutions, with a reasonable expectation of success;
- 22 (d) Known work in one field of endeavor may prompt variations of it for use
23 in either the same field or a different one based on design incentives or
24 other market forces if the variations would have been predictable to one
25 of ordinary skill in the art; and
- 26 (e) Some teaching, suggestion, or motivation in the prior art that would have
27 led one of ordinary skill to modify the prior art reference or to combine
28 prior art reference teachings to arrive at the claimed invention.

24 Google further contends that the prior art identified in these Contentions is
25 evidence of simultaneous or near-simultaneous independent invention by others of
26 the alleged invention as recited in one or more of the Asserted Claims. Google
27 reserves its right to rely on the simultaneous or near-simultaneous independent
28 invention by others as further evidence of the obviousness of the Asserted Claims.

1 Each limitation of the Asserted Claims was well known to those of ordinary
2 skill in the art before the filing dates of the application to which the Patents-in-Suit
3 claim priority, as detailed below and in the attached charts.

4 The elements recited in the Asserted Claims are mere combinations and
5 modifications of these well-known elements. A person of ordinary skill in the art
6 would be able, and motivated, to improve the existing technology in the same or
7 similar manner by combining or modifying the individual elements that were
8 already known in the art to yield predictable results.

9 (a) **Overview of the State of the Art**

10 (i) '949 and '014 Patents

11 The '949 and '014 patents are directed to “user interfaces for controlling or
12 manipulating a plurality of multimedia players in a multi-zone system.” '949 patent
13 at 1:26-30; *see also* '014 patent at 1:19-22. The patents state that multi-zone audio
14 systems were known in the prior art. '949 patent at 1:41-45; '014 patent at 1:34-38.
15 According to the patent, these systems typically included a plurality of audio
16 players, each with its own amplifier and a set of speakers installed in a defined
17 location such as a room. '949 patent at 1:41-45; '014 patent at 1:34-38. Each audio
18 player could then playback audio from a source (e.g., CD player) that is either local
19 to the player or centralized to the overall system. '949 patent at 1:45-46; '014 patent
20 at 1:39-40.

21 Traditional stereo systems were often designed with a set number and
22 configuration of playback devices. For example, home stereo systems implementing
23 the Dolby 5.1 configuration includes six speakers, each dedicated to a specific audio
24 channel: front left, front right, center, surround left, surround left, and low-
25 frequency. *See, e.g., Kraemer, Two Speakers Are Better Than 5.1, IEEE Spectrum*
26 *2001*. While these systems provided a high-end audio experience, customers
27 demanded more flexibility and customization options. *See id.* As a result,
28 developers and manufacturers of audio equipment offered customizable systems,

1 often called “multi-zone” systems, that allowed for one or more playback devices to
2 be distributed throughout different areas (such as different rooms in a house), and to
3 be played either individually or be grouped together. *See, e.g., Bose Lifestyle 50*
4 *System*, Owner’s Guide (2001). For example, the Bose Lifestyle 50 system released
5 in 2001 allowed users to define different rooms, each with one or more playback
6 devices. *See id.* at 41-43. As another example, the Russound CAV 6.6 system, on
7 belief, released in 2003 allowed users to control different rooms with one or more
8 playback devices, separately or collectively. *See, e.g., Russound CAV 6.6*,
9 *Instruction Manual* (2003) at 12-13. A similar arrangement is disclosed in U.S.
10 Patent Publication No. 2002/0124097 (“Isely”), which discloses playback devices
11 that can be combined into groups to define different audio zones. *See Isely* at
12 Abstract; [0040] (“One element of various embodiments of the present invention, as
13 described above, is the ability to dynamically define aggregate zones. To
14 accomplish this, the system provides the ability to add or remove audio device 105
15 to or from groups or virtual zones.”). The flexibility allows users to play the same
16 or different audio in, for example, different rooms of a residence. *See id.* at [0039].

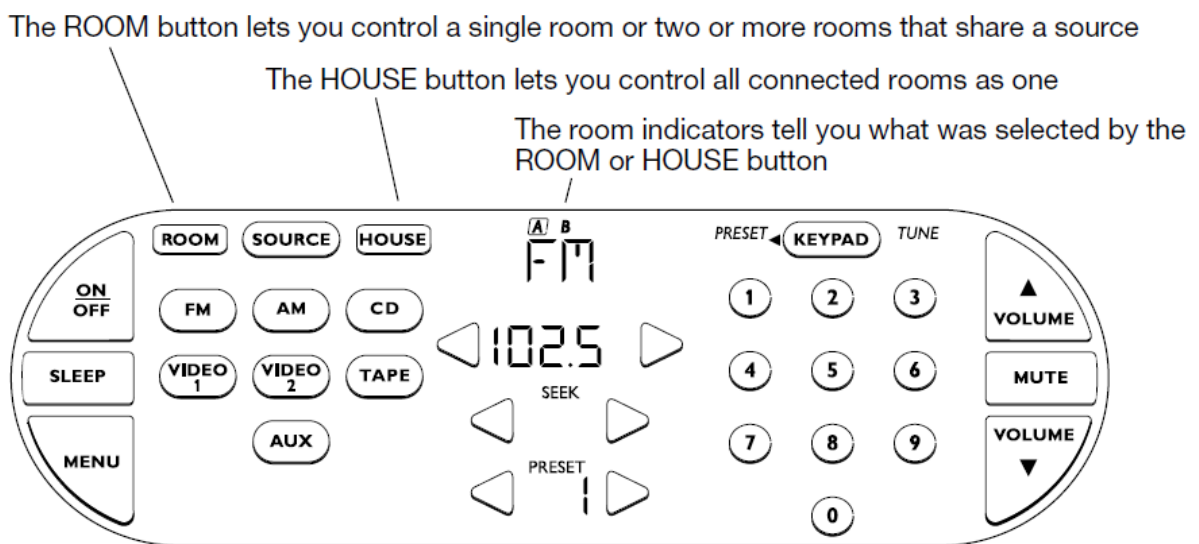
17 Developers recognized that, in these multi-zone systems, playback devices
18 can operate both individually and as part of a group. *See, e.g., U.S. Patent*
19 *Publication No. 2003/0220705 (“Ibey”)*. For example, Ibey discloses a
20 customizable system for distributing audio throughout buildings, residences, and
21 other locations. *See id.* at Abstract. The system is built on a plurality of individual
22 playback devices that can be controlled alone or as part of a group over a local area
23 network. *See id.* at Abstract; [0009] (“What is therefore needed is an audio system
24 which can control various operational parameters of speaker output at the individual
25 speaker. What is also needed is such a system which can provide such control from
26 a location remote from the speaker. Such a system is also needed that can provide
27 independent and separate operational control of any individual speaker of a set of
28 speakers each of which is in a separate location from the others.”). Isely discloses a

1 similar configuration of individual audio devices combined to define different audio
2 zones. *See* Isely at [0047] (“The zones may include one or a plurality of the
3 individual addressable audio devices included in the illustrated block of network
4 audio devices 305.”). The Bose Lifestyle 50 system likewise discloses individual
5 playback devices that can be operated alone or customized into a group. *See* Bose
6 Lifestyle 50 Owner’s Guide at 6-9, 22, 41-43.

7 Given that playback devices *operated* alone or as part of a group, developers
8 appreciated that users should be able to *control* the devices alone or as part of a
9 group. *See* Isely at [0039] (“Thus, individual ones of the network attached audio
10 devices may be grouped together and instructed to listen to the same channel to
11 provide common audio signals to multiple rooms in a house while other groupings
12 of the network attached audio devices 105 may be assigned a different channel to
13 provide a different audio signal source in another set of rooms within the
14 residence.”); Bose at 41-43. Playback devices were designed to allow users to
15 control audio and non-audio functions. *See id.* Audio functions included obvious
16 characteristics like volume, bass, treble, balance and fade. *See* Isely at [0048] (“The
17 characteristic may, for example, be any of a number of audio signal characteristics
18 commonly associated with playing audio signals such as volume, tone, balance and
19 spatialization.”); *see* Ibey at [0046] (“This feature is advantageous because it allows
20 the remote control user to turn down the music in some locations where deemed too
21 loud and turn it up in other locations where deemed not loud enough in accordance
22 with the preferences of the occupants of that particular room, the acoustic
23 characteristics of the room or with management’s needs.”). Non-audio functions
24 included, for example, adding new playback devices to the network or creating and
25 modifying groups of playback devices, such as by adding or removing individual
26 players from a group. *See* Isely at [0017] (“A controller coupled to the plurality of
27 network attached audio devices designates the associated identifier to be received by
28 respective ones of the plurality of network attached audio devices based on the user

1 designation to provide dynamic zone aggregation of the audio equipment at the
2 site.”); *see also* Bose at 41-43.

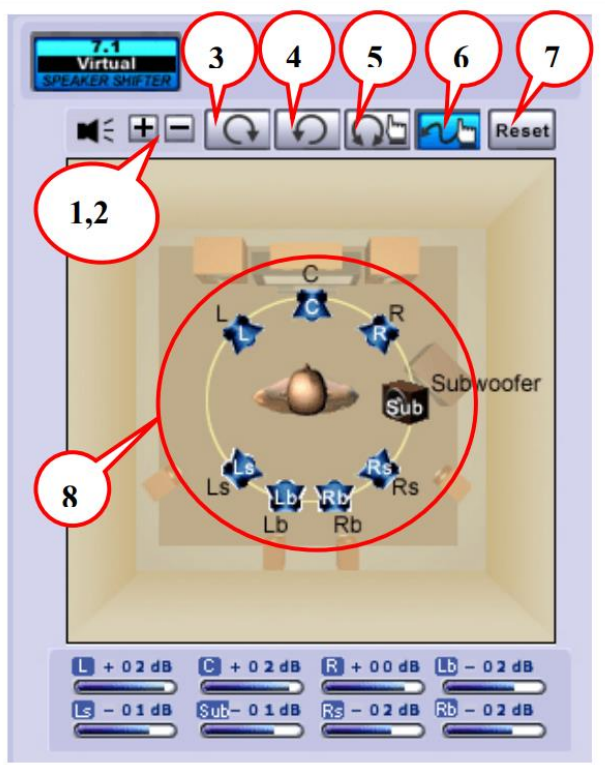
3 A common approach for providing control of individual playback devices and
4 groups of playback devices was a networked controller with a user interface. *See*
5 Isely at [0011]-[0012] (“A user interface is provided which is configured to receive
6 a user designation of the control input. The characteristic may be a volume, a tone
7 or a balance.”); [0039] (“The user device 130, in combination with the controller
8 125, provides a user interface configured to receive a user designation of
9 aggregations of the audio equipment 145, 150 located at the site so as to provide
10 dynamic zone aggregation in various embodiments of the present invention.”); *see*
11 *also* Ibey at [0046] (“By simply pointing the remote control unit at the speaker
12 subsystem thereof and actuating the remote control unit to emit the control signal,
13 the user can thereby make adjustments to the speaker such as raising or lowering its
14 sound volume as raising or lowering its sound volume, altering the bass, middle or
15 treble output or raising or lowering the music output relative to the paging output or
16 vice versa.”). The Bose Lifestyle 50 system, for example, included a remote control
17 with a user interface that allowed users to link and unlink playback devices across
18 rooms and control their volume both individually and as a group:



1 Bose at 41-43.

2 The prior art was replete with similar user-interface based controllers that
3 allowed users to group playback devices and control their audio functions alone or
4 as part of the group:

5 **Virtual SPEAKER SHIFTER**

6	1.Total Volume Up Control	
7	2.Total Volume Down Control	
8	3.Clockwise	
9	4.Counter Clockwise	
10	5.Manual Rotation	
11	6.Manual Shifter	
12	7.Reset	
13	8.Shifter Drag	

14 C-Media Xear 3D Sound Solution for USB Multi-Channel User, User Manual
15 Rev 1.0 at 18.

Figure 97

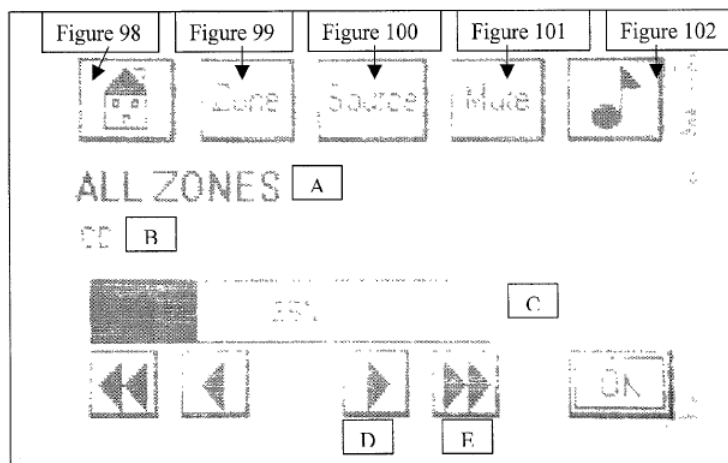


Figure 97 is the main navigational menu for the audio control portion of the system. Figure 97 includes these additional figures:

- Figure 98 – ‘House’ allows the user to select All Zones for immediate control.
- Figure 99 – ‘Zone’ allows the user to select individual zones for control.
- Figure 100 – ‘Source’ allows the user to toggle between the sources connected to the system.
- Figure 101 – ‘Mute’ allows the user to mute the zone or zones being controlled.
- Figure 102 – ‘Music Note’ functions as an On/Off switch for the zone or zones being controlled.

Functional Description:

- A.) ‘All Zones’ – References that the touchscreen is controlling all the audio zones in the same fashion and that any command performed will change all zones simultaneously.
- B.) ‘CD’ – The current source for all zones.
- C.) ‘Volume’ – The current volume for all zones is 25%.
- D.) ‘Single Arrow’ – Adjusts the volume in increments of 1%.
- E.) ‘Double Arrow’ – Adjusts the volume in increments of 5%.

Figure 106

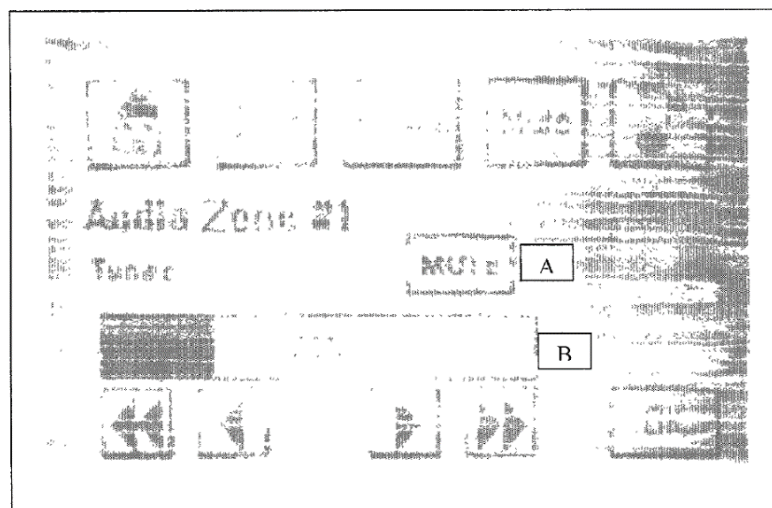
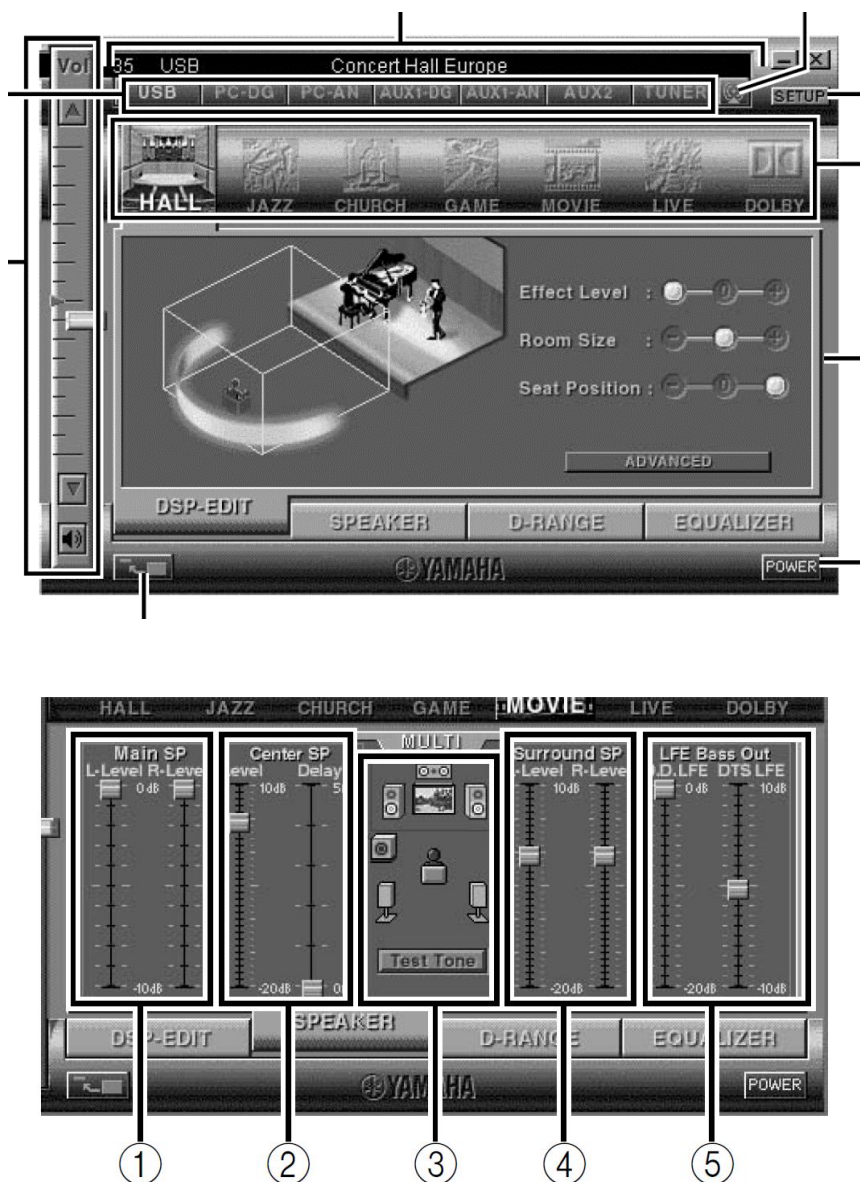


Figure 106 shows that Audio Zone #1 has been muted. Pressing Figure 101 will display the Mute icon labeled ‘A’ within Figure 106. Pressing Figure 101 while the Mute icon is displayed will remove the icon and restore the volume indicated in the volume bar labeled ‘B’.

Pressing the ‘OK’ icon returns the user to Figure 13.

Geiwitz Provisional, Specification at 62 (Fig. 97), 66 (Fig. 106).



Yamaha Personal Receiver at E-22, E-24.

These user interfaces implemented the same functionality found in computer operating systems, such as Microsoft Windows, available years before the alleged invention of the '949 Patent. *See, e.g.,* Windows XP, The Complete Reference, Chapter 19.

(ii) '959 and '025 Patents

The '959 and '025 Patents generally relate to playback devices capable of operating in different paired arrangements. *See* '959 Patent at Abstract. Depending

1 on the type of pairing configuration, the playback device may output single-channel
2 or multi-channel audio. When the device is part of a stereo pair, for example, it may
3 be configured to play single-channel audio comprising the left channel or right
4 channel. See '959 patent at 3:26-31 ("Subsequent to pairing, one playback device is
5 reconfigured to output a first channel (e.g., right channel audio and not left channel
6 audio) and the other playback device is reconfigured to output a second channel
7 (e.g., left channel audio and not right channel audio), which is different from the
8 first channel."); '025 patent at 3:49-54 (same). When the device is part of a theater
9 pair, it may be configured to play two-channel audio comprising the right channel
10 and center channel. See '959 patent at 14:29-32 ("In another example, player 702
11 might play the right channel plus a center channel (e.g., in television or theater
12 mode) and player 704 might play the left channel plus the center channel."); '025
13 patent at 15:9-13 (same).

14 Sound can be recorded and played back using one or more audio channels.
15 The use or perception of a single audio channel is often referred to as monaural
16 (mono) sound, while the use or perception of multiple audio channels is referred to
17 as stereophonic (stereo) sound. See Hull et al., *Building Hi-Fi Speaker Systems*,
18 Philips Application Book (1970) ("Hull") at 8-10. To a listener, the principal
19 difference between mono and stereo sound is that the latter has the perception of
20 depth or range. For example, a common implementation of stereo will use a first
21 channel to record and playback left audio, and a second channel to record and
22 playback right audio. This gives the listener the perception of different sounds from
23 different directions, which is deemed more realistic in applications such as music
24 and film. Mono sound, by contrast, typically uses a single channel to record and
25 playback both the left and right audio, as well as all frequency ranges. Mono sound
26 may also be achieved by mixing left and right audio channels into a single channel.

27 For decades before the alleged invention of the '959 Patent, playback devices
28 were designed to accommodate single-channel audio, multi-channel audio, or both.

1 Some playback devices were designed with a single speaker driver to produce mono
2 sound from a single audio channel. Alternatively, a playback device could be
3 configured to down-mix multi-channel audio into a single channel to produce mono
4 sound from a single speaker driver. *See, e.g., High Fidelity, New Wave In Speaker*
5 *Design* (1980) at 30. More sophisticated playback devices were designed with
6 multiple drivers corresponding to different frequency ranges—*e.g.*, woofers, mid-
7 range, and tweeters for bass, mid-range, and treble—to produce single-channel or
8 multi-channel sound with greater frequency depth. *See, e.g., id.* at 86. And of
9 course, playback devices were designed in stereo-pair configurations, where a first
10 dedicated driver or set of drivers would produce left-channel sound, and a second
11 dedicated driver or set of drivers would produce right-channel sound. *See, e.g., id.*;
12 *see also* Hull at 8-10.

13 Those of ordinary skill in the art recognized the benefit of allowing a
14 playback device to switch between stereo-paired and non-paired modes to produce
15 single-channel sound (*e.g.*, left or right) or multi-channel sound (*e.g.*, mixed left and
16 right). *See* Bose LifeStyle 50 System, Owner’s Guide (2001). In some
17 implementations, a playback device was designed with a physical switch that
18 allowed a user to select stereo-paired and mono non-paired output. In other designs,
19 the playback device would be connected to a network, with a central controller
20 allowing a user to switch the device between paired and non-paired modes. *See id.*
21 at 26. In still other designs, the playback device itself would automatically detect
22 whether it was in a paired or non-paired configuration and adjust its audio output
23 accordingly. For example, U.S. Patent No. 8,509,463 (“Goh 463”) discloses a
24 playback device capable of detecting whether it is in a stereo-pair configuration, and
25 if so, processing received audio data as stereophonic, or single-channel. If the
26 playback device determines that it is in a non-paired arrangement, it processes the
27 received audio data as multi-channel. Another example is U.S. Patent Publication
28 No. 2012/0148075 (“Goh 075”), which discloses a playback device that produces

1 multi-channel output in a non-paired configuration and single-channel output in a
2 paired configuration:

3 For instance, when the speakers are located in different rooms, each
4 speaker may be configured such that it reproduces all channels of an
5 incoming audio signal when functioning independently. When a
6 speaker is capable of reproducing stereo sound only, the speaker may
7 be configured in a manner such that an incoming multichannel audio
8 signal may be either mixed down to stereo, or virtualized such that
9 this signal could be audibly reproduced over just two channels. But
10 when the speakers are repositioned such that they are now located
11 within a single room, the speakers may correspondingly be re-
12 configured such that each speaker only reproduces a portion of the
13 incoming audio signal. To further illustrate the aforementioned, when
14 there is an incoming stereo audio signal and three speakers in a single
15 room, one of the speakers may be used to playback the left channel
16 signal, another the right channel signal while a third speaker may be
17 used to reproduce a synthesized low frequency channel derived from
18 the left and right audio signals.

19 Goh '075 at [0037].

20 Commercial systems available at the time of the alleged invention offered
21 similar configurations. For example, the Rocketfish system allowed customers to
22 purchase a single wireless speaker that would play in a multi-channel mono
23 configuration. *See* Rocketfish Outdoor Speaker (2009) at 24. The customer could
24 then purchase a second wireless speaker that would operate in concert with the first
25 speaker to form stereo-pair configuration with each speaker playing one channel of
26 audio. *Id.*

27 Those of ordinary skill in the art also recognized that it was beneficial to
28 apply different equalization to audio data depending on whether a playback device
was operating in a stereo-pair or non-paired configuration. Some systems allowed
for manual equalization, but it was often difficult to achieve a consistent and high-
quality output. *See, e.g.*, U.S. Patent No. 5,910,990 ("Jang"). Thus, persons of
ordinary skill in the art developed techniques for automatic equalization. *See id.*;
see also U.S. Patent No. 7,907,736 ("Yuen"); U.S. Patent No. 9,560,448

1 (“Hartung”). Techniques for automatic equalization were applicable to—and
2 implemented in—playback devices capable of switching between paired and non-
3 paired configurations:

4 For example, when listening to a stereo setup, an optimal listening experience
5 is possible when the speakers are set apart at a distance, such that the two speakers
6 and the listener are located at the vertices of an area defined by an equilateral
7 triangle. Unfortunately, space and aesthetic constraints typically result in speakers
8 being positioned closer than desired. However, such issues may be addressed with
9 the use of audio signal processing whereby much of the lost stereo separation may
10 be restituted with a suitable amount of cross-talk cancellation and midrange (1-4
11 kHz) equalization—the amount of which is varied according to the distance the
12 speakers are set apart at Goh ‘075 at [0038].

13 (iii) ’953, ’258, ’715, and ’001 Patents

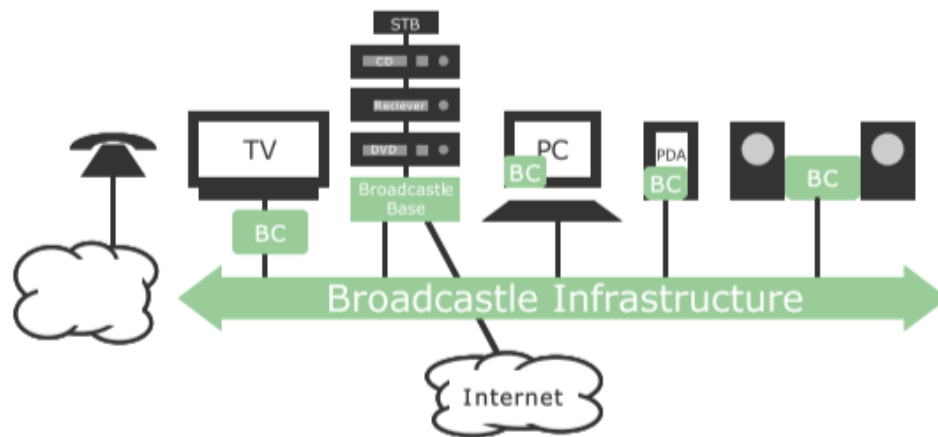
14 The ’953, ’258, ’715, and ’001 Patents generally relate to systems for
15 distributing audio and maintaining synchronous playback of audio and/or video
16 among a plurality of audio and/or video playback devices. ’953 Patent at Abstract;
17 ’258 Patent at Abstract; ’715 Patent at 1:26-45; ’001 Patent at 1:25-44. The asserted
18 claims of the ’953 and ’258 Patents are directed to distribution of audio information
19 and synchronous playback generally (*see, e.g.*, ’953 Patent at cl. 7; ’258 Patent at cl.
20 17), while the asserted claims of the ’715 Patent additionally relate to evaluating
21 operational performance metrics when deciding whether a zone player (*i.e.*, a
22 playback device) should serve as a master or slave of the synchrony group (*see, e.g.*,
23 ’715 Patent at cl. 7), and the asserted claims of the ’001 Patent additionally relate to
24 zone players that serve as one or both of audio-master and control-master, or a
25 control-master or control slave for the synchrony group (*see, e.g.*, ’001 Patent at cl.
26 12).

27 Distributing digital information to multiple digital processing devices such as
28 audio output devices was known before the alleged conception of ’953, ’258, ’715,

1 and '001 Patents. For example, the patents admit that “systems are being developed
2 in which one audio information source can distribute audio information in digital
3 form to a number of audio playback devices for playback.” *See, e.g.,* '258 Patent at
4 1:59-62. Such a distribution of digital information was needed for simultaneous
5 enjoyment of entertainment by users in different physical locations as well as for
6 multimedia presentations provided with multiple rendering devices. *See* Janevski at
7 1:39-43 (“many people enjoy watching various programs simultaneously (*e.g.*,
8 sporting events, talk shows or dramas) even though the people may be physically
9 located in different locations.”); Balassanian at 1:19-22 (“Multimedia presentations
10 that are presented on different rendering devices (*e.g.*, video display and stereo
11 system) typically require that the different content of the presentation be rendered in
12 a synchronized manner.”).

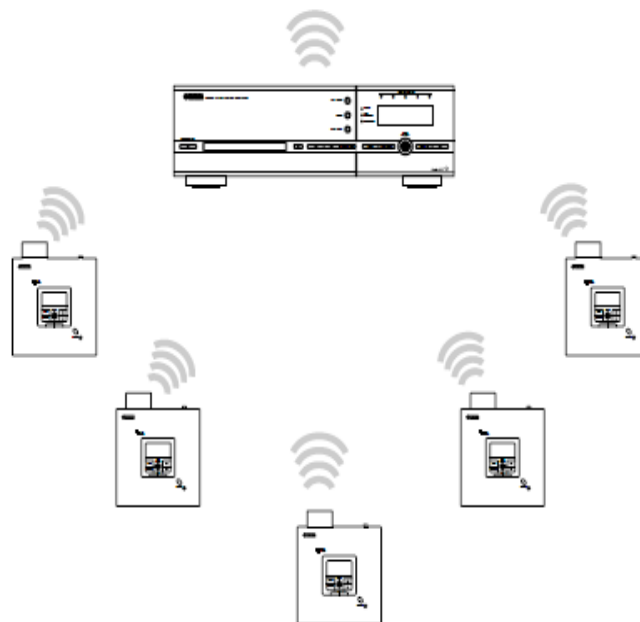
13 Indeed, “the networked home” was a crowded field before the time of the
14 alleged invention, given that it was a natural progression following the development
15 of individual PCs and “the rise of networking and advances in application
16 architecture (*i.e.* client/server systems and standard APIs) in the 1980s.” *See*
17 Broadcastle, *The Networked Home*, September 2002. As such, “[t]he need for
18 robust and ‘standardized’ storage, transport, and control/interface of systems in the
19 business arena [was already] clearly understood and assumed.” *Id.* For example,
20 Broadcastle was one of the numerous companies that offered a protocol technology
21 for “The Home of Tomorrow,” “built on a standard IP base and creates the robust
22 infrastructure necessary for distributing home applications such as audio and video
23 entertainment.”

Figure 3. The Home of Tomorrow



Unified Systems Using Broadcast Devices

Id. at 4. Yamaha's MusicCAST was another such device, allowing different client devices connected over a local area network (LAN) to simultaneously play back music received from the MusicCAST server:



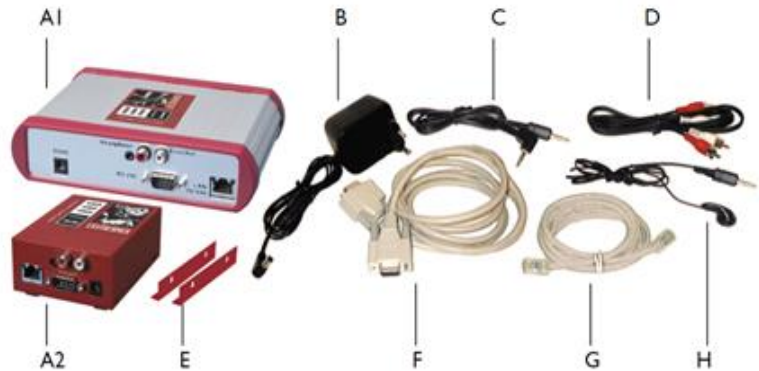
Yamaha, MusicCAST: Digital Audio Terminal MCX-A10, Owner's Manual at 21.

Numerous other networking systems existed at the time of the alleged invention. The following are just several non-limiting examples:

The Barix Exstreamer:

3 Package content

- A1 Exstreamer Wireless or
- A2 Exstreamer
- B Power supply
- C 3.5 mm Jack cable
- D RCA stereo cable
- E Mounting brackets (not included if Exstreamer wireless)
- F Serial cable
- G Network cable
- H Earbud



The Exstreamer Instruction Manual at 3.

This Barix Exstreamer was designed “so that you are not limited to listening to your MP3s being stuck in front of a computer or having to listen to high quality music through low quality computer speakers. The Exstreamer lets you enjoy your music anywhere in your home.” Exstreamer Instruction Manual at 2. The device itself is “an audio network interface for your home stereo system that streams MP3s from your PC and radio stations from the internet,” and “[e]ven though possible, the Exstreamer is not meant to be plugged directly into your computer but rather *into your network*.” *Id.* at 2 (emphasis added). “Once the Exstreamer is installed on to your network, it will automatically receive an IP address from you’re your DHCP server.” *Id.* at 4. And the Exstreamer can be controlled “from anywhere on your network using the web browser (from your PC, PDA or web tablet).” *Id.* at 6. The Exstreamer could be configured *over the network*:

Adresse <http://192.168.2.50/config.html>

Configuration

[Control Update](#)

IP address

Password

Device

Firmware Version: 5.17

Network **Server** **Audio** **Playlist** **WLAN**

IP Address (0.0.0.0 for DHCP)	0.0.0.0
Gateway IP Address	0.0.0.0
Netmask	255.255.255.0
DNS 1 IP Address	0.0.0.0
DNS 2 IP Address	0.0.0.0
No SonicIP	☐ Yes ☒ No

Exstreamer Instruction Manual at 9. Once properly configured, the Barix Exstreamer has several different modes to stream music. *Id.* at 10-11, 18.

Critically, the Barix Exstreamer had the ability to play music *in sync* with other Barix Exstreamers. For example, the control command “SYNC” “*synchronizes an Exstreamer as slave to another Exstreamer which then will be the master.*” The Exstreamer Technical Description Version 1.5 (10/2002) at 16 (emphasis added):

1.1.1 Control Commands for Sync

This commands aren't available in the standard Exstreamer firmware. The Exstreamer has to be loaded with a special Exstreamer Sync firmware.

Element	Description	CGI command	SERIAL, TCP or UDP command
SYNC	This command synchronizes an Exstreamer as slave to another Exstreamer which then will be the master. IP: IP address of the master Exstreamer (ex. 192.168.2.50) PORT: Sync port of the master Exstreamer (ex. 20562). This port can be calculated but normally it should be taken from the answer of the DISCOVER command. The formula is: $20000 + (\text{second to last byte of IP bit and } 0x0F) \times 256 + \text{last byte of IP}$ (ex. $20000 + (2 \times 256) + 50 = 20562$) NAME: Name of the master Exstreamer (ex. Master). It can be taken from the answer of the DISCOVER command.	s=<IP>&port=<PORT>&name=<NAME>	0x73 0x3D ... 0x00 (s=...l)

P4Sync:

The P4Sync is another example of a networking system at the time of the alleged invention that was capable of playing back audio simultaneously across multiple devices:

synchronizing mp3 playback

Background



Once upon a time, we thought a killer app for hall parties would be an MP3 player synchronizer. We actually wrote one, as part of our p2p network, P4. It plugged into Winamp and synched its playback with other P4 users on the network. This allowed lots of computers to sync up and play the same songs, at the same time, as if they were tuned to the same radio station. It sounded like one giant stereo with lots and lots of speakers.

https://snarfed.org/synchronizing_mp3_playback

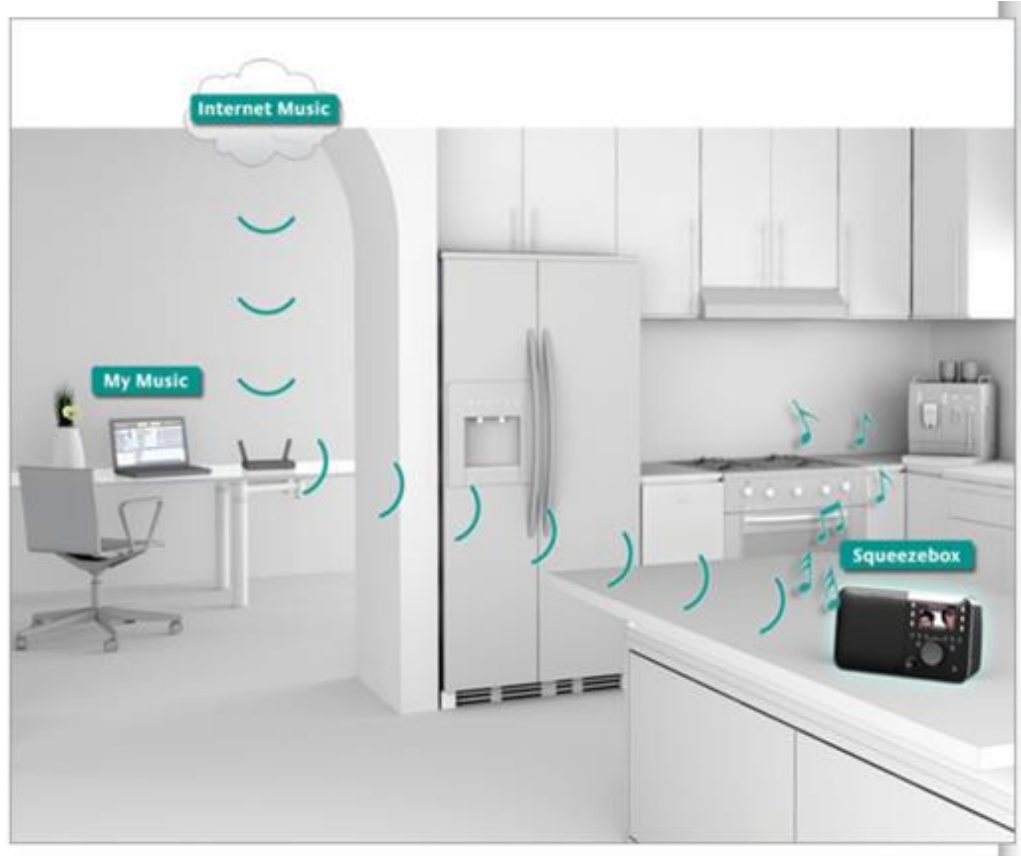
The P4Sync enabled such simultaneously audio playback among multiple devices by calculating “*the difference between current time from*” the time that the server starts playing a song (recorded to the millisecond) and “*seek[s] forward that far into the song*”:

Seriously, though, there's only one trick to p4sync, and that is how it uses NTP. One host acts as the p4sync server. The other p4sync clients synchronize their system clocks to the server's clock, using SNTP. When the server starts playing a song, it records the time, to the millisecond. The clients then retrieve that timestamp, calculate the difference between current time from that timestamp, and seek forward that far into the song.

1 https://snarfed.org/synchronizing_mp3_playback

2 Logitech Squeezebox:

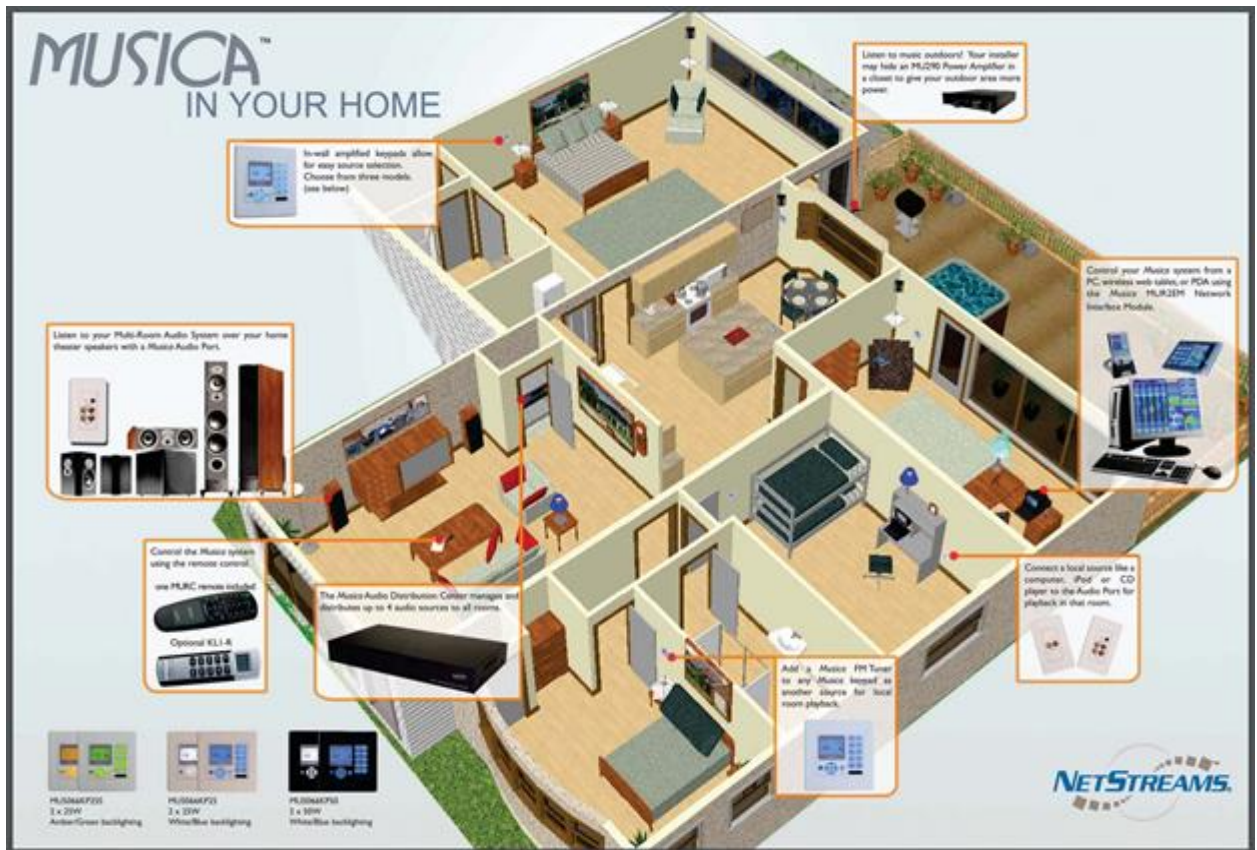
3 The Logitech Squeezebox is yet another example of an audio networking
4 device, with the ability to stream and play back audio simultaneously across
5 multiple such devices on the network:



20 <https://mysqueezebox.com/download>

21 NetStreams Musica:

22 Yet another example is the NetStreams Musica, which allowed simultaneous
23 playback of audio among multiple playback devices across the entire house or
24 network:



<http://www.rolec.net/downloads/MusicaConsumerBrochure.pdf>

NetStreams Musica allowed the devices the be controlled from anywhere on the network:

**CONTROL YOUR MUSICA
MULTI-ROOM AUDIO SYSTEM
FROM A PDA OR YOUR PC**

<http://www.rolec.net/downloads/MusicaConsumerBrochure.pdf>

Indeed, it provided “*seamless control of up to 18 rooms of audio*” and permitted a user to “*turn the music on and off in any and all rooms,*” including “*transfer[ring] audio from room to room*”:

1 The MUR2EM features an eye-catching and intuitive user interface, enabling
2 users to control all of their audio sources using a web browser on a PC, web
3 tablet, or PDA*. The MUR2EM Network Interface provides seamless control
4 of up to 18 rooms of audio, featuring an RS-232 port for quick and easy
5 connection to the *Musica* Audio Distribution Center. Turn the music on and
6 off in any and all rooms in your home. You can also select which source you
7 want to listen to, and transfer audio from room to room.



16 <http://www.rolec.net/downloads/MusicaConsumerBrochure.pdf>

17 Using a typical wireless network technology such as IEEE.802.11 standards
18 to interconnect and control the output devices was also well known in the art. See
19 Rietschel at 4:24-28 (“Typically, the network is a conventional, wired network, but
20 it may preferably also be a wireless network, particularly a radio network (e.g. Wifi,
21 wireless fidelity, also called IEEE802.11b, or follow-up standards at a higher data
22 rate, such as IEEE802.11a).”); Balassanian at 6:47-50 (“Various communications
23 links may be used, such as the Internet, a local area network, a wide area network, or
24 a point-to-point dial-up connection.”); Janevski at 6:45-48 (“The first is an Internet
25 network 118 that interconnects the PVRs 11411, b located at the two different
26 locations (e.g. House 1 and House 2”); Walsh at [0042] (teaching a dynamic content
27 delivery system (DCDS) that allows a user to control playback of audio content
28 using a mobile communications device over networks such as “HomeRF, WLAN,

1 cellular telephone networks, or HyperLAN2”); Yamaha, MusicCAST: Digital Audio
2 Terminal MCX-A10, Owner’s Manual at 21.

3 Indeed, wireless networking and wireless location area networks (“WLANs”)
4 have existed for decades. By at least the 1990s, for example, IEEE 802.11 standards
5 development was well underway, including ways to setup devices on the network
6 for secure communications. U.S. Patent No. 10,439,896 (another patent asserted in
7 this Investigation) admits that adding new devices on secure wireless networks was
8 not new and people who set up wireless networks already existed: “Typically, the
9 person who sets up the wireless network must have at least some knowledge about
10 IP (Internet Protocol) networking and Ethernet (e.g., 802.3, 802.11), such as
11 addressing, security, broadcast, unicast, etc.” U.S. Patent No. 10,439,896 at 1:39-
12 42. That patent alleges that this was “typically” the case, but in reality, the
13 technology was already available to allowed consumers to set up wireless networks,
14 as illustrated in the invalidity charts submitted by Google for U.S. Patent No.
15 10,439,896.

16 Although IT professionals and even those with an elementary level of
17 knowledge could set up commercial devices on secure wireless networks prior to the
18 time of the alleged invention, many devices already existed that did not require
19 average consumers to have this knowledge, including home entertainment products
20 that used wireless or wired Ethernet connections.

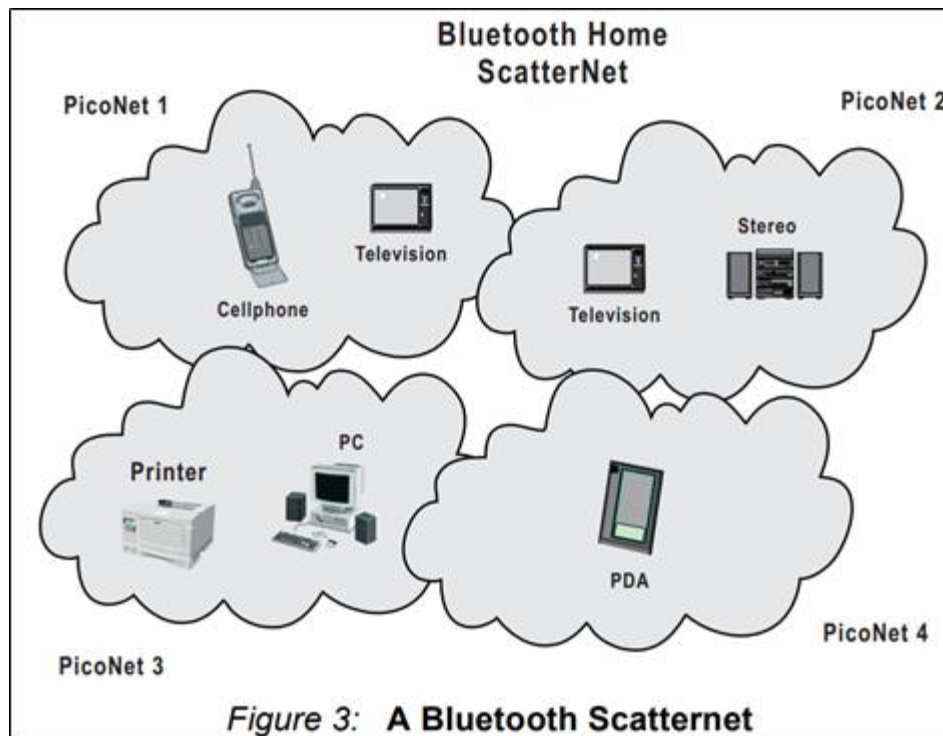
21 This is not surprising, as wireless home entertainment networks have long
22 been an area of research and commercial development prior to the existence of
23 Sonos, including the easy setup of these home networks and the ability to play
24 music simultaneously cross the home network. As exemplified by the invalidity
25 charts submitted by Google, there was widespread advances in this field. It was
26 expected that these home networks should be easy for end users to install and use.
27 For example, a 2001 white paper “Wireless Home Networks — DECT, Bluetooth,
28

HomeRF, and Wireless LANs” (<http://application-notes.digchip.com/077/77-43382.pdf>) states:

Wireless home networking solutions satisfy the following four specific demands:

1. No new wiring infrastructures
2. The solutions must also be simple to install and easy to use
3. Interoperability with other networks such as phoneline-based home networks is also essential
4. Solutions need to be economical and home security cannot be compromised

Id. at 1. “Two major factors are presenting a real opportunity for networking data devices within the home. The first is the massive growth of people going online and accessing the Internet. The second factor is the emergence of sub-\$800 powerful home PCs. With these low-cost devices the barrier to getting on the Internet and discovering the functionality of PCs is low enough to reach the vast majority of middle-income households.” *Id.* at 4.



1 *Id.* at 9.

2 U.S. Patent No. 6,131,130 (assigned to Sony and filed on December 10, 1997)
3 discloses “[a] converged system architecture and method for converging a personal
4 computer with audio/video devices” where “[w]ireless communications are
5 transmitted between the personal computer and the audio/video devices.” *Id.* at
6 Abstract. As U.S. Patent No. 6,131,130 discloses:

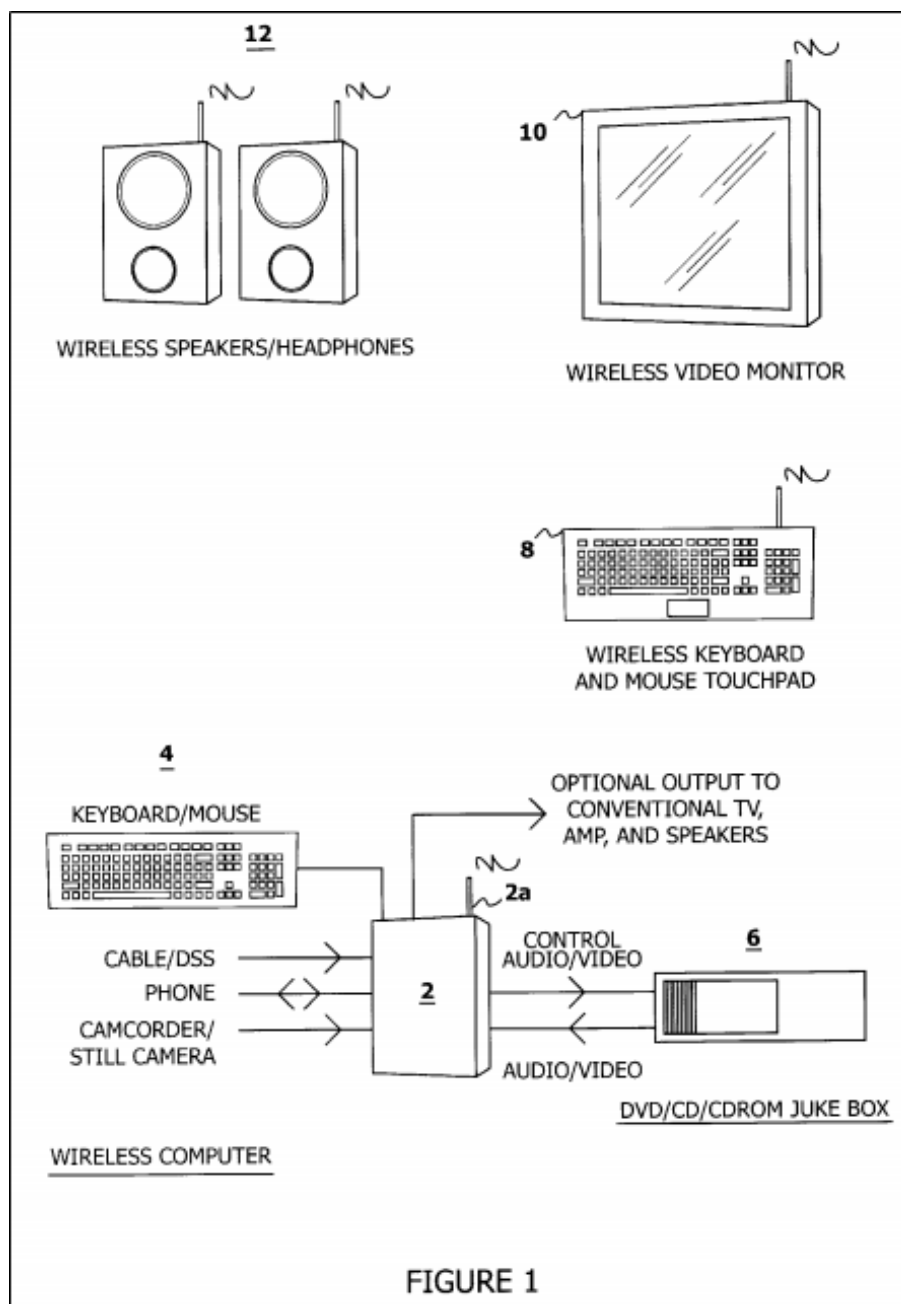
7 It is an object of the present invention to provide a system architecture
8 which converges the personal computer and wireless home A/V
9 electronics;

10 It is another object of the present invention to provide a converged
11 system which is both easy and economical to install;

12 It is still another object of the present invention to provide a
13 converged system which allows the A/V devices to be freely moved;
14 and

15 It is yet another object of the present invention to provide a converged
16 system having a common interface through which the homeowner
17 operates the A/V devices from anywhere in the home.

18 *Id.* at 1:62-2:7.



Id. at Fig. 1.

“The proliferation of consumer electronic devices that provide streams of video, such as digital-video disk (DVD) players, high-definition television (HDTV) sets, digital cameras, and digital camcorders, has given rise to significant interest in broadband home entertainment networks. Wireless home networks are particularly attractive because of ease of installation or relocation.” M. Ho ; L. Taylor; G.R. Aiello (2001). “The availability of digital entertainment devices is increasing

1 rapidly and the need to interconnect them is ever more important. This paper gives
2 a description of the technical standards that are key to the definition and design of
3 high-speed integrated digital networks and the approach that is being taken to extend
4 the network into the wireless domain. These standards address both the method of
5 interconnection and the means to ensure that there is full interoperability between
6 digital entertainment appliances in a user-friendly manner.” See In-home wireless
7 networking: an entertainment perspective, D. Evans, Electronics & Communication
8 Engineering Journal, Vo. 13, Issue 5 213-19 (October 2001).

9 Wireless home entertainment systems were widely sold and demonstrated, as
10 shown in Google’s invalidity charts for the asserted patents. There are, of course,
11 other companies and products in this crowded field prior to the existence of Sonos.
12 For example, at Comdex 2000:

13 Sony Corp. last month provided a glimpse of the many choices
14 consumers will soon face when putting together home networks for
15 entertainment, information and telecommuting.

16 The entertainment giant's huge booth at the Comdex trade show in Las
17 Vegas included demonstrations of systems that may use four different
18 communication technologies.

19 Home LANs were a hot topic at the show as products using the
20 Bluetooth wireless specification finally begin to hit the market and
21 join a plethora of other wireless and wireline technologies. Using
22 home LANs, consumers can link together broadband Internet
23 connections, multiple PCs, connected PDAs (personal digital
24 assistants) and digital game and entertainment devices.

25 At Sony's booth, first-day visitors saw demonstrations of networks
26 that can use IEEE 802.11b wireless LAN, Ethernet, IEEE 1394
27 wireline technology (called iLink by Sony) or the Bluetooth short-
28 range wireless system to connect PCs, portable digital devices and
home-entertainment products, including TVs and stereos.

 Sony's vision sees consumers downloading movies, games and other
digital entertainment from the Internet as part of a service that delivers

1 Sony-produced content. Gateway devices will bring in the data from
2 the Internet and deliver it on to PCs and entertainment devices.

3 However, the range of technologies and their capabilities is huge,
4 including Bluetooth's point-to-point 1Mbps (bit per second)
5 connection, Ethernet at 10Mbps or 100Mbps, IEEE 802.11b wireless
6 LAN at 11Mbps and IEEE 1394 at up to 400Mbps.

7 [https://search.proquest.com/openview/41445f9786fbc9b9f1f60627152faeed/1?pq-](https://search.proquest.com/openview/41445f9786fbc9b9f1f60627152faeed/1?pq-origsite=gscholar&cbl=43820)
8 [origsite=gscholar&cbl=43820](https://search.proquest.com/openview/41445f9786fbc9b9f1f60627152faeed/1?pq-origsite=gscholar&cbl=43820).

9 Operating multiple rendering devices in synchrony was an obvious
10 requirement to create a functional entertainment system. See Balassanian at 1:19-22
11 (“Multimedia presentations that are presented on different rendering devices (e.g.,
12 video display and stereo system) typically require that the different content of the
13 presentation be rendered in a synchronized manner.”). It was no secret that accurate
14 synchronization amongst the audio devices was critical, without which the system
15 “produces an echo or delay effect which causes a listener to receive the same audio
16 at slightly different times from the multiple devices,” thereby impairing the
17 listener’s enjoyment. Sullivan at 1:42-46.

18 As the patents admit, an echo effect can arise from a number of reasons,
19 including “delays in the transfer of audio information over the network” and the use
20 of independent clocks by different audio playback devices. See, e.g., ’258 Patent at
21 2:17-36. Each of these problems was well appreciated in prior art. For example,
22 Balassanian notes that various rendering devices have different “system clocks that
23 operate at slightly different frequencies,” resulting in “different time domains that
24 make the rendering of the multimedia presentation in a synchronized manner
25 difficult” Balassanian at 1:35-40. Balassanian also addresses the latency in
26 communication links. *Id.* at 5:7-10 (“If there was no variation in the time domains
27 between the devices, then the send and receive times would reflect the
28 communications link latency between sending and receiving the time domain
messages.”).

1 In light of these problems, the patents purport to achieve synchrony among
2 different audio output devices by transmitting playback timing information that
3 accounts for the differences in the time domains under which each output device
4 operates, which is again an approach that was widely known before the alleged
5 invention of the '953, '258, '715, and '001 Patents. *See* Balassanian at 4:47-5:35
6 (teaching a formula to compute the time domain differential); Janevski at 9:30-10:2
7 (teaching a formula to compute the time misregistration between different output
8 devices).

9 (iv) '896 and '883 Patents

10 The '896 and '883 Patents generally relate to wireless network configuration
11 of zone players and music streaming through a controller that is already connected
12 to a secure wireless local area network ("WLAN"). The controller provides the
13 network configuration parameters with the zone player so that human interventions
14 in configuring the network settings are reduced. *See* '896 Patent, at Abstract; 1:28-
15 32. The controller establishes a rudimentary communication path with the zone
16 player over which the network configuration parameters are exchanged. '896 Patent,
17 at 2:16-29, 5:1-10. The zone player uses the network configuration parameters to
18 connect to the secure WLAN. '896 Patent, at 2:45-50.

19 Wireless networking and wireless local area networks ("WLANs") have
20 existed for decades. By at least the 1990s, for example, IEEE 802.11 standards
21 development was well underway, including ways to set up devices on the network
22 for secure communications. The '896 Patent admits that adding new devices on
23 secure wireless networks was not new and people who set up wireless networks
24 already existed: "Typically, the person who sets up the wireless network must have
25 at least some knowledge about IP (Internet Protocol) networking and Ethernet (e.g.,
26 802.3, 802.11), such as addressing, security, broadcast, unicast, etc." '896 Patent at
27 1:39-42. The '896 Patent alleges that this was "typically" the case, but in reality, the
28

1 technology was already available to allow consumers to set up wireless networks, as
2 shown in Exhibits 896-1 through 896-11 and 896-B.

3 Although IT professionals and even those with an elementary level of
4 knowledge could set up commercial devices on secure wireless networks prior to the
5 '896 Patent, many devices already existed that did not require average consumers to
6 have this knowledge, including home entertainment products that used wireless or
7 wired Ethernet connections. For example, as shown in Exhibits 896-1 through 896-
8 11 and 896-B, the SMC Networks' EZ-Stream Wireless Audio Adapter
9 (SMCWAA-B), Linksys' WMA11B, Creative SoundBlaster Wireless, cd3o's C200
10 and C300, Yamaha MusicCast, and BridgeCo's Wireless Audio Adapter and
11 Speakers, and Apple's Airport Express each had simple to follow instructions to
12 help users add new wired and wireless home entertainment products to home
13 networks with minimal human intervention.

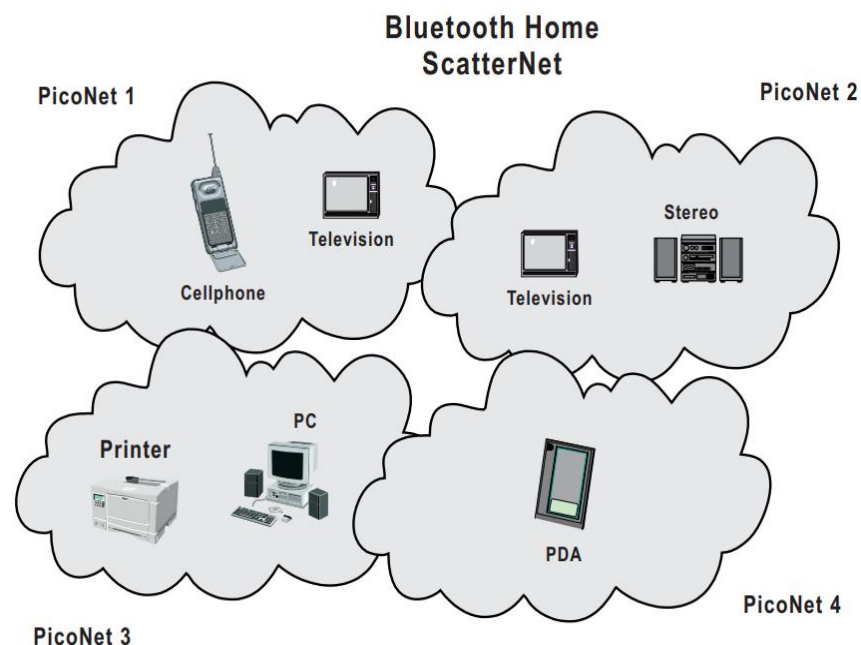
14 This is not surprising. Wireless home entertainment networks have long been
15 an area of research and commercial development prior to the existence of Sonos,
16 including the easy setup of these home networks. In addition to the prior art
17 discussed in the Exhibits 896-1 through 896-11 and 896-B, as well as the prior art
18 cited for the other Asserted Patents, there were widespread advances in this field. It
19 was expected that these home networks should be easy for end users to install and
20 use. For example, a 2001 white paper "Wireless Home Networks — DECT,
21 Bluetooth, HomeRF, and Wireless LANs" ([http://application-
22 notes.digchip.com/077/77-43382.pdf](http://application-notes.digchip.com/077/77-43382.pdf)) states:

23 Wireless home networking solutions satisfy the following four specific
24 demands:

- 25 1. No new wiring infrastructures
- 26 2. The solutions must also be simple to install and easy to use
- 27 3. Interoperability with other networks such as phonline-based home
- 28 networks is also essential

1 4. Solutions need to be economical and home security cannot be
2 compromised

3 *Id.* at 1. “Two major factors are presenting a real opportunity for networking
4 data devices within the home. The first is the massive growth of people going
5 online and accessing the Internet. The second factor is the emergence of sub-\$800
6 powerful home PCs. With these low-cost devices the barrier to getting on the
7 Internet and discovering the functionality of PCs is low enough to reach the vast
8 majority of middle-income households.” *Id.* at 4.



20 **Figure 3: A Bluetooth Scatternet**

21 *Id.* at 9.

22 U.S. Patent No. 6,131,130 (assigned to Sony and filed on December 10, 1997)
23 discloses “[a] converged system architecture and method for converging a personal
24 computer with audio/video devices” where “[w]ireless communications are
25 transmitted between the personal computer and the audio/video devices.” *Id.* at
Abstract. As U.S. Patent No. 6,131,130 discloses:

26 It is an object of the present invention to provide a system architecture which
27 converges the personal computer and wireless home A/V electronics;
28

1 It is another object of the present invention to provide a converged system
2 which is both easy and economical to install;

3 It is still another object of the present invention to provide a converged
4 system which allows the A/V devices to be freely moved; and

5 It is yet another object of the present invention to provide a converged system
6 having a common interface through which the homeowner operates the A/V devices
7 from anywhere in the home.

8 *Id.* at 1:62-2:7.

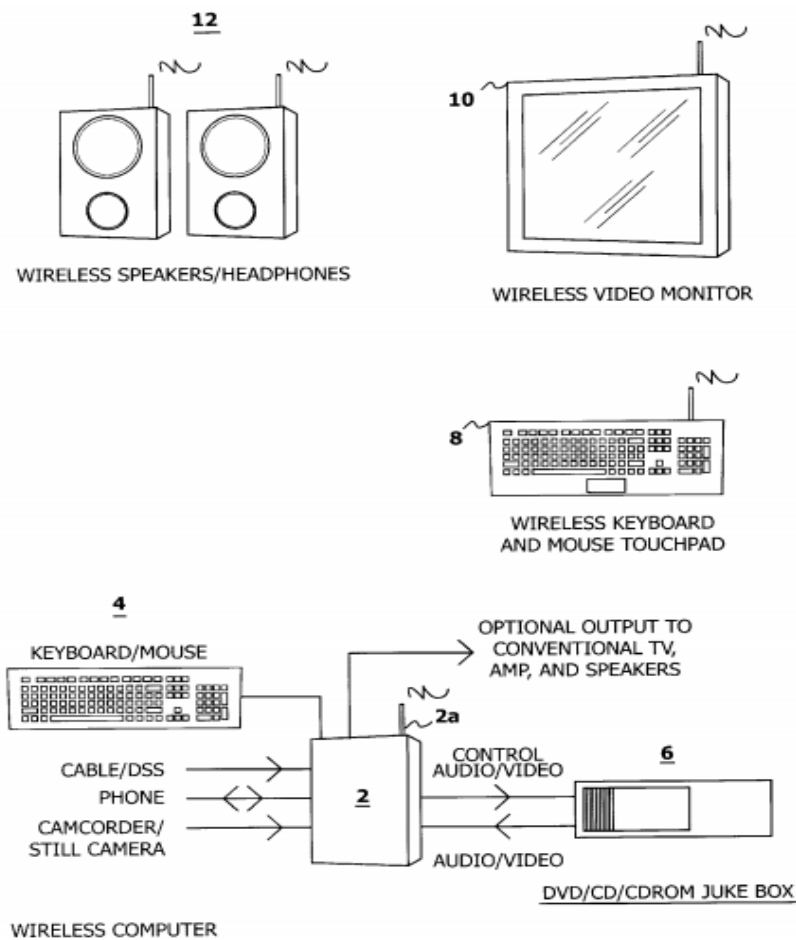


FIGURE 1

Id. at Fig. 1.

1 “The proliferation of consumer electronic devices that provide streams of
2 video, such as digital-video disk (DVD) players, high-definition television (HDTV)
3 sets, digital cameras, and digital camcorders, has given rise to significant interest in
4 broadband home entertainment networks. Wireless home networks are particularly
5 attractive because of ease of installation or relocation.” M. Ho; L. Taylor; G.R.
6 Aiello (2001). “The availability of digital entertainment devices is increasing
7 rapidly and the need to interconnect them is ever more important. This paper gives
8 a description of the technical standards that are key to the definition and design of
9 high-speed integrated digital networks and the approach that is being taken to extend
10 the network into the wireless domain. These standards address both the method of
11 interconnection and the means to ensure that there is full interoperability between
12 digital entertainment appliances in a user-friendly manner.” See In-home wireless
13 networking: an entertainment perspective, D. Evans, Electronics & Communication
14 Engineering Journal, Vo. 13, Issue 5 213-19 (October 2001).

15 Wireless home entertainment systems were widely sold and demonstrated, as
16 shown in Exhibits 896-1 through 896-11 and 896-B and Exhibits for the other
17 Asserted Patents. There are, of course, other companies and products in this
18 crowded field prior to the existence of Sonos. For example, at Comdex 2000:

19 Sony Corp. last month provided a glimpse of the many choices consumers
20 will soon face when putting together home networks for entertainment, information
21 and telecommuting.

22 The entertainment giant's huge booth at the Comdex trade show in Las Vegas
23 included demonstrations of systems that may use four different communication
24 technologies.

25 Home LANs were a hot topic at the show as products using the Bluetooth
26 wireless specification finally begin to hit the market and join a plethora of other
27 wireless and wireline technologies. Using home LANs, consumers can link together
28

1 broadband Internet connections, multiple PCs, connected PDAs (personal digital
2 assistants) and digital game and entertainment devices.

3 At Sony's booth, first-day visitors saw demonstrations of networks that can
4 use IEEE 802.11b wireless LAN, Ethernet, IEEE 1394 wireline technology (called
5 iLink by Sony) or the Bluetooth short-range wireless system to connect PCs,
6 portable digital devices and home-entertainment products, including TVs and
7 stereos.

8 Sony's vision sees consumers downloading movies, games and other digital
9 entertainment from the Internet as part of a service that delivers Sony-produced
10 content. Gateway devices will bring in the data from the Internet and deliver it on to
11 PCs and entertainment devices.

12 However, the range of technologies and their capabilities is huge, including
13 Bluetooth's point-to-point 1Mbps (bit per second) connection, Ethernet at 10Mbps
14 or 100Mbps, IEEE 802.11b wireless LAN at 11Mbps and IEEE 1394 at up to
15 400Mbps.

16 [https://search.proquest.com/openview/41445f9786fbc9b9f1f60627152faeed/1](https://search.proquest.com/openview/41445f9786fbc9b9f1f60627152faeed/1?pq-origsite=gscholar&cbl=43820)
17 [?pq-origsite=gscholar&cbl=43820](https://search.proquest.com/openview/41445f9786fbc9b9f1f60627152faeed/1?pq-origsite=gscholar&cbl=43820).

18 Starting before Sonos' alleged development of the '896 Patent, a multitude of
19 companies, industry organizations, and standard setting bodies had already
20 developed the technology for the simple set up of wireless devices, including for
21 home entertainment systems. For example, there was HomeRF:

22 With these issues in mind, several major stakeholders in the IT industry
23 formed the HomeRF Working Group in early 1997. There are 85+ members, with
24 major contributors including Compaq, Ericsson, HP, IBM, Intel, Microsoft,
25 Motorola, Philips, Proxim, Symbionics. The key goal of the group is to enable
26 interoperable wireless voice and data networking within the home at consumer price
27 points.
28

1 Since its formation, the group has developed a specification for wireless
2 communications in the home called Shared Wireless Access Protocol-Cordless
3 Access (or “SWAP-CA”). Three subcommittees exist within the HomeRF Working
4 Group. The HRFWG-Japan sub-committee was created to assist in defining SWAP
5 and ensure that it complies with local regulations. The group has also formed
6 committees to plan future versions of SWAP that address wireless multimedia and a
7 lower cost alternative.

8 In addition to ratifying the standard, 13 companies have also committed to
9 building products based on SWAP. Products that adhere to the SWAP standard will
10 carry voice and data traffic between various portable appliances within the home
11 using wireless system. Additionally, these products will interoperate with the public
12 telephone network and the Internet.

13 Wireless Home Networks — DECT, Bluetooth, HomeRF, and Wireless
14 LANs” (<http://application-notes.digchip.com/077/77-43382.pdf>) at 4-5.

15 There was also the Digital Home Working Group (DHWG) that was started in
16 2003 and later renamed the Digital Living Network Alliance.

17 Seventeen companies have formed the Digital Home Working Group
18 (DHWG) to create interoperability standards for digital content among audio, video,
19 mobile and PC products.

20 Intel Corp. and Sony Corp. proposed formation of the group, and so far 15
21 companies have joined: Fujitsu, Gateway, HP, IBM, Kenwood, Lenovo, Microsoft,
22 NEC, Nokia, Panasonic, Philips, Samsung, Sharp, ST Microelectronics and
23 Thomson.

24 The non-profit organization will seek an industry consensus on design
25 guidelines for consumer electronics products so that consumers can access digital
26 content across different platforms.

1 For example, consumers could download a MP3 music file in MP3 to a
2 mobile phone, play the file on a home stereo and store it in a PC without worrying
3 about troublesome format conversions.

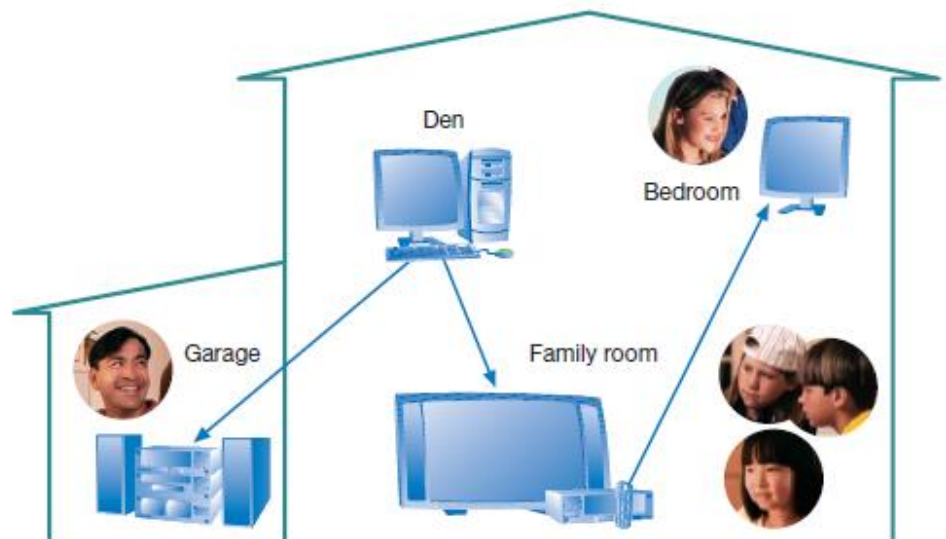
4 Thus far, no such interoperability exists. DHWG was established to prepare
5 guidelines for cross-platform interoperability, a Sony spokeswoman said.

6 The group will first set a simple guideline based on established standards such
7 as Internet Protocol (IP), UPnP, Wi-Fi and other common formats such as MPEG2
8 and MP3. In several years, the guidelines will evolve to incorporate emerging or
9 subsequent versions of existing standards to cover wider areas such as home
10 controls and communications.

11 [https://www.eetimes.com/digital-home-working-group-to-seek-platform-](https://www.eetimes.com/digital-home-working-group-to-seek-platform-compatibility/#)
12 [compatibility/#](https://www.eetimes.com/digital-home-working-group-to-seek-platform-compatibility/#).

13 See also DNLA White Paper, Use Case Scenarios (June 2004).

14 Figure 5.
15 Home network



23 It is Saturday night in the Campbell house and everyone is relaxing. Jim is
24 listening to the wirelessly networked stereo he has in the garage, which he controls
25 with a remote from the workbench. He has on some old jazz he has stored on the
26 den PC. The music is streaming over the wireless home network from the PC to the
27 stereo.

1 There was also the Home Networking and IT (“HNIT”) division of the
2 Consumer Electronics Association (“CEA”). “HNIT’s membership includes
3 consumer electronics executives, marketing and market research professionals,
4 engineers, and standards developers, which provide a broad perspective on this
5 subject.” See Home Networks: A Standards Perspective, Bill Rose, WJR
6 Consulting, Inc., IEEE Communications Magazine at 78 (December 2001). “Home
7 networking is defined by the CEA-HNIT’s Board of Directors as follows: ‘A home
8 network interconnects electronic products and systems, enabling remote access to
9 and control of those products and systems, and any available content such a music,
10 video or data.’ *Id.*

11 The desire to easily setting up devices to wireless networks is not limited to
12 play back devices and applies to most, if not all, wireless peripherals. Naturally,
13 there were multiple standards and industry groups that crowded this field prior to the
14 existence of Sonos. For example, there was the Zero Configuration Networking
15 (Zeroconf) Group:

16 The IETF Zeroconf Working Group was chartered September 1999 and held
17 its first official meeting at the 46th IETF in Washington, D.C., in November 1999.
18 By the time the Working Group completed its work on Dynamic Configuration of
19 IPv4 Link-Local Addresses and wrapped up in July 2003, IPv4LL was implemented
20 and shipping in Mac OS (9 & X), Microsoft Windows (98, ME, 2000, XP, 2003), in
21 every network printer from every major printer vendor, and in many assorted
22 network devices from a variety of vendors. IPv4LL is available for Linux and for
23 embedded operating systems. If you're making a networked device today, there's no
24 excuse not to include IPv4 Link-Local Addressing.

25 <http://www.zeroconf.org/>.

26 The goal of the Zero Configuration Networking (ZEROCONF) Working
27 Group is to enable networking in the absence of configuration and administration.
28 Zero configuration networking is required for environments where administration is

1 impractical or impossible, such as in the home or small office, embedded systems
2 ‘plugged together’ as in an automobile, or to allow impromptu networks as between
3 the devices of strangers on a train.

4 ZEROCONF requirements will make networking as easy as possible, but no
5 easier. In some cases other considerations may dominate ease of use. For example,
6 network security requires some configuration which may not be as easy as the
7 unacceptable alternative of ‘no security.’

8 <http://www.zeroconf.org/zeroconf-charter.html>.

9 Several companies ended up developing their own versions of Zeroconfig.
10 For example, in May 2002, “Apple announced their Zero Configuration Networking
11 solution under the product name Rendezvous. Apple is keen to leave AppleTalk
12 behind and move to all-IP networking, and Rendezvous makes that possible.
13 Rendezvous is now used by iChat, iTunes, iPhoto, Safari, file sharing, printing, and
14 just about every other piece of software that does networking on a Mac, including
15 trusty old favorites like telnet, ssh, and ftp.” <http://www.zeroconf.org/>. Apple later
16 introduced their Airport Express product that allows for easy setup of wireless audio
17 speakers in June 2004. See, e.g., https://www.youtube.com/watch?v=hq5_P90pOqo.

19 Another well-known technology was Universal Plug and Play (“UPnP”)
20 spearheaded by the UPnP Forum:

21 UPnP™ technology defines an architecture for pervasive peer-to-peer
22 network connectivity of intelligent appliances, wireless devices, and PCs of all form
23 factors. It is designed to bring easy-to-use, flexible, standards-based connectivity to
24 ad-hoc or unmanaged networks whether in the home, in a small business, public
25 spaces, or attached to the Internet. UPnP technology provides a distributed, open
26 networking architecture that leverages TCP/IP and the Web technologies to enable
27 seamless proximity networking in addition to control and data transfer among
28 networked devices.

1 The UPnP Device Architecture (UDA) is more than just a simple extension of
2 the plug and play peripheral model. It is designed to support zero-configuration,
3 "invisible" networking, and automatic discovery for a breadth of device categories
4 from a wide range of vendors. This means a device can dynamically join a network,
5 obtain an IP address, convey its capabilities, and learn about the presence and
6 capabilities of other devices. Finally, a device can leave a network smoothly and
7 automatically without leaving any unwanted state behind.

8 The technologies leveraged in the UPnP architecture include Internet
9 protocols such as IP, TCP, UDP, HTTP, and XML. Like the Internet, contracts are
10 based on wire protocols that are declarative, expressed in XML, and communicated
11 via HTTP. Using internet protocols is a strong choice for UDA because of its proven
12 ability to span different physical media, to enable real world multiple-vendor
13 interoperation, and to achieve synergy with the Internet and many home and office
14 intranets. The UPnP architecture has been explicitly designed to accommodate these
15 environments. Further, via bridging, UDA accommodates media running non-IP
16 protocols when cost, technology, or legacy prevents the media or devices attached to
17 it from running IP.

18 What is "universal" about UPnP technology? No device drivers; common
19 protocols are used instead. UPnP networking is media independent. UPnP devices
20 can be implemented using any programming language, and on any operating system.
21 The UPnP architecture does not specify or constrain the design of an API for
22 applications; OS vendors may create APIs that suit their customers' needs.

23 UPnP™ Device Architecture 1.0, Version 1.0.1, 06 May 2003; *see also*
24 Authentication and Authorization in Universal Plug and Play Home Networks,
25 Mauri Kangas, Ad Hoc Mobile Wireless Networks – Research Seminar on
26 Telecommunications Software, Autumn 2002 HUT TML – Course T-110.557 –
27 Publication ISBN 951-22-6309-2 ISSN 1456-7628 TML-C8.

1 IETF, through its work related to the Simple Service Discovery Protocol
2 (“SSDP”), was another such group. See, e.g., <https://tools.ietf.org/html/draft-cai-ssdp-v1-03>. “The Simple Service Discovery Protocol (SSDP) provides a
3 mechanism where by network clients, with little or no static configuration, can
4 discover network services. SSDP accomplishes this by providing for multicast
5 discovery support as well as server based notification and discovery routing.” *Id.*

7 Using multiple communication paths to set up a device was standard practice,
8 as shown in Exhibits 896-1 through 896-11 and 896-B. This was common place
9 prior to Sonos. For example, by 2002:

10 In July, TDC Mobile, the mobile arm of Danish incumbent telephone
11 company Tele Danmark, signed a contract with Ericsson to deploy a Wi-Fi system
12 to link with GSM. The Danish operator plans to integrate an IEEE 802.11 service
13 into its GSM network, using mobile phones and their subscriber identification
14 module (SIM) cards to deliver passwords that control access. (All GSM phones
15 contain SIM cards, which include the user’s phone number, account information,
16 phone directories, and so on.)

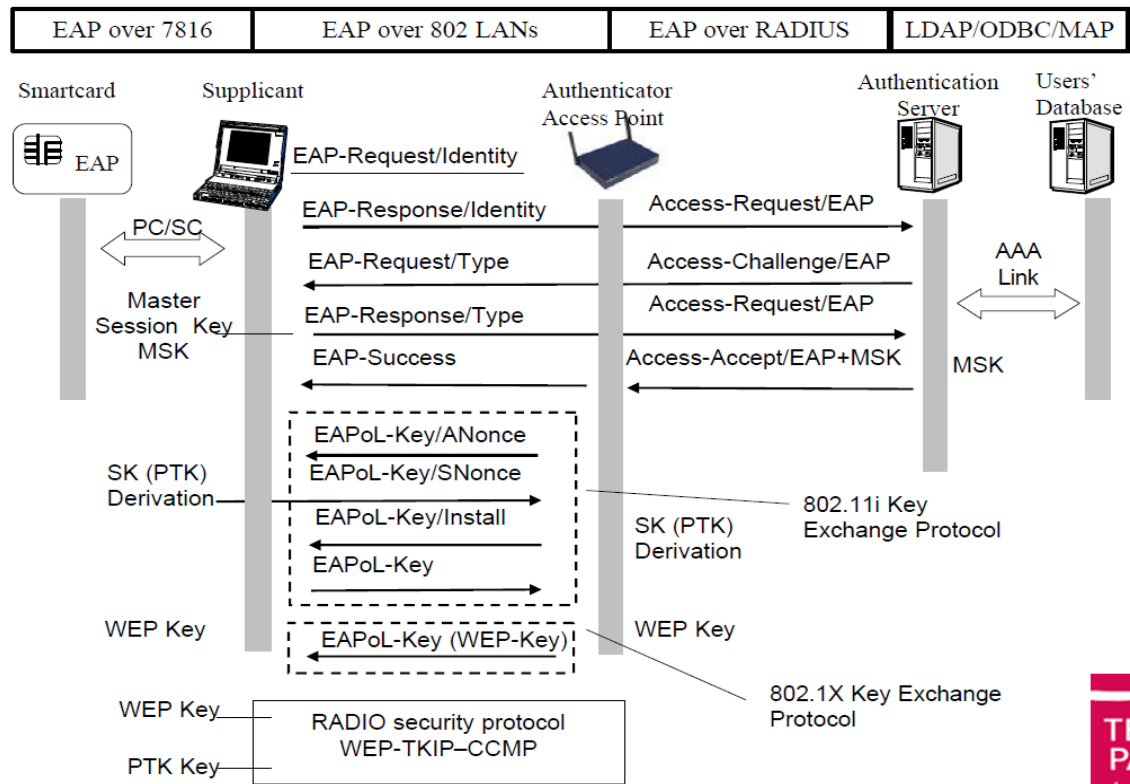
17

18 Finland’s Nokia Corp., the world’s largest maker of handsets, has developed
19 an integrated Wi-Fi/SIM card, which also uses the GSM network for authentication.
20 And local GSM mobile operator Sonera Corp. (Helsinki) is offering a roaming
21 service between its public local-area networks, also relying on SIM cards for
22 authenticated access. Sonera argues that SIM authentication is far more secure than
23 relying on user names and passwords.”

24 Wi-Fi Hotspot Networks Sprout Like Mushrooms, IEEE SPECTRUM •
25 September 2002.

26 SIM-based Subscriber Authentication for Wireless Local Area Networks,
27 Yuh-Ren Tsai and Cheng-Ju Chang, IEEE (2003) discloses another example:
28

EAP standards, like EAP-SIM and EAP-TLS also combine multiple communication paths:

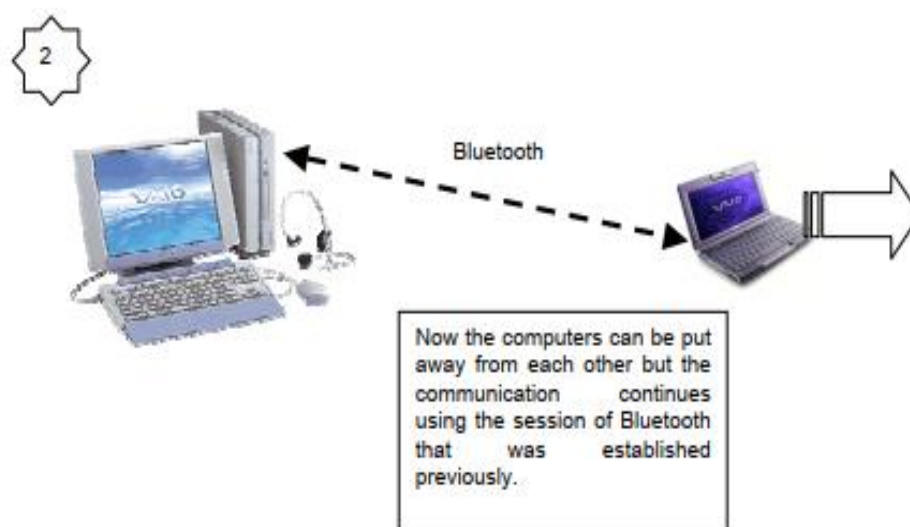
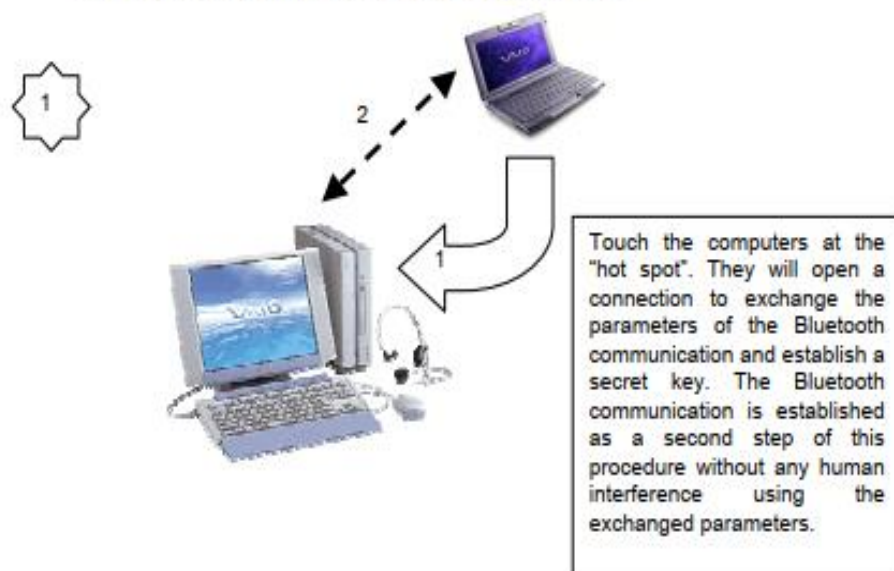


EAP-TLS Smartcards, from Dream to Reality, Pascal Urien, Mohamed Badra, Mesmin Dandjinou, 4th Workshop on Applications and Services in Wireless Networks, Boston University, Massachusetts, USA (August 9th, 2004).

Near Field Communications (“NFC”) technology was also used to help with setup through different communication paths.

2.2 Set up of communication for other protocols

Imagine that you would like to transfer a large amount of information between two computers – a desktop and a laptop. Let's say you want to transfer a presentation file. Using NFC may be slow and we decide to use something with more bandwidth. Let's say for this example we use Bluetooth. Now, to set up Bluetooth communication between two computers we would need to set it up manually with a password to protect the communication. Using NFC we can set up this communication by simply touching the two computers:



The same procedure can be used to establish a wireless (Bluetooth, WiFi etc.) link between two pieces of computer or consumer electronics equipment like TVs, laptop computers, PDAs, mobile phones and so on.

<http://web.archive.org/web/20050513015811/http://www.ecma-international.org/activities/Communications/2004tg19-001.pdf>.

1 Even graduate students discussed the common scenarios where this
2 technology was already used:

3 Example 1: A traveler wants to use the airport waiting lounge printer to
4 wirelessly print a document from his PDA. The document is personal and the
5 traveler does not want to share it with the whole waiting lounge. 23 CHAPTER 3.
6 REQUIREMENTS 24 The PDA of the traveler and the waiting lounge printer are
7 both equipped with wireless network interfaces that can be used for local
8 communication. In addition, an RFID tag is attached to the printer and the PDA has
9 an RFID reader. There is no prior security context between these two devices, that is
10 the PDA and the printer do not share any keys or possess certificates issued by
11 mutually trusted CAs. The traveler forms the secure connection between the two
12 devices by touching the printer with his PDA. During the touch, the RFID reader of
13 the PDA reads the contents of the RFID tag. After that, the secure connection is set
14 up using the information received from the RFID tag of the printer. The traveler can
15 now print his personal document securely.

16 Example 2: A home user wants to set up a secure connection between his
17 computer and camera phone, so that he can securely upload pictures from his
18 camera phone to his computer. The connection must be secured, so that the wireless
19 picture traffic takes place between just the camera phone and the computer, and no
20 outsider devices can receive the pictures sent by the camera phone. Both of the
21 devices are equipped with wireless network interfaces, and in addition, the computer
22 and the camera phone both have infrared ports. Like in the previous example, there
23 is no prior security context between these devices. The home user brings his camera
24 phone close to his computer. The two devices set up an infrared link and exchange
25 information using that link. After that, secure connection is set up between these two
26 devices, and the home user can upload the pictures from his phone to his computer
27 securely.
28

1 Example 3: A group of businessmen forms an ad hoc network for
2 conferencing when they meet outside the office. The businessmen want to share
3 company confidential material and thus the communication must be secured. Each
4 of the businessmen has a laptop with a wireless network card and an infrared port.
5 Also one of the businessmen has a mobile phone that has an infrared interface. No
6 prior security context exists between the laptops of the businessmen. The
7 businessman with the mobile phone moves his phone close to all the laptops one at a
8 time. The mobile phone and the laptops establish infrared links and exchange
9 information using that link. After that, the secure group connection is set up between
10 the users.

11 Institutive Security Initiation Using Location-Limited Channels, Kari
12 Kostiainen (April 2004)
13 ([http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.95.4930&rep=rep1&type](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.95.4930&rep=rep1&type=pdf)
14 [=pdf](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.95.4930&rep=rep1&type=pdf)).

15 (a) **Obviousness Contentions**

16 (i) The '949 Patent

17 The following is a list of prior art references that, either alone, or in
18 combination with the knowledge of a person of ordinary skill in the art, Applicant's
19 Admitted Prior Art, and/or the additional prior art references discussed below, and
20 in Exhibits 949-1 through 949-B would have rendered obvious one or more Asserted
21 Claims of the '949 patent, including as indicated in the associated claim charts. A
22 person of ordinary skill in the art would have been motivated and had a reasonable
23 expectation of success to make these combinations because, for example, each
24 would have been merely: (a) a combination of prior art elements according to
25 known methods to yield predictable results; (b) a simple substitution of one known
26 element for another to obtain predictable results; (c) a use of a known technique to
27 improve similar devices in the same way; (d) application of a known technique to a
28 known device ready for improvement to yield predictable results; (e) obvious to try;

1 and/or (f) known work in one field of endeavor prompting variations of it for use in
2 either the same field or a different one based on design incentives or other market
3 forces since the variations are predictable to one of ordinary skill in the art.

4 As set forth with more detail in Exhibits 949-1 through 949-B, Defendant
5 contends that all claims are rendered obvious by the identified reference(s) alone, or
6 in combination with other references, including the references identified below and
7 discussed in the attached exhibits.

8 Exhibit No.	Reference	In Combination With
9 949-1	Bose	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
10 949-2	Isely	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
11 949-3	Cd3o	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
12 949-4	Russound	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
13 949-5	Geiwitz	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
14 949-6	Allen	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or

Exhibit No.	Reference	In Combination With
		various references cited in the Obviousness exhibit
949-B	Obviousness, citing various references	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '949 patent, it would have been obvious to a POSITA at the time of the alleged invention of the '949 patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in Exhibits 949-1 through 949-B and/or with a POSITA's general knowledge. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. A POSITA would have been motivated to combine any of the references described in attached Exhibits 949-1 through 949-B, including for the reasons below. A POSITA at the time of filing of the asserted patents would also have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them, including as further described below.

The alleged invention of the '949 patent relates to a controller with a user interface that can form a group including playback devices and control volumes of all players, individually and collectively, in the zone group.

The asserted claims recite elements that were conventional in a home or audio device controller connected to one or more audio devices well before the priority date of the '949 patent. For example, use of a user interface to control plurality of audio playing devices to play the same source was well-known prior to the '949

1 patent and the prior art is replete with teachings that confirm this knowledge. *See*
2 *generally, e.g.*, Bose; Isely; Russound; Cd3o; Geiwitz.

3 Use of a user interface to control volumes of plurality of audio playing
4 devices was also well-known prior to the '949 patent and the prior art is replete with
5 teachings that confirm this knowledge. *See generally, e.g.*, Bose; Isely; Russound;
6 Cd3o; Geiwitz.

7 In sum, by the time the '949 patent was filed, it was well known to provide a
8 user interface to form groups to play common source and control volumes of
9 plurality of audio playing devices as claimed at least because all the above was well
10 known in the art before the '949 patent, and a POSITA would have known that any
11 and/or all the above techniques could be combined to provide "a multimedia
12 controller including a processor" that provides a user interface to from groups and
13 control volumes of plurality of audio playing devices. This is especially true here
14 because all of the references disclose a user interface to control plurality of audio
15 playing devices. As such, a POSITA would have logically and predictably
16 consulted all of the references together to derive the alleged invention in the '949
17 patent.

18 Further, the knowledge described above and below would have provided the
19 basis for combining any number of known Applicant's Admitted Prior Art, and/or
20 the additional prior art references discussed above, and in Exhibits 949-1 through
21 949-B. Because all of these techniques were already known in the art for use in a
22 home or audio device controller connected to one or more audio devices, a POSITA
23 would have understood that combining any/all of these techniques would have
24 yielded predictable results, would have been a simple substitution of one known
25 technique for another to obtain predictable results, would have used known
26 techniques to improve similar techniques in the same way, would have applied a
27 known technique to a known method that was ready for improvement to yield
28 predictable results, would have been obvious to try because the techniques were all

1 known and there was reasonable expectation of success in combining them, would
2 have been obvious to try to improve a home or audio device controller connected to
3 one or more audio devices, and would have been obvious because all techniques
4 were already known and combined in various fashions before. This is especially
5 true given the '949 patent and prior art relate to different user interfaces based on
6 design changes in the audio system. A POSITA would have been motivated to use,
7 try, and combine different user interfaces to create another user interface (like the
8 '949 patent) based on user needs and the audio system. Implementing the
9 combination and any necessary modifications would have been routine and within
10 the scope of the prior art references' teachings. With respect to the prior art
11 references in Exhibits 949-1 through 949-B, a POSITA would have been motivated
12 to combine any of the references to render the asserted claims of the '949 patent
13 obvious for at least the reasons above and below.

14 First, the prior art references identified above and the accompanying
15 invalidity claim charts teach similar home or audio device controller that can control
16 volumes of one or more audio devices (and within relevant timeframes), and thus
17 the teachings of any one reference are applicable to other references in that same
18 field. *See generally, e.g.*, Bose; Isely; Russound; Cd3o; Geiwitz.

19 Second, a POSITA would have been motivated and found it obvious to apply
20 references teaching certain specific techniques—*e.g.*, Isely, Geiwitz, C-Media Xear,
21 Yamaha Personal Receiver—to other references that relate to playback devices
22 generally because they relate to use of user interface to control plurality of playback
23 devices apply to any playback devices. *See generally, e.g.*, Bose; Isely; Russound;
24 Cd3o; Geiwitz.

25 A POSITA would have also been motivated and found it obvious to replace
26 and/or combine a reference's exact set of materials, components, or configurations
27 for all the reasons provided above and below. These modifications would have been
28 a simple substitution of one known element for another, which would have obtained

1 predictable results because it was already well known in the art that teaches use of
2 user interface to form groups and control volumes and playback devices. The
3 substitution of one component, material, or configuration for another would not
4 have changed the principle of operation for either reference in any combination
5 because the references all use similar mechanisms for a similar purpose: use of user
6 interface to control plurality of playback devices. This is thus a combination of
7 prior art elements (*e.g.*, use of a user interface to group and control volumes of
8 plurality of playback devices) according to known methods (a POSITA would
9 understand that these are all available design choices) to yield predictable results (a
10 POSITA would understand the benefits and drawbacks of each design choice, and
11 there are no unexpected results from any particular combination). This is especially
12 true given the '949 patent and prior art relate to different user interfaces based on
13 different audio systems. *E.g.*, compare '949 patent, claim 1 with Bose (a controller
14 with a user input to control plurality of playback devices), Russound (same), and
15 Geiwitz (same). A POSITA would have been motivated to use, try, and combine
16 different user interfaces to yield another user interface (like the '949 patent) based
17 on user needs and the audio system.

18 Further, a POSITA would have been motivated to combine these teachings,
19 and to make these replacements, because all of these user interface to control
20 plurality of playback devices components, materials, and configurations were
21 widely-used techniques. For example, a POSITA would have been motivated to
22 combine teachings from Bose with teachings from Geiwitz to allow a user to change
23 zone group names as claimed in claim 5 of the '949 patent. Indeed, a POSITA
24 would have been especially motivated to combine these two teachings because both
25 relate to different user interfaces, thus, a POSITA would have had a clear
26 expectation of success and expect a predictable result given adding new features to a
27 user interface does not require nothing more than a simple modification.
28

1 Accordingly, a POSITA would have had a reasonable expectation of success
2 given considerations discussed above, the similarities in the teachings and systems,
3 and given that the claimed components and configurations of controller with a user
4 interface to control plurality of playback devices were all well-known at the time.
5 Implementing the combination and any necessary modifications would have been
6 routine and within the scope of the prior art references' teachings.

7 For example, to the extent that Bose or Isely does not disclose the "configured
8 to accept via the user interface an input to name the player group" limitation, it
9 would have been obvious to combine any of these references with, e.g., Geiwitz;
10 Christensen; Farinelli, to arrive at said limitation because those references disclose
11 such limitation, and a POSITA would have been motivated to consult references that
12 disclose accepting a user input to name of the player group. *See, e.g.,* Geiwitz;
13 Christensen; Farinelli.

14 Also, to the extent that Isely does not disclose the "accept via the user
15 interface a group-level input to adjust a volume associated with the player group,
16 wherein the group-level input to adjust the volume associated with the player group
17 causes each of the players in the player group to adjust its respective volume"
18 limitation, it would have been obvious to combine any of these references with, e.g.,
19 Bose, Russound, Geiwitz, to arrive at said limitation because those references
20 disclose such limitation, and a POSITA would have been motivated to consult
21 references that disclose "adjusting a group-level input to adjust a volume associated
22 with the player group." *See, e.g.,* Bose; Russound; Geiwitz. A POSITA would have
23 had a had a clear expectation of success and expect a predictable result given adding
24 new features to a user interface does not require nothing more than a simple
25 modification.

26 Additional obviousness combinations of the references identified here are
27 possible, and Defendant may rely on such combination(s) in this litigation. In
28 particular, Defendant is currently unaware of Sonos's allegations with respect to the

1 level of skill in the art and the qualifications of a POSITA. Defendant is also
2 unaware of the extent, if any, to which Sonos may contend that limitations of the
3 claims at issue are not disclosed in the prior art identified by defendant as
4 anticipatory, and the extent to which Sonos will contend that elements not disclosed
5 in the asserted patent specifications would have been known to a POSITA. And
6 Defendant does not yet know how the Court will construe terms in the asserted
7 claim. Defendant is also continuing its investigation of the large universe of prior
8 art to identify potential prior art systems, publications related to those systems, and
9 third parties that may have information about those systems. Defendant reserves the
10 right to amend and supplement these contentions to identify other prior art and
11 combinations rendering the asserted claim obvious.

12 (ii) The '014 Patent

13 The following is a list of prior art references that, either alone, or in
14 combination with the knowledge of a person of ordinary skill in the art, Applicant's
15 Admitted Prior Art, and/or the additional prior art references discussed below, and
16 in Exhibits 014-1 through 014-B would have rendered obvious one or more Asserted
17 Claims of the '014 patent, including as indicated in the associated claim charts. A
18 person of ordinary skill in the art would have been motivated and had a reasonable
19 expectation of success to make these combinations because, for example, each
20 would have been merely: (a) a combination of prior art elements according to
21 known methods to yield predictable results; (b) a simple substitution of one known
22 element for another to obtain predictable results; (c) a use of a known technique to
23 improve similar devices in the same way; (d) application of a known technique to a
24 known device ready for improvement to yield predictable results; (e) obvious to try;
25 and/or (f) known work in one field of endeavor prompting variations of it for use in
26 either the same field or a different one based on design incentives or other market
27 forces since the variations are predictable to one of ordinary skill in the art.

28

As set forth with more detail in Exhibits 014-1 through 014-B, Defendant contends that all claims are rendered obvious by the identified reference(s) alone, or in combination with other references, including the references identified below and discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
014-1	Bose	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
014-2	Isely	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
014-3	Cd3o	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
014-4	Russound	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
014-5	Geiwitz	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
014-6	Allen	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or various references cited in the Obviousness exhibit
014-B	Obviousness, citing various references	Bose, Isely, Cd3o, Russound, Geiwitz, Allen, C-Media Xear, Yamaha Personal Receiver, Christensen and/or

Exhibit No.	Reference	In Combination With
		various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '014 patent, it would have been obvious to a POSITA at the time of the alleged invention of the '014 patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in Exhibits 014-1 through 014-B and/or with a POSITA's general knowledge.

Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. A POSITA would have been motivated to combine any of the references described in attached Exhibits 014-1 through 014-B, including for the reasons described below. A POSITA at the time of filing of the asserted patents would also have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them, including as further described below.

The alleged invention of the '014 patent relates to a controller with a user interface that can form a group including playback devices and control volumes of all players, individually and collectively, in the group.

The asserted claims recite elements that were conventional in a home or audio device controller connected to one or more audio devices well before the priority date of the '014 patent. As an example, use of a user interface to control plurality of audio playing devices to play the same source was well-known prior to the '014 patent and the prior art is replete with teachings that confirm this knowledge. *See generally, e.g.,* Bose; Isely; Russound; Cd3o; Geiwitz.

Use of a user interface to control volumes of plurality of audio playing devices was also well-known prior to the '014 patent and the prior art is replete with

1 teachings that confirm this knowledge. *See generally, e.g.,* Bose; Isely; Russound;
2 Cd3o; Geiwitz.

3 In sum, by the time the '014 patent was filed, it was well known to provide a
4 user interface to form a group and control volumes of plurality of audio playing
5 devices as claimed at least because all the above was well known in the art before
6 the '014 patent, and a POSITA would have known that any and/or all the above
7 techniques could be combined to provide an “apparatus for controlling a plurality of
8 players.” This is especially true here because all of the references disclose a user
9 interface to control plurality of audio playing devices. As such, a POSITA would
10 have logically and predictably consulted all of the references together to derive the
11 alleged invention in the '014 patent.

12 Further, the general background knowledge described above and below would
13 have provided the basis for combining any number of known Applicant's Admitted
14 Prior Art, and/or the additional prior art references discussed above, and in Exhibits
15 014-1 through 014-B. Because all of these techniques were already known in the art
16 for use in a home or audio device controller that can one or more audio devices, a
17 POSITA would have understood that combining any/all of these techniques would
18 have yielded predictable results, would have been a simple substitution of one
19 known technique for another to obtain predictable results, would have used known
20 techniques to improve similar techniques in the same way, would have applied a
21 known technique to a known method that was ready for improvement to yield
22 predictable results, would have been obvious to try because the techniques were all
23 known and there was reasonable expectation of success in combining them, would
24 have been obvious to try to improve a user interface that controls plurality of audio
25 devices, and would have been obvious because all techniques were already known
26 and combined in various fashions before. With respect to the prior art references in
27 Exhibits 014-1 through 014-B, a POSITA would have been motivated to combine
28

1 any of the references identified as prior art to the '014 patent for these reasons
2 provided above and the additional reasons provided below.

3 First, the prior art references identified above and the accompanying
4 invalidity claim charts teach similar home or audio device controller that can form a
5 group and control volumes of one or more audio devices (and within relevant
6 timeframes), and thus the teachings of any one reference are applicable to other
7 references in that same field. *See generally, e.g.*, Bose; Isely; Russound; Cd3o;
8 Geiwitz.

9 Second, a POSITA would have been motivated and found it obvious to apply
10 references teaching certain specific techniques—*e.g.*, Isely, Geiwitz, C-Media Xear,
11 Yamaha Personal Receiver—to other references that relate to playback devices
12 generally because they relate to use of user interface to control plurality of playback
13 devices. *See generally, e.g.*, Bose; Isely; Russound; Cd3o; Geiwitz.

14 A POSITA would have also been motivated and found it obvious to replace
15 and/or combine a reference's exact set of materials, components, or configurations
16 for all the reasons provided above and below. These modifications would have been
17 a simple substitution of one known element for another, which would have obtained
18 predictable results because it was already well known in the art that teaches use of
19 user interface to form a group and control volumes of one or more playback devices.
20 The substitution of one component, material, or configuration for another would not
21 have changed the principle of operation for either reference in any combination
22 because the references all use similar mechanisms for a similar purpose: use of user
23 interface to control plurality of playback devices. This is thus a combination of
24 prior art elements (*e.g.*, use of a user interface to group and control volumes of
25 plurality of playback devices) according to known methods (a POSITA would
26 understand that these are all available design choices) to yield predictable results (a
27 POSITA would understand the benefits and drawbacks of each design choice, and
28 there are no unexpected results from any particular combination). This is especially

1 true given the '014 patent and prior art relate to different user interfaces based on
2 design changes in the audio system. *E.g., compare '014 patent, claim 1 with Bose*
3 *(an apparatus with a user input to control plurality of playback devices), Russound*
4 *(same), and Geiwitz (same). A POSITA would have been motivated to use, try, and*
5 *combine different user interfaces to create another user interface (like the '014*
6 *patent) based on user needs and the audio system.*

7 Further, a POSITA would have been motivated to combine these teachings,
8 and to make these replacements, because all of these use of user interfaces to control
9 plurality of playback devices components, materials, and configurations were
10 widely used techniques. For example, a POSITA would have been motivated
11 combine teachings from Bose with teachings from Geiwitz to display a zone volume
12 input as an averaged volume of the players (or any other numerical or representative
13 value) to better guide a user when a user decides to change and/or monitor group
14 volume as claimed in claim 25 of the '014 patent. Indeed, a POSITA would have
15 been especially motivated to combine these teachings because both relate to user
16 interfaces, thus, a POSITA would have had a clear expectation of success and
17 expect a predictable result given adding new features to a user interface does not
18 require nothing more than a simple modification. Also, such motivation to combine
19 is prevalent in this industry because it is a common practice for a POSITA to receive
20 a user feedback about their user interface and make any modifications (or updates)
21 based on the feedback. In other words, a POSITA would have been strongly
22 motivated to change and combine teachings from other prior art to provide a better
23 functioning and more flexible user interface.

24 Accordingly, a POSITA would have had a reasonable expectation of success
25 given considerations discussed above, the similarities in the teachings and systems,
26 and given that the claimed components and configurations of controller with a user
27 interface to control plurality of playback devices were all well-known at the time.

1 Implementing the combination and any necessary modifications would have been
2 routine and within the scope of the prior art references' teachings.

3 As one example, to the extent that Bose or Isely does not disclose the
4 "displaying a zone group including players from the available players when at least
5 two of the available players are selected to form the zone group, wherein any one of
6 the players in the group serves as a zone group head" limitation, it would have been
7 obvious to combine any of these references with, e.g., Russound; Geiwitz, to arrive
8 at said limitation because those references disclose such limitation, and a POSITA
9 would have been motivated to consult references that disclose displaying a zone
10 group and selecting a player to serve as a leader. *See, e.g.,* Russound; Geiwitz.

11 As another example, to the extent that Bose does not disclose the "adjusting a
12 volume meter represented by an averaged value of audio volumes of the [p]layers in
13 the group, wherein said adjusting of the volume meter includes changing a volume
14 of each of the group of players synchronously in accordance with an adjustment
15 made by a user" limitation, it would have been obvious to combine any of these
16 references with, e.g., C-Media Xear; Yamaha Personal Receiver; Christensen, to
17 arrive at said limitation because those references disclose such limitation, and a
18 POSITA would have been motivated to consult references that disclose using a zone
19 group volume meter to change a volume of all players in the group. *See, e.g.,* C-
20 Media Xear; Yamaha Personal Receiver; Christensen. A POSITA would have had a
21 had a clear expectation of success and expect a predictable result given adding new
22 features to a user interface does not require nothing more than a simple
23 modification.

24 Additional obviousness combinations of the references identified here are
25 possible, and Defendant may rely on such combination(s) in this litigation. In
26 particular, Defendant is currently unaware of Sonos' allegations with respect to the
27 level of skill in the art and the qualifications of a POSITA. Defendant is also
28 unaware of the extent, if any, to which Sonos may contend that limitations of the

1 claims at issue are not disclosed in the prior art identified by defendant as
2 anticipatory, and the extent to which Sonos will contend that elements not disclosed
3 in the asserted patent specifications would have been known to a POSITA. And
4 Defendant does not yet know how the Court will construe terms in the asserted
5 claim. Defendant is also continuing its investigation of the large universe of prior
6 art to identify potential prior art systems, publications related to those systems, and
7 third parties that may have information about those systems. Defendant reserves the
8 right to amend and supplement these contentions to identify other prior art and
9 combinations rendering the asserted claim obvious.

10 (iii) The '959 Patent

11 The following is a list of prior art references that, either alone, or in
12 combination with the knowledge of a person of ordinary skill in the art, Applicant's
13 Admitted Prior Art, and/or the additional prior art references discussed below, and
14 in Exhibits 959-1 through 959-B would have rendered obvious one or more Asserted
15 Claims of the '959 patent, including as indicated in the associated claim charts. A
16 person of ordinary skill in the art would have been motivated and had a reasonable
17 expectation of success to make these combinations because, for example, each
18 would have been merely: (a) a combination of prior art elements according to
19 known methods to yield predictable results; (b) a simple substitution of one known
20 element for another to obtain predictable results; (c) a use of a known technique to
21 improve similar devices in the same way; (d) application of a known technique to a
22 known device ready for improvement to yield predictable results; (e) obvious to try;
23 and/or (f) known work in one field of endeavor prompting variations of it for use in
24 either the same field or a different one based on design incentives or other market
25 forces since the variations are predictable to one of ordinary skill in the art.

26 As set forth with more detail in Exhibits 959-1 through 959-B, Defendant
27 contends that all claims are rendered obvious by the identified reference(s) alone, or
28

1 in combination with other references, including the references identified below and
2 discussed in the attached exhibits.

3 Exhibit No.	Reference	In Combination With
4 959-1	Ramsay	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
5 959-2	Rocketfish	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
6 959-3	McCarty	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
7 959-4	Litback	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
8 959-5	Sasaki	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
9 959-6	Sonos Zoneplayer S5	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
10 959-B	Obviousness, citing various references	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit

1 To the extent that any of the anticipation references is found not to disclose a
2 limitation recited in the asserted claim of the '959 patent, it would have been
3 obvious to a POSITA at the time of the alleged invention of the '959 patent either (i)
4 to modify the reference to include this limitation and any remaining limitations of
5 this claim and/or (ii) to combine said reference with any other of the references in
6 Exhibits 959-1 through 959-B and/or with a POSITA's general knowledge.
7 Generally, motivation to combine any of these references with others exists within
8 the references themselves, as well as within the knowledge of those of ordinary skill
9 in the art at the relevant time. A POSITA would have been motivated to combine
10 any of the references described in attached Exhibits 959-1 through 959-B, including
11 for the reasons described below. A POSITA at the time of filing of the asserted
12 patents would also have understood the references listed above, alone or in
13 combination, to contain explicit and/or implicit teaching, suggestion, and/or
14 rationales to combine them, including as further described below.

15 The alleged invention of the '959 patent relates to a playback device that
16 performs first equalization or second equalization before it outputs audio to one or
17 more playback devices.

18 The asserted claims recite elements that were conventional in a home or audio
19 system connected to one or more audio devices well before the priority date of the
20 '959 patent. As an example, a home or audio system that has one or more audio
21 devices was well-known prior to the '959 patent and the prior art is replete with
22 teachings that confirm this knowledge. *See generally, e.g.*, Ramsay; Rocketfish;
23 McCarty; Litback; Sasaki.

24 Making changes to equalization settings before outputting audio from one or
25 more audio devices was also well-known prior to the '959 patent and the prior art is
26 replete with teachings that confirm this knowledge. *See, e.g.*, Ramsay; Rocketfish;
27 McCarty; Litback; Sasaki; Goh 463; Fincham.

1 In sum, by the time the '959 patent was filed, it was well known to change
2 equalization settings before outputting audio from one or more audio devices as
3 claimed at least because all the above was well known in the art before the '959
4 patent, and a POSITA would have known that any and/or all the above techniques
5 could be combined to provide “a playback device configured to output audio in a
6 multi-channel listening environment.” This is especially true here because all of the
7 references disclose a playback that output audio in a single- and multi-channel
8 environment. As such, a POSITA would have logically and predictably consulted
9 all of the references together to derive the alleged invention in the '959 patent.

10 Further, the general background knowledge described above and below would
11 have provided the basis for combining any number of known Applicant's Admitted
12 Prior Art, and/or the additional prior art references discussed below, and in Exhibits
13 959-1 through 959-B. Because all of these techniques were already known in the art
14 for use in a home or audio device controller that can one or more audio devices, a
15 POSITA would have understood that combining any/all of these techniques would
16 have yielded predictable results, would have been a simple substitution of one
17 known technique for another to obtain predictable results, would have used known
18 techniques to improve similar techniques in the same way, would have applied a
19 known technique to a known method that was ready for improvement to yield
20 predictable results, would have been obvious to try because the techniques were all
21 known and there was reasonable expectation of success in combining them, would
22 have been obvious to try to improve a home or audio device controller connected to
23 one or more audio devices, and would have been obvious because all techniques
24 were already known and combined in various fashions before. This is especially
25 true given the '959 patent and prior art relate to various equalization methods in the
26 audio system. A POSITA would have been motivated to use, try, and combine
27 different equalization methods to permit a user (or automatically perform) to change
28 audio output to their liking for the “best” audio listening experience based on

1 subjective preference of a user and how and where the audio system has been
2 installed. Implementing the combination and any necessary modifications would
3 have been routine and within the scope of the prior art references' teachings. With
4 respect to the prior art references in Exhibits 959-1 through 959-B, a POSITA would
5 have been motivated to combine any of the references identified as prior art to the
6 '959 patent for these reasons provided above and the additional reasons provided
7 below.

8 First, the prior art references identified above and the accompanying
9 invalidity claim charts teach similar home or audio device controller connected to
10 one or more audio devices or speakers (and within relevant timeframes), and thus
11 the teachings of any one reference are applicable to other references in that same
12 field. *See generally, e.g.*, Ramsay; Rocketfish; McCarty; Litback; Sasaki.

13 Second, a POSITA would have been motivated and found it obvious to apply
14 references teaching certain specific techniques—*e.g.*, Goh 463, Fincham—to other
15 references that relate to playback devices generally because they relate to outputting
16 one or more channel audio to one or more playback devices. *See, e.g.*, Ramsay;
17 Rocketfish; McCarty; Litback; Sasaki.

18 A POSITA would have also been motivated and found it obvious to replace
19 and/or combine a reference's exact set of materials, components, or configurations
20 in a particular image sensor with the teachings regarding other materials,
21 components, and configurations used in other image sensor for all the reasons
22 provided above and below. These modifications would have been a simple
23 substitution of one known element for another, which would have obtained
24 predictable results because it was already well known in the art that teaches
25 outputting one or more channels of audio to one or more playback devices. The
26 substitution of one component, material, or configuration for another would not
27 have changed the principle of operation for either reference in any combination
28 because the references all use similar mechanisms for a similar purpose: outputting

1 one or more channels of audio to one or more playback devices. This is thus a
2 combination of prior art elements (*e.g.*, outputting one or more channels of audio to
3 one or more playback devices) according to known methods (a POSITA would
4 understand that these are all available design choices) to yield predictable results (a
5 POSITA would understand the benefits and drawbacks of each design choice, and
6 there are no unexpected results from any particular combination). This is especially
7 true given the '959 patent and prior art relate to different audio configurations with
8 one or more audio devices or speakers. *E.g.*, compare claim 5 with McCarty at Fig.
9 1C (disclosing multiple audio devices/speakers) and Ramsay at Fig. 17 (disclosing
10 multiple audio devices/speakers). A POSITA would not have found an audio
11 devices and a speaker distinctive because known methods of equalization equally
12 applies to both audio devices and speakers (*i.e.*, any device that outputs sound). A
13 POSITA would have been motivated to use, try, and combine different equalization
14 methods to perform better equalization methods (like the '959 patent) based on
15 number of speakers connected to the system and where these speakers installed to
16 provide better sound to a user.

17 A POSITA would have been motivated to combine these teachings, and to
18 make these replacements, because all of these outputting one or more channels of
19 audio to one or more playback devices components, materials, and configurations
20 were widely-used techniques. For example, Ramsay discloses an audio system that
21 uses multiple audio devices to provide a multi-channel audio experience to a user.
22 *See, e.g.*, Ramsay, Fig. 6. Fincham also discloses an audio system that uses multiple
23 audio devices to provide a multi-channel audio experience to a user. *See, e.g.*,
24 Fincham Fig. 7. Fincham further discloses a need and how to perform equalization
25 (*e.g.*, filtering audio signal) based on a different audio configurations to provide a
26 better audio experience to a user. *See, e.g.*, Fincham, Fig. 12 (performing different
27 filtration based on where an audio device is located). As such, a POSITA would
28

1 have been strongly motivated to change and combine teachings of Ramsay and
2 Fincham to provide a better listening experience.

3 Accordingly, a POSITA would have had a reasonable expectation of success
4 given considerations discussed above, the similarities in the teachings and systems,
5 and given that the claimed components and configurations of outputting one or more
6 channels of audio to one or more playback devices were all well-known at the time.
7 Implementing the combination and any necessary modifications would have been
8 routine and within the scope of the prior art references' teachings.

9 As one example, to the extent that Ramsay or McCarty does not disclose the
10 "wherein in the first type of pairing, the playback device is configured to output
11 audio comprising two channel sound via the plurality of speaker drivers" limitation
12 (they disclose this), it would have been obvious to combine any of these references
13 with, e.g., Rocketfish, Litback, to arrive at said limitation because those references
14 disclose such limitation, and a POSITA would have been motivated to consult
15 references that disclose a playback device outputting one or more channels of audio.
16 *See generally, e.g.,* Rocketfish, Litback.. For example, Ramsay discloses an audio
17 system that uses multiple audio devices to provide a multi-channel audio experience
18 to a user. *See, e.g.,* Ramsay, Fig. 13. Ramsay also discloses that each audio device
19 may be used alone. *See, e.g., id.,* Fig. 17. Based on this single audio device
20 configuration, a POSITA would have been strongly motivated to change and
21 combine teachings of Rocketfish and/or Litback (disclose how a playback device
22 should be configured when it is not connected/paired with another playback device
23 for a better listening experience) with Ramsay to provide a better listening
24 experience when a single playback device is present in a room.

25 As another example, to the extent that Ramsay does not disclose the
26 "configure the playback device to perform a first equalization of the audio data
27 before outputting audio based on the audio data from the plurality of speaker drivers
28 when the type of pairing is determined to comprise the first type of pairing"

1 limitation (Ramsay discloses this), it would have been obvious to combine any of
2 these references with, e.g., Litback, Goh 463, Fincham, to arrive at said limitation
3 because those references disclose such limitation, and a POSITA would have been
4 motivated to consult references that disclose equalization of the audio data before
5 outputting audio. *See, e.g.,* Litback; Goh 463; Fincham.

6 Additional obviousness combinations of the references identified here are
7 possible, and Defendant may rely on such combination(s) in this litigation. In
8 particular, Defendant is currently unaware of Sonos' allegations with respect to the
9 level of skill in the art and the qualifications of a POSITA. Defendant is also
10 unaware of the extent, if any, to which Sonos may contend that limitations of the
11 claims at issue are not disclosed in the prior art identified by defendant as
12 anticipatory, and the extent to which Sonos will contend that elements not disclosed
13 in the asserted patent specifications would have been known to a POSITA. And
14 Defendant does not yet know how the Court will construe terms in the asserted
15 claim. Defendant is also continuing its investigation of the large universe of prior
16 art to identify potential prior art systems, publications related to those systems, and
17 third parties that may have information about those systems. Defendant reserves the
18 right to amend and supplement these contentions to identify other prior art and
19 combinations rendering the asserted claim obvious.

20 (iv) The '025 Patent

21 The following is a list of prior art references that, either alone, or in
22 combination with the knowledge of a person of ordinary skill in the art, Applicant's
23 Admitted Prior Art, and/or the additional prior art references discussed below, and
24 in Exhibits 025-1 through 025-B would have rendered obvious one or more Asserted
25 Claims of the '025 patent, including as indicated in the associated claim charts. A
26 person of ordinary skill in the art would have been motivated and had a reasonable
27 expectation of success to make these combinations because, for example, each
28 would have been merely: (a) a combination of prior art elements according to

1 known methods to yield predictable results; (b) a simple substitution of one known
2 element for another to obtain predictable results; (c) a use of a known technique to
3 improve similar devices in the same way; (d) application of a known technique to a
4 known device ready for improvement to yield predictable results; (e) obvious to try;
5 and/or (f) known work in one field of endeavor prompting variations of it for use in
6 either the same field or a different one based on design incentives or other market
7 forces since the variations are predictable to one of ordinary skill in the art.

8 As set forth with more detail in Exhibits 025-1 through 025-B, Defendant
9 contends that all claims are rendered obvious by the identified reference(s) alone, or
10 in combination with other references, including the references identified below and
11 discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
025-1	Ramsay	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
025-2	Rocketfish	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
025-3	McCarty	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
025-4	Litback	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
025-5	Sasaki	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or

Exhibit No.	Reference	In Combination With
		various references cited in the Obviousness exhibit
025-6	Sonos Zoneplayer S5	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit
025-B	Obviousness, citing various references	Ramsay, Rocketfish, McCarty, Litback, Sasaki, Sonos Zoneplayer S5, Goh 463, Fincham, Lin, and/or various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '025 patent, it would have been obvious to a POSITA at the time of the alleged invention of the '025 patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in Exhibits 025-1 through 025-B and/or with a POSITA's general knowledge. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. A POSITA would have been motivated to combine any of the references described in attached Exhibits 025-1 through 025-B, including for the reasons described below. A POSITA at the time of filing of the asserted patents would also have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them, including as further described below.

The alleged invention of the '025 patent relates to a playback device that processes audio data into one or more channel before it outputs audio from the playback device.

1 The asserted claims recite elements that were conventional in a home or audio
2 device controller that can one or more audio devices well before the priority date of
3 the '025 patent. As an example, processing audio data into one or more channel
4 before it outputs audio from the playback device was well-known prior to the '025
5 patent and the prior art is replete with teachings that confirm this knowledge. *See,*
6 *e.g.*, Ramsay; Rocketfish; McCarty; Litback; Sasaki; Goh 463; Fincham.

7 Determining whether more than one playback devices are connected was also
8 well-known prior to the '025 patent and the prior art is replete with teachings that
9 confirm this knowledge. *See, e.g.*, Ramsay; Rocketfish; McCarty; Litback; Sasaki;
10 Goh 463; Fincham.

11 In sum, by the time the '025 patent was filed, it was well known to process
12 audio data into one or more channel before it outputs audio from the playback
13 device as claimed at least because all the above was well known in the art before the
14 '025 patent, and a POSITA would have known that any and/or all the above
15 techniques could be combined to provide “a playback device.” This is especially
16 true here because all of the references disclose processing audio data into one or
17 more channel before it outputs audio from the playback device. As such, a POSITA
18 would have logically and predictably consulted all of the references together to
19 derive the alleged invention in the '025 patent.

20 Further, the general background knowledge described above and below would
21 have provided the basis for combining any number of known Applicant's Admitted
22 Prior Art, and/or the additional prior art references discussed below, and in Exhibits
23 025-1 through 025-B. Because all of these techniques were already known in the art
24 for use in a home or audio device that processes audio data before it outputs to one
25 or more audio devices, a POSITA would have understood that combining any/all of
26 these techniques would have yielded predictable results, would have been a simple
27 substitution of one known technique for another to obtain predictable results, would
28 have used known techniques to improve similar techniques in the same way, would

1 have applied a known technique to a known method that was ready for improvement
2 to yield predictable results, would have been obvious to try because the techniques
3 were all known and there was reasonable expectation of success in combining them,
4 would have been obvious to try to improve how a home or audio device outputs
5 sound to one or more playback device, and would have been obvious because all
6 techniques were already known and combined in various fashions before. With
7 respect to the prior art references in Exhibits 025-1 through 025-B, a POSITA would
8 have been motivated to combine any of the references identified as prior art to the
9 '025 patent for these reasons provided above and the additional reasons provided
10 below.

11 First, the prior art references identified above and the accompanying
12 invalidity claim charts teach similar home or audio device that processes audio
13 before it outputs sound to one or more audio devices (and within relevant
14 timeframes), and thus the teachings of any one reference are applicable to other
15 references in that same field. *See, e.g.*, Ramsay; Rocketfish; McCarty; Litback;
16 Sasaki; Goh 463; Fincham.

17 Second, a POSITA would have been motivated and found it obvious to apply
18 references teaching certain specific techniques—*e.g.*, Goh 463; Fincham—to other
19 references that relate to playback devices generally because processing audio before
20 it outputs sound to one or more audio devices. *See, e.g.*, Ramsay; Rocketfish;
21 McCarty; Litback; Sasaki; Goh 463; Fincham.

22 A POSITA would have also been motivated and found it obvious to replace
23 and/or combine a reference's exact set of materials, components, or configurations
24 in a particular image sensor with the teachings regarding other materials,
25 components, for all the reasons provided above and below. These modifications
26 would have been a simple substitution of one known element for another, which
27 would have obtained predictable results because it was already well known in the art
28 that processes audio before it outputs sound to one or more audio devices. The

1 substitution of one component, material, or configuration for another would not
2 have changed the principle of operation for either reference in any combination
3 because the references all use similar mechanisms for a similar purpose: processing
4 audio before it outputs sound to one or more audio devices. This is thus a
5 combination of prior art elements (*e.g.*, processing audio before it outputs sound to
6 one or more audio devices) according to known methods (a POSITA would
7 understand that these are all available design choices) to yield predictable results (a
8 POSITA would understand the benefits and drawbacks of each design choice, and
9 there are no unexpected results from any particular combination). This is especially
10 true given the '025 patent and prior art relate to different audio configurations with
11 one or more audio devices or speakers. *E.g.*, compare claim 1 with McCarty at Fig.
12 1C (disclosing multiple audio devices/speakers) and Ramsay at Fig. 17 (disclosing
13 multiple audio devices/speakers). A POSITA would not have found an audio
14 devices and a speaker distinctive because known methods of processing equally
15 applies to both audio devices and speakers (*i.e.*, any device that outputs sound). A
16 POSITA would have been motivated to use, try, and combine different processing
17 methods to allow better processing options (like the '025 patent) based on number
18 of speakers connected to the system and where these speakers installed.

19 Further, a POSITA would have been motivated to combine these teachings,
20 and to make these replacements, because all of these processing audio before it
21 outputs sound to one or more audio devices components, materials, and
22 configurations were widely used techniques. For example, Ramsay discloses an
23 audio system that uses multiple audio devices to provide a multi-channel audio
24 experience to a user. *See, e.g.*, Ramsay, Fig. 6. Fincham also discloses an audio
25 system that uses multiple audio devices to provide a multi-channel audio experience
26 to a user. *See, e.g.*, Fincham Fig. 7. Fincham further discloses a need and how to
27 process these signals based on a different audio configurations to provide a better
28 audio experience to a user. *See, e.g.*, Fincham, Fig. 12 (performing different

1 processing of audio data based on where an audio device is located). As such, a
2 POSITA would have been strongly motivated to change and combine teachings of
3 Ramsay and Fincham to provide a better listening experience.

4 Accordingly, a POSITA would have had a reasonable expectation of success
5 given considerations discussed above, the similarities in the teachings and systems,
6 and given that the claimed components and configurations of processing audio
7 before it outputs sound to one or more audio devices were all well-known at the
8 time. Implementing the combination and any necessary modifications would have
9 been routine and within the scope of the prior art references' teachings.

10 As one example, to the extent that McCarty does not disclose the "configure
11 the playback device to perform a first processing of the audio data so as to output
12 two-channel audio based on the audio data from the one or more speaker drivers
13 after the playback device has determined it is not paired with the one or more other
14 playback devices" limitation (McCarty discloses this), it would have been obvious
15 to combine any of these references with, e.g., Ramsay, Rocketfish, Goh 463,
16 Fincham, to arrive at said limitation because those references disclose such
17 limitation, and a POSITA would have been motivated to consult references that
18 disclose processing of the audio data before outputting to one or mor channels to
19 one or more playback devices. *See, e.g.*, Ramsay; Rocketfish; Goh 463; Fincham.
20 For example, McCarty discloses an audio system that uses multiple audio devices to
21 provide a multi-channel audio experience to a user. *See, e.g.*, Ramsay, Fig. 1C.
22 Based on this multi-channel configuration, it would have been obvious to a POSITA
23 that a single audio device disclosed in Fig. 8 may also be used alone to play music.
24 As such, a POSITA would have been strongly motivated to change McCarty into a
25 single device configuration and combine teachings of Ramsay, Rocketfish, Goh 463,
26 and/or Fincham (disclose how to process an audio data when a playback device is
27 not connected/paired with another playback device for a better listening experience)
28

1 with McCarty to provide a better listening experience when a single playback device
2 is present in a room.

3 As another example, to the extent that Litback does not disclose the “receive a
4 signal from a controller over the network, wherein the signal comprises an
5 instruction for the playback device to become paired with one or more other
6 playback devices such that, after pairing, the playback device and the one or more
7 other playback devices have different playback roles” limitation (Litback discloses
8 this), it would have been obvious to combine any of these references with, e.g.,
9 Ramsay, McCarty, Rocketfish, to arrive at said limitation because those references
10 disclose such limitation, and a POSITA would have been motivated to consult
11 references that disclose instructing the playback device to become paired with one
12 or more other playback device. *See, e.g.,* Ramsay; McCarty; Rocketfish.

13 Additional obviousness combinations of the references identified here are
14 possible, and Defendant may rely on such combination(s) in this litigation. In
15 particular, Defendant is currently unaware of Sonos’s allegations with respect to the
16 level of skill in the art and the qualifications of a POSITA. Defendant is also
17 unaware of the extent, if any, to which Sonos may contend that limitations of the
18 claims at issue are not disclosed in the prior art identified by defendant as
19 anticipatory, and the extent to which Sonos will contend that elements not disclosed
20 in the asserted patent specifications would have been known to a POSITA. And
21 Defendant does not yet know how the Court will construe terms in the asserted
22 claim. Defendant is also continuing its investigation of the large universe of prior
23 art to identify potential prior art systems, publications related to those systems, and
24 third parties that may have information about those systems. Defendant reserves the
25 right to amend and supplement these contentions to identify other prior art and
26 combinations rendering the asserted claim obvious.

27 (v) The ’953 Patent
28

The following is a list of prior art references that, either alone, or in combination with the knowledge of a person of ordinary skill in the art, Applicant's Admitted Prior Art, and/or the additional prior art references discussed below, and in Exhibits 953-1 through 953-B would have rendered obvious one or more Asserted Claims of the '953 patent, including as indicated in the associated claim charts. A person of ordinary skill in the art would have been motivated and had a reasonable expectation of success to make these combinations because, for example, each would have been merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of a known technique to improve similar devices in the same way; (d) application of a known technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

As set forth with more detail in Exhibits 953-1 through 953-B, Defendant contends that all claims are rendered obvious by the identified reference(s) alone, or in combination with other references, including the references identified below and discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
953-1	Janevski	Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
953-2	Balassanian	Janevski, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit

Exhibit No.	Reference	In Combination With
953-3	Goldberg	Janevski, Balassanian, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
953-4	Kono	Janevski, Balassanian, Goldberg, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
953-5	Squeezebox	Janevski, Balassanian, Kono, Goldberg, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
953-6	Yamaha	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
953-7	Barix	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
953-8	p4sync	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, Nestreams Musica, and/or various references cited in the Obviousness exhibit
953-9	Netstreams Musica	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, and/or various references cited in the Obviousness exhibit
953-B	Obviousness, citing various references	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit

1
2 To the extent that any of the anticipation references is found not to disclose a
3 limitation recited in the asserted claim of the '953 patent, it would have been
4 obvious to a POSITA at the time of the alleged invention of the '953 patent either (i)
5 to modify the reference to include this limitation and any remaining limitations of
6 this claim and/or (ii) to combine said reference with any other of the references in
7 Exhibits 953-1 through 953-B and/or with a POSITA's general knowledge.
8 Generally, motivation to combine any of these references with others exists within
9 the references themselves, as well as within the knowledge of those of ordinary skill
10 in the art at the relevant time. A POSITA would have been motivated to combine
11 any of the references described in attached Exhibits 953-1 through 953-B, including
12 for the reasons described below. A POSITA at the time of filing of the asserted
13 patents would also have understood the references listed above, alone or in
14 combination, to contain explicit and/or implicit teaching, suggestion, and/or
15 rationales to combine them, including as further described below.

16 The alleged invention of the '953 patent relates to a system for maintaining
17 synchronous playback among a plurality of playback devices that have independent
18 clocking arrangements. '953 Patent at Abstract. The system, as claimed, includes
19 several key features, such as a master and slave playback devices, the ability to
20 transfer audio and playback timing information from a master playback device to
21 slave playback devices, a controller device, volume control, and the ability to switch
22 the master and slave roles. *See id.* at cls. 7-8, 12-14, 18, 22-24.

23 These elements were conventional in synchronized wireless playback systems
24 well before the priority date of the '953 patent. For example, synchronized wireless
25 playback systems that utilized master and slave playback devices were well-known
26 prior to the '953 Patent and the prior art is replete with teachings that confirm this
27 knowledge. *See, e.g.,* Janevski at 6:5-22 (describing an "initiator" PVR and
28

1 “participant” PVRs that engage “in a synchronized viewing session”); Balassanian
2 at Abstract (describing a system “for synchronizing the rendering of content”
3 between “a **master** rendering device” and “**slave** rendering devices”) (emphasis
4 added); Goldberg at 27:2-7 (describing a system for “highly synchronized” “audio
5 playback” between a “broadcast unit” and “receive units”); Kono at [0010]
6 (describing a system for “synchronized” playback in which “the mobile
7 communication terminal serving as the **master** distributes to the song data to the
8 mobile communication terminal serving as the **slave**”) (emphasis added).

9 The ability for any playback device to assume the role of the master playback
10 device was also well-known prior the ’953 Patent, and the prior art is replete with
11 teaching that confirm this knowledge. For example, Janevski teaches that the
12 “initiator” (*i.e.*, master) “role is handed off to any PVR that ... performs a control
13 function.” Janevski at 6:5-22. Likewise, Goldberg teaches that a “new, soon-to-be
14 broadcast unit” (*i.e.*, a current slave or “receive” unit) could assume the role of the
15 broadcast unit (*i.e.*, the master unit). Goldberg at 49:21-50:2. Kono also teaches
16 that master and slave units can be “set” by “master / slave selection information”
17 embedded in the “music data” downloaded from a “server.” Kono at [0015].

18 The ability to transfer audio and playback timing information from a master
19 playback device to slave playback devices, to maintain synchronous playback of
20 audio between the devices, was also well-known prior to the ’953 Patent and the
21 prior art is replete with teachings that confirm this knowledge. *See, e.g.*, Janevski at
22 7:25-50, 10:4-27 (describing a “status message” and “time stamp[s]” transmitted
23 between initiator PVR and the participants PVRs, which includes “information
24 characteristic of content of a digital bit stream from which playback ... is being
25 generated” and “is used to ‘fine tune’ the synchronization” between the PVRs);
26 Balassanian at 3:60-4:15, 2:13-28 (describing “audio content” that “may be sent to
27 multiple audio rendering devices” this is accompanied by an associated “rendering
28 time”); Goldberg at 27:8-17, 21:18-22:17 (describing “audio media” that is

1 transmitted from a broadcast unit to a receive unit, and associated “block code” that
2 designates the “beginning” of each block of an “MP3 file[.]”); Kono at [0021],
3 [0007] (describing “**audio data**” and associated “timing information” that is
4 transmitted from the master to the slave to control “**playback timing**”) (emphasis
5 added).

6 The ability to control a synchronized wireless playback system by utilizing a
7 controller device was also well-known prior to the ’953 Patent and the prior art is
8 replete with teachings that confirm this knowledge. For example, Janevski teaches
9 that the initiator could be controlled “via **control commands** displayed on the
10 television and activated by an input device such as a keyboard or **remote**
11 **controller**.” Janevski at 7:4-24 (emphasis added). Goldberg teaches a “**unit**
12 **controller**” that “performs various operational and executive functions.” Goldberg
13 at [0096] (emphasis added). Kono teaches that audio data is reproduced
14 synchronously “[w]hen the playback start button is pressed on the master side.”
15 Kono at [0021]. Likewise, the ability to issue volume control commands to the
16 playback devices from a controller was also well-known prior to the ’953 Patent.
17 See, e.g., Goldberg at 56:15-22 (describing the ability to “further control aspects of
18 the music output, such as **volume control**”) (emphasis added).

19 In sum, by the time the ’953 patent was filed, it was well known to perform
20 synchronized playback between master and slave devices as claimed at least because
21 all the above was well known in the art before the ’953 patent, and a POSITA would
22 have known that any and/or all the above techniques could be combined to provide a
23 system for synchronous playback among a plurality of playback devices. This is
24 especially true here because all of the references disclose master and slave devices
25 for rendering audio and/or video content and timing information for maintaining
26 synchrony between the playback devices. As such, a POSITA would have logically
27 and predictably consulted all of the references together to arrive at the alleged
28 invention in the ’953 Patent.

1 Furthermore, the general background knowledge described above and below
2 would have provided the basis for combining any number of known Applicant's
3 Admitted Prior Art, and/or the additional prior art references discussed above, and in
4 Exhibits 953-1 through 953-B. Because all of these techniques were already known
5 in the art for use in synchronous playback systems that utilized master and slave
6 devices, a POSITA would have understood that combining any/all of these
7 techniques would have yielded predictable results, would have been a simple
8 substitution of one known technique for another to obtain predictable results, would
9 have used known techniques to improve similar techniques in the same way, would
10 have applied a known technique to a known method that was ready for improvement
11 to yield predictable results, would have been obvious to try because the techniques
12 were all known and there was reasonable expectation of success in combining them,
13 would have been obvious to try to improve a synchronized playback system with
14 master and slave devices, and would have been obvious because all techniques were
15 already known and combined in various fashions before. With respect to the prior
16 art references in Exhibits 953-1 through 953-B, a POSITA would have been
17 motivated to combine any of the references identified as prior art to the '953 patent
18 for these reasons provided above and the additional reasons provided below.

19 First, the prior art references identified above and the accompanying
20 invalidity claim charts teach similar devices for wireless transmitting multimedia
21 information, such as audio and/or video and associated timing information to
22 facilitate synchronous playback (and within relevant timeframes), and thus the
23 teachings of any one reference are applicable to other references in that same field.
24 *See generally, e.g.,* Janevski; Balassanian; Goldberg; Kono.

25 Second, a POSITA would have been motivated and found it obvious to apply
26 references teaching certain specific techniques—*e.g.,* Kono's explicit disclosure of
27 "timing information" used to control "playback timing" between master and slave
28 devices (Kono at [0021], [0007]), and Goldberg's disclosure of "volume control"

1 (Goldberg at 56:15-22)—to other references that relate to synchronized playback
2 generally because a POSITA would have understood that the timekeeping
3 functionality disclosed by the exemplary prior art references could be used for
4 playback timing, and that volume control could be easily implemented in the
5 controllers disclosed by exemplary prior art references. For example, volume
6 control for the synchronous playback system could easily implemented in the
7 “remote control” disclosed by Janevski because remote controls are typically used
8 for controlling volume in multimedia playback systems. The same is true with
9 respect with playback timing information, which could readily be derived from the
10 “time stamp[s]” related to audio content disclosed by Janevski in order to
11 synchronize playback timing and set a future time for synchronous playback, as
12 claimed. *See, e.g.*, Janevski at 7:4-50, 10:4-27

13 A POSITA would have also found it obvious to replace the exact modules,
14 hardware, and/or software disclosed in the charted references for one another
15 because all of the references relate to particular synchronized playback systems.
16 These modifications would involve the simple substitution of one known element
17 for another. For example, Kono discloses that audio is synchronized among a
18 plurality of “telephone[s]” or “mobile communication terminal[s]” (Kono at
19 Abstract, [0010]), and Janevski discloses synchronized playback among a plurality
20 of PVRs (personal video recorders) (Janevski at 6:5-22). A POSITA would have
21 understood that audio could be synchronized using the methods described therein
22 for any type of playback device, including standalone synchronized speakers, or for
23 any type of information content that requires synchronization in order to be rendered
24 at the same time among a plurality of devices. In the case of the PVRs disclosed by
25 Janevski, a POSITA would have further understood that video content is
26 accompanied by audio, which must also be synchronized at the same time to ensure
27 fully synchronous playback among a plurality of PVRs.

1 Further, a POSITA that synchronization and/or control could be facilitated by
2 a variety of different communication protocols, and would have thus found it
3 obvious to replace the communication protocol described in one of the charted
4 referenced for another, or for various communication protocols described within the
5 same reference. Indeed, the references do not teach that a particular communication
6 protocol is required to achieve control or synchronization. For example, Janevski
7 teaches that each PVR includes a “remote control sensor,” but also further discloses
8 that “control” commands can be communicated between the master and slave PVRs
9 over a network such as the Internet. Janevski at 7:51-8:3, 6:5-16, Fig. 1. A
10 POSITA would have thus understood that the remote control could be achieved over
11 the Internet given the Internet’s suitability for transmission of any type of signal or
12 data, including control signals. A POSITA would have also understood that the
13 Internet, or a local area network, would be a readily available alternative for
14 transmitting control signals between a remote control and a PVR, because Janevski
15 already describes the use of the Internet as a network for transmitting control signals
16 between PVRs.¹³

17 Additional obviousness combinations of the references identified here are
18 possible, and Defendant may rely on such combination(s) in this litigation. In
19 particular, Defendant is currently unaware of Sonos’ allegations with respect to the
20 level of skill in the art and the qualifications of a POSITA. Defendant is also
21 unaware of the extent, if any, to which Sonos may contend that limitations of the
22 claims at issue are not disclosed in the prior art identified by defendant as
23 anticipatory, and the extent to which Sonos will contend that elements not disclosed

24
25 ¹³ These examples are not limiting, and are only meant to show how the charted
26 prior art references could be combined, and to provide specific examples of features
27 that could be easily interchanged within and among the charted prior art references.
28 Moreover, these examples should be interpreted as an admission that a specific
element is not suggested or disclosed, either inherently or explicitly, by any of the
charted prior art references.

1 in the asserted patent specifications would have been known to a POSITA. And
2 Defendant does not yet know how the Court will construe terms in the asserted
3 claim. Defendant is also continuing its investigation of the large universe of prior
4 art to identify potential prior art systems, publications related to those systems, and
5 third parties that may have information about those systems. Defendant reserves the
6 right to amend and supplement these contentions to identify other prior art and
7 combinations rendering the asserted claim obvious.

8 (vi) The '258 Patent

9 The following is a list of prior art references that, either alone, or in
10 combination with the knowledge of a person of ordinary skill in the art, Applicant's
11 Admitted Prior Art, and/or the additional prior art references discussed below, and
12 in Exhibits 258-1 through 258-B would have rendered obvious one or more Asserted
13 Claims of the '258 patent, including as indicated in the associated claim charts. A
14 person of ordinary skill in the art would have been motivated and had a reasonable
15 expectation of success to make these combinations because, for example, each
16 would have been merely: (a) a combination of prior art elements according to
17 known methods to yield predictable results; (b) a simple substitution of one known
18 element for another to obtain predictable results; (c) a use of a known technique to
19 improve similar devices in the same way; (d) application of a known technique to a
20 known device ready for improvement to yield predictable results; (e) obvious to try;
21 and/or (f) known work in one field of endeavor prompting variations of it for use in
22 either the same field or a different one based on design incentives or other market
23 forces since the variations are predictable to one of ordinary skill in the art.

24 As set forth with more detail in Exhibits 258-1 through 258-B, Defendant
25 contends that all claims are rendered obvious by the identified reference(s) alone, or
26 in combination with other references, including the references identified below and
27 discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
258-1	Janevski	Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
258-2	Balassanian	Janevski, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
258-3	Goldberg	Janevski, Balassanian, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
258-4	Kono	Janevski, Balassanian, Goldberg, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
258-5	Squeezebox	Janevski, Balassanian, Kono, Goldberg, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
258-6	Yamaha	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
258-7	Barix	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
258-8	p4sync	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, Nestreams Musica, and/or various references cited in the Obviousness exhibit

Exhibit No.	Reference	In Combination With
258-9	Netstreams Musica	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, and/or various references cited in the Obviousness exhibit
258-B	Obviousness, citing various references	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '258 patent, it would have been obvious to a POSITA at the time of the alleged invention of the '258 patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in Exhibits 258-1 through 258-B and/or with a POSITA's general knowledge. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. A POSITA would have been motivated to combine any of the references described in attached Exhibits 258-1 through 258-B, including for the reasons described below. A POSITA at the time of filing of the asserted patents would also have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them, including as described above with respect to the '953 Patent, which similarly describes a system for maintaining synchronous playback among a plurality of playback devices, and as further described below.

Like the '953 Patent, the alleged invention of the '258 patent relates to a system for maintaining synchronous playback among a plurality of playback devices that have independent clocking arrangements. The system, as claimed, includes additional features beyond the features recited in the Asserted Claims of the '953

1 Patent—most notably, the ability to transmit information indicating the status of the
2 synchrony group to a controller. *See* '258 Patent at cl. 17.

3 As described with respect the '953 Patent, the common elements were
4 conventional in synchronized wireless playback systems well before the priority
5 date of the '258 Patent. The additional features were also conventional in wireless
6 playback systems well before the priority date of the '285 Patent. For example,
7 synchronized wireless playback systems that transmitted information regarding the
8 status of the synchrony group were well-known prior to the '258 Patent and the prior
9 art is replete with teachings that confirm this knowledge. *See, e.g.*, Janevski at 7:4-
10 24 (describing a “**status message**” that “is transmitted with each command that is
11 broadcasted in response to a participant performing a control function,” which
12 contains information indicating the status of the synchrony group such as “time
13 misregistration”) (emphasis added); Balassanian at 26:18-28 (describing
14 “[i]nformation” about the number of members of the cluster that “can be sent by the
15 broadcast unit the other members of the cluster” and “conveniently placed on a
16 display on the unit”). As described above with respect to the '953 Patent,
17 synchronized wireless playback systems that utilized controllers were also well-
18 known prior to the '258 Patent. *See, e.g.*, Goldberg at [0096] (describing a “**unit**
19 **controller**” that “performs various operational and executive functions”) (emphasis
20 added); Janevski at 7:4-24 (describing that the initiator could be controlled “via a
21 **remote control**” or “via controls on the PVR 114a itself”) (emphasis added).

22 In sum, by the time the '258 Patent was filed, it was well known to perform
23 synchronized playback between master and slave devices as claimed at least because
24 all the above was well known in the art before the '258 Patent, and a POSITA would
25 have known that any and/or all the above techniques could be combined to provide a
26 system for synchronous playback among a plurality of playback devices. This is
27 especially true here because all of the references disclose master and slave devices
28 for rendering audio and/or video content and timing information for maintaining

1 synchrony between the playback devices. As such, a POSITA would have logically
2 and predictably consulted all of the references together to arrive at the alleged
3 invention in the '258 Patent.

4 Furthermore, the general background knowledge described above and below
5 would have provided the basis for combining any number of known Applicant's
6 Admitted Prior Art, and/or the additional prior art references discussed above, and in
7 Exhibits 258-1 through 258-B. Because all of these techniques were already known
8 in the art for use in synchronous playback systems that utilized master and slave
9 devices, a POSITA would have understood that combining any/all of these
10 techniques would have yielded predictable results, would have been a simple
11 substitution of one known technique for another to obtain predictable results, would
12 have used known techniques to improve similar techniques in the same way, would
13 have applied a known technique to a known method that was ready for improvement
14 to yield predictable results, would have been obvious to try because the techniques
15 were all known and there was reasonable expectation of success in combining them,
16 would have been obvious to try to improve a synchronized playback system with
17 master and slave devices, and would have been obvious because all techniques were
18 already known and combined in various fashions before. With respect to the prior
19 art references in Exhibits 258-1 through 258-B, a POSITA would have been
20 motivated to combine any of the references identified as prior art to the '258 patent
21 for these reasons provided above and the additional reasons provided below.

22 First, the prior art references identified above and the accompanying
23 invalidity claim charts teach similar devices for wireless transmitting multimedia
24 information, such as audio and/or video and associated timing information to
25 facilitate synchronous playback (and within relevant timeframes), and thus the
26 teachings of any one reference are applicable to other references in that same field.
27 *See generally, e.g.,* Janevski; Balassanian; Goldberg; Kono.

1 Second, a POSITA would have been motivated and found it obvious to apply
2 references teaching certain specific techniques—*e.g.*, Janevski’s disclosure of a
3 “status message” (Janevski at 7:4-24), or Balassanian’s disclosure of
4 “[i]nformation” about the members of the cluster (Balassanian at 26:18-28)—to
5 other references that related to using a controller or user interface to control a
6 synchronized playback system because a POSITA would have understood that a
7 controller or a user interface could be used to display information regarding the
8 status of the synchrony group. For example, information indicating the status of the
9 synchrony group could be easily implemented in the “remote control” disclosed by
10 Janevski because remote controls are typically used for displaying the status of the
11 system that they are being used to control, in order to allow a user to respond to the
12 status of the system by issuing control commands. *See, e.g.*, Janevski at 6:40-44.
13 The same is true with respect to Balassanian’s disclosure of “information” related to
14 the cluster, which could include information regarding the “lack of synchronization”
15 among members of the synchrony group, and would thus facilitate corrective action
16 that could be applied to the synchronization system when combined with a reference
17 such as Janevski that discloses a remote control, or when read in light of
18 Balassanian’s own disclosure of a “user interface” that could be used for making
19 adjustments to the synchronization system. *See, e.g.*, Balassanian at 3:12-26.

20 Additional obviousness combinations of the references identified here are
21 possible, and Defendant may rely on such combination(s) in this litigation. In
22 particular, Defendant is currently unaware of Sonos’ allegations with respect to the
23 level of skill in the art and the qualifications of a POSITA. Defendant is also
24 unaware of the extent, if any, to which Sonos may contend that limitations of the
25 claims at issue are not disclosed in the prior art identified by defendant as
26 anticipatory, and the extent to which Sonos will contend that elements not disclosed
27 in the asserted patent specifications would have been known to a POSITA. And
28 Defendant does not yet know how the Court will construe terms in the asserted

claim. Defendant is also continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and third parties that may have information about those systems. Defendant reserves the right to amend and supplement these contentions to identify other prior art and combinations rendering the asserted claim obvious.

(vii) The '715 Patent

The following is a list of prior art references that, either alone, or in combination with the knowledge of a person of ordinary skill in the art, Applicant's Admitted Prior Art, and/or the additional prior art references discussed below, and in Exhibits 715-1 through 715-B would have rendered obvious one or more Asserted Claims of the '715 patent, including as indicated in the associated claim charts. A person of ordinary skill in the art would have been motivated and had a reasonable expectation of success to make these combinations because, for example, each would have been merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of a known technique to improve similar devices in the same way; (d) application of a known technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

As set forth with more detail in Exhibits 715-1 through 715-B, Defendant contends that all claims are rendered obvious by the identified reference(s) alone, or in combination with other references, including the references identified below and discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
715-1	Janevski	Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various

Exhibit No.	Reference	In Combination With
		references cited in the Obviousness exhibit
715-2	Balassanian	Janevski, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
715-3	Goldberg	Janevski, Balassanian, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
715-4	Kono	Janevski, Balassanian, Goldberg, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
715-5	Squeezebox	Janevski, Balassanian, Kono, Goldberg, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
715-6	Yamaha	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
715-7	Barix	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
715-8	p4sync	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, Nestreams Musica, and/or various references cited in the Obviousness exhibit
715-9	Netstreams Musica	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, and/or various

Exhibit No.	Reference	In Combination With
		references cited in the Obviousness exhibit
715-B	Obviousness, citing various references	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '715 patent, it would have been obvious to a POSITA at the time of the alleged invention of the '715 patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in Exhibits 715-1 through 715-B and/or with a POSITA's general knowledge. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. A POSITA would have been motivated to combine any of the references described in attached Exhibits 715-1 through 715-B, including for the reasons described below. A POSITA at the time of filing of the asserted patents would also have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them, including as described above with respect to the '953 and '258 Patents, which similarly describe systems for maintaining synchronous playback among a plurality of playback devices, and as further described below.

Like the '953 and '258 Patents, the alleged invention of the '715 patent relates to a system for maintaining synchronous playback among a plurality of playback devices. The system, as claimed, includes additional features beyond the features recited in the Asserted Claims of the '953 and '258 Patents—most notably, the ability to evaluate operational performance metrics of the synchrony group, and to switch the master and slave roles in response to indicating potential degradation

1 in performance of synchronous playback of information content by the members of
2 the group. See '715 Patent at cl. 7.

3 As described with respect the '953 and '258 Patents, the common elements
4 were conventional in synchronized wireless playback systems well before the
5 priority date of the '715 Patent. The additional features were also conventional in
6 wireless playback systems well before the priority date of the '715 Patent. For
7 example, synchronized wireless playback systems that evaluated operational
8 performance metrics of the synchrony group and that were capable of switching the
9 master and slave roles were well-known prior to the '715 Patent and the prior art is
10 replete with teachings that confirm this knowledge. See, e.g., Janevski at 7:4-24
11 (describing the ability to detect “misalignment” and that the “initiator” (*i.e.*, the
12 master) “may change during the session”); Balassanian at 5:62-65, 4:17-20
13 (describing an audio rendering device as either a master or slave in different
14 disclosed configurations); Goldberg at [0245], [0250] (describing a “function to test
15 the presence and speed of connection with the broadcast unit” (*i.e.*, the master unit),
16 which is “then reported to the system” to alert the “user of potential communications
17 issues”); Kono at [0014] (describing a “setting” for “master / slave selection”).

18 In sum, by the time the '715 Patent was filed, it was well known to perform
19 synchronized playback between master and slave devices as claimed at least because
20 all the above was well known in the art before the '715 Patent, and a POSITA would
21 have known that any and/or all the above techniques could be combined to provide a
22 system for synchronous playback among a plurality of playback devices. This is
23 especially true here because all of the references disclose master and slave devices
24 for rendering audio and/or video content and timing information for maintaining
25 synchrony between the playback devices. As such, a POSITA would have logically
26 and predictably consulted all of the references together to arrive at the alleged
27 invention in the '715 Patent.

1 Furthermore, the general background knowledge described above and below
2 would have provided the basis for combining any number of known Applicant's
3 Admitted Prior Art, and/or the additional prior art references discussed above, and in
4 Exhibits 715-1 through 715-B. Because all of these techniques were already known
5 in the art for use in synchronous playback systems that utilized master and slave
6 devices, a POSITA would have understood that combining any/all of these
7 techniques would have yielded predictable results, would have been a simple
8 substitution of one known technique for another to obtain predictable results, would
9 have used known techniques to improve similar techniques in the same way, would
10 have applied a known technique to a known method that was ready for improvement
11 to yield predictable results, would have been obvious to try because the techniques
12 were all known and there was reasonable expectation of success in combining them,
13 would have been obvious to try to improve a synchronized playback system with
14 master and slave devices, and would have been obvious because all techniques were
15 already known and combined in various fashions before. With respect to the prior
16 art references in Exhibits 715-1 through 715-B, a POSITA would have been
17 motivated to combine any of the references identified as prior art to the '715 patent
18 for these reasons provided above and the additional reasons provided below.

19 First, the prior art references identified above and the accompanying
20 invalidity claim charts teach similar devices for wireless transmitting multimedia
21 information, such as audio and/or video and associated timing information to
22 facilitate synchronous playback (and within relevant timeframes), and thus the
23 teachings of any one reference are applicable to other references in that same field.
24 *See generally, e.g.,* Janevski; Balassanian; Goldberg; Kono.

25 Second, a POSITA would have been motivated and found it obvious to apply
26 references teaching certain specific techniques—*e.g.,* Goldberg's disclosure of a
27 "function to test the presence and speed of connection" (Goldberg at [0345])—to
28 other references that disclose the ability to switch the master and slave roles because

1 a POSITA would have understood that an slave device could assume the role of an
2 underperforming master device to alleviate latency or speed issues within a
3 synchronous playback system. For example, a function for testing the speed of a
4 connection between the devices in a synchrony group could be readily combined
5 with Janevski's disclosure of an "initiator" (*i.e.*, a master) that "may change during
6 the session" to allow a slave device to assume the master role when the current
7 master is underperforming (*see* Janevski at 7:4-24), or to adjust the "master / slave
8 selection setting" disclosed by Kono (*see* Kono at [0014]).

9 Additional obviousness combinations of the references identified here are
10 possible, and Defendant may rely on such combination(s) in this litigation. In
11 particular, Defendant is currently unaware of Sonos' allegations with respect to the
12 level of skill in the art and the qualifications of a POSITA. Defendant is also
13 unaware of the extent, if any, to which Sonos may contend that limitations of the
14 claims at issue are not disclosed in the prior art identified by defendant as
15 anticipatory, and the extent to which Sonos will contend that elements not disclosed
16 in the asserted patent specifications would have been known to a POSITA. And
17 Defendant does not yet know how the Court will construe terms in the asserted
18 claim. Defendant is also continuing its investigation of the large universe of prior
19 art to identify potential prior art systems, publications related to those systems, and
20 third parties that may have information about those systems. Defendant reserves the
21 right to amend and supplement these contentions to identify other prior art and
22 combinations rendering the asserted claim obvious.

23 (viii) The '001 Patent

24 The following is a list of prior art references that, either alone, or in
25 combination with the knowledge of a person of ordinary skill in the art, Applicant's
26 Admitted Prior Art, and/or the additional prior art references discussed below, and
27 in Exhibits 001-1 through 001-B would have rendered obvious one or more Asserted
28 Claims of the '001 patent, including as indicated in the associated claim charts. A

1 person of ordinary skill in the art would have been motivated and had a reasonable
2 expectation of success to make these combinations because, for example, each
3 would have been merely: (a) a combination of prior art elements according to
4 known methods to yield predictable results; (b) a simple substitution of one known
5 element for another to obtain predictable results; (c) a use of a known technique to
6 improve similar devices in the same way; (d) application of a known technique to a
7 known device ready for improvement to yield predictable results; (e) obvious to try;
8 and/or (f) known work in one field of endeavor prompting variations of it for use in
9 either the same field or a different one based on design incentives or other market
10 forces since the variations are predictable to one of ordinary skill in the art.

11 As set forth with more detail in Exhibits 001-1 through 001-B, Defendant
12 contends that all claims are rendered obvious by the identified reference(s) alone, or
13 in combination with other references, including the references identified below and
14 discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
001-1	Janevski	Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
001-2	Balassanian	Janevski, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
001-3	Goldberg	Janevski, Balassanian, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
001-4	Kono	Janevski, Balassanian, Goldberg, Kono, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or

Exhibit No.	Reference	In Combination With
		various references cited in the Obviousness exhibit
001-5	Squeezebox	Janevski, Balassanian, Kono, Goldberg, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
001-6	Yamaha	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
001-7	Barix	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit
001-8	p4sync	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, Nestreams Musica, and/or various references cited in the Obviousness exhibit
001-9	Netstreams Musica	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, and/or various references cited in the Obviousness exhibit
001-B	Obviousness, citing various references	Janevski, Balassanian, Kono, Goldberg, Squeezebox, Yamaha, Barix, p4sync, Nestreams Musica, and/or various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '001 Patent, it would have been obvious to a POSITA at the time of the alleged invention of the '001 Patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in

1 Exhibits 001-1 through 001-B and/or with a POSITA's general knowledge.
2 Generally, motivation to combine any of these references with others exists within
3 the references themselves, as well as within the knowledge of those of ordinary skill
4 in the art at the relevant time. A POSITA would have been motivated to combine
5 any of the references described in attached Exhibits 001-1 through 001-B, including
6 for the reasons described below. A POSITA at the time of filing of the asserted
7 patents would also have understood the references listed above, alone or in
8 combination, to contain explicit and/or implicit teaching, suggestion, and/or
9 rationales to combine them, including as described above with respect to the '953,
10 '258, and '715 Patents, which similarly describes a system for maintaining
11 synchronous playback among a plurality of playback devices, and as further
12 described below.

13 Like the '953, '258, and '715 Patents, the alleged invention of the '001 Patent
14 relates to a system for maintaining synchronous playback among a plurality of
15 playback devices that have independent clocking arrangements. The system, as
16 claimed, includes additional features beyond the features recited in the Asserted
17 Claims of the '953, '258, and '001 Patents—most notably, the ability to designate a
18 device as one of control-master or control-slave, and one of an audio-master or
19 audio-slave. See '001 Patent at cl. 12.

20 As described with respect the '953, '258, and '715 Patents, the common
21 elements were conventional in synchronized wireless playback systems well before
22 the priority date of the '001 Patent. The additional features were also conventional
23 in wireless playback systems well before the priority date of the '001 Patent. For
24 example, synchronized wireless playback systems that allowed for separate
25 designation of a playback device as a control-master or control-slave, and audio-
26 master or audio-slave were well-known prior to the '001 Patent and the prior art is
27 replete with teachings that confirm this knowledge. See, e.g., Janevski at Abstract
28 (describing that any participant (*i.e.*, and slave device) may “perform[] a control

1 function” and that as a result “all other participants follow synchronously,” while
2 status messages are only sent out by “the PVR 114 a that initiated the session” (*i.e.*,
3 the master device)); Balassanian at 5:61-6:13 (describing a “source device” that
4 sends “a rendering time to each of the rendering devices” and a separate “audio
5 rendering device that renders audio content); Goldberg at [0173] (describing that
6 control information inputted by “the user at the receive unit” and “passed back to the
7 broadcast unit”). As described above with respect to the ’953 Patent, synchronized
8 wireless playback systems that utilized separate controllers were also well-known
9 prior to the ’258 Patent. *See, e.g.*, Goldberg at [0096] (describing a “**unit**
10 **controller**” that “performs various operational and executive functions”) (emphasis
11 added); Janevski at 7:4-24 (describing that the initiator could be controlled “via a
12 **remote control**” or “via controls on the PVR 114a itself”) (emphasis added).

13 In sum, by the time the ’001 Patent was filed, it was well known to perform
14 synchronized playback between master and slave devices as claimed at least because
15 all the above was well known in the art before the ’001 Patent, and a POSITA would
16 have known that any and/or all the above techniques could be combined to provide a
17 system for synchronous playback among a plurality of playback devices. This is
18 especially true here because all of the references disclose master and slave devices
19 for rendering audio and/or video content and timing information for maintaining
20 synchrony between the playback devices. As such, a POSITA would have logically
21 and predictably consulted all of the references together to arrive at the alleged
22 invention in the ’001 Patent.

23 Furthermore, the general background knowledge described above and below
24 would have provided the basis for combining any number of known Applicant’s
25 Admitted Prior Art, and/or the additional prior art references discussed above, and in
26 Exhibits 001-1 through 001-B. Because all of these techniques were already known
27 in the art for use in synchronous playback systems that utilized master and slave
28 devices, a POSITA would have understood that combining any/all of these

1 techniques would have yielded predictable results, would have been a simple
2 substitution of one known technique for another to obtain predictable results, would
3 have used known techniques to improve similar techniques in the same way, would
4 have applied a known technique to a known method that was ready for improvement
5 to yield predictable results, would have been obvious to try because the techniques
6 were all known and there was reasonable expectation of success in combining them,
7 would have been obvious to try to improve a synchronized playback system with
8 master and slave devices, and would have been obvious because all techniques were
9 already known and combined in various fashions before. With respect to the prior
10 art references in Exhibits 001-1 through 001-B, a POSITA would have been
11 motivated to combine any of the references identified as prior art to the '001 patent
12 for these reasons provided above and the additional reasons provided below.

13 First, the prior art references identified above and the accompanying
14 invalidity claim charts teach similar devices for wireless transmitting multimedia
15 information, such as audio and/or video and associated timing information to
16 facilitate synchronous playback (and within relevant timeframes), and thus the
17 teachings of any one reference are applicable to other references in that same field.
18 *See generally, e.g.,* Janevski; Balassanian; Goldberg; Kono.

19 Second, a POSITA would have been motivated and found it obvious to apply
20 references teaching certain specific techniques—*e.g.,* Goldberg’s disclosure of a
21 control information being input at the receive unit (*i.e.,* the audio-slave and control-
22 master unit) before being “passed back to broadcast unit” (*i.e.,* the audio-master and
23 control-slave unit)—to other references that related to a synchronized playback
24 system with playback devices that serve in more generalized master and slave roles
25 because a POSITA would have understood the benefits of being able to control the
26 synchronization system by providing inputs at any of the devices that form part of
27 the synchronization system. For example, control information could be input into
28 one of the slave devices disclosed by Janevski to facilitate control of the system by

1 any of the PVRs, regardless of the source or rendering content and playback timing
2 information. Indeed, to the extent that Janevski does not disclose this specific
3 functionality, it suggests it could be readily implemented because it teaches that any
4 device may assume the role of the initiator. See Janevski at 7:31-50. A POSITA
5 would have thus been motivated to allow an audio-slave PVR to assume the role of
6 the control-master while issuing controls, to allow controls to be issued from any of
7 the PVRs without disrupting the transmission of audio content from an audio-master
8 to an audio-slave.

9 Additional obviousness combinations of the references identified here are
10 possible, and Defendant may rely on such combination(s) in this litigation. In
11 particular, Defendant is currently unaware of Sonos' allegations with respect to the
12 level of skill in the art and the qualifications of a POSITA. Defendant is also
13 unaware of the extent, if any, to which Sonos may contend that limitations of the
14 claims at issue are not disclosed in the prior art identified by defendant as
15 anticipatory, and the extent to which Sonos will contend that elements not disclosed
16 in the asserted patent specifications would have been known to a POSITA. And
17 Defendant does not yet know how the Court will construe terms in the asserted
18 claim. Defendant is also continuing its investigation of the large universe of prior
19 art to identify potential prior art systems, publications related to those systems, and
20 third parties that may have information about those systems. Defendant reserves the
21 right to amend and supplement these contentions to identify other prior art and
22 combinations rendering the asserted claim obvious.

23 (ix) The '896 Patent

24 The following is a list of prior art references that, either alone, or in
25 combination with the knowledge of a person of ordinary skill in the art, Applicant's
26 Admitted Prior Art, and/or the additional prior art references discussed below, and
27 in Exhibits 896-1 through 896-11 would have rendered obvious one or more
28 Asserted Claims of the '896 patent, including as indicated in the associated claim

charts. A person of ordinary skill in the art would have been motivated and had a reasonable expectation of success to make these combinations because, for example, each would have been merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of a known technique to improve similar devices in the same way; (d) application of a known technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

As set forth with more detail in Exhibits 896-1 through 896-11, Defendant contends that all claims are rendered obvious by the identified reference(s) alone, or in combination with other references, including the references identified below and discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
896-01	cd3o	Creative, Linksys, BridgeCo, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-02	Chesire	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-03	BridgeCo	Creative, cd3o, Linksys, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-04	Creative	Linksys, cd3o, BridgeCo, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein,

Exhibit No.	Reference	In Combination With
		and/or various references cited in the Obviousness exhibit
896-05	Linksys	Creative, cd3o, BridgeCo, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-06	Gassho	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Chesire, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-07	Mathews	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, Chromecast, and/or various references cited in the Obviousness exhibit
896-08	Rector	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Chesire, Gassho, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-09	Airport Express	Creative, cd3o, BrdigeCo, Linksys, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-10	Yamaha	Creative, cd3o, Linksys, BridgeCo, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
896-11	Chromecast	Creative, cd3o, Linksys, BridgeCo, Yamaha, Airport Express, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit

Exhibit No.	Reference	In Combination With
896-B	Obviousness, citing various references	cd3o, BridgeCo, Linksys, Creative, Yamaha, Airport Express, Chromecast, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '896 patent, it would have been obvious to a POSITA at the time of the alleged invention of the '896 patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in Exhibits 896-1 through 896-11 and/or with a POSITA's general knowledge. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. A POSITA would have been motivated to combine any of the references described in attached Exhibits 896-1 through 896-11, including for the reasons described below. A POSITA at the time of filing of the asserted patents would also have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them, including as further described below.

The alleged invention of the '896 patent relates to a process for configuring a zone player to a secure wireless local area network or WLAN using a controller that is already connected to the secure WLAN. During the setup process, the zone player sends a message to the controller indicating it is ready to connect to the secure WLAN. The controller establishes a rudimentary communication path with the zone player over which the network configuration parameters are exchanged between the controller and the zone player. The zone player can use the network configuration parameters to connect to the secure WLAN. The asserted claims recite elements that

1 were conventional in wireless network configuration well before the priority date of
2 the '896 patent. As an example, Apple Airport Express was well-known prior to the
3 '896 patent and the prior art is replete with teachings that confirm this knowledge.
4 *See, e.g.*, Apple Airport Express; Google Chromecast; Linksys; cd3o; BridgeCo;
5 Creative; Yamaha; Cheshire; Mathews; Gassho; Rector.

6 It was well known at the time that establishing communication between two
7 devices involved various protocol-specific message exchanges. Depending on the
8 technology used, these exchanges enable devices to identify each other, agree on
9 parameters, conduct authentication, and initiate a reliable communication session,
10 etc.. For example, Bluetooth connection starts with inquiry and paging followed by
11 authentication for two devices to identify each other, enter connection state, and
12 validate the connection between the devices. For another example, an ad hoc
13 network or peer-to-peer connection starts with one device broadcasting an SSID and
14 operating channel. Another device scans and detects this network and sends
15 association requests to join the ad hoc network. Other technologies such as USB,
16 near field communication ("NFC"), etc., all involve protocol-specific message
17 exchange processes for establishing connection and data transfer. A POSITA who
18 adopted these existing technologies for transmitting network configuration
19 parameters would have understood that the initial message exchanges are an integral
20 part of the process. *See, e.g.*, Rector at [0028]; *see also, generally*, Gassho;
21 Mathews.

22 Music streaming over wireless network was also well-known prior to the '896
23 patent and the prior art is replete with teachings that confirm this knowledge. *See,*
24 *e.g.*, Apple Airport Express; Google Chromecast; Linksys; cd3o; BridgeCo;
25 Creative; Yamaha; Spurgat; Isely; Balassanian.

26 As discussed below, the specification of the '896 Patent does not disclose
27 controlling multiple zone players so that they can play back audio content in
28 synchrony. Without conceding the foregoing, synchronous music streaming on

1 multiple playback devices was also well-known prior to the '896 Patent and the
2 prior art is replete with teachings that confirm this knowledge. *See, e.g.,* Airport
3 Express; Chromecast; Yamaha; Spurgat; Isely; Balassanian.

4 In sum, by the time the '896 patent was filed, it was well known to configure
5 a playback device to connect to a secure WLAN using an existing, connected
6 computing device and stream music wirelessly as claimed at least because all the
7 above was well known in the art before the '896 patent, and a POSITA would have
8 known that any and/or all the above techniques could be combined to configure a
9 new device to join a secure WLAN through an existing, connected device and
10 wirelessly stream music to the new device. This is especially true here because all
11 of the references disclose automatic network configuration. As such, a POSITA
12 would have logically and predictably consulted all of the references together to
13 derive the solutions claimed in the '896 Patent.

14 Furthermore, the general background knowledge described above and below
15 would have provided the basis for combining any number of known methods for
16 message exchanges through a rudimentary communication path to facilitate the
17 process of network configuration. Because all of these techniques were already
18 known in the art for use in automatic network configuration and wireless music
19 streaming, a POSITA would have understood that combining any/all of these
20 techniques would have yielded predictable results, would have been a simple
21 substitution of one known technique for another to obtain predictable results, would
22 have used known techniques to improve similar techniques in the same way, would
23 have applied a known technique to a known method that was ready for improvement
24 to yield predictable results, would have been obvious to try because the techniques
25 were all known and there was reasonable expectation of success in combining them,
26 would have been obvious to try to improve an automated process for network
27 configuration and wireless music streaming, and would have been obvious because
28 all techniques were already known and combined in various fashions before. With

1 respect to the prior art references in Exhibits 896-1 through 896-11, a POSITA
2 would have been motivated to combine any of the references identified as prior art
3 to the '896 patent for these reasons provided above and the additional reasons
4 provided below.

5 First, the prior art references identified above and the accompanying
6 invalidity claim charts teach similar automated processes for network configuration
7 and wireless music streaming (and within relevant timeframes), and thus the
8 teachings of any one reference are applicable to other references in that same field.
9 *See, e.g.,* Airport Express; Linksys; cd3o; BridgeCo; Creative; Yamaha;
10 Chromecast; Cheshire; Mathews; Gassho; Rector. Further, where the references are
11 from the same manufacturer (e.g., Airport Express, individual publications about
12 technologies available from Apple, Cheshire, and/or Kearny), a POSITA would
13 have recognized those references are designed to operate in combination and been
14 motivated to combine them as such.

15 Second, a POSITA would have been motivated and found it obvious to apply
16 references teaching certain specific techniques—*e.g.,* Rector or Gassho—to other
17 references that relate to wireless playback devices generally because the automated
18 network configuration principles apply to any wireless devices including playback
19 devices. *See, e.g.,* Airport Express; Linksys; cd3o; BridgeCo; Creative; Yamaha;
20 Google Chromecast; Cheshire; Mathews.

21 A POSITA would have also been motivated and found it obvious to replace
22 and/or combine a reference's exact set of materials, components, or configurations
23 in a particular computing device with the teachings regarding other materials,
24 components, and configurations used in other computing devices for all the reasons
25 provided above and below. These modifications would have been a simple
26 substitution of one known element for another, which would have obtained
27 predictable results because it was already well known in the art that teaches network
28 configuration and wireless music streaming. The substitution of one component,

1 material, or configuration for another would not have changed the principle of
2 operation for either reference in any combination because the references all use
3 similar mechanisms for a similar purpose: automated network configuration and
4 wireless music streaming. This is thus a combination of prior art elements (*e.g.*,
5 establishing a rudimentary communication path and exchanging message therefrom,
6 configuring a new device using information obtained through message exchange via
7 the rudimentary communication path between a connected device and the new
8 device) according to known methods (a POSITA would understand that these are all
9 available design choices) to yield predictable results (a POSITA would understand
10 the benefits and drawbacks of each design choice, and there are no unexpected
11 results from any particular combination). A POSITA would have been motivated to
12 combine these teachings, and to make these replacements, because all of these
13 wireless network components, materials, and configurations were widely used
14 techniques. Accordingly, a POSITA would have had a reasonable expectation of
15 success given considerations discussed above, the similarities in the teachings and
16 systems, and given that the claimed components and configurations of wireless
17 network were all well-known at the time. Implementing the combination and any
18 necessary modifications would have been routine and within the scope of the prior
19 art references' teachings.

20 As one example, to the extent that a primary reference does not disclose the
21 "retrieving the current network configuration parameters of the computing device"
22 limitation, it would have been obvious to combine any of these references with, *e.g.*,
23 Apple Keychain Services, to arrive at said limitation because those references
24 disclose such limitation, and a POSITA would have been motivated to consult
25 references that disclose retrieving network configuration settings from the current
26 computer. *See, e.g.*, Apple Keychain Services. This would be convenient to the
27 user. For many primary references, user convenience is already a monitoring factor,
28 and permitting the retrieval of parameters instead of having them inputted by the

1 user, would further improve user convenience. Moreover, there's no technical
2 impediment to implementing this feature – to the extent it is missing from a primary
3 reference, it is only missing due to permission issues when software is installed on
4 the operating system of another entity.

5 As another example, to the extent a primary reference does not disclose “an
6 application for controlling the playback device” (as interpreted by Sonos) or
7 dependent claim limitations related to audio playback, it would have been obvious
8 to combine any of these references with, e.g., Yamaha, Spurgat, Isely, Balassanian,
9 Kearney. Setup and control after setup are separate features, and a POSITA would
10 have been motivated to pick and choose different implementations for each feature
11 from different references. For example, a reference like Gassho that discloses *inter*
12 *alia* setup of devices like printers or BridgeCo that includes a remote for controlling
13 playback directly on a playback device can be selected for its disclosure of the setup
14 feature and then combined with a different reference, such as Yamaha, from the
15 media playback space for its disclosure of the control feature. A POSITA would be
16 motivated to select references for each feature that best meet the needs and
17 preferences of the POSITA for each individual feature. For example, the POSITA
18 may want to implement setup over a wireless initial communication channel, such as
19 Linksys or BridgeCo, and combine that with a reference that teaches control from a
20 computing device rather than just the playback device directly, such as cd3o or
21 Creative.

22 As another example, to the extent a primary reference does not disclose the
23 “transmitting a command to the given playback device to form a group with at least
24 a first playback device of a networked audio system such that the given playback
25 device is configured to play back audio content in synchrony with at least the first
26 playback device” limitation, it would have been obvious to combine any of these
27 references with, e.g., Yamaha, Airport Express; Chromecast; Spurgat, Isely,
28 Balassanian, to arrive at said limitation because those references disclose such

1 limitation, and a POSITA would have been motivated to consult references that
2 disclose synchronous playback – a feature that, to the extent was allegedly missing
3 from the primary reference, a user would find desirable, or that can be improved by
4 relying on art more focused on implementing synchrony, e.g., via coordination
5 between devices. *See, e.g.*, Yamaha, Airport Express; Chromecast; Spurgat, Isely,
6 Balassanian.

7 Additional obviousness combinations of the references identified here are
8 possible, and Defendant may rely on such combination(s) in this litigation. In
9 particular, Defendant is currently unaware of Sonos’ allegations with respect to the
10 level of skill in the art and the qualifications of a POSITA. Defendant is also
11 unaware of the extent, if any, to which Sonos may contend that limitations of the
12 claims at issue are not disclosed in the prior art identified by defendant as
13 anticipatory, and the extent to which Sonos will contend that elements not disclosed
14 in the asserted patent specifications would have been known to a POSITA. And
15 Defendant does not yet know how the Court will construe terms in the asserted
16 claim. Defendant is also continuing its investigation of the large universe of prior
17 art to identify potential prior art systems, publications related to those systems, and
18 third parties that may have information about those systems. Defendant reserves the
19 right to amend and supplement these contentions to identify other prior art and
20 combinations rendering the asserted claim obvious.

21 (x) The ’883 Patent

22 The following is a list of prior art references that, either alone, or in
23 combination with the knowledge of a person of ordinary skill in the art, Applicant’s
24 Admitted Prior Art, and/or the additional prior art references discussed below, and
25 in Exhibits 883-1 through 883-11 would have rendered obvious one or more
26 Asserted Claims of the ’883 patent, including as indicated in the associated claim
27 charts. A person of ordinary skill in the art would have been motivated and had a
28 reasonable expectation of success to make these combinations because, for example,

each would have been merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of a known technique to improve similar devices in the same way; (d) application of a known technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

As set forth with more detail in Exhibits 883-1 through 883-11, Defendant contends that all claims are rendered obvious by the identified reference(s) alone, or in combination with other references, including the references identified below and discussed in the attached exhibits.

Exhibit No.	Reference	In Combination With
883-01	cd3o	Creative, Linksys, BridgeCo, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-02	Chesire	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-03	BridgeCo	Creative, cd3o, Linksys, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-04	Creative	Linksys, cd3o, BridgeCo, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit

Exhibit No.	Reference	In Combination With
883-05	Linksys	Creative, cd3o, BridgeCo, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-06	Gassho	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Chesire, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-07	Mathews	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, Chromecast, and/or various references cited in the Obviousness exhibit
883-08	Rector	Creative, cd3o, BridgeCo, Linksys, Yamaha, Kearney, Chesire, Gassho, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-09	Airport Express	Creative, cd3o, BrdigeCo, Linksys, Yamaha, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-10	Yamaha	Creative, cd3o, Linksys, BridgeCo, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit
883-11	Chromecast	Creative, cd3o, Linksys, BridgeCo, Yamaha, Airport Express, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit

Exhibit No.	Reference	In Combination With
883-B	Obviousness, citing various references	cd3o, BridgeCo, Linksys, Creative, Yamaha, Airport Express, Chromecast, Kearney, Chesire, Gassho, Rector, Spurgat, Balassanian, Isely, Richenstein, and/or various references cited in the Obviousness exhibit

To the extent that any of the anticipation references is found not to disclose a limitation recited in the asserted claim of the '883 patent, it would have been obvious to a POSITA at the time of the alleged invention of the '883 patent either (i) to modify the reference to include this limitation and any remaining limitations of this claim and/or (ii) to combine said reference with any other of the references in Exhibits 883-1 through 883-11 and/or with a POSITA's general knowledge. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. A POSITA would have been motivated to combine any of the references described in attached Exhibits 883-1 through 883-11, including for the reasons described below. A POSITA at the time of filing of the asserted patents would also have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them, including as further described below.

The alleged invention of the '883 patent relates to the same wireless network configuration and music steaming technology as in the '896 Patent. The '883 Patent was filed on the same day as the '896 Patent and both were continuations of the same series of predecessor applications. The '883 Patent claims on a playback device while the '896 Patent claims on a computing device that is already connected to the secure WLAN and exchanges network configuration parameters with the playback device. In other words, the '883 Patent and the '896 Patent relate to the

1 same technology and represent two sides of the same coin. Not surprisingly, the
2 '883 Patent includes a terminal disclaimer on the '896 Patent.

3 As discussed above in the '896 Patent, the asserted claims recite elements that
4 were conventional in wireless network configuration and music streaming well
5 before the priority date of the '883 patent. As an example, Apple Airport Express
6 was well-known prior to the '883 patent and the prior art is replete with teachings
7 that confirm this knowledge. *See, e.g.*, Airport Express; Chromecast; Linksys; cd3o;
8 BridgeCo; Creative; Yamaha; Cheshire; Mathews; Gassho; Rector.

9 Also as discussed above and without conceding that the '883 provides
10 sufficient disclosure on controlling multiple zone players to play audio content in
11 synchrony, synchronous music streaming on multiple playback devices was also
12 well-known prior to the '883 patent and the prior art is replete with teachings that
13 confirm this knowledge. *See, e.g.*, Yamaha; Spurgat; Isely; Balassanian.

14 In sum, by the time the '883 patent was filed, it was well known to configure
15 a playback device to connect to a secure WLAN using an existing, connected
16 computing device and stream music wirelessly as claimed at least because all the
17 above was well known in the art before the '883 patent, and a POSITA would have
18 known that any and/or all the above techniques could be combined to configure a
19 new device to join a secure WLAN through an existing, connected device and
20 wirelessly stream music to the new device. This is especially true here because all
21 of the references disclose automatic network configuration. As such, a POSITA
22 would have logically and predictably consulted all of the references together to
23 derive the solutions claimed in the '883 Patent.

24 Furthermore, the general background knowledge described above and below
25 would have provided the basis for combining any number of known methods for
26 message exchanges through a rudimentary communication path to facilitate the
27 process of network configuration. Because all of these techniques were already
28 known in the art for use in automatic network configuration and wireless music

1 streaming, a POSITA would have understood that combining any/all of these
2 techniques would have yielded predictable results, would have been a simple
3 substitution of one known technique for another to obtain predictable results, would
4 have used known techniques to improve similar techniques in the same way, would
5 have applied a known technique to a known method that was ready for improvement
6 to yield predictable results, would have been obvious to try because the techniques
7 were all known and there was reasonable expectation of success in combining them,
8 would have been obvious to try to improve an automated process for network
9 configuration and wireless music streaming, and would have been obvious because
10 all techniques were already known and combined in various fashions before. With
11 respect to the prior art references in Exhibits 883-1 through 883-11, a POSITA
12 would have been motivated to combine any of the references identified as prior art
13 to the '883 patent for these reasons provided above and the additional reasons
14 provided below.

15 First, the prior art references identified above and the accompanying
16 invalidity claim charts teach similar automated processes for network configuration
17 and wireless music streaming (and within relevant timeframes), and thus the
18 teachings of any one reference are applicable to other references in that same field.
19 *See, e.g.,* Airport Express; Linksys; cd3o; BridgeCo; Creative; Yamaha;
20 Chromecast; Cheshire; Matthews; Gassho; Rector. Further, where the references are
21 from the same manufacturer (e.g., Airport Express, individual publications about
22 technologies available from Apple, Cheshire, and/or Kearny), a POSITA would
23 have recognized those references are designed to operate in combination and been
24 motivated to combine them as such.

25 Second, a POSITA would have been motivated and found it obvious to apply
26 references teaching certain specific techniques—*e.g.,* Rector or Gassho—to other
27 references that relate to wireless playback devices generally because the automated
28 network configuration principles apply to any wireless devices including playback

1 devices. *See, e.g.,* Airport Express; Linksys; cd3o; BridgeCo; Creative; Yamaha;
2 Cheshire; Mathews.

3 A POSITA would have also been motivated and found it obvious to replace
4 and/or combine a reference's exact set of materials, components, or configurations
5 in a particular image sensor with the teachings regarding other materials,
6 components, and configurations used in other image sensor for all the reasons
7 provided above and below. These modifications would have been a simple
8 substitution of one known element for another, which would have obtained
9 predictable results because it was already well known in the art that teaches network
10 configuration and wireless music streaming. The substitution of one component,
11 material, or configuration for another would not have changed the principle of
12 operation for either reference in any combination because the references all use
13 similar mechanisms for a similar purpose: automated network configuration and
14 wireless music streaming. This is thus a combination of prior art elements (*e.g.,*
15 establishing a rudimentary communication path and exchanging message therefrom,
16 configuring a new device using information obtained through message exchange via
17 the rudimentary communication path between a connected device and the new
18 device) according to known methods (a POSITA would understand that these are all
19 available design choices) to yield predictable results (a POSITA would understand
20 the benefits and drawbacks of each design choice, and there are no unexpected
21 results from any particular combination). A POSITA would have been motivated to
22 combine these teachings, and to make these replacements, because all of these
23 wireless network components, materials, and configurations were widely used
24 techniques. Accordingly, a POSITA would have had a reasonable expectation of
25 success given considerations discussed above, the similarities in the teachings and
26 systems, and given that the claimed components and configurations of wireless
27 network were all well-known at the time. Implementing the combination and any
28

1 necessary modifications would have been routine and within the scope of the prior
2 art references' teachings.

3 As one example, to the extent a primary reference does not disclose "an
4 application for controlling the playback device" (as interpreted by Sonos) or
5 dependent claim limitations related to audio playback, it would have been obvious
6 to combine any of these references with, e.g., Yamaha, Spurgat, Isely, Balassanian,
7 Kearney. Setup and control after setup are separate features, and a POSITA would
8 have been motivated to pick and choose different implementations for each feature
9 from different references. For example, a reference like Gassho that discloses inter
10 alia setup of devices like printers or BridgeCo that includes a remote for controlling
11 playback directly on a playback device can be selected for its disclosure of the setup
12 feature and then combined with a different reference, such as Yamaha, from the
13 media playback space for its disclosure of the control feature. A POSITA would be
14 motivated to select references for each feature that best meet the needs and
15 preferences of the POSITA for each individual feature. For example, the POSITA
16 may want to implement setup over a wireless initial communication channel, such as
17 Linksys or BridgeCo, and combine that with a reference that teaches control from a
18 computing device rather than just the playback device directly, such as cd3o or
19 Creative.

20 For another example, to the extent that a primary reference does not disclose
21 "the triggering event comprises one of (a) powering on the playback device or (b)
22 receiving user input via a physical interface of the playback device" limitation, it
23 would have been obvious to do so because initiating configuration process for the
24 playback device through either means would be intuitive. Such a feature was
25 commonly offered to simplify the configuration process and improve user
26 experience. *See, e.g.,* Linksys, Airport Express, Yamaha, cd3o, BridgeCo, Creative.
27 Thus, a POSITA would have been motivated to include this feature into the
28 playback device as part of the device's auto configuration capability.

1 As another example, to the extent that a primary reference does not disclose
2 the “receiving, from the computing device, a command to form a group with at least
3 a first playback device of a networked audio system such that the playback device is
4 configured to play back audio content in synchrony with at least the first playback
5 device” limitation, it would have been obvious to combine any of these references
6 with, e.g., Yamaha, Spurgat, Isely, Balassanian, to arrive at said limitation because
7 those references disclose such limitation, and a POSITA would have been motivated
8 to consult references that disclose synchronous playback – a feature that, to the
9 extent was allegedly missing from the primary reference, a user would find
10 desirable, or that can be improved by relying on art more focused on implementing
11 synchrony, e.g., via coordination between devices. *See, e.g.,* Yamaha, Airport
12 Express; Chromecast; Spurgat, Isely, Balassanian.

13 For another example, to the extent that a primary reference does not disclose
14 “transmitting, to the computing device via the initial communication path, at least a
15 third message indicating that the playback device has successfully received the
16 network configuration parameters” limitation, it would have been obvious to do so
17 because a confirmation or acknowledgment message was common in many existing
18 communication protocols. For example, a POSITA would simply substitute the data
19 transmission protocol from UDP to TCP, which has built-in reliability mechanisms
20 and confirmation messages (acknowledgments) to ensure successful data
21 transmission. A POSITA would also be motivated to do so because confirmation of
22 successful receipt of the network configuration parameters helps the computing
23 device monitor whether the playback device can successfully connect to the WLAN
24 and provide remedial measures in case of a failure.

25 By way of another example, to the extent that a primary reference does not
26 disclose the “a command to assign a name to the playback device” limitation, it
27 would have been obvious and trivial to do so because assigning a name to a newly
28 connected device was well known and common practice at the time. Further,

1 primary references such as Gassho discuss in detail as exemplary the setup of a
2 wireless printer. Assigning a name to a newly connected printer was and remains
3 common practice for any user, and therefore it would be obvious to apply that
4 principle to other network devices discussed in Gassho and other references such as
5 cell phones and audio devices. *See, e.g.,* Gassho, Rector, Cheshire, Yamaha,
6 Spurgat, Isely, Balassanian.

7 Additional obviousness combinations of the references identified here are
8 possible, and Defendant may rely on such combination(s) in this litigation. In
9 particular, Defendant is currently unaware of Sonos' allegations with respect to the
10 level of skill in the art and the qualifications of a POSITA. Defendant is also
11 unaware of the extent, if any, to which Sonos may contend that limitations of the
12 claims at issue are not disclosed in the prior art identified by defendant as
13 anticipatory, and the extent to which Sonos will contend that elements not disclosed
14 in the asserted patent specifications would have been known to a POSITA. And
15 Defendant does not yet know how the Court will construe terms in the asserted
16 claim. Defendant is also continuing its investigation of the large universe of prior
17 art to identify potential prior art systems, publications related to those systems, and
18 third parties that may have information about those systems. Defendant reserves the
19 right to amend and supplement these contentions to identify other prior art and
20 combinations rendering the asserted claim obvious.

21 **C. Invalidity Contentions Pursuant to S.P.R. 2.5.4 – 35 U.S.C. § 112**

22 Pursuant to S.P.R. 2.5.4, Google contends that certain Asserted Claims of the
23 Patents- In-Suit are invalid under 35 U.S.C. § 112 because: (1) the claims lack
24 adequate written description; (2) the claims are not enabled, and/or (3) the claims
25 are indefinite. Defendant's contentions that the following claims are invalid under
26 35 U.S.C. § 112 are made in the alternative and do not constitute, and should not be
27 interpreted as, admissions regarding the construction or scope of the claims of the
28 Patents-In-Suit, or that any of the claims of the Patents-In-Suit are not anticipated or

1 rendered obvious by prior art. The following contentions, made pursuant to P.R. 3-
2 3(d), are subject to revision and amendment pursuant to Federal Rule of Civil
3 Procedure 26(e) and the Orders of record in this matter to the extent appropriate,
4 e.g., in light of further investigation and discovery regarding the defenses, the
5 Court’s construction of the claims at issue, and/or review and analysis of expert
6 witnesses.

7 **1. Enablement and Written Description**

8 The asserted claims are invalid for failure to comply with the written
9 description and enablement requirements because the Patents-in-Suit do not contain
10 sufficient written description of the claimed invention and do not provide a
11 sufficiently enabling disclosure. *See* 35 U.S.C. § 112. To satisfy the written
12 description requirement, a patent specification must describe the claimed invention
13 in sufficient detail that one skilled in the art can reasonably conclude that the
14 inventor had possession of the claimed invention at the time of filing the patent
15 application. *See generally Ariad Pharm., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336
16 (Fed. Cir. 2010) (en banc). “To be enabling, the specification of a patent must teach
17 those skilled in the art how to make and use the full scope of the claimed invention
18 without undue experimentation.” *MagSil Corp. v. Hitachi Global Storage Techs.*,
19 687 F.3d 1377, 1380-81 (Fed. Cir. 2012) (citation omitted). The specifications of
20 the Patents-in-Suit do not adequately describe or enable the claimed inventions
21 recited in the Asserted Claims.

22 The “enablement requirement is satisfied when one skilled in the art, after
23 reading the specification, could practice the claimed invention without undue
24 experimentation.” *Auto. Techs. Int’l, Inc. v. BMW of N. Am.*, 501 F.3d 1274, 1282
25 (Fed. Cir. 2007). A claimed invention may be invalid for lack of written description
26 and non-enablement even if it was disclosed in the prior art: “It is the specification,
27 not the knowledge of one skilled in the art, that must supply the novel aspects of an
28 invention in order to constitute adequate enablement.” *Genentech v. Novo Nordisk*,

1 108 F.3d 1361, 1366 (Fed. Cir. 1997). The patentee is “required to provide an
2 adequate enabling disclosure in the specification; it cannot simply rely on the
3 knowledge of a person of ordinary skill to serve as a substitute for the missing
4 information in the specification.” *Alza Corp. v. Andrx Pharms., LLC*, 603 F.3d 935,
5 940-41 (Fed. Cir. 2010). “A patentee who chooses broad claim language must make
6 sure the broad claims are fully enabled.” *Sitrick v. Dreamworks, LLC*, 516 F.3d
7 993, 999-1000 (Fed. Cir. 2008). As the Federal Circuit has explained:

8 Enablement serves the dual function in the patent system of ensuring adequate
9 disclosure of the claimed invention and of preventing claims broader than the
10 disclosed invention. This important doctrine prevents both inadequate disclosure of
11 an invention and overbroad claiming that might otherwise attempt to cover more
12 than was actually invented. Thus, a patentee chooses broad claim language at the
13 peril of losing any claim that cannot be enabled across its full scope of coverage.
14 *Magsil Corp. and MIT v. Hitachi*, 687 F.3d 1377, 1380-81 (Fed. Cir. 2012). “The
15 specification must contain sufficient disclosure to enable an ordinarily skilled artisan
16 to make and use the entire scope of the claimed invention at the time of filing.” *Id.*
17 at 1381-82.

18 Google contends that the specification does not provide sufficient written
19 description and enablement for each of the claim limitations identified below, which
20 identify grounds of invalidity for lack of enablement and written description with
21 respect to the asserted claim and the limitations of the asserted claim, pursuant to
22 S.P.R. 2.5.4. Where Google has identified a phrase as lacking written description
23 and/or enablement, Google also contends that the subparts of the phrase lack written
24 description and/or enablement within the context recited in the claim.

25 The following discussion includes the identification and discussion of claim
26 terms and limitations lacking § 112 written description and enablement support. A
27 more detailed basis for Defendant’s written description and enablement defenses
28

1 may be set forth in any expert report(s) on invalidity to be served by Defendant in
2 accordance with the Court's Scheduling Order.

3 (a) **'949 Patent**

4 Asserted claims 1, 2, 4, 5, 8, 9, 11, and 12 of the '949 patent fail to satisfy the
5 requirements of 35 U.S.C. § 112 at least because the '949 patent fails to provide an
6 adequate written description or enablement of the following limitations, at least as
7 those limitations are applied by Sonos in its infringement contentions:

- 8 • "the player group for synchronized playback of a multimedia output
9 from the same multimedia source" (claim 1)
- 10 • "each of the players in the player group to adjust its respective volume"
11 (claims 1 and 8)
- 12 • "the volumes of each of the players in the player group should be
13 adjusted in scale" (claims 4 and 11)

14 The foregoing phrases are not described in such a way that a person having
15 ordinary skill in the art at the time of the alleged invention would have understood
16 that the individuals named as the inventors on the face of the '949 patent were in
17 possession of the claimed subject matter, at least to the extent the claims are
18 interpreted consistently with the positions taken in Plaintiff's infringement
19 contentions. Furthermore, to the extent the claims are interpreted consistently the
20 positions taken in Plaintiff's infringement contentions, the '949 patent fails to teach
21 a person of ordinary skill in the art how to make and use the full scope of the
22 claimed invention without undue experimentation with respect to foregoing phrases.
23 To the extent the claims are construed or interpreted to be as broad as the positions
24 taken in Plaintiff's infringement contentions, the '949 patent does not provide
25 adequate written description or enable the full scope of the claim limitations listed
26 above.

1 (b) '014 Patent

2 Asserted claims 25, 32, 35, 38, 42, and 43 of the '014 patent fail to satisfy the
3 requirements of 35 U.S.C. § 112 at least because the '014 patent fails to provide an
4 adequate written description or enablement of the following limitations, at least as
5 those limitations are applied by Sonos in its infringement contentions:

- 6 • “displaying a zone group including players from the available players
7 when at least two of the available players are selected to form the zone
8 group” (claim 25)
- 9 • “wherein any one of the players in the group serves as a zone group head”
10 (claim 25)
- 11 • “synchronizing all players in the zone group in accordance with the zone
12 group head ” (claim 25)
- 13 • “adjusting a volume meter represented by an averaged value of audio
14 volumes of the [p]layers in the group” (claims 25 and 38)
- 15 • “adjusting of the volume meter includes changing a volume of each of
16 the group of players synchronously in accordance with an adjustment
17 made by a user” (claim 25)
- 18 • “selecting the zone group to be de-grouped from the first list” (claim 35)
- 19 • “another list showing all the players within the zone group to be de-
20 grouped” (claim 35)
- 21 • “selecting one or more players from the another list” (claim 35)
- 22 • “disassociating the selected players from the zone group” (claim 35)
- 23 • “adjusting of the one of the volume meters includes changing a volume
24 of each of the group of players synchronously in accordance with an
25 adjustment made by a user” (claim 38)
- 26 • “maintaining relative volume loudness difference among each of the
27 players in the group” (claim 42)
- 28

1 The foregoing phrases are not described in such a way that a person having
2 ordinary skill in the art at the time of the alleged invention would have understood
3 that the individuals named as the inventors on the face of the '014 patent were in
4 possession of the claimed subject matter, at least to the extent the claims are
5 interpreted consistently with the positions taken in Plaintiff's infringement
6 contentions. Furthermore, to the extent the claims are interpreted consistently the
7 positions taken in Plaintiff's infringement contentions, the '014 patent fails to teach
8 a person of ordinary skill in the art how to make and use the full scope of the
9 claimed invention without undue experimentation with respect to foregoing phrases.
10 To the extent the claims are construed or interpreted to be as broad as the positions
11 taken in Plaintiff's infringement contentions, the '014 patent does not provide
12 adequate written description or enable the full scope of the claim limitations listed
13 above.

14 (c) **'959 Patent**

15 Asserted claims 5, 10, and 29 of the '959 patent fail to satisfy the
16 requirements of 35 U.S.C. § 112 at least because the '959 patent fails to provide an
17 adequate written description or enablement of the following limitations, at least as
18 those limitations are applied by Sonos in its infringement contentions:

- 19 • “process the audio data” (claims 5 and 29)
- 20 • “determine that a type of pairing ” (claim 5)
- 21 • “the first type of pairing, the playback device is configured to output
22 audio comprising two channel sound via the plurality of speaker drivers”
23 (claim 5)
- 24 • “in the second type of pairing, the playback device is configured to
25 output audio comprising no more than one channel of the two channel
26 sound via the plurality of speaker drivers” (claim 5)
- 27 • “configure the playback device to perform a first equalization of the
28 audio data” (claim 5)

- “configure the playback device to perform a second equalization of the audio” (claim 5)
- “the signal comprises an instruction for the playback device to pair with one or more playback devices”/“an instruction for the playback device to pair with one or more playback devices” (claims 10 and 29)

The foregoing phrases are not described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the individuals named as the inventors on the face of the ’959 patent were in possession of the claimed subject matter, at least to the extent the claims are interpreted consistently with the positions taken in Plaintiff’s infringement contentions. Furthermore, to the extent the claims are interpreted consistently the positions taken in Plaintiff’s infringement contentions, the ’959 patent fails to teach a person of ordinary skill in the art how to make and use the full scope of the claimed invention without undue experimentation with respect to foregoing phrases. To the extent the claims are construed or interpreted to be as broad as the positions taken in Plaintiff’s infringement contentions, the ’959 patent does not provide adequate written description or enable the full scope of the claim limitations listed above.

(d) ’025 Patent

Asserted claims 1, 10, 12, 13, and 18 of the ’025 patent fail to satisfy the requirements of 35 U.S.C. § 112 at least because the ’025 patent fails to provide an adequate written description or enablement of the following limitations, at least as those limitations are applied by Sonos in its infringement contentions:

- “receive a signal from a controller over the network” (claim 1)
- “the signal comprises an instruction for the playback device to become paired with one or more other playback devices such that, after pairing, the playback device and the one or more other playback devices have different playback roles” (claims 1 and 18)

- 1 • “determine that either (a) the playback device is not paired with the one
2 or more other playback devices ” (claims 1 and 18)
- 3 • “configure the playback device to perform a first processing of the audio
4 data so as to output two-channel audio based on the audio data from the
5 one or more speaker drivers after the playback device has determined it
6 is not paired with the one or more other playback devices” (claim 1 and
7 18)
- 8 • “determine . . . (b) that the playback device is paired with the one or more
9 other playback devices such that the playback device and the one or more
10 other playback devices have the different playback roles” (claim 1)
- 11 • “configuring the playback device to perform a second processing of the
12 audio data so as to output one-channel audio based on the audio data
13 from the one or more speaker drivers after the playback device has
14 determined it is paired with the one or more other playback devices”
15 (claim 1)
- 16 • “separate the audio data into separate audio channels” (claims 10 and 12)
- 17 • “output audio based on audio data of at least one separate audio channel
18 from the one or more speaker drivers” (claims 10 and 12)
- 19 • “the playback device is further configured to receive another signal from
20 the controller over the network, wherein the other signal comprises an
21 instruction for the playback device to separate the pair with the one or
22 more other playback devices” (claim 13)
- 23 • “Configuring the playback device to perform a second processing of the
24 audio data so as to output one-channel audio based on the audio data
25 from the one or more speaker drivers” (claim 18)

26 The foregoing phrases are not described in such a way that a person having
27 ordinary skill in the art at the time of the alleged invention would have understood
28 that the individuals named as the inventors on the face of the ’025 patent were in

1 possession of the claimed subject matter, at least to the extent the claims are
2 interpreted consistently with the positions taken in Plaintiff's infringement
3 contentions. Furthermore, to the extent the claims are interpreted consistently the
4 positions taken in Plaintiff's infringement contentions, the '025 patent fails to teach
5 a person of ordinary skill in the art how to make and use the full scope of the
6 claimed invention without undue experimentation with respect to foregoing phrases.
7 To the extent the claims are construed or interpreted to be as broad as the positions
8 taken in Plaintiff's infringement contentions, the '025 patent does not provide
9 adequate written description or enable the full scope of the claim limitations listed
10 above.

11 **(e) '953 Patent**

12 Asserted claims 7, 8, 12-14, 18, 22-25, and 28-30 of the '953 patent fail to
13 satisfy the requirements of 35 U.S.C. § 112 at least because the '953 patent fails to
14 provide an adequate written description or enablement of the following limitations,
15 at least as those limitations are applied by Sonos in its infringement contentions:

- 16 • "receiving a request to enter into a synchrony group with at least a second
17 zone player that is communicatively coupled with the first zone player
18 over a local area network (LAN)" (claims 7, 25)
- 19 • "receiving, from the second zone player over the LAN, clock timing
20 information that comprises at least one reading of the clock time of the
21 second zone player" (claims 7, 25)
- 22 • "receiving, from the second zone player over the LAN, (a) audio
23 information for at least a first audio track and (b) playback timing
24 information associated with the audio information for the first audio
25 track that comprises an indicator of a first future time, relative to the
26 clock time of the second zone player, at which the first and second zone
27 players are to initiate synchronous playback of the audio information for
28 the first audio track" (claims 7, 25)

- 1 • “receiving the request to enter into the synchrony group with at least the
2 second zone player over the LAN from one or both of (a) a controller
3 device that is communicatively coupled to the first zone player over the
4 LAN and (b) the second zone player” (claim 8)
- 5 • “wherein receiving the audio information for the first audio track from
6 the second zone player over the LAN comprises: receiving a series of
7 frames that each include a respective portion of the obtained audio
8 information for the first audio track” (claim 12)
- 9 • “wherein a first frame in the series of frames includes the indicator of the
10 first future time” (claim 13)
- 11 • “an indicator of a respective future time, relative to the clock time of the
12 second zone player, at which the frame is to be synchronously played
13 back by the first and second zone players” (claim 14)
- 14 • “after determining the initial differential between the clock time of the
15 first zone player and the clock time of the second zone player, receiving,
16 from the second zone player over the LAN, updated clock timing
17 information that includes at least one updated reading of the clock time
18 of the second zone player; and based on the updated timing information,
19 determining an updated differential between the clock time of the first
20 zone player and the clock time of the second zone player” (claims 18,
21 28)
- 22 • “receiving, from the second zone player over the LAN, a command to
23 adjust an individual volume of the first zone player; and in response to
24 receiving the command, adjusting the individual volume of the first zone
25 player” (claims 22, 29)
- 26 • “while operating as the slave of the synchrony group, receiving, from the
27 second zone player over the LAN, control information that enables the
28 first zone player to begin operating as the master of the synchrony group;

1 and in response to receiving the control information, transitioning from
2 operating as the slave of the synchrony group to operating as the master
3 of the synchrony group” (claims 23, 30)

4 The foregoing phrases are not described in such a way that a person having
5 ordinary skill in the art at the time of the alleged invention would have understood
6 that the individuals named as the inventors on the face of the ’953 patent were in
7 possession of the claimed subject matter, at least to the extent the claims are
8 interpreted consistently with the positions taken in Plaintiff’s infringement
9 contentions. Furthermore, to the extent the claims are interpreted consistently the
10 positions taken in Plaintiff’s infringement contentions, the ’953 patent fails to teach
11 a person of ordinary skill in the art how to make and use the full scope of the
12 claimed invention without undue experimentation with respect to foregoing phrases.
13 To the extent the claims are construed or interpreted to be as broad as the positions
14 taken in Plaintiff’s infringement contentions, the ’953 patent does not provide
15 adequate written description or enable the full scope of the claim limitations listed
16 above.

17 (f) **’258 Patent**

18 Asserted claims 17, 21-24, and 26 of the ’258 patent fail to satisfy the
19 requirements of 35 U.S.C. § 112 at least because the ’258 patent fails to provide an
20 adequate written description or enablement of the following limitations, at least as
21 those limitations are applied by Sonos in its infringement contentions:

- 22 • “a network interface configured to interface the first zone player with at
23 least a local area network (LAN)” (claim 17)
 - 24 • “receive control information from any one of a plurality of controllers
25 over the LAN via the network interface, wherein the received control
26 information comprises a direction for the first zone player to enter into a
27 synchrony group with at least a second zone player” (claim 17)
- 28

- “transmit status information to at least one of the plurality of controllers over the LAN via the network interface, wherein the status information comprises an indication of a status of the synchrony group” (claim 17)

The foregoing phrases are not described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the individuals named as the inventors on the face of the '258 patent were in possession of the claimed subject matter, at least to the extent the claims are interpreted consistently with the positions taken in Plaintiff's infringement contentions. Furthermore, to the extent the claims are interpreted consistently the positions taken in Plaintiff's infringement contentions, the '258 patent fails to teach a person of ordinary skill in the art how to make and use the full scope of the claimed invention without undue experimentation with respect to foregoing phrases. To the extent the claims are construed or interpreted to be as broad as the positions taken in Plaintiff's infringement contentions, the '258 patent does not provide adequate written description or enable the full scope of the claim limitations listed above.

(g) '715 Patent

Asserted claims 7, 9, 11, 13, 15, and 17 of the '715 patent fail to satisfy the requirements of 35 U.S.C. § 112 at least because the '715 patent fails to provide an adequate written description or enablement of the following limitations, at least as those limitations are applied by Sonos in its infringement contentions:

- “wherein in the master device role, the first zone player is configured to control synchronous playback of information content by both the first zone player and the second zone player in response to playback commands received from a controller device via a network interface of the first zone player” (claim 7)
- “while performing the master device role, evaluating one or more operational performance metrics of the one or more processors or the at

1 least one network interface indicating potential degradation in
2 performance of synchronous playback of information content by both the
3 first and second zone player, and based on the evaluation, determining
4 that the second zone player should perform the master device role for the
5 synchrony group” (claims 7, 13)

- 6 • “in response to determining that the second zone player should perform
7 the master device role for the synchrony group, initiating migration of
8 the master device role from the first zone player to the second zone
9 player” (claims 7, 13)
- 10 • “after migration of the master device role from the first zone player to
11 the second zone player, ceasing to perform the master device role for the
12 synchrony group, and playing back information content in synchrony
13 with the second zone player while the second zone player is performing
14 the master device role for the synchrony group” (claims 7, 13)
- 15 • “wherein the one or more operational performance metrics comprise a
16 network latency metric, and wherein while performing the master device
17 role, evaluating one or more operational performance metrics of the one
18 or more processors or the at least one network interface indicating
19 potential degradation in performance of synchronous playback of
20 information content by both the first and second zone player comprises
21 the first zone player determining that migrating the master device role
22 from the first zone player to the second zone player would improve
23 latency of message transmission within the synchrony group” (claims 9,
24 15)

25 The foregoing phrases are not described in such a way that a person having
26 ordinary skill in the art at the time of the alleged invention would have understood
27 that the individuals named as the inventors on the face of the ’715 patent were in
28 possession of the claimed subject matter, at least to the extent the claims are

1 interpreted consistently with the positions taken in Plaintiff's infringement
2 contentions. Furthermore, to the extent the claims are interpreted consistently the
3 positions taken in Plaintiff's infringement contentions, the '715 patent fails to teach
4 a person of ordinary skill in the art how to make and use the full scope of the
5 claimed invention without undue experimentation with respect to foregoing phrases.
6 To the extent the claims are construed or interpreted to be as broad as the positions
7 taken in Plaintiff's infringement contentions, the '715 patent does not provide
8 adequate written description or enable the full scope of the claim limitations listed
9 above.

10 (h) '001 Patent

11 Asserted claims 12-14, 17-25, and 28-33 of the '001 patent fail to satisfy the
12 requirements of 35 U.S.C. § 112 at least because the '001 patent fails to provide an
13 adequate written description or enablement of the following limitations, at least as
14 those limitations are applied by Sonos in its infringement contentions:

- 15 • "a network interface that is configured to communicatively couple the
16 first zone player to at least one data network" (claim 12)
- 17 • "receiving, via the network interface, a request to engage in synchronous
18 playback of audio content as part of a synchrony group that includes at
19 least a second zone player that is communicatively coupled to the first
20 zone player via the at least one data network" (claim 12)
- 21 • "detecting an indication that the first zone player is to operate in (a) one
22 of a control-master mode or a control-slave mode for the synchrony
23 group and (b) one of an audio-master mode or an audio-slave mode for
24 the synchrony group; and beginning to operate in the synchrony group
25 in accordance with the indication" (claims 12, 23)
- 26 • "wherein, while operating in the control-master mode for the synchrony
27 group, the first zone player is configured to: receive, via the network
28 interface, first control information for the synchrony group from a

1 network device that is communicatively coupled to the first zone player;
2 and based on the first control information, cause, via the network
3 interface, at least one playback action to be applied in the synchrony
4 group” (claims 12, 23)

- 5 • “wherein, while operating in the control-slave mode for the synchrony
6 group, the first zone player is configured to: receive, via the network
7 interface, second control information from another zone player; and
8 perform one or more playback actions in accordance with the second
9 control information” (claims 12, 23)
- 10 • “wherein, while operating in the audio-master mode for the synchrony
11 group, the first zone player is configured to: obtain audio information
12 that is representative of the audio content; generate playback timing
13 information associated with the obtained audio information that is
14 indicative of at least one future time that is relative to a reference clock
15 time and denotes a time at which at least the first and second zone players
16 are to engage in synchronous playback of a corresponding portion of the
17 obtained audio information; and transmit, via the network interface, the
18 obtained audio information and the generated playback timing
19 information to the second zone player” (claim 12)
- 20 • “wherein, while operating in the audio-slave mode for the synchrony
21 group, the first zone player is configured to: receive, via the network
22 interface, audio information and playback timing information associated
23 with the received audio information from another zone player; and
24 engage in synchronous playback of the received audio information with
25 at least the second zone player based on the received playback timing
26 information associated with the received audio information while a local
27 clock time of the first zone player differs from a local clock time of the
28 second zone player” (claims 12, 23)

- 1 • “wherein detecting an indication that the first zone player is to operate in
2 (a) one of a control-master mode or a control-slave mode for the
3 synchrony group and (b) one of an audio-master mode or an audio-slave
4 mode for the synchrony group comprises detecting an indication that the
5 first zone player is to operate in (a) the control-master mode for the
6 synchrony group and (b) the audio-master mode for the synchrony
7 group” (claims 13, 24)
- 8 • “wherein the playback timing further comprises a future time relative to
9 the reference clock time that denotes a time at which at least the first and
10 second zone players are to initiate synchronous playback at the
11 beginning of the obtained audio information” (claims 14, 25)
- 12 • “wherein beginning to operate in the synchrony group in accordance
13 with the indication comprises either (a) transitioning from operating in
14 the audio-master mode to operating in the audio-slave mode or (b)
15 transitioning from operating in the audio-slave mode to operating in the
16 audio-master mode” (claims 17, 28)
- 17 • “wherein the first control information identifies particular audio content
18 to be played back by the synchrony group that is available at an audio
19 source outside of the at least one data network, and wherein causing the
20 at least one playback action to be applied in the synchrony group
21 comprises causing a zone player operating in the audio-master mode to
22 obtain audio information that is representative of the particular audio
23 content” (claims 18, 29)
- 24 • “wherein the at least one future time relative to the reference clock time
25 comprise at least one first future time that is determined based on a local
26 clock of a zone player other than the first zone player” (claim 19)

- 1 • “wherein at least one future time relative to the reference clock time
2 comprises at least one first future time that is determined based a local
3 clock of the first zone player” (claim 20)
- 4 • “wherein the playback timing information that is received while
5 operating in the audio-slave mode comprises at least one future time at
6 which at least the first and second zone players are to engage in
7 synchronous playback of a corresponding portion of the received audio
8 information, and wherein being configured while operating in the audio-
9 slave mode to engage in synchronous playback of the received audio
10 information with at least the second zone player comprises being
11 configured to: update the at least one future time to account for a
12 differential between the local clock time of the first zone player and a
13 local clock time of another zone player; and when the local clock time
14 of the first zone player reaches the updated at least one future time,
15 engage in synchronous playback of the corresponding portion of the
16 received audio information with at least the second zone player” (claim
17 22)
- 18 • “receiving, via a network interface at the first zone player, a request to
19 engage in synchronous playback of audio content as part of a synchrony
20 group that includes at least a second zone player that is communicatively
21 coupled to the first zone player via at least one data network” (claim 23)
- 22 • “wherein, while operating in the audio-master mode for the synchrony
23 group, the first zone player is configured to: obtain audio information
24 that is representative of the audio content; generate playback timing
25 information associated with the obtained audio information that is
26 indicative of one or more future times relative to a reference clock time,
27 wherein an individual future time denotes a time at which at least the
28 first and second zone players are to engage in synchronous playback of

1 a corresponding portion of the obtained audio information; and transmit,
2 via the network interface, the obtained audio information and the
3 generated playback timing information to the second zone player” (claim
4 23)

- 5 • “wherein an individual future time relative to the reference clock time
6 comprise at least one first future time that is determined based on a local
7 clock of a zone player other than the first zone player” (claim 30)
- 8 • “wherein the at least one an individual future time relative to the
9 reference clock time comprise at least one first future time that is
10 determined based on a local clock of the first zone player” (claim 31)
- 11 • “wherein the playback timing information that is received while
12 operating in the audio-slave mode comprises at least one future time at
13 which at least the first and second zone players are to engage in
14 synchronous playback of a corresponding portion of the received audio
15 information, and wherein operating in the audio-slave mode to engage in
16 synchronous playback of the received audio information with at least the
17 second zone player comprises: updating the at least one future time to
18 account for a differential between the local clock time of the first zone
19 player and a local clock time of another zone player; and when the local
20 clock time of the first zone player reaches the updated at least one future
21 time, engaging in synchronous playback of the corresponding portion of
22 the received audio information with at least the second zone player”
23 (claim 33)

24 The foregoing phrases are not described in such a way that a person having
25 ordinary skill in the art at the time of the alleged invention would have understood
26 that the individuals named as the inventors on the face of the ’001 patent were in
27 possession of the claimed subject matter, at least to the extent the claims are
28 interpreted consistently with the positions taken in Plaintiff’s infringement

1 contentions. Furthermore, to the extent the claims are interpreted consistently the
2 positions taken in Plaintiff’s infringement contentions, the ’001 patent fails to teach
3 a person of ordinary skill in the art how to make and use the full scope of the
4 claimed invention without undue experimentation with respect to foregoing phrases.
5 To the extent the claims are construed or interpreted to be as broad as the positions
6 taken in Plaintiff’s infringement contentions, the ’001 patent does not provide
7 adequate written description or enable the full scope of the claim limitations listed
8 above.

9 (i) **’896 Patent**

10 Asserted claims 1, 5, 6, 8, 9, 12, 13, 15, 17, and 18 of the ’896 patent fail to
11 satisfy the requirements of 35 U.S.C. § 112 at least because the ’896 patent fails to
12 provide an adequate written description or enablement of the following limitations,
13 at least as those limitations are applied by Sonos in its infringement contentions:

- 14 • “a secure wireless local area network (WLAN) that is defined by an
15 access point,” “the secure WLAN that is defined by the access point,”
16 and “the initial communication path with the given playback device does
17 not traverse the access point” (claims 1, 13);
 - 18 • “before transmitting the second message containing the network
19 configuration parameters, obtaining the network configuration
20 parameters” (claims 8, 17);
 - 21 • “wherein obtaining the network configuration parameters comprises
22 retrieving the current network configuration parameters of the
23 computing device” (claims 9, 18); and
 - 24 • “transmitting a command to the given playback device to form a group
25 with at least a first playback device of a networked audio system such
26 that the given playback device is configured to play back audio content
27 in synchrony with at least the first playback device” (claim 12).
- 28

1 The foregoing phrases are not described in such a way that a person having
2 ordinary skill in the art at the time of the alleged invention would have understood
3 that the individuals named as the inventors on the face of the '896 patent were in
4 possession of the claimed subject matter, at least to the extent the claims are
5 interpreted consistently with the positions taken in Plaintiff's infringement
6 contentions. Furthermore, to the extent the claims are interpreted consistently the
7 positions taken in Plaintiff's infringement contentions, the '896 patent fails to teach
8 a person of ordinary skill in the art how to make and use the full scope of the
9 claimed invention without undue experimentation with respect to foregoing phrases.
10 To the extent the claims are construed or interpreted to be as broad as the positions
11 taken in Plaintiff's infringement contentions, the '896 patent does not provide
12 adequate written description or enable the full scope of the claim limitations listed
13 above.

14 (j) **'883 Patent**

15 Asserted claims 1, 2, 4, 5, 9-11, 13-17, and 19 of the '883 patent fail to satisfy
16 the requirements of 35 U.S.C. § 112 at least because the '883 patent fails to provide
17 an adequate written description or enablement of the following limitations, at least
18 as those limitations are applied by Sonos in its infringement contentions:

- 19 • "a secure wireless local area network (WLAN) that is defined by an
20 access point," "the secure WLAN that is defined by the access point,"
21 and "the initial communication path with the given playback device does
22 not traverse the access point" (claims 1, 14);
- 23 • "detecting a triggering event that causes the playback device to enter a
24 setup mode in which the playback device transmits at least a first
25 message indicating that the playback device is available for setup"
26 (claims 1, 14);
- 27 • "while in the setup mode, receiving a response to the first message that
28 facilitates establishing an initial communication path with a computing

1 device that is installed with an application for controlling the playback
2 device” (claims 1, 14);

- 3 • “the triggering event comprises one of (a) powering on the playback
4 device or (b) receiving user input via a physical interface of the playback
5 device.” (claims 2, 15);
- 6 • “receiving, from the computing device, a command to assign a name to
7 the playback device” (claim 9);
- 8 • “receiving a command related to playback of audio content” (claim 10);
- 9 • “the command comprises a command to retrieve audio content for
10 playback from an audio source that is accessible via a communication
11 path that includes the secure WLAN, and wherein the playback device
12 further comprises program instructions stored on the non-transitory
13 computer-readable medium that, when executed by the at least one
14 processor, cause the playback device to perform functions comprising:
15 in response to receiving the command, retrieving the audio content from
16 the audio source via the communication path that includes the secure
17 WLAN” (claims 11, 19); and
- 18 • “a command to form a group with at least a first playback device of a
19 networked audio system such that the playback device is configured to
20 play back audio content in synchrony with at least the first playback
21 device” (claim 13).

22 The foregoing phrases are not described in such a way that a person having
23 ordinary skill in the art at the time of the alleged invention would have understood
24 that the individuals named as the inventors on the face of the ’883 patent were in
25 possession of the claimed subject matter, at least to the extent the claims are
26 interpreted consistently with the positions taken in Plaintiff’s infringement
27 contentions. Furthermore, to the extent the claims are interpreted consistently the
28 positions taken in Plaintiff’s infringement contentions, the ’883 patent fails to teach

1 a person of ordinary skill in the art how to make and use the full scope of the
2 claimed invention without undue experimentation with respect to foregoing phrases.
3 To the extent the claims are construed or interpreted to be as broad as the positions
4 taken in Plaintiff's infringement contentions, the '883 patent does not provide
5 adequate written description or enable the full scope of the claim limitations listed
6 above.

7 **2. Indefiniteness**

8 One or more terms of the Asserted Claims may suffer from defects that render
9 them indefinite, as those claims are applied by Sonos to the accused products in
10 Sonos' Infringement Contentions. A more detailed basis for Google's indefiniteness
11 defenses may be set forth in any expert report(s) on invalidity to be served by
12 Google in accordance with the Court's Scheduling Order and/or at an appropriate
13 later stage of this lawsuit, such as claim construction. To the extent that Google has
14 identified any instance of a term or limitation in a particular claim as rendering the
15 claim invalid as indefinite, Google contends that every instance of the challenged
16 term or limitation in each Asserted Claim renders the claim invalid for the same
17 reason.

18 **(a) '949 Patent**

19 One or more Asserted Claims, and/or terms of the Asserted Claims, of the
20 '949 patent may suffer from defects that render them indefinite, at least under
21 interpretations and/or applications of the claim language that Sonos appears to be
22 asserting, including, for example:

- 23 • “the player group for synchronized playback of a multimedia output
24 from the same multimedia source” (claim 1)
- 25 • “each of the players in the player group to adjust its respective volume”
26 (claims 1 and 8)
- 27 • “the volumes of each of the players in the player group should be
28 adjusted in scale” (claims 4 and 11)

1 (b) '014 Patent

2 One or more Asserted Claims, and/or terms of the Asserted Claims, of the
3 '014 patent may suffer from defects that render them indefinite, at least under
4 interpretations and/or applications of the claim language that Sonos appears to be
5 asserting, including, for example:

- 6 • “displaying a zone group including players from the available players
7 when at least two of the available players are selected to form the zone
8 group” (claim 25)
- 9 • “wherein any one of the players in the group server as a zone group head”
10 (claim 25)
- 11 • “synchronizing all players in the zone group in accordance with the zone
12 group head ” (claim 25)
- 13 • “adjusting a volume meter represented by an averaged value of audio
14 volumes of the [p]layers in the group” (claims 25, 38)
- 15 • “adjusting of the volume meter includes changing a volume of each of
16 the group of players synchronously in accordance with an adjustment
17 made by a user” (claim 25)
- 18 • “presenting the zone group in a manner that indicates a grouping” (claim
19 32)
- 20 • “selecting the zone group to be de-grouped from the first list” (claim 35)
- 21 • “another list showing all the players within the zone group to be de-
22 grouped” (claim 35)
- 23 • “selecting one or more players from the another list” (claim 35)
- 24 • “disassociating the selected players from the zone group” (claim 35)
- 25 • “adjusting of the one of the volume meters includes changing a volume
26 of each of the group of players synchronously in accordance with an
27 adjustment made by a user” (claim 38)
- 28

- “maintaining relative volume loudness difference among each of the players in the group” (claim 42)

(c) **'959 Patent**

One or more Asserted Claims, and/or terms of the Asserted Claims, of the '959 patent may suffer from defects that render them indefinite, at least under interpretations and/or applications of the claim language that Sonos appears to be asserting, including, for example:

- “process the audio data” (claims 5 and 29)
- “determine that a type of pairing ” (claim 5)
- “the first type of pairing, the playback device is configured to output audio comprising two channel sound via the plurality of speaker drivers” (claim 5)
- “in the second type of pairing, the playback device is configured to output audio comprising no more than one channel of the two channel sound via the plurality of speaker drivers” (claim 5)
- “configure the playback device to perform a first equalization of the audio data” (claim 5)
- “configure the playback device to perform a second equalization of the audio” (claim 5)
- “the signal comprises an instruction for the playback device to pair with one or more playback devices”/“an instruction for the playback device to pair with one or more playback devices” (claims 10 and 29)

(d) **'025 Patent**

One or more Asserted Claims, and/or terms of the Asserted Claims, of the '025 patent may suffer from defects that render them indefinite, at least under interpretations and/or applications of the claim language that Sonos appears to be asserting, including, for example:

- “receive a signal from a controller over the network” (claim 1)

- 1 • “the signal comprises an instruction for the playback device to become
2 paired with one or more other playback devices such that, after pairing,
3 the playback device and the one or more other playback devices have
4 different playback roles” (claims 1, 18)
- 5 • “determine that either (a) the playback device is not paired with the one
6 or more other playback devices ” (claims 1 and 18)
- 7 • “configure the playback device to perform a first processing of the audio
8 data so as to output two-channel audio based on the audio data from the
9 one or more speaker drivers after the playback device has determined it
10 is not paired with the one or more other playback devices” (claim 1 and
11 18)
- 12 • “determine . . . (b) that the playback device is paired with the one or more
13 other playback devices such that the playback device and the one or more
14 other playback devices have the different playback roles” (claim 1)
- 15 • “configuring the playback device to perform a second processing of the
16 audio data so as to output one-channel audio based on the audio data
17 from the one or more speaker drivers after the playback device has
18 determined it is paired with the one or more other playback devices”
19 (claim 1)
- 20 • “separate the audio data into separate audio channels” (claims 10, 12)
- 21 • “output audio based on audio data of at least one separate audio channel
22 from the one or more speaker drivers” (claims 10 and 12)
- 23 • “the playback device is further configured to receive another signal from
24 the controller over the network, wherein the other signal comprises an
25 instruction for the playback device to separate the pair with the one or
26 more other playback devices” (claim 13)
- 27
- 28

- “Configuring the playback device to perform a second processing of the audio data so as to output one-channel audio based on the audio data from the one or more speaker drivers” (claim 18)

(e) **’953 Patent**

One or more Asserted Claims, and/or terms of the Asserted Claims, of the ’953 patent may suffer from defects that render them indefinite, at least under interpretations and/or applications of the claim language that Sonos appears to be asserting, including, for example:

- “receiving a request to enter into a synchrony group with at least a second zone player that is communicatively coupled with the first zone player over a local area network (LAN)” (claims 7, 25)
- “receiving, from the second zone player over the LAN, clock timing information that comprises at least one reading of the clock time of the second zone player” (claims 7, 25)
- “receiving, from the second zone player over the LAN, (a) audio information for at least a first audio track and (b) playback timing information associated with the audio information for the first audio track that comprises an indicator of a first future time, relative to the clock time of the second zone player, at which the first and second zone players are to initiate synchronous playback of the audio information for the first audio track” (claims 7, 25)
- “receiving the request to enter into the synchrony group with at least the second zone player over the LAN from one or both of (a) a controller device that is communicatively coupled to the first zone player over the LAN and (b) the second zone player” (claim 8)
- “wherein receiving the audio information for the first audio track from the second zone player over the LAN comprises: receiving a series of

frames that each include a respective portion of the obtained audio information for the first audio track” (claim 12)

- “wherein a first frame in the series of frames includes the indicator of the first future time” (claim 13)
- “an indicator of a respective future time, relative to the clock time of the second zone player, at which the frame is to be synchronously played back by the first and second zone players” (claim 14)
- “after determining the initial differential between the clock time of the first zone player and the clock time of the second zone player, receiving, from the second zone player over the LAN, updated clock timing information that includes at least one updated reading of the clock time of the second zone player; and based on the updated timing information, determining an updated differential between the clock time of the first zone player and the clock time of the second zone player” (claims 18, 28)
- “receiving, from the second zone player over the LAN, a command to adjust an individual volume of the first zone player; and in response to receiving the command, adjusting the individual volume of the first zone player” (claims 22, 29)
- “while operating as the slave of the synchrony group, receiving, from the second zone player over the LAN, control information that enables the first zone player to begin operating as the master of the synchrony group; and in response to receiving the control information, transitioning from operating as the slave of the synchrony group to operating as the master of the synchrony group” (claims 23, 30)

(f) **’258 Patent**

One or more Asserted Claims, and/or terms of the Asserted Claims, of the ’258 patent may suffer from defects that render them indefinite, at least under

1 interpretations and/or applications of the claim language that Sonos appears to be
2 asserting, including, for example:

- 3 • “a network interface configured to interface the first zone player with at
4 least a local area network (LAN)” (claim 17)
- 5 • “receive control information from any one of a plurality of controllers
6 over the LAN via the network interface, wherein the received control
7 information comprises a direction for the first zone player to enter into a
8 synchrony group with at least a second zone player” (claim 17)
- 9 • “transmit status information to at least one of the plurality of controllers
10 over the LAN via the network interface, wherein the status information
11 comprises an indication of a status of the synchrony group” (claim 17)

12 (g) **’715 Patent**

13 One or more Asserted Claims, and/or terms of the Asserted Claims, of the
14 ’715 patent may suffer from defects that render them indefinite, at least under
15 interpretations and/or applications of the claim language that Sonos appears to be
16 asserting, including, for example:

- 17 • “wherein in the master device role, the first zone player is configured to
18 control synchronous playback of information content by both the first
19 zone player and the second zone player in response to playback
20 commands received from a controller device via a network interface of
21 the first zone player” (claim 7)
- 22 • “while performing the master device role, evaluating one or more
23 operational performance metrics of the one or more processors or the at
24 least one network interface indicating potential degradation in
25 performance of synchronous playback of information content by both the
26 first and second zone player, and based on the evaluation, determining
27 that the second zone player should perform the master device role for the
28 synchrony group” (claims 7, 13)

- 1 • “in response to determining that the second zone player should perform
2 the master device role for the synchrony group, initiating migration of
3 the master device role from the first zone player to the second zone
4 player” (claims 7, 13)
- 5 • “after migration of the master device role from the first zone player to
6 the second zone player, ceasing to perform the master device role for the
7 synchrony group, and playing back information content in synchrony
8 with the second zone player while the second zone player is performing
9 the master device role for the synchrony group” (claims 7, 13)
- 10 • “wherein the one or more operational performance metrics comprise a
11 network latency metric, and wherein while performing the master device
12 role, evaluating one or more operational performance metrics of the one
13 or more processors or the at least one network interface indicating
14 potential degradation in performance of synchronous playback of
15 information content by both the first and second zone player comprises
16 the first zone player determining that migrating the master device role
17 from the first zone player to the second zone player would improve
18 latency of message transmission within the synchrony group” (claims 9,
19 15)

20 (h) **’001 Patent**

21 One or more Asserted Claims, and/or terms of the Asserted Claims, of the
22 ’001 patent may suffer from defects that render them indefinite, at least under
23 interpretations and/or applications of the claim language that Sonos appears to be
24 asserting, including, for example:

- 25 • “a network interface that is configured to communicatively couple the
26 first zone player to at least one data network” (claim 12)
- 27 • “receiving, via the network interface, a request to engage in synchronous
28 playback of audio content as part of a synchrony group that includes at

1 least a second zone player that is communicatively coupled to the first
2 zone player via the at least one data network” (claim 12)

- 3 • “detecting an indication that the first zone player is to operate in (a) one
4 of a control-master mode or a control-slave mode for the synchrony
5 group and (b) one of an audio-master mode or an audio-slave mode for
6 the synchrony group; and beginning to operate in the synchrony group
7 in accordance with the indication” (claims 12, 23)
- 8 • “wherein, while operating in the control-master mode for the synchrony
9 group, the first zone player is configured to: receive, via the network
10 interface, first control information for the synchrony group from a
11 network device that is communicatively coupled to the first zone player;
12 and based on the first control information, cause, via the network
13 interface, at least one playback action to be applied in the synchrony
14 group” (claims 12, 23)
- 15 • “wherein, while operating in the control-slave mode for the synchrony
16 group, the first zone player is configured to: receive, via the network
17 interface, second control information from another zone player; and
18 perform one or more playback actions in accordance with the second
19 control information” (claims 12, 23)
- 20 • “wherein, while operating in the audio-master mode for the synchrony
21 group, the first zone player is configured to: obtain audio information
22 that is representative of the audio content; generate playback timing
23 information associated with the obtained audio information that is
24 indicative of at least one future time that is relative to a reference clock
25 time and denotes a time at which at least the first and second zone players
26 are to engage in synchronous playback of a corresponding portion of the
27 obtained audio information; and transmit, via the network interface, the
28

1 obtained audio information and the generated playback timing
2 information to the second zone player” (claim 12)

- 3 • “wherein, while operating in the audio-slave mode for the synchrony
4 group, the first zone player is configured to: receive, via the network
5 interface, audio information and playback timing information associated
6 with the received audio information from another zone player; and
7 engage in synchronous playback of the received audio information with
8 at least the second zone player based on the received playback timing
9 information associated with the received audio information while a local
10 clock time of the first zone player differs from a local clock time of the
11 second zone player” (claims 12, 23)
- 12 • “wherein detecting an indication that the first zone player is to operate in
13 (a) one of a control-master mode or a control-slave mode for the
14 synchrony group and (b) one of an audio-master mode or an audio-slave
15 mode for the synchrony group comprises detecting an indication that the
16 first zone player is to operate in (a) the control-master mode for the
17 synchrony group and (b) the audio-master mode for the synchrony
18 group” (claims 13, 24)
- 19 • “wherein the playback timing further comprises a future time relative to
20 the reference clock time that denotes a time at which at least the first and
21 second zone players are to initiate synchronous playback at the
22 beginning of the obtained audio information” (claims 14, 25)
- 23 • “wherein beginning to operate in the synchrony group in accordance
24 with the indication comprises either (a) transitioning from operating in
25 the audio-master mode to operating in the audio-slave mode or (b)
26 transitioning from operating in the audio-slave mode to operating in the
27 audio-master mode” (claims 17, 28)

- 1 • “wherein the first control information identifies particular audio content
2 to be played back by the synchrony group that is available at an audio
3 source outside of the at least one data network, and wherein causing the
4 at least one playback action to be applied in the synchrony group
5 comprises causing a zone player operating in the audio-master mode to
6 obtain audio information that is representative of the particular audio
7 content” (claims 18, 29)
- 8 • “wherein the at least one future time relative to the reference clock time
9 comprise at least one first future time that is determined based on a local
10 clock of a zone player other than the first zone player” (claim 19)
- 11 • “wherein at least one future time relative to the reference clock time
12 comprises at least one first future time that is determined based a local
13 clock of the first zone player” (claim 20)
- 14 • “wherein the playback timing information that is received while
15 operating in the audio-slave mode comprises at least one future time at
16 which at least the first and second zone players are to engage in
17 synchronous playback of a corresponding portion of the received audio
18 information, and wherein being configured while operating in the audio-
19 slave mode to engage in synchronous playback of the received audio
20 information with at least the second zone player comprises being
21 configured to: update the at least one future time to account for a
22 differential between the local clock time of the first zone player and a
23 local clock time of another zone player; and when the local clock time
24 of the first zone player reaches the updated at least one future time,
25 engage in synchronous playback of the corresponding portion of the
26 received audio information with at least the second zone player” (claim
27 22)

- 1 • “receiving, via a network interface at the first zone player, a request to
2 engage in synchronous playback of audio content as part of a synchrony
3 group that includes at least a second zone player that is communicatively
4 coupled to the first zone player via at least one data network” (claim 23)
- 5 • “wherein, while operating in the audio-master mode for the synchrony
6 group, the first zone player is configured to: obtain audio information
7 that is representative of the audio content; generate playback timing
8 information associated with the obtained audio information that is
9 indicative of one or more future times relative to a reference clock time,
10 wherein an individual future time denotes a time at which at least the
11 first and second zone players are to engage in synchronous playback of
12 a corresponding portion of the obtained audio information; and transmit,
13 via the network interface, the obtained audio information and the
14 generated playback timing information to the second zone player” (claim
15 23)
- 16 • “wherein an individual future time relative to the reference clock time
17 comprise at least one first future time that is determined based on a local
18 clock of a zone player other than the first zone player” (claim 30)
- 19 • “wherein the at least one an individual future time relative to the
20 reference clock time comprise at least one first future time that is
21 determined based on a local clock of the first zone player” (claim 31)
- 22 • “wherein the playback timing information that is received while
23 operating in the audio-slave mode comprises at least one future time at
24 which at least the first and second zone players are to engage in
25 synchronous playback of a corresponding portion of the received audio
26 information, and wherein operating in the audio-slave mode to engage in
27 synchronous playback of the received audio information with at least the
28 second zone player comprises: updating the at least one future time to

1 account for a differential between the local clock time of the first zone
2 player and a local clock time of another zone player; and when the local
3 clock time of the first zone player reaches the updated at least one future
4 time, engaging in synchronous playback of the corresponding portion of
5 the received audio information with at least the second zone player”
6 (claim 33)

7 (i) **'896 Patent**

8 One or more Asserted Claims, and/or terms of the Asserted Claims, of the
9 '896 patent may suffer from defects that render them indefinite, at least under
10 interpretations and/or applications of the claim language that Sonos appears to be
11 asserting, including, for example:

- 12 • “receiving, via a graphical user interface (GUI) associated
13 with an application for controlling one or more playback devices, user
14 input indicating that a user wishes to set up a playback device to operate
15 on the secure WLAN” (claims 1, 13);
- 16 • “transmitting a command to the given playback device related to
17 playback of audio content” (claims 5);
- 18 • “a command to retrieve audio content for playback from an audio source
19 that is accessible via a communication path that includes the secure
20 WLAN” (claims 6);
- 21 • “before transmitting the second message containing the network
22 configuration parameters, obtaining the network configuration
23 parameters” (claims 8, 17);
- 24 • “retrieving the current network configuration parameters of the
25 computing device” (claims 9, 18);
- 26 • “transmitting a command to the given playback device to form a group
27 with at least a first playback device of a networked audio system such
28

1 that the given playback device is configured to play back audio content
2 in synchrony with at least the first playback device” (claim 12); and

- 3 • “transmitting a command to retrieve audio content for playback
4 from an audio source that is accessible via a communication path that
5 includes the secure WLAN” (claim 15)

6 (j) **’883 Patent**

7 One or more Asserted Claims, and/or terms of the Asserted Claims, of the
8 ’883 patent may suffer from defects that render them indefinite, at least under
9 interpretations and/or applications of the claim language that Sonos appears to be
10 asserting, including, for example:

- 11 • “detecting a triggering event that causes the playback device to enter a
12 setup mode in which the playback device transmits at least a first
13 message indicating that the playback device is available for setup”
14 (claims 1, 14);
- 15 • “while in the setup mode, receiving a response to the first message that
16 facilitates establishing an initial communication path with a computing
17 device that is installed with an application for controlling the playback
18 device” (claims 1, 14);
- 19 • “the triggering event comprises one of (a) powering on the playback
20 device or (b) receiving user input via a physical interface of the playback
21 device.” (claims 2, 15)
- 22 • “receiving, from the computing device, a command to assign a name to
23 the playback device” (claim 9);
- 24 • “receiving a command related to playback of audio content” (claim 10);
- 25 • “the command comprises a command to retrieve audio content for
26 playback from an audio source that is accessible via a communication
27 path that includes the secure WLAN, and wherein the playback device
28 further comprises program instructions stored on the non-transitory

1 computer-readable medium that, when executed by the at least one
2 processor, cause the playback device to perform functions comprising:
3 in response to receiving the command, retrieving the audio content from
4 the audio source via the communication path that includes the secure
5 WLAN” (claims 11, 19);

- 6 • “The computing device of claim 1, further comprising...” and “cause the
7 computing device to perform functions comprising” (claim 13); and
- 8 • “a command to form a group with at least a first playback device of a
9 networked audio system such that the playback device is configured to
10 play back audio content in synchrony with at least the first playback
11 device” (claim 13).

12 **D. Invalidity Contentions Pursuant to S.P.R. 2.5.4 – 35 U.S.C. § 101**

13 In addition to the preceding invalidity contentions, Google further contends
14 that the Asserted Claims are drawn to subject matter that is not patentable under 35
15 U.S.C. § 101. To be patentable subject matter under § 101, a claim must be directed
16 to one of four eligible subject matter categories: “new and useful process, machine,
17 manufacture, or composition of matter.” 35 U.S.C. § 101. “Claims that fall within
18 one of the four subject matter categories may nevertheless be ineligible if they
19 encompass laws of nature, physical phenomena, or abstract ideas.” *Diamond v.*
20 *Chakrabarty*, 447 U.S. 303, 309 (1980). The Supreme Court established a two-step
21 test for deciding the subject matter eligibility of claims under § 101. *Alice Corp. Pty.*
22 *Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). First, the claims must be
23 analyzed to determine whether they are drawn to one of the statutory exceptions. *Id.*
24 Second, the elements of the claims must be viewed both individually and as an
25 ordered combination to see if there is an “inventive concept.” *Id.*

26 **1. ’949 Patent**

27 The asserted claims of the ’949 Patent are invalid under 35 U.S.C. § 101
28 because they are directed to non-patentable subject matter. The asserted claims are

1 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
2 lack utility and the alleged invention claimed does not constitute patentable subject
3 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
4 *Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
5 no elements of the asserted claims that transform the nature of the claim into a
6 patent-eligible application of the abstract idea or provide the necessary inventive
7 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
8 merely involve well-understood, routine, conventional activity and implementations
9 previously used by those in the field at the time of the alleged inventions of the
10 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
11 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
12 entail nothing of patentable significance, and they are therefore invalid for failure to
13 meet the requirements of 35 U.S.C. § 101.

14 Regarding *Alice* step one, the asserted claims are directed to the abstract idea
15 of a user interface for grouping together playback devices and adjusting their volume.
16 The alleged invention implements these abstract concepts using conventional
17 hardware and software, such as a controller with a user interface and a local area
18 network. The fact that the claimed invention describes a controller programmed with
19 software to perform the grouping and volume adjustment steps does not render the
20 claims non-abstract. It simply automates abstract processes that were performed
21 manually in existing audio systems.

22 Regarding *Alice* step two, whether in an individual limitation or the ordered
23 combination of the limitations, the asserted claims do not contain an “inventive
24 concept” that transforms the abstract idea into patent eligible claims. It is well-settled
25 that mere recitation of concrete, tangible components is insufficient to confer patent
26 eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent Litig.*, 823
27 F.3d 607, 613 (Fed. Cir. 2016). For example, claim 8 is directed to program
28 instructions to perform the steps of grouping and volume adjustments. Mere storage

1 of these programs in a generic non-transitory storage medium does not render the
2 claim patent eligible.

3 The ordered combination of claims does not contain inventive concepts either.
4 Furthermore, the Supreme Court has explained that “simply appending conventional
5 steps, specified at a high level of generality, to . . . abstract ideas cannot make those
6 . . . ideas patentable.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
7 Ct. 1289, 1300 (2012). Here, the alleged invention does not provide an
8 improvement to existing hardware or software. It simply uses conventional
9 hardware and software components to implement the abstract concepts of grouping
10 and volume adjustment. The generic hardware and software recited in the claims—
11 e.g., a controller, user interface, and local area network—are not used in any
12 specialized way or improved by virtue of the claimed invention. As such, the claims
13 do not recite an “inventive concept” to overcome the abstract idea. *See*
14 *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341 (Fed. Cir. 2019).

15 **2. ’014 Patent**

16 The asserted claims of the ’014 Patent are invalid under 35 U.S.C. § 101
17 because they are directed to non-patentable subject matter. The asserted claims are
18 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
19 lack utility and the alleged invention claimed does not constitute patentable subject
20 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
21 *Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
22 no elements of the asserted claims that transform the nature of the claim into a
23 patent-eligible application of the abstract idea or provide the necessary inventive
24 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
25 merely involve well-understood, routine, conventional activity and implementations
26 previously used by those in the field at the time of the alleged inventions of the
27 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
28 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims

1 entail nothing of patentable significance, and they are therefore invalid for failure to
2 meet the requirements of 35 U.S.C. § 101.

3 Regarding *Alice* step one, claim the asserted claims is are directed towards the
4 abstract of idea of a user interface for grouping together playback devices and
5 adjusting their volume. The alleged invention implements these abstract concepts
6 using conventional hardware and software, such as a controller with a user interface
7 and a local area network. The fact that the claimed invention describes a controller
8 programmed with software to perform the grouping and volume adjustment steps
9 does not render the claims non-abstract. It simply automates abstract processes that
10 were performed manually in existing audio systems.

11 Regarding *Alice* step two, whether in an individual limitation or the ordered
12 combination of the limitations, the asserted claims do not contain an “inventive
13 concept” that transforms the abstract idea into patent eligible claims. It is well-
14 settled that mere recitation of concrete, tangible components is insufficient to confer
15 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
16 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). For example, claim 35 is directed to an
17 application module to perform the steps of grouping. Mere storage of this
18 application module in a generic memory does not render the claim patent eligible.
19 The ordered combination of claims does not contain inventive concepts either.
20 Furthermore, the Supreme Court has explained that “simply appending conventional
21 steps, specified at a high level of generality, to . . . abstract ideas cannot make those
22 . . . ideas patentable.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
23 Ct. 1289, 1300 (2012). Here, the alleged invention does not provide an
24 improvement to existing hardware or software. It simply uses conventional
25 hardware and software components to implement the abstract concepts of grouping
26 and volume adjustment. The generic hardware and software recited in the claims—
27 e.g., a controller, user interface, and local area network—are not used in any
28 specialized way or improved by virtue of the claimed invention. As such, the claims

1 do not recite an “inventive concept” to overcome the abstract idea. *See*
2 *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341 (Fed. Cir. 2019).

3 **3. ’959 Patent**

4 The asserted claims of the ’959 Patent are invalid under 35 U.S.C. § 101
5 because they are directed to non-patentable subject matter. The asserted claims are
6 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
7 lack utility and the alleged invention claimed does not constitute patentable subject
8 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
9 *Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
10 no elements of the asserted claims that transform the nature of the claim into a
11 patent-eligible application of the abstract idea or provide the necessary inventive
12 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
13 merely involve well-understood, routine, conventional activity and implementations
14 previously used by those in the field at the time of the alleged inventions of the
15 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
16 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
17 entail nothing of patentable significance, and they are therefore invalid for failure to
18 meet the requirements of 35 U.S.C. § 101.

19 Regarding *Alice* step one, the asserted claims are directed towards the abstract
20 of idea of pairing two audio output devices and adjusting the equalization of audio
21 data. The alleged invention implements these abstract concepts using conventional
22 hardware and software, such as a network interface, speaker drivers, processors, and
23 memory. The fact that the claimed invention describes logic in a playback device to
24 determine whether it is in a paired arrangement and perform equalization of audio
25 data does not render the claims non-abstract. It simply automates abstract processes
26 that were performed manually in existing audio systems.

27 Regarding *Alice* step two, whether in an individual limitation or the ordered
28 combination of the limitations, the asserted claims do not contain an “inventive

1 concept” that transforms the abstract idea into patent eligible claims. It is well-
2 settled that mere recitation of concrete, tangible components is insufficient to confer
3 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
4 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). For example, claim 29 is directed to a
5 signal to perform the steps of pairing. Merely transmitting this signal does not
6 render the claim patent eligible.

7 The ordered combination of claims does not contain inventive concepts either.
8 Furthermore, the Supreme Court has explained that “simply appending conventional
9 steps, specified at a high level of generality, to . . . abstract ideas cannot make those
10 . . . ideas patentable.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
11 Ct. 1289, 1300 (2012). Here, the alleged invention does not provide an
12 improvement to existing hardware or software. It simply uses conventional
13 hardware and software components to implement the abstract concepts of pairing
14 and equalization. The generic hardware and software recited in the claims—e.g., a
15 network interface, speaker drivers, processors, and memory—are not used in any
16 specialized way or improved by virtue of the claimed invention. As such, the claims
17 are directed to the abstract idea of wireless transmission and output of audio data
18 and do not recite an “inventive concept” to overcome the abstract idea. *See, e.g.*,
19 *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341 (Fed. Cir. 2019).

20 4. ’025 Patent

21 The asserted claims of the ’025 Patent are invalid under 35 U.S.C. § 101
22 because they are directed to non-patentable subject matter. The asserted claims are
23 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
24 lack utility and the alleged invention claimed does not constitute patentable subject
25 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
26 *Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
27 no elements of the asserted claims that transform the nature of the claim into a
28 patent-eligible application of the abstract idea or provide the necessary inventive

1 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
2 merely involve well-understood, routine, conventional activity and implementations
3 previously used by those in the field at the time of the alleged inventions of the
4 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
5 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
6 entail nothing of patentable significance, and they are therefore invalid for failure to
7 meet the requirements of 35 U.S.C. § 101.

8 Regarding *Alice* step one, the asserted claims are directed towards the abstract
9 of idea of pairing two audio output devices and adjusting the equalization of audio
10 data. The alleged invention implements these abstract concepts using conventional
11 hardware and software, such as a network interface, speaker drivers, processors, and
12 memory. The fact that the claimed invention describes logic in a playback device to
13 determine whether it is in a paired arrangement and process audio data does not
14 render the claims non-abstract.

15 Regarding *Alice* step two, whether in an individual limitation or the ordered
16 combination of the limitations, the asserted claims do not contain an “inventive
17 concept” that transforms the abstract idea into patent eligible claims. It is well-
18 settled that mere recitation of concrete, tangible components is insufficient to confer
19 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
20 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). For example, claim 18 is directed to
21 program instructions to perform the steps of determining whether it is in a paired
22 arrangement and process audio data. Merely storing these programs in a computer
23 readable memory does not render the claim patent eligible.

24 The ordered combination of claims does not contain inventive concepts either.
25 Furthermore, the Supreme Court has explained that “simply appending conventional
26 steps, specified at a high level of generality, to . . . abstract ideas cannot make those
27 . . . ideas patentable.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
28 Ct. 1289, 1300 (2012). Here, the alleged invention does not provide an

1 improvement to existing hardware or software. It simply uses conventional
2 hardware and software components to implement the abstract concepts of pairing
3 and equalization. The generic hardware and software recited in the claims—e.g., a
4 network interface, speaker drivers, processors, and memory—are not used in any
5 specialized way or improved by virtue of the claimed invention. As such, the claims
6 are directed to the abstract idea of wireless transmission and output of audio data
7 and do not recite an “inventive concept” to overcome the abstract idea. *See, e.g.,*
8 *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341 (Fed. Cir. 2019).

9 5. ’953 Patent

10 The asserted claims of the ’953 Patent are invalid under 35 U.S.C. § 101
11 because they are directed to non-patentable subject matter. The asserted claims are
12 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
13 lack utility and the alleged invention claimed does not constitute patentable subject
14 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
15 *Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
16 no elements of the asserted claims that transform the nature of the claim into a
17 patent-eligible application of the abstract idea or provide the necessary inventive
18 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
19 merely involve well-understood, routine, conventional activity and implementations
20 previously used by those in the field at the time of the alleged inventions of the
21 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
22 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
23 entail nothing of patentable significance, and they are therefore invalid for failure to
24 meet the requirements of 35 U.S.C. § 101.

25 Regarding *Alice* step one, asserted claims 7, 8, 12-14, 18, 22-25, and 28-30
26 are directed towards the abstract of idea of synchronizing a group of zone players
27 (*i.e.*, speakers). This abstract idea is confirmed by Sonos’ reliance on the same
28 evidence alleging infringement for accused products. Sonos does not identify any

1 specific way of syncing speakers and instead merely identifies the fact that the
2 speakers are synchronized to allege infringement of the claims.

3 The specification confirms that the claims are directed to the abstract idea of
4 synchronizing a group of zone players. The specification states that “the present
5 invention relates generally to the field of digital data processing devices, and more
6 particularly to systems and methods for synchronizing operations among a plurality
7 of independently-clocked digital data processing devices.” ’953 patent at 1:30-34. It
8 also states “the invention relates to the field of arrangements that synchronize output
9 generated by a number of output generators, including audio output, video output,
10 combinations of audio and video, as well as other types of output as will be
11 appreciated by those skilled in the art, provide by a common channel.” *Id.* at 1:41-
12 46. This focus confirms that the focus of the alleged invention was merely
13 synchronizing independent devices that have independent clocks. *See ChargePoint,*
14 *Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765-66 (Fed. Cir. 2019) (explaining that
15 the step one inquiry “as looking at the ‘focus’ of the claims” and the specification
16 may illuminate the true focus.”).

17 As recited in the claims, the concept of synchronizing a group of zone players
18 with independent clocks without more is an abstract idea. For example, independent
19 claim 7 attempts to add additional limitations such as communicating over a LAN, a
20 processor and a synchrony group. These limitations all relate to the main portion of
21 the claim which describes synchronizing the electronic devices.

22 Regarding *Alice* step two, whether in an individual limitation or the ordered
23 combination of the limitations, the asserted claims do not contain an “inventive
24 concept” that transforms the abstract idea into patent eligible claims. It is well-
25 settled that mere recitation of concrete, tangible components is insufficient to confer
26 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
27 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). The ordered combination of claims does
28 not contain inventive concepts either. Furthermore, the Supreme Court has

1 explained that “simply appending conventional steps, specified at a high level of
2 generality, to . . . abstract ideas cannot make those . . . ideas patentable.” *Mayo*
3 *Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300 (2012). The
4 issues apply to asserted claims 7, 8, 12-14, 18, 22-25, and 28-30. Here, for example,
5 all of the limitations in claim 7 merely instruct the practitioner how to implement
6 synchronization with two devices. Moreover, the hardware limitations (LAN,
7 Processor, and memory) do not rectify the issues with the claims. These limitations
8 are well known and conventional and routinely appear in prior art, such as that
9 identified by Google. Finally, the transfer of information between zone players for
10 synchronization is not an inventive concept—such limitations merely involve the
11 transfer of information regarding a zone player’s clock and the audio to be played. It
12 is well known and conventional that, to sync multiple speakers, information needs to
13 be shared amongst those speakers. The dependent claims also add nothing but
14 conventional additional limitations. For example, claims 12-14 merely describe
15 content that is typically exchanged between the zone players, claim 22 describes
16 changing the volume of the players, and claims 23-24 describe operations of devices
17 as slaves and masters to the group.

18 **6. ’258 Patent**

19 The asserted claims of the ’258 Patent are invalid under 35 U.S.C. § 101
20 because they are directed to non-patentable subject matter. The asserted claims are
21 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
22 lack utility and the alleged invention claimed does not constitute patentable subject
23 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
24 *Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
25 no elements of the asserted claims that transform the nature of the claim into a
26 patent-eligible application of the abstract idea or provide the necessary inventive
27 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
28 merely involve well-understood, routine, conventional activity and implementations

1 previously used by those in the field at the time of the alleged inventions of the
2 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
3 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
4 entail nothing of patentable significance, and they are therefore invalid for failure to
5 meet the requirements of 35 U.S.C. § 101.

6 Regarding *Alice* step one, asserted claims 17, 21-24, and 26 are directed to the
7 patent-ineligible abstract idea of synchronizing a group of zone players (*i.e.*,
8 speakers) with independent clocks. This abstract idea is confirmed by Sonos’
9 reliance on the same evidence alleging infringement for accused products. Sonos
10 does not identify any specific way of syncing speakers and instead merely identifies
11 the fact that the speakers are synchronized to allege infringement of the claims.

12 The specification confirms that the claims are directed to the abstract idea of
13 synchronizing a group of zone players. The specification states that “the present
14 invention relates generally to the field of digital data processing devices, and more
15 particularly to systems and methods for synchronizing operations among a plurality
16 of independently-clocked digital data processing devices.” ’258 patent at 1:33-36. It
17 also states “the invention relates to the field of arrangements that synchronize output
18 generated by a number of output generators, including audio output, video output,
19 combinations of audio and video, as well as other types of output as will be
20 appreciated by those skilled in the art, provide by a common channel.” *Id.* at 1:44-
21 49. This focus confirms that the focus of the alleged invention was merely
22 synchronizing independent devices that have independent clocks. *See ChargePoint,*
23 *Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765-66 (Fed. Cir. 2019) (explaining that
24 the step one inquiry “as looking at the ‘focus’ of the claims” and the specification
25 may illuminate the true focus.”)

26 As recited in the claims, the concept of synchronizing a group of zone players
27 with independent clocks without more is an abstract idea. For example, independent
28 claim 17 attempts to add additional limitations such as communicating over a LAN,

1 and joining a group of devices that are synchronized. These limitations all relate to
2 the main portion of the claim which describes synchronizing the electronic devices.

3 Regarding *Alice* step two, whether in an individual limitation or the ordered
4 combination of the limitations, the asserted claims do not contain an “inventive
5 concept” that transforms the abstract idea into patent eligible claims. It is well-
6 settled that mere recitation of concrete, tangible components is insufficient to confer
7 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
8 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). The ordered combination of claims does
9 not contain inventive concepts either. Furthermore, the Supreme Court has
10 explained that “simply appending conventional steps, specified at a high level of
11 generality, to . . . abstract ideas cannot make those . . . ideas patentable.” *Mayo*
12 *Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300 (2012). The
13 issues apply to asserted claims 17, 21-24, and 26. Here, for example, all of the
14 limitations in claim 17 merely instruct the practitioner how to implement
15 synchronization with two devices – both of which have their own independent
16 clocks. Moreover, the hardware limitations (LAN, Processor, and memory) do not
17 rectify the issues with the claims. These limitations are well known and
18 conventional and routinely appear in prior art, such as that identified by Google.
19 Finally, the transfer of information between zone players for synchronization is not
20 an inventive concept—such limitations merely involve the transfer of information
21 regarding a zone player’s clock and the audio to be played. It is well known and
22 conventional that, to sync multiple speakers, information needs to be shared
23 amongst those speakers. The dependent claims also add nothing but conventional
24 additional limitations. For example, claims 21-23 merely identify the zone players
25 as master and slave (something done in electronics long before the alleged invention
26 date), claim 24 relates to playing the audio that is to be synchronized, and claim 26
27 describes the known process of playing the audio in sync with the timing
28 information transmitted.

7. '715 Patent

The asserted claims of the '715 Patent are invalid under 35 U.S.C. § 101 because they are directed to non-patentable subject matter. The asserted claims are invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims lack utility and the alleged invention claimed does not constitute patentable subject matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are no elements of the asserted claims that transform the nature of the claim into a patent-eligible application of the abstract idea or provide the necessary inventive concept. *See id.* at 2357. In addition, all of the elements of the asserted claims merely involve well-understood, routine, conventional activity and implementations previously used by those in the field at the time of the alleged inventions of the Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims entail nothing of patentable significance, and they are therefore invalid for failure to meet the requirements of 35 U.S.C. § 101.

Regarding *Alice* step one, asserted claims 7, 9, 11, 13, 15, and 17 are directed towards the abstract of idea of synchronizing a group of zone players (*i.e.*, speakers). This abstract idea is confirmed by Sonos' reliance on the same evidence alleging infringement for accused products. Sonos does not identify any specific way of syncing speakers and instead merely identifies the fact that the speakers are synchronized to allege infringement of the claims.

The specification confirms that the claims are directed to the abstract idea of synchronizing a group of zone players. The specification states that "the present invention relates generally to the field of digital data processing devices, and more particularly to systems and methods for synchronizing operations among a plurality of independently-clocked digital data processing devices." '715 patent at 1:26-30. It also states "the invention relates to the field of arrangements that synchronize output

1 generated by a number of output generators, including audio output, video output,
2 combinations of audio and video, as well as other types of output as will be
3 appreciated by those skilled in the art, provided by a common channel.” *Id.* at 1:37-
4 42. This focus confirms that the focus of the alleged invention was merely
5 synchronizing independent devices that have independent clocks. *See ChargePoint,*
6 *Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765-66 (Fed. Cir. 2019) (explaining that
7 the step one inquiry “as looking at the ‘focus’ of the claims” and the specification
8 may illuminate the true focus.”).

9 As recited in the claims, the concept of synchronizing a group of zone players
10 with independent clocks without more is an abstract idea. For example, independent
11 claim 7 attempts to add additional limitations such as a processor and a synchrony
12 group. These limitations all relate to the main portion of the claim which describes
13 synchronizing the electronic devices.

14 Regarding *Alice* step two, whether in an individual limitation or the ordered
15 combination of the limitations, the asserted claims do not contain an “inventive
16 concept” that transforms the abstract idea into patent eligible claims. It is well-
17 settled that mere recitation of concrete, tangible components is insufficient to confer
18 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
19 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). The ordered combination of claims does
20 not contain inventive concepts either. Furthermore, the Supreme Court has
21 explained that “simply appending conventional steps, specified at a high level of
22 generality, to . . . abstract ideas cannot make those . . . ideas patentable.” *Mayo*
23 *Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300 (2012). The
24 issues apply to asserted claims 7, 9, 11, 13, 15, and 17. Here, for example, all of the
25 limitations in claim 7 merely instruct the practitioner how to implement
26 synchronization with two devices. Moreover, the hardware limitations (*e.g.*, “one or
27 more processors” and “tangible, non-transitory computer-readable media”) do not
28 rectify the issues with the claims. These limitations are well known and

1 conventional and routinely appear in prior art, such as that identified by Google.
2 Finally, the transfer of information between zone players for synchronization is not
3 an inventive concept—such limitations merely involve the transfer of information
4 regarding a zone player’s clock and the audio to be played. It is well known and
5 conventional that, to sync multiple speakers, information needs to be shared
6 amongst those speakers. The dependent claims also add nothing but conventional
7 additional limitations.

8 **8. ’001 Patent**

9 The asserted claims of the ’001 Patent are invalid under 35 U.S.C. § 101
10 because they are directed to non-patentable subject matter. The asserted claims are
11 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
12 lack utility and the alleged invention claimed does not constitute patentable subject
13 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
14 *Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
15 no elements of the asserted claims that transform the nature of the claim into a
16 patent-eligible application of the abstract idea or provide the necessary inventive
17 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
18 merely involve well-understood, routine, conventional activity and implementations
19 previously used by those in the field at the time of the alleged inventions of the
20 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
21 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
22 entail nothing of patentable significance, and they are therefore invalid for failure to
23 meet the requirements of 35 U.S.C. § 101.

24 Regarding *Alice* step one, asserted claims 12-14, 17-25, and 28-33 are
25 directed towards the abstract of idea of synchronizing a group of zone players (*i.e.*,
26 speakers). This abstract idea is confirmed by Sonos’ reliance on the same evidence
27 alleging infringement for accused products. Sonos does not identify any specific
28

1 way of syncing speakers and instead merely identifies the fact that the speakers are
2 synchronized to allege infringement of the claims.

3 The specification confirms that the claims are directed to the abstract idea of
4 synchronizing a group of zone players. The specification states that “the present
5 invention relates generally to the field of digital data processing devices, and more
6 particularly to systems and methods for synchronizing operations among a plurality
7 of independently-clocked digital data processing devices.” ’001 patent at 1:25-29. It
8 also states “the invention relates to the field of arrangements that synchronize output
9 generated by a number of output generators, including audio output, video output,
10 combinations of audio and video, as well as other types of output as will be
11 appreciated by those skilled in the art, provided by a common channel.” *Id.* at 1:36-
12 41. This focus confirms that the focus of the alleged invention was merely
13 synchronizing independent devices that have independent clocks. *See ChargePoint,*
14 *Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765-66 (Fed. Cir. 2019) (explaining that
15 the step one inquiry “as looking at the ‘focus’ of the claims” and the specification
16 may illuminate the true focus.”).

17 As recited in the claims, the concept of synchronizing a group of zone players
18 with independent clocks without more is an abstract idea. For example, independent
19 claim 12 attempts to add additional limitations such as a processor and a synchrony
20 group. These limitations all relate to the main portion of the claim which describes
21 synchronizing the electronic devices.

22 Regarding *Alice* step two, whether in an individual limitation or the ordered
23 combination of the limitations, the asserted claims do not contain an “inventive
24 concept” that transforms the abstract idea into patent eligible claims. It is well-
25 settled that mere recitation of concrete, tangible components is insufficient to confer
26 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
27 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). The ordered combination of claims does
28 not contain inventive concepts either. Furthermore, the Supreme Court has

1 explained that “simply appending conventional steps, specified at a high level of
2 generality, to . . . abstract ideas cannot make those . . . ideas patentable.” *Mayo*
3 *Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300 (2012). The
4 issues apply to asserted claims 12-14, 17-25, and 28-33. Here, for example, all of
5 the limitations in claim 12 merely instruct the practitioner how to implement
6 synchronization with two devices. Moreover, the hardware limitations (*e.g.*, “at least
7 one processor” and “a tangible, non-transitory computer-readable medium”) do not
8 rectify the issues with the claims. These limitations are well known and
9 conventional and routinely appear in prior art, such as that identified by Google.
10 Finally, the transfer of information between zone players for synchronization is not
11 an inventive concept—such limitations merely involve the transfer of information
12 regarding a zone player’s clock and the audio to be played. It is well known and
13 conventional that, to sync multiple speakers, information needs to be shared
14 amongst those speakers. The dependent claims also add nothing but conventional
15 additional limitations.

16 **9. ’896 Patent**

17 The asserted claims of the ’896 Patent are invalid under 35 U.S.C. § 101
18 because they are directed to non-patentable subject matter. The asserted claims are
19 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
20 lack utility and the alleged invention claimed does not constitute patentable subject
21 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
22 *Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
23 no elements of the asserted claims that transform the nature of the claim into a
24 patent-eligible application of the abstract idea or provide the necessary inventive
25 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
26 merely involve well-understood, routine, conventional activity and implementations
27 previously used by those in the field at the time of the alleged inventions of the
28 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.

1 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
2 entail nothing of patentable significance, and they are therefore invalid for failure to
3 meet the requirements of 35 U.S.C. § 101.

4 Regarding *Alice* step one, the '896 patent claims are directed towards the
5 abstract of idea of using an initial communication path to provide network
6 configuration parameters to another device. This is just receiving and sending data
7 – an abstract idea. In addition, the concept does not improve any technology; rather,
8 it is just allegedly a convenient way to provide network configuration parameters.
9 Moreover, even this concept predates and is independent of the specific
10 technological environment recited in the claims (e.g., connecting a playback device
11 to a secure WLAN), since the same basic concept is applicable to any type of device
12 (e.g., printers) and network (e.g., non-secure WLAN or any other network). In fact,
13 the basic idea even applies to users exchanging and then manually entering network
14 configuration parameters, such as the user of a first device reading such parameters
15 to a user of a second device. Finally, Sonos' attempt to claim the basic idea of using
16 an initial communication path, especially when coupled with Sonos' overly broad
17 claim interpretations and attempted application of DOE, reflects an effort to preempt
18 the entire field of connecting devices to the Internet.

19 Regarding *Alice* step two, whether in an individual limitation or the ordered
20 combination of the limitations, the asserted claims do not contain an “inventive
21 concept” that transforms the abstract idea into patent eligible claims. It is well-
22 settled that mere recitation of concrete, tangible components is insufficient to confer
23 patent eligibility to an otherwise abstract idea. *In re TLI Commc'ns LLC Patent*
24 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). For example, the '896 patent claims
25 recite program instructions to perform the steps of network configuration and
26 merely claiming a generic, non-transitory storage medium that stores those program
27 instructions is insufficient to confer patent eligibility of the abstract idea.

1 The ordered combination of claims does not contain inventive concepts either.
2 Furthermore, the Supreme Court has explained that “simply appending conventional
3 steps, specified at a high level of generality, to . . . abstract ideas cannot make those
4 . . . ideas patentable.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
5 Ct. 1289, 1300 (2012). Here, establishing an initial communication path and
6 exchanging messages are conventional steps in network communication and do not
7 contain inventive concepts.

8 **10. '883 Patent**

9 The asserted claims of the '883 Patent are invalid under 35 U.S.C. § 101
10 because they are directed to non-patentable subject matter. The asserted claims are
11 invalid for failure to meet the requirements of 35 U.S.C. § 101 because the claims
12 lack utility and the alleged invention claimed does not constitute patentable subject
13 matter. The asserted claims are directed to a patent-ineligible concepts. *See Alice*
14 *Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). Furthermore, there are
15 no elements of the asserted claims that transform the nature of the claim into a
16 patent-eligible application of the abstract idea or provide the necessary inventive
17 concept. *See id.* at 2357. In addition, all of the elements of the asserted claims
18 merely involve well-understood, routine, conventional activity and implementations
19 previously used by those in the field at the time of the alleged inventions of the
20 Asserted Patents. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
21 Ct. 1289, 1294 (2012). The alleged inventions described in the asserted claims
22 entail nothing of patentable significance, and they are therefore invalid for failure to
23 meet the requirements of 35 U.S.C. § 101.

24 Regarding *Alice* step one, the '883 patent claims are directed towards the
25 abstract of idea of using an initial communication path to provide network
26 configuration parameters to another device. This is just receiving and sending data
27 – an abstract idea. In addition, the concept does not improve any technology; rather,
28 it is just allegedly a convenient way to provide network configuration parameters.

1 Moreover, even this concept predates and is independent of the specific
2 technological environment recited in the claims (e.g., connecting a playback device
3 to a secure WLAN), since the same basic concept is applicable to any type of device
4 (e.g., printers) and network (e.g., non-secure WLAN or any other network). In fact,
5 the basic idea even applies to users exchanging and then manually entering network
6 configuration parameters, such as the user of a first device reading such parameters
7 to a user of a second device. Finally, Sonos’ attempt to claim the basic idea of using
8 an initial communication path, especially when coupled with Sonos’ overly broad
9 claim interpretations and attempted application of DOE, reflects an effort to preempt
10 the entire field of connecting devices to the Internet.

11 Regarding *Alice* step two, whether in an individual limitation or the ordered
12 combination of the limitations, the asserted claims do not contain an “inventive
13 concept” that transforms the abstract idea into patent eligible claims. It is well-
14 settled that mere recitation of concrete, tangible components is insufficient to confer
15 patent eligibility to an otherwise abstract idea. *In re TLI Commc’ns LLC Patent*
16 *Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016). For example, the ’883 patent claims
17 recite program instructions to perform the steps of network configuration and
18 merely claiming a generic, non-transitory storage medium that stores those program
19 instructions is insufficient to confer patent eligibility of the abstract idea.

20 The ordered combination of claims does not contain inventive concepts either.
21 Furthermore, the Supreme Court has explained that “simply appending conventional
22 steps, specified at a high level of generality, to . . . abstract ideas cannot make those
23 . . . ideas patentable.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.
24 Ct. 1289, 1300 (2012). Here, establishing an initial communication path and
25 exchanging messages are conventional steps in network communication and do not
26 contain inventive concepts.

27
28

1 **VIII. ADDITIONAL INVALIDITY/UNENFORCEABILITY CONTENTIONS**

2 In addition to the preceding contentions, Google further contends that the
3 Asserted Claims are invalid and/or unenforceable for the reasons set forth below.

4 **A. Inequitable Conduct**

5 The Asserted Patents are unenforceable due to inequitable conduct committed
6 by the inventors, attorneys, and/or applicants during prosecution. See Initial
7 Determination (public version) in 337-TA-1191 ITC investigation (noting
8 allegations of same).

9 **B. Lack of Inventorship Under 35.U.S.C. § 102**

10 The Asserted Claims of the Asserted Patents are unenforceable due to lack of
11 inventorship under 35 U.S.C. § 102. See Initial Determination (public version) in
12 337-TA-1191 ITC investigation (noting allegations of same).

13 **1. '258 Patent**

14 The asserted claims of the '258 patent are invalid under 35 U.S.C. § 102(f)
15 because Nicholas Millington did not invent the subject matter sought to be patented.
16 Section 102 states that "A person shall be entitled to a patent unless . . . (f) he did
17 not himself invent the subject matter sought to be patented." In this case, the
18 alleged inventor, Mr. Millington got the idea for the content of the claims from
19 someone else, who should have been the true inventor, if the patent would have even
20 been filed.

21 Nicholas A.J. Millington is the sole named inventor of the '258 patent. On
22 information and belief, Mr. Millington worked at Microsoft from June 1998 to April
23 2003. <https://www.linkedin.com/in/nickmillington/>. On information and belief, in or
24 near February 2003, another employee of Sonos, Andrew Schulert, who also
25 previously worked at Microsoft, contacted Mr. Millington about joining Sonos.
26 <https://www.wired.com/story/sonos-nick-millington-exclusive-interview/>.

27 On July 28, 2003, after Mr. Millington left Microsoft, Sonos filed
28 a provisional application for the '258 patent allegedly disclosing (at least in part)

1 Sonos' speaker synchronization solution. Tellingly, Microsoft was working on its
2 own speaker synchronization solution during this time, filing applications for at least
3 U.S. Pat. App. Pub. No. 2002/015003 ("Gray") on April 17, 2001; U.S. Pat. No.
4 7,295,548 ("Blank I") on November 27, 2002; U.S. Pat. App. Pub. No.
5 2004/0252400 ("Blank II") on July 13, 2003. Gray, Blank I, and Blank II, alone or
6 in combination, disclose or render obvious the claims of the asserted patent. Thus,
7 upon information and belief, it appears that Mr. Millington copied at least part of the
8 subject matter claimed in the '258 patent from other Microsoft employees and/or
9 conceived at least part of the claimed inventions during his time at Microsoft. In
10 any event, Mr. Millington is not the proper inventor of the '258 patent, and therefore
11 it is invalid.

12 2. '953 Patent

13 The asserted claims of the '953 Patent are invalid under 35 U.S.C. § 102(f)
14 because Nicholas Millington did not invent the subject matter sought to be patented.
15 Section 102 states that "A person shall be entitled to a patent unless . . . (f) he did
16 not himself invent the subject matter sought to be patented." In this case, the
17 alleged inventor, Mr. Millington clearly got the idea for the content of the claims
18 from someone else, who should have been the true inventor, if the patent would
19 have even been filed.

20 Nicholas A.J. Millington is the sole named inventor of the '953 patent. On
21 information and belief, Mr. Millington worked at Microsoft from June 1998 to April
22 2003. <https://www.linkedin.com/in/nickmillington/>. On information and belief, in or
23 near February 2003, another employee of Sonos, Andrew Schulert, who also
24 previously worked at Microsoft, contacted Mr. Millington about joining Sonos.
25 <https://www.wired.com/story/sonos-nick-millington-exclusive-interview/>.

26 On July 28, 2003, after Mr. Millington left Microsoft, Sonos filed
27 a provisional application for the '258 patent allegedly disclosing (at least in part)
28 Sonos' speaker synchronization solution. Tellingly, Microsoft was working on its

1 own speaker synchronization solution during this time, filing applications for at least
2 U.S. Pat. App. Pub. No. 2002/015003 (“Gray”) on April 17, 2001; U.S. Pat. No.
3 7,295,548 (“Blank I”) on November 27, 2002; U.S. Pat. App. Pub. No.
4 2004/0252400 (“Blank II”) on July 13, 2003. Gray, Blank I, and Blank II, alone or
5 in combination, disclose or render obvious the claims of the asserted patent. Thus,
6 upon information and belief, it appears that Mr. Millington copied at least part of the
7 subject matter claimed in the ’953 patent from other Microsoft employees and/or
8 conceived at least part of the claimed inventions during his time at Microsoft. In
9 any event, Mr. Millington is not the proper inventor of the ’953 patent, and therefore
10 it is invalid.

11 **3. ’959 Patent**

12 The asserted claims of the ’959 patent are invalid under 35 U.S.C. § 102(f)
13 because the named inventors did not invent the subject matter sought to be patented.
14 See Initial Determination (public version) in 337-TA-1191 ITC investigation (noting
15 allegations of same). Google may seek further discovery on this topic.

16 **4. ’025 Patent**

17 On belief, for the similar reasons as the ’959 patent, the asserted claims of the
18 ’025 patent are invalid under 35 U.S.C. § 102(f). Google may seek further
19 discovery on this topic.

20 **5. ’949 Patent**

21 The asserted claims of the ’949 patent are invalid under 35 U.S.C. § 102(f)
22 because the named inventors did not invent the subject matter sought to be patented.
23 See Initial Determination (public version) in 337-TA-1191 ITC investigation (noting
24 allegations of same). Google may seek further discovery on this topic.

25 **6. ’014 Patent**

26 On belief, for the similar reasons as the ’949 patent, the asserted claims of the
27 ’014 patent are invalid under 35 U.S.C. § 102(f). Google may seek further
28 discovery on this topic.

1 **7. '896 Patent**

2 On belief, for the similar reasons as the '949 patent, the asserted claims of the
3 '014 patent are invalid under 35 U.S.C. § 102(f). See Initial Determination (public
4 version) in 337-TA-1191 ITC investigation (noting allegations of same). Google
5 may seek further discovery on this topic.

6 **8. '883 Patent**

7 On belief, for the similar reasons as the '949 patent, the asserted claims of the
8 '014 patent are invalid under 35 U.S.C. § 102(f). See Initial Determination (public
9 version) in 337-TA-1191 ITC investigation (noting allegations of same). Google
10 may seek further discovery on this topic.

11 **C. Prosecution Laches**

12 **1. '896 and '883 Patents**

13 The '896 and the '883 Patents are unenforceable under the doctrine of
14 prosecution laches, which bars enforcement of patents where the applicant
15 unreasonably and inexcusably delays prosecution, resulting in prejudice to others.
16 *Symbol Technologies, Inc. v. Lemelson Medical, Education & Research Foundation,*
17 *LP*, 422 F.3d 1378 (Fed. Cir. 2005), 1385-86.

18 Sonos engaged in a prolonged prosecution strategy for obtaining the '896 and
19 the '883 Patents, characterized by repeated continuation filings and deferrals,
20 effectively extending the pendency of the application well beyond the statutory
21 norm. Sonos initially filed its provisional application No. 60/577,284 (the '284
22 Provisional Application”) on June 5, 2004. On June 6, 2005, Sonos filed its first
23 application No. 11/147,116 (the “'116 Application”) in this patent family, which
24 resulted in issued patent No. 8,326,951 (the “'951 Patent”). Sonos subsequently
25 filed three continuations of the '116 Application on September 14, 2012 (application
26 No. 13/618,829), September 15, 2014 (application 14/486,667), and April 5, 2016
27 (application No. 15/091,113) which eventually resulted in issued patent Nos.
28

1 8,868,698 (the “’698 Patent”), 9,866,447 (the “’447 Patent”), and 10,979,310 (the
2 “’310 Patent”), respectively.

3 The ’896 and the ’883 Patent applications were filed concurrently on March
4 11, 2019 as continuations of the application that led to ’310 Patent. The original
5 claims of the ’896 recited “secure wireless local area network (WLAN)” or “secure
6 WLAN.” *See* ’896 File History. In response to a non-final office action, Sonos
7 appended the claims to “secure wireless local area network (WLAN) that is defined
8 by an access point” and “the secure WLAN that is defined by the access point.” *Id.*
9 Sonos also amended the claim term “the initial communication path with the
10 computing device is outside of the secure WLAN” to “the initial communication
11 path with the computing device does not traverse the access point.” *Id.* Sonos also
12 submitted terminal disclaimers to overcome an obviousness double patenting
13 rejection over its predecessor applications. *Id.* The claims were allowed after the
14 amendment.

15 The prosecution history of the ’883 Patent followed a similar pattern. *See*
16 ’883 File History.

17 None of the predecessor applications in this patent family included the
18 limitation “[wireless local area network (WLAN)] defined by an/the access point” in
19 their respective original claims. It was not until February 7, 2017 that Sonos first
20 introduced a claim limitation “wireless local area network provided by a wireless
21 access point” in its response to an office action dated November 2, 2016 rejecting all
22 the then pending claims of the application that led to the ’447 Patent. *See* ’447 File
23 History. Sonos also added the claim limitation “wherein the controller is a device
24 separate from the wireless access point and the playback device” in the same
25 amendment in order to overcome an obviousness rejection. *Id.*

26 As discussed above, Google does not concede that Sonos has provided
27 adequate disclosure in satisfaction of the written description requirement for the
28 claim limitations “secure wireless local area network (WLAN)/WLAN that is

1 defined by an/the access point.” In addition, Sonos waited almost 12 years since its
2 original ’116 Application to add such claim limitations, after Google had released
3 three iterations of its first Chromecast products¹⁴ and received significant market
4 appreciation. The delay constituted a strategic abuse of the patent system to obtain
5 de facto submarine patents and resulted in material prejudice to Google and to the
6 public. Plus, on information and belief, Sonos knew about Google’s Chromecast
7 products and other similar technologies and revised its claims or filed new claims
8 (including claims with limitations not supported by the originally filed provisional
9 and non-provisional applications) in an attempt to specifically target Google’s
10 Chromecast products and any other similar technologies that were released after the
11 originally filed provisional and non-provisional applications. Accordingly, under
12 Federal Circuit precedent and consistent with the equitable principles underlying the
13 patent system, the ’896 and the ’883 Patents should be deemed unenforceable due to
14 prosecution laches.

15 2. ’025 Patent

16 The ’025 patent is unenforceable under the doctrine of prosecution laches,
17 which bars enforcement of patents where the applicant unreasonably and
18 inexcusably delays prosecution, resulting in prejudice to others. *Symbol*
19 *Technologies, Inc. v. Lemelson Medical, Education & Research Foundation, LP*,
20 422 F.3d 1378 (Fed. Cir. 2005), 1385-86.

21 Sonos engaged in a prolonged prosecution strategy to obtain the ’025 patent
22 through repeated continuation and continuations-in-part filings extended the
23 application beyond the norm. Sonos initially filed its initial provisional application
24
25

26
27 ¹⁴ Google released the first generation Chromecast in July, 2013 and the second
28 generation in September, 2015. Google subsequently released a model Chromecast
Ultra in November, 2016.

1 no. 60/825,407 on September 12, 2006 and alleges it is entitled to a priority date of
2 January 25, 2011.¹⁵

3 The '025 patent was filed on October 31, 2019. In other words, Sonos waited
4 more than 13 years since its provisional application to file the '025 patent after
5 Google had released three iterations of its first Chromecast products.¹⁶ This
6 unreasonable and inexcusable delay constitutes a strategic abuse of the patent
7 system to obtain a *de facto* submarine patent and resulted in material prejudice to
8 Google and to the public. Indeed, Sonos made clear during prosecution, that this
9 delay was to abuse the patent system to materially prejudice Google and the public.
10 For example, on October 7, 2020 Sonos filed a replacement response based on the
11 ITC's claim construction ruling for the purpose of this litigation and to materially
12 prejudice Google. See October 21, 2020 Applicant-Initiated Interview Summary
13 ("Applicant called to explain the 10/07/2020 replacement response to the 8/31/2020
14 filing due to the narrowing court construal of the claimed equalization.").

15 Accordingly, under Federal Circuit precedent and consistent with the
16 equitable principles underlying the patent system, the '025 patent should be deemed
17 unenforceable under prosecution laches.

18 3. '258, '953, '715, and '001 Patents

19 The '258, '953, '715, and '001 patents are unenforceable under the doctrine
20 of prosecution laches, which bars enforcement of patents where the applicant
21 unreasonably and inexcusably delays prosecution, resulting in prejudice to others.
22

23 ¹⁵ The '025 patent is not entitled to the alleged January 25, 2011 priority
24 date. During prosecution, Sonos admitted the earliest priority date is April 8, 2011.
25 Applicant Arguments/Remarks Dated Oct. 7, 2020 at 11 ("Applicant submits the
26 claimed subject matter has a priority date at least as early as April 8, 2011[.]").

27 ¹⁶ Google released the first generation Chromecast in July, 2013 and the second
28 generation in September, 2015. Google subsequently released a model Chromecast
Ultra in November, 2016.

1 *Symbol Technologies, Inc. v. Lemelson Medical, Education & Research Foundation,*
2 *LP*, 422 F.3d 1378 (Fed. Cir. 2005), 1385-86.

3 Sonos engaged in a prolonged prosecution strategy to obtain these patents
4 through repeated continuation and continuations-in-part filings that extended the
5 applications beyond the norm. For all four patents, Sonos initially filed its initial
6 provisional application no. 60/490,768 on July 28, 2003, and Sonos alleges that it is
7 entitled to a priority date of April 1, 2004 (for the '258 and '953 patents) or July 28,
8 2003 (for the '715 and '001 patents).

9 The '258 patent was filed on February 20, 2014; the '953 patent was filed on
10 August 31, 2018; and the '715 and '001 patents were both filed on April 17, 2013.
11 In other words, Sonos waited nearly 10 years (or more) since its provisional
12 application to file the '258, '953, '715, and '001 patents. The more than 15 year
13 delay with respect to the '953 patent is particularly staggering. Google released
14 multi-room audio by December 2015.
15 [https://www.techtimes.com/articles/115214/20151210/googles-chromecast-audio-](https://www.techtimes.com/articles/115214/20151210/googles-chromecast-audio-update-now-supports-multi-room-hi-res.htm)
16 [update-now-supports-multi-room-hi-res.htm](https://www.techtimes.com/articles/115214/20151210/googles-chromecast-audio-update-now-supports-multi-room-hi-res.htm) ("Chromecast Audio now lets users
17 group multiple speakers together under one unit in its multi-room feature so that the
18 same song will play on all of them at the same time."). Google also disclosed its
19 multizone audio features to Sonos during at least a June 2014 meeting between the
20 parties. This unreasonable and inexcusable delay constitutes a strategic abuse of the
21 patent system to obtain a *de facto* submarine patent and resulted in material
22 prejudice to Google and to the public.

23 Accordingly, under Federal Circuit precedent and consistent with the
24 equitable principles underlying the patent system, the '258, '953, '715, and '001
25 patents should be deemed unenforceable under prosecution laches.
26
27
28

1 **D. Obviousness-type Double Patenting**

2 **1. '014 Patent**

3 The asserted claims of the '014 patent are invalid under obviousness-type
4 double patenting at least based on the '949 patent. *See generally In re Cellect, LLC*,
5 No. 2022-1293, 81 F.4th 1216 (Fed. Cir. 2023).

6 The '014 patent and '949 patent are in the same family, claim June 5, 2004 as
7 their priority date, and do not claim distinctive subject matter. The '949 patent has
8 expired. The '014 patent will expire no later than March 28, 2027 because of a
9 patent term adjustment. In other words, the '014 and '949 patents would have
10 expired on the same day but for the patent term adjustment. As such, the asserted
11 claims of the '014 patent are invalid under obviousness-type double patenting at
12 least based on the expired '949 patent.

13 **2. '715 Patent**

14 The asserted claims of the '715 Patent are invalid under obviousness-type
15 double patenting at least based on the earlier-issued, earlier-expiring claims of the
16 '258 Patent. *See generally In re Cellect, LLC*, No. 2022-1293, 81 F.4th 1216 (Fed.
17 Cir. 2023). The '715 and '258 Patents are part of the same family, claim the same
18 July 28, 2003 priority date, and claim patentably indistinct subject matter. But the
19 '715 Patent has a patent term nearly three years longer than that of the '258 Patent,
20 as the result of a 1,008 day PTA that was granted during prosecution and the
21 patentee's failure to properly file a terminal disclaimer for patentably indistinct
22 claims.

23 For example, both sets of asserted claims are directed to systems for
24 “synchronous playback” or “playing back audio in synchrony” within a “synchrony
25 group,” and include first and second zone players that serve as one of either a
26 “master” or “slave” device within the synchrony group. *Compare* '715 Patent, cl. 7
27 *with* '258 Patent, cl. 17. As another example, they both claim obvious variations of
28 monitoring the synchrony group, by either transmitting an indication related to the

1 “status of the synchrony group” (’258 Patent, cl. 17) or evaluating “operational
2 performance metrics” related to the synchrony group (’715 Patent, cl. 7). Thus, as
3 in *In re Collect*, the later-expiring asserted claims of the ’715 Patent constitute “an
4 improper timewise extension of a patent term,” for an “obvious variation” of earlier-
5 expiring claims within the same family. See 81 F.4th at 1229-30.

6 **3. ’001 Patent**

7 The asserted claims of the ’001 Patent are invalid under obviousness-type
8 double patenting at least based on the earlier-issued, earlier-expiring claims of the
9 ’258 and ’953 Patents. See generally *In re Collect, LLC*, No. 2022-1293, 81 F.4th
10 1216 (Fed. Cir. 2023). The ’001, ’258, and ’953 Patents are part of the same family,
11 claim the same July 28, 2003 priority date, and claim patentably indistinct subject
12 matter. But the ’001 Patent has a term nearly two years longer than that of the ’258
13 and ’953 Patents, as the result of a 708 day PTA that was granted during prosecution
14 and the patentee’s failure to properly file a terminal disclaimer for patentably
15 indistinct claims. For example, all three sets of claims are directed to obvious
16 variations of a system for synchronous playback among a plurality of devices within
17 a synchrony group, where master and slave devices are designated according to their
18 respective roles, and where devices may be used to control and/or monitor the
19 synchrony group. Compare ’001 Patent, cl. 12 with ’258 Patent, cl. 17 and ’953
20 Patent, cl. 7. Thus, as in *In re Collect*, the later-expiring asserted claims of the ’001
21 Patent constitute “an improper timewise extension of a patent term,” for an “obvious
22 variation” of earlier-expiring claims within the same family. See 81 F.4th at 1229-
23 30.

24 **IX. GOOGLE’S DOCUMENT PRODUCTION**

25 Pursuant to S.P.R. 2.6.1, Google is producing source code, specifications,
26 schematics, flow charts, artwork, formulas and/or other documentation sufficient to
27 show the operation of any aspects or elements of an Accused Instrumentality
28

1 identified by Sonos in its Infringement Contentions at GOOG-SONOSITC-
2 00000001-1903.

3 Pursuant to S.P.R. 2.6.2, Google is producing copy or sample of the prior art
4 identified under S.P.R. 2.5.1 that does not appear in the file history of the patent(s)
5 at issue at GOOG-SONOSITC-PA-00000001-27086 and GOOG-SONOSCDCA-
6 PA-00000001-7479. To the extent any such item is not in English, an English
7 translation of the portion relied upon is provided.

8 **X. CONCLUSION**

9 For the reasons discussed above, and those revealed through further
10 discovery, the asserted claims of the Patents-in-Suit are invalid and unenforceable.

1 DATED: April 28, 2025

Respectfully submitted,

2 QUINN EMANUEL URQUHART &
3 SULLIVAN, LLP

4 By /s/ James D. Judah

5 Lance Yang (Bar No. 260705)
6 lanceyang@quinnemanuel.com
7 865 S. Figueroa St., 10th Floor
8 Los Angeles, CA 90017
9 Telephone: (213) 443-3000
Facsimile: (213) 443-3100

10 James Judah (SBN 257112)
11 jamesjudah@quinnemanuel.com
12 50 California Street, 22nd Floor
13 San Francisco, CA 94111
14 Tel: (415) 875-6600
15 Fax: (415) 875-6700

16 *Attorneys for Google, LLC*

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28

Clement S. Roberts (SBN 209203)
croberts@orrick.com
Orrick Herrington & Sutcliffe LLP
405 Howard Street
San Francisco, CA 94105
Tel: 415-773-5700 / Fax: 415-773-5759

Alyssa M. Caridis (SBN 260103)
acaridis@orrick.com
Orrick Herrington & Sutcliffe LLP
355 S. Grand Avenue, Suite 2700
Los Angeles, CA 90071
Tel: 213-629-2020 / Fax: 213-612-2499

George I. Lee (Admitted *Pro Hac Vice*)
lee@ls3ip.com
Sean M. Sullivan (Admitted *Pro Hac Vice*)
sullivan@ls3ip.com
Rory P. Shea (Admitted *Pro Hac Vice*)
shea@ls3ip.com
J. Dan Smith (Admitted *Pro Hac Vice*)
smith@ls3ip.com
Lee Sullivan Shea & Smith LLP
656 W. Randolph Street, Floor 5W
Chicago, IL 60661
Tel: 312-754-0002 / Fax: 312-754-0003

Attorneys for Plaintiff, Sonos, Inc.

James D. Judah