

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner

v.

SONOS, INC.,

Patent Owner.

Case No. IPR2026-00021
U.S. Patent No. 7,571,014

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 7,571,014**

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Exhibit	Description
1001	U.S. Patent No. 7,571,014 B1 to Lambourne et al. (“’014 patent”)
1002	Prosecution History of the ’014 patent
1003	Declaration of David V. Anderson, Ph.D.
1004	Curriculum Vitae of David V. Anderson, Ph.D.
1005	International Publication No. WO 03/040839 A1 to Geiwitz (“Geiwitz-PCT”)
1006	U.S. Provisional Application No. 60/339,511 to Geiwitz (“Geiwitz-Provisional”)
1007	U.S. Patent No. 7,403,626 B2 to Aiso et al. (“Aiso”)
1008	U.S. Patent No. 6,703,940 B1 to Allen et al. (“Allen”)
1009	U.S. Patent No. 5,313,524 to Van Hulle et al. (“Van Hulle”)
1010	U.S. Patent Application Publication No. 2005/0131558 A1 to Braithwaite et al. (“Braithwaite”)
1011	U.S. Patent No. 5,608,807 to Brunelle (“Brunelle”)
1012	U.S. Patent No. 7,502,480 B2 to Baudisch et al. (“Baudisch”)
1013	Yamaha MusicCAST Digital Audio Server MCX-1000 Owner’s Manual
1014	Yamaha MusicCAST Digital Audio Server MCX-1000 Website
1015	U.S. Patent Application Publication No. 2002/0124097 A1 to Isely et al. (“Isely”)
1016	U.S. Provisional Application No. 60/490,768 filed July 28, 2003 (“’768 provisional”)

Exhibit	Description
1017	U.S. Patent No. 8,234,395 B2 to Millington
1018	<i>Sonos, Inc. v. D&M Holdings Inc. d/b/a The D+M Group et al.</i> , Case No. 1:14-cv-01330-WCB, D.I. No. 221, Claim Construction Order (D. Del. Jan. 18, 2017).
1019	File History of Reexamination Control No. 90/013,882
1020	<i>Sonos, Inc. v. Linkplay Technology Inc. et al.</i> , Case No. 1:24-cv-00131-JNR, D.I. No. 188, Joint Claim Construction Chart (D. Del. June 5, 2025)
1021	<i>Sonos, Inc. v. Google LLC</i> , Case No. 2:20-cv-00169-JAK-DFM, June 2025 E-mail Exchange Between Parties Concerning Claim Construction
1022	The Bose® Lifestyle® 50 System, Owner’s Guide, dated October 17, 2001
1023	Sonos, Inc.’s Corrected Disclosure of Asserted Claims and Infringement Contention, <i>Sonos, Inc. v. Google LLC</i> , Case No. 2:20-cv-00169-JAK (DFMx) (C.D. Cal. Apr. 30, 2025)
1024	U.S. Patent No. 2,338,551 to Stanko (“Stanko”)
1025	Sonos, Inc.’s First Amended Complaint for Patent Infringement, <i>Sonos, Inc. v. Google LLC</i> , Case No. 1:20-cv-00169 (Oct. 15, 2024)
1026	U.S. Patent Application Publication No. 2004/0179695 A1 to Terada et al. (“Terada”)
1027	U.S. Patent No. 7,742,609 to Yeakel et al. (“Yeakel”)

I. Relief Requested and Grounds

Google LLC requests review and cancellation of claims 16, 19, 23, 25, 32, 35, 38, 42, and 43 (“Challenged Claims”) of U.S. Patent No. 7,571,014 (EX1001, “’014 patent”) based on the following prior art:

Exhibit	Prior Art	Filed	Published	Prior Art Status¹
EX1005	International Publication No. WO 03/040839 (“Geiwitz-PCT”)	10/22/2002	5/15/2003	§102(b)
EX1006	U.S. Provisional Application No. 60/339,511 (“Geiwitz-Provisional”)	10/22/2001	5/15/2003	§102(b)
EX1007	U.S. Patent No. 7,403,626 B2 (“Aiso”)	7/9/2003	7/22/2008	§102(e)
EX1008	U.S. Patent No. 6,703,940 (“Allen”)	6/15/1999	3/9/2004	§102(a)
EX1009	U.S. Patent No. 5,313,524 (“Van Hulle”)	10/21/1992	5/17/1994	§102(b)

The Challenged Claims are unpatentable under the following pre-AIA §103 grounds. All references to “Geiwitz” refer to Geiwitz-PCT incorporating Geiwitz-Provisional.

¹ Prior art status assessed under pre-AIA §102.

Ground	Claims	Prior Art
1	25, 32, 35	Geiwitz, Van Hulle
2	16, 19, 23, 38, 42, 43	Geiwitz, Aiso
3	25, 32, 35	Allen, Geiwitz, Van Hulle
4	16, 19, 23, 38, 42, 43	Allen, Geiwitz, Aiso

None of the references or any of these combinations were presented to the Office. EX1002; EX1019.

II. The '014 Patent

A. Overview

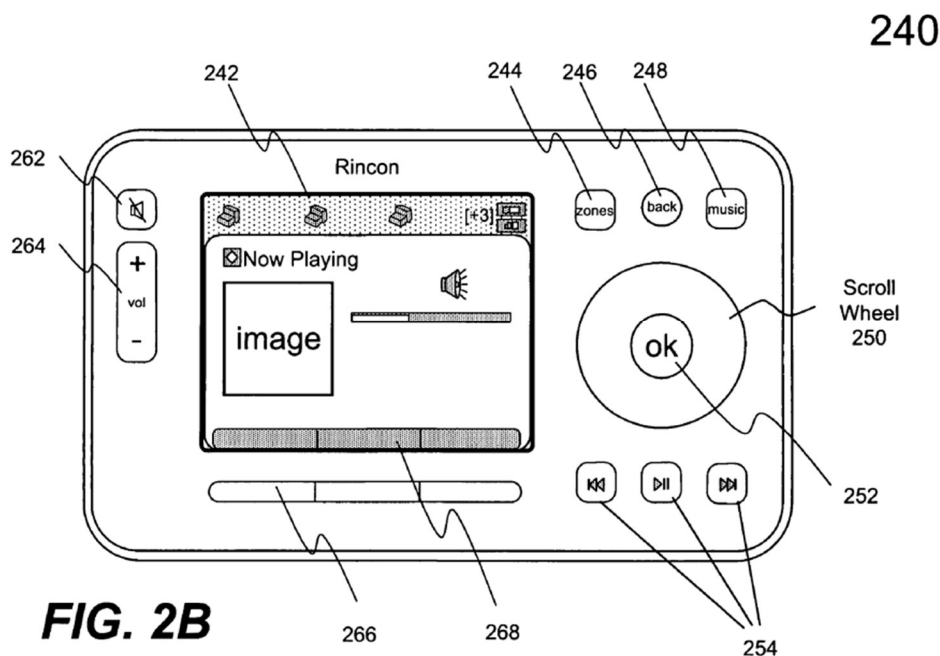
The '014 patent discloses “techniques for controlling a plurality of players, grouping some of the players, manipulating audio characteristics of the players individually or in groups.” EX1001, 4:11-14. It recognizes the difficulty of controlling traditional multi-zone audio systems with a pre-programmed controller to dynamically group the players and control audio volume of players. EX1001, 1:50-2:13. The '014 patent describes a solution that uses a controller to:

1. Select players to form a zone group wherein any one of the players in the zone group serves as a zone group head;
2. Synchronize all players in the zone group in accordance with the zone group head; and

3. Adjust a volume meter for the zone group to adjust volume of each player of the group synchronously.

EX1001, 3:6-21, 4:11-37.

The controller provides a graphical user interface for controlling playback, grouping players, and adjusting volume of individual or a group of players. EX1001, 2:41-46, 4:28-35, 7:43-8:37, 9:7-9, 9:61-67, 14:6-29, Figs. 2B-4B, 7A-7D; EX1003, ¶¶60-63. Such controllers and user interface were well known. *Id.*, ¶¶49-59.



EX1001, Fig. 2B.

B. Priority

The '014 patent is only entitled to its filing date of June 5, 2004, and Sonos admits the same. EX1001, Cover (22); EX1023, 61; EX1003, ¶¶67-69.

The '014 patent is allegedly a continuation-in-part of U.S. Patent Application No. 10/816,217 (“’217 application”), filed on April 1, 2004, issued as U.S. 8,234,395, which claims priority to Provisional Application No. 60/490,768 (“’768 provisional”), filed July 28, 2003. EX1001, Cover (63); EX1002, 187; EX1017, Cover (21), (60); EX1016. It does not incorporate by reference the ’217 application or the ’768 provisional. EX1002, 187, 239. Neither the ’768 provisional nor the ’217 application provides §112 support for a volume meter “*represented by an averaged value of audio volumes of the players in the group,*” required by all Challenged Claims. EX1016; EX1017; *Droplets, Inc. v. E*TRADE Bank*, 887 F.3d 1309, 1316 (Fed. Cir. 2018).

III. Level of Ordinary Skill

A person of ordinary skill in the art (“POSITA”) at the time of the purported invention would have had the equivalent of a four-year degree from an accredited institution in computer science, computer engineering, electrical engineering, or an equivalent thereof, and approximately four years of professional experience in the fields of networking and network-based systems or applications, such as consumer audio systems, or an equivalent level of skill, knowledge, and experience. EX1003, ¶¶77-78. Additional education could substitute for professional experience, and significant work experience could substitute for formal education. *Id.*

IV. Claim Construction

The Board construes claims per *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), and “only to the extent necessary to resolve the controversy,” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

In the district court litigation, the parties agreed on the following:

Claim Term	Agreed Construction
“player” ²	“data network device configured to process and output audio” (EX1021, 3)
“network interface”	“physical component of a device that provides an interconnection with a data network” (EX1021, 4-5; EX1018, 1; EX1019, 6; EX1020, 1)

² In *Sonos, Inc. v. Linkplay Technology Inc.*, Defendants proposed “zone player” in other patents means “*data network device configured to process and output audio to a defined location.*” EX1020, 4.

Claim Term	Agreed Construction
“synchronizing all players”	“causing all players to playback the same multimedia at the same time” (EX1021, 6)

Patent Owner asserted that “any one of the players in the group serves as a zone group head” recited in claim 25 should be given its plain and ordinary meaning, which “does not require that ‘each of the players in an [already] existing zone group can serve as the zone group head for that [already existing] zone group.’” EX1020, 18.

Petitioner applies these constructions. All other terms should be given their plain and ordinary meaning.³ EX1003, ¶¶70-76.

V. Ground 1: Geiwitz and Van Hulle Render Obvious Claims 25, 32, and 35

A. Geiwitz-PCT Incorporating the Geiwitz-Provisional Is a Single Reference

Geiwitz-PCT qualifies as prior art at least based upon its May 15, 2003, publication date. Geiwitz-Provisional, filed October 22, 2001, independently qualifies as a “printed publication” and prior art to the ’014 patent because it became

³ Petitioner does not waive §112 arguments raised in litigation. *Apple, Inc. v. Smith Interface Techs., LLC*, IPR2024-01089, Paper 7, 9-10 (PTAB Jan. 17, 2025).

publicly accessible as of the May 15, 2003, publication date of Geiwitz-PCT. *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348-49 (Fed. Cir. 2016); *Konda v. Flex Logix Techs., Inc.*, No. 2022-1162, 2022 WL 1436144, at *2 (Fed. Cir. May 6, 2022); *Mastercard Inc. v. OV Loop, Inc.*, IPR2023-01289, Paper 37, 20-22 (PTAB Mar. 19, 2025); 37 C.F.R. §1.14(a)(1)(vi).

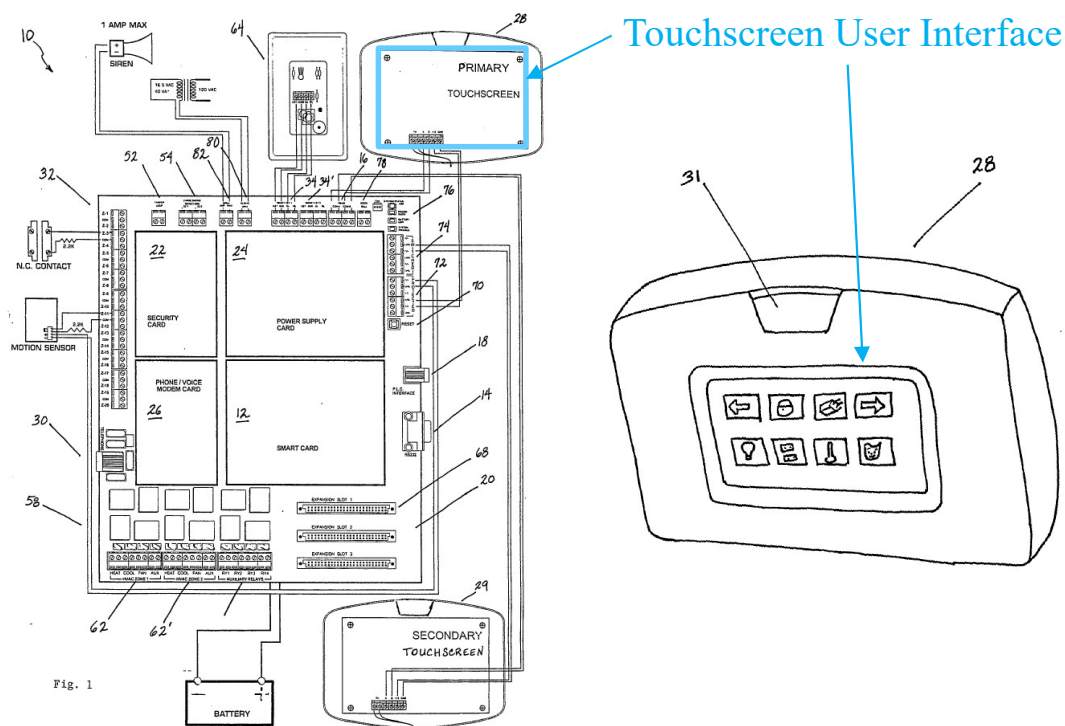
Geiwitz-PCT incorporates Geiwitz-Provisional by reference. EX1005, Cover (30), 1:8-10, 19:15-17, 35:7-10; 37 C.F.R. §1.57(c)(1); *Paice LLC v. Ford Motor Co.*, 881 F.3d 894, 906-07 (Fed. Cir. 2018). Geiwitz-Provisional forms part of the disclosure of Geiwitz-PCT, and the two should be considered a single disclosure. *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000); *Cisco Sys., Inc. v. Umbra Techs. Ltd.*, IPR2024-00344, Paper 31, 32-47 (PTAB July 11, 2025); *Verizon Connect, Inc. v. Omega Pats., LLC*, IPR2023-01162, Paper 12, 37 (PTAB Feb. 21, 2024); *Mastercard*, IPR2023-01289, Paper 37, 20-22; M.P.E.P. §2163.07(b).

B. Independent Claim 25

1. [25pre]: An apparatus for controlling a plurality of players, the apparatus comprising:

Geiwitz's control system 10 ("*apparatus*") includes a touchscreen user interface for configuring and controlling audio devices ("*a plurality of players*") of a building. EX1005, 1:13-18, 2:4-13, 3:15-5:9, 17:4-23, 19:5-20:20, 25:26-26:8,

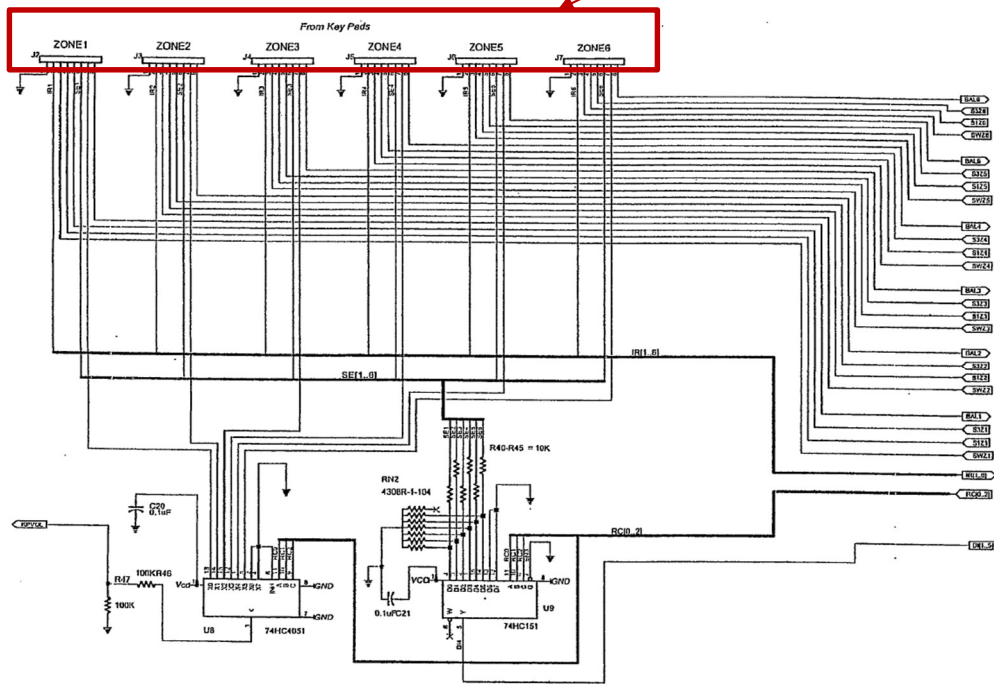
28:11-17, 41:25-29, Figs. 1, 14, 31; EX1006, 2, 5, 11-17, 172-173, 581; EX1003, ¶¶90-94.

EX1005, Figs. 1, 14.⁴

Like the '014 patent, Geiwitz's audio device corresponds to an audio zone, room, or a set of speakers. EX1005, 17:4-20, Fig. 31; EX1006, 172, 122, Fig. 227; EX1001, 4:65-67 (each audio device installed in one area or zone as a zone player), 5:3-8 (two zone players located in two rooms), 1:36-38 (an audio device includes amplifiers and a set of speakers, typically installed in one room); EX1003, ¶92.

⁴ Annotations added unless otherwise noted.

Audio Devices/Audio Zones are “players”



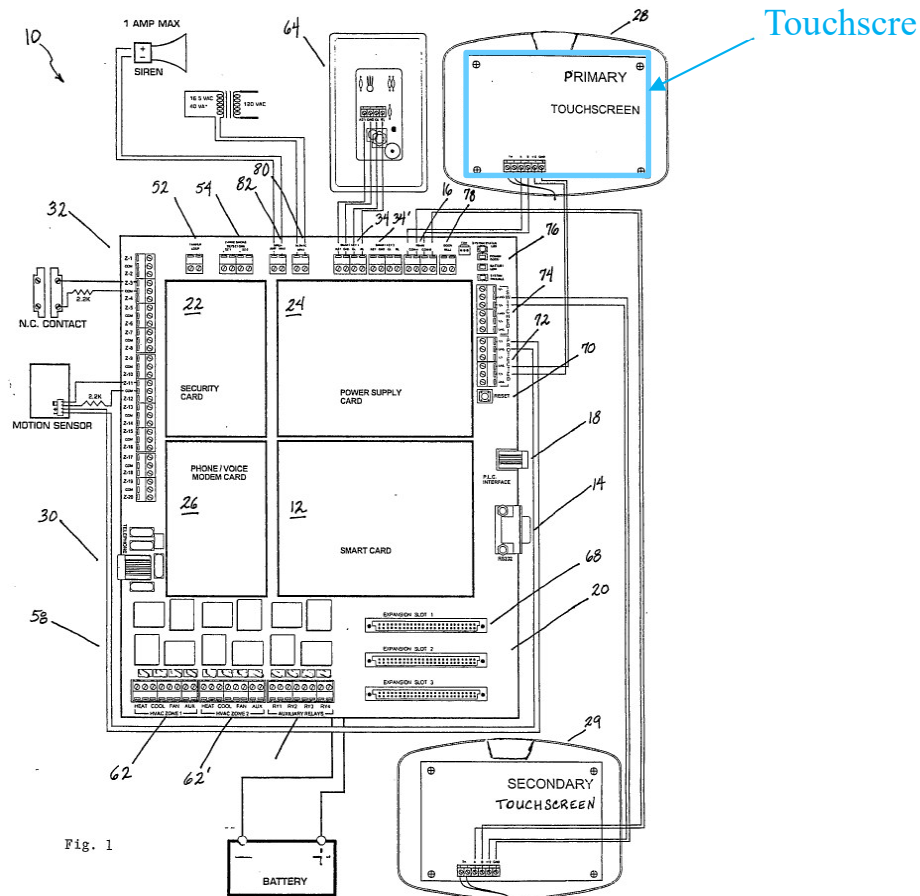
Geiwitz's audio devices (audio zones) are "*a plurality of players*" under the parties' agreed construction of "*player*" as "*data network device configured to process and output audio.*" Section IV; EX1003, ¶¶92-94.

Like the '014 patent, Geiwitz's audio devices receive control signals from the control system via a wired network (e.g., RS 485 interface and system bus) or wirelessly (e.g., Internet, infrared, radio frequency transmission). EX1005, Abstract, 1:14-18, 4:15-21, 9:5-13, 13:10-13, 17:4-20, 18:1-15; EX1006, 1-2, 4, 9, 164-167; EX1001, 5:14-15 (a data network may be a wired network, a wireless network, or a combination of both), 8:38-61 (controller sends signals or data to players). Geiwitz's control system can "be easily modified to adapt to future protocols as they gain acceptance," such as Bluetooth. EX1005, 3:15-18, 18:29-19:4; EX1006, 1; EX1003, ¶93.

Geiwitz's audio devices would receive audio signals from audio sources connected to the system (e.g., a CD player, tuner, radio station) and perform signal processing, e.g., amplification and digital-to-analog conversion, before outputting audio. EX1005, 26:5-7, 28:11-17, 38:5-6, 17:4-20; EX1006, 13, 85, 88, 213-214; EX1003, ¶94.

2. [25a]: a screen;
[25b]: a screen driver commanding the screen;
[25c]: an input interface;

Geiwitz's **touchscreen** user interface (“screen”) is driven by an embedded controller circuit in communication with the system smart bus and microprocessor. EX1005, 9:11-13, 14:4-10, Figs. 1, 15; EX1006, 2, 5. A POSITA would have understood that Geiwitz’s embedded controller circuit would convert control signals from the microprocessor into electric control signals and constitute “a screen driver commanding the screen.” EX1011, 5:43-61, Fig. 4; EX1003, ¶¶95-97.



EX1005, Fig. 1.

Geiwitz's touchscreen user interface (“*an input interface*”) accepts user input to effect control and programming, such as allowing the user to navigate through menus and select icons, configure devices, and programming scenes. EX1005, Abstract, 1:14-18, 9:11-21, 17:14-20, 19:5-20:20, 25:15-37:13, Figs. 1, 14; EX1006, 20-21, Figs. 4, 13; EX1003, ¶¶97.

3. [25d]: a network interface;

Like the '014 patent, Geiwitz discloses that the control system interfaces with components and devices of the building via a variety of communication interfaces, such as an RS 485 interface, or by a wireless interface, such as Infrared, RF, or Bluetooth transmitters/receivers. EX1005, Abstract, 9:5-13, 14:4-21, 17:14-20, 18:4-15, 19:5-10; EX1006, 1-2, 176-177, 581, 805; EX1001, 6:6-17, 8:38-49, Fig. 2C. The communication interface is a “*physical component*” of the control system (“*a device*”) that provides communication with the various components and devices of the building (“*provides an interconnection with a data network*”) under the agreed construction. EX1010, [0031]-[0034], [0040]-[0041]; EX1003, ¶¶98-101.

Geiwitz's control system can be a mobile wireless communication device, such as a personal digital assistant (PDA) device, which would include a wireless data interface (“*network interface*”) to communicate with the various components and devices of the building (“*a data network*”). EX1005, 2:10-13, 9:2-4, 12:6-8,

18:1-10; EX1006, 1-2, 176-177, 581, 805; EX1010, [0031]-[0034], [0038], [0040]-[0041]; EX1003, ¶101.

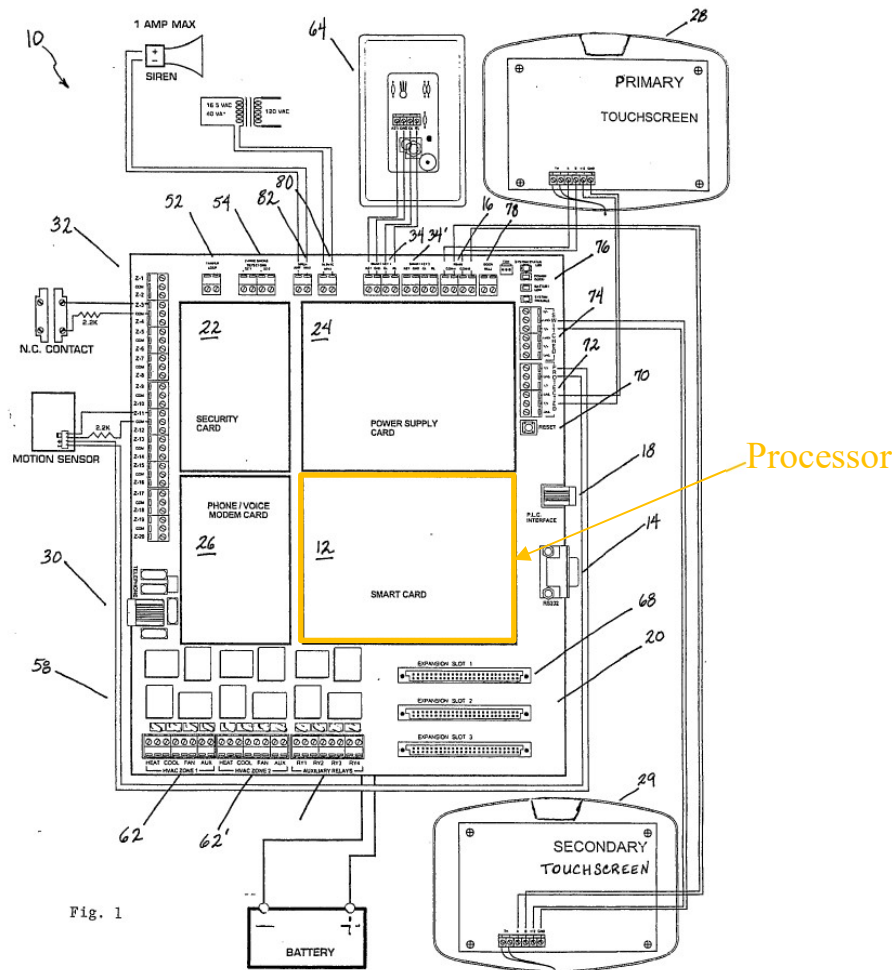
4. [25e]: a memory for storing code for an application module;

Geiwitz's control system includes a microprocessor provided with suitable processing power, memory capabilities, and inputs/outputs. EX1005, 8:28-9:2, 10:19-27, Fig. 1; EX1006, 1, 167-168. The control system can include an expanded processor module providing additional processing power, system memory, input/output signal and data routing, firmware, and an external flash memory. EX1005, 12:13-15, 16:12-14; EX1006, 167-168; EX1003, ¶¶102-104.

Geiwitz's microprocessor executes programmable software or firmware to update the touchscreen user interface and configure and control audio devices interfaced with the control system. EX1005, 1:13-18, 2:4-13, 3:15-5:9, 9:1-2, 10:19-27, 17:4-23, 19:5-20:20, 25:26-26:8, 28:11-17, 34:19-37:13, Figs. 1, 14; EX1006, 2, 5, 11-17, 172-173, 581; EX1003, ¶103. Such software or firmware constitutes "*an application module*," and Geiwitz's microprocessor memory and/or flash memory stores software or firmware code ("*a memory for storing code*") for the microprocessor to execute to update the touchscreen user interface and configure and control devices. EX1003, ¶¶103-104, 106.

5. [25f]: a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

Geiwitz's control system includes a programmable microprocessor ("processor"). Section V.B.4; EX1005, 10:19-27, 15:28-16:2, Fig. 1; EX1006, 1-2, 167-168; EX1003, ¶¶105-109.



EX1005, Fig. 1.

Geiwitz's microprocessor is coupled to the embedded controller ("*screen driver*") of the touchscreen such that control signals can be communicated to and converted to control electric signals of the touchscreen. Section V.B.2; EX1003, ¶107. Geiwitz's microprocessor is coupled to the touchscreen user interface ("*the input interface*") to receive input from the user and convert the user input into control signals to configure or control devices. EX1005, 19:5-20:20; EX1006, 20, Fig. 4; EX1003, ¶107.

A POSITA would have understood that Geiwitz's microprocessor would be coupled to the network interface, such as a wired RS 485 interface or a wireless interface, to communicate the signals between the microprocessor and the devices being controlled or configured. EX1005, Abstract, 9:5-13, 14:4-21, 17:14-20, 18:4-15, 19:5-10; EX1006, 1-2, 176-177, 581, 805; EX1003, ¶108.

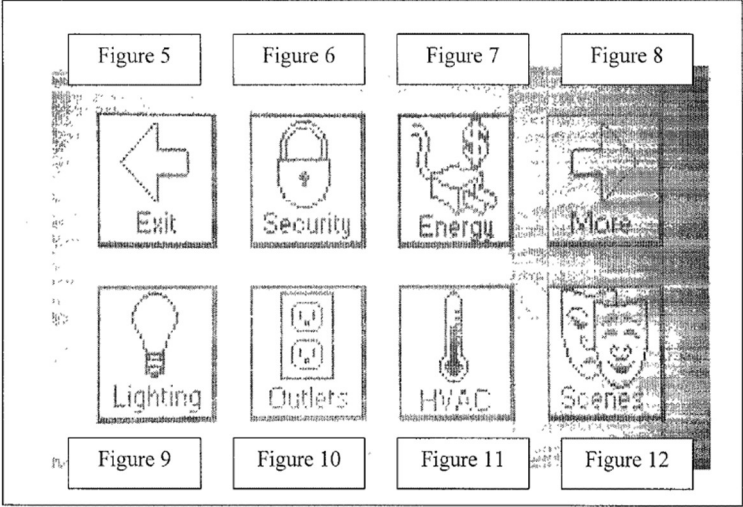
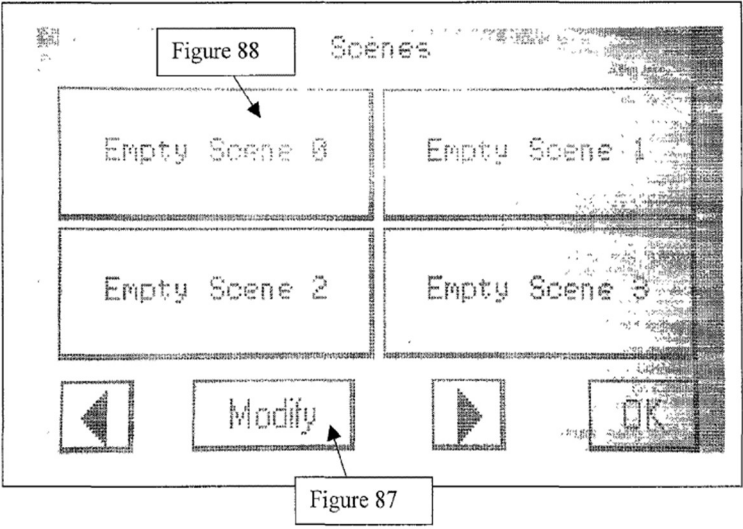
Geiwitz's microprocessor would be "*coupled to the memory*" to access and execute the software or firmware code stored in the memory, which would cause the software or firmware ("*application module*") and the screen driver to perform operations to update the touchscreen user interface and configure and control devices. Section V.B.4; EX1003, ¶¶106, 109.

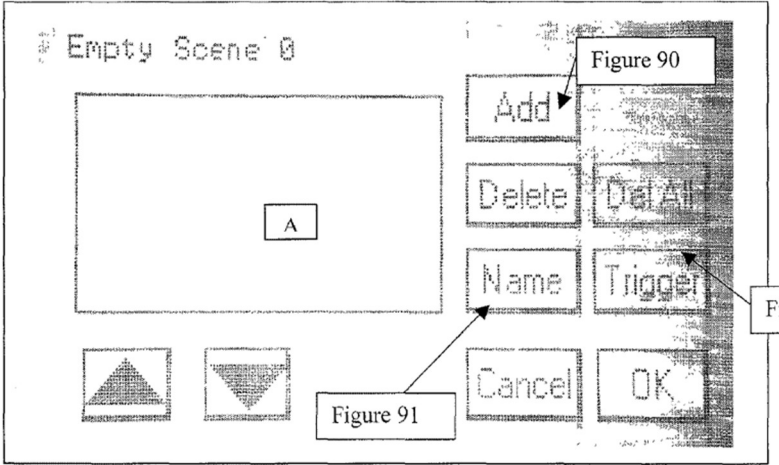
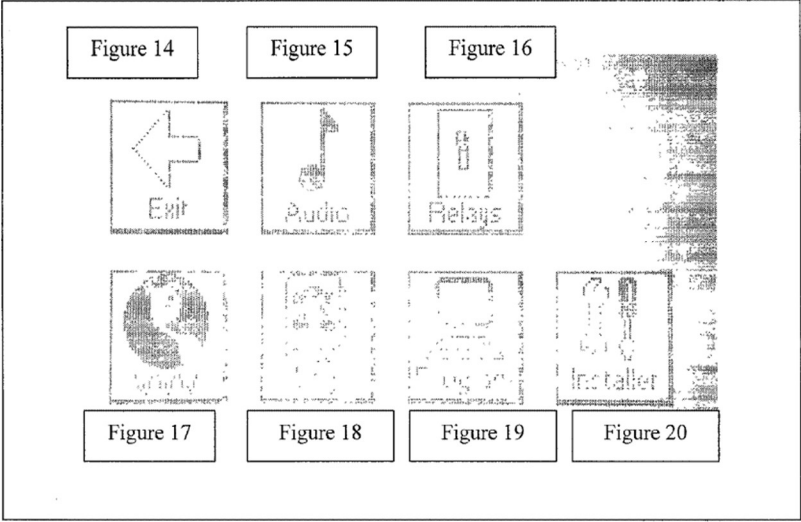
6. [25g]: displaying on a screen a first list showing at least available players;

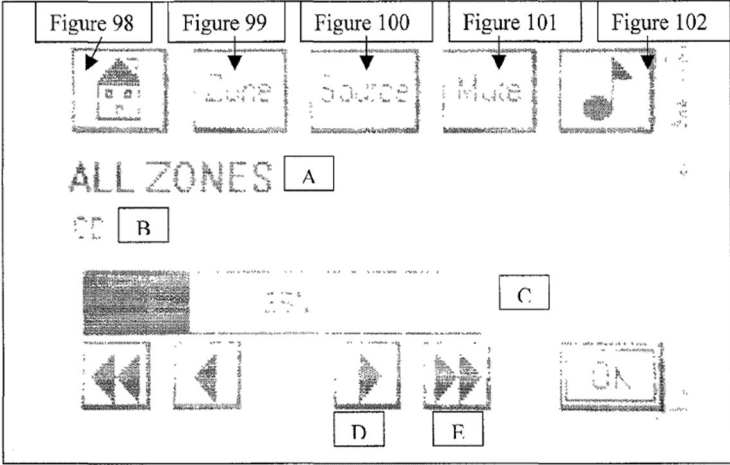
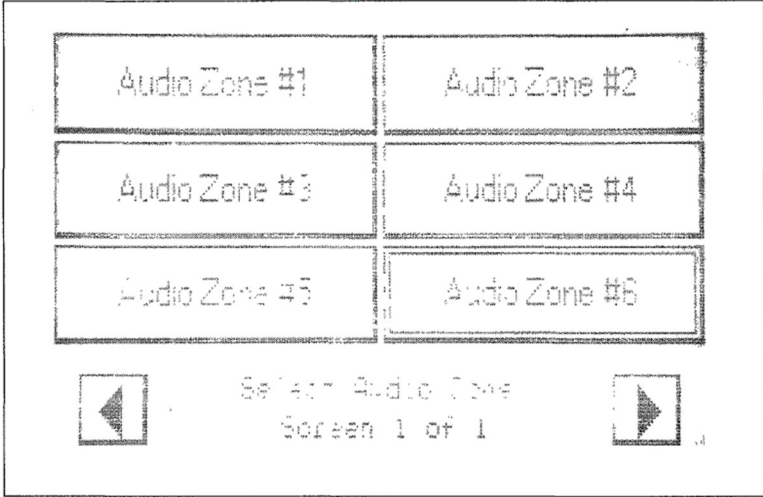
Geiwitz's control system allows the user to program an audio scene using the touchscreen user interface. EX1005, 36:13-15; EX1006, 56-58, 172. A user can navigate to the "Scenes" icon to create or modify a "scene." EX1005, 25:15-25; EX1006, 20, 56, Figs. 4, 86. The user can add features to a scene, including naming the scene, adding commands, or selecting specific methods for triggering a scene. EX1006, 57-61, Figs. 90-92, 94, 96 (showing a "Party" scene); EX1003, ¶¶110-115.

To program an audio scene, such as a "Dinner Party" scene, the user can navigate to and choose the "Audio" icon, and navigate to the audio control screen, where the user chooses the "Zone" icon to see a screen displaying a list of audio zones ("*players*") for selection to include in the scene. EX1005, 25:15-25; EX1006, 20-21, 56-59, 62-64, 172, 581-590, Figs. 4, 13, 15, 86, 89, 97, 99, 104; EX1003, ¶112.

The table below summarizes this process through a sequence of screens:

Screen	User Action
<p data-bbox="215 317 297 338">Figure 4</p>  <p data-bbox="204 911 500 953">EX1006, 20, Fig. 4.</p>	<p data-bbox="1052 317 1414 443">Choose “Scenes” icon from a navigation menu.</p>
<p data-bbox="215 1024 297 1045">Figure 86</p>  <p data-bbox="204 1654 570 1696">EX1006, 56-57, Fig. 86.</p>	<p data-bbox="1052 1024 1414 1318">Choose a “Scene” (e.g., Scene 0) and “Modify.” to create or modify a scene.</p>

Screen	User Action
<p>Figure 89</p>  <p>EX1006, 57, Fig. 89.</p>	<p>Choose “Add” to add devices to the scene.</p>
<p>Figure 13</p>  <p>EX1006, 21, Fig. 13.</p>	<p>To add audio devices, navigate to navigation menu, choose “Audio” icon to navigate to audio control.</p>

Screen	User Action
<p data-bbox="215 317 310 342">Figure 97</p>  <p data-bbox="203 873 516 909">EX1006, 62, Fig. 97.</p>	<p data-bbox="1052 317 1414 527">Choose “Zone” icon to select audio zones to include in the scene.</p>
<p data-bbox="289 999 927 1083"><i>“displaying on a screen a first list showing at least available players”</i></p> <p data-bbox="215 1125 321 1150">Figure 104</p>  <p data-bbox="203 1734 537 1770">EX1006, 64, Fig. 104.</p>	<p data-bbox="1052 989 1414 1115">Select from a displayed list of audio zones.</p>

Geiwitz's audio zones are the claimed "*players*." Section V.B.1. Geiwitz discloses displaying on the touchscreen user interface a list of available players for adding to the scene ("*a first list showing at least available players*"). EX1006, 21, 56-59, 64, Fig. 104; EX1003, ¶¶113-114.

Geiwitz further discloses that "[w]hen more zones are present[,] the system will represent the number of additional screens and allow the user to cycle between them with the navigation arrows at the bottom of Figure 104." EX1006, 64. To the extent Patent Owner argues the "*first list*" needs to display all the available players, a POSITA would have understood that Geiwitz's list would allow the user to scroll through to see and select from all available audio zones ("*players*"). And a POSITA would have understood that in the instance where just six audio zones are available, all six would be shown in the list on the screen. EX1006, 64, Fig. 104; EX1003, ¶115.

7. [25h]

- a. **Geiwitz discloses, or at least renders obvious, "displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group,"**

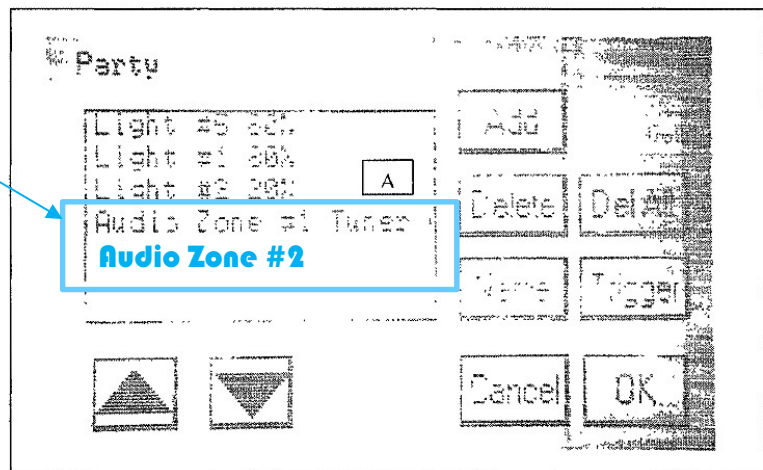
As explained for [25g], Geiwitz's control system allows the user to program an audio scene using the touchscreen user interface. Section V.B.6. Geiwitz's scene

including user-selected audio zones constitutes “a zone group including players from the available players.” EX1006, 57-61; EX1003, ¶¶116-117.

A POSITA would have understood that Geiwitz’s user would select at least two audio zones to form the scene (“zone group”). To configure a “Party” scene, at least two audio zones would be selected for inclusion in the scene (“at least two of the available players are selected to form the zone group”). EX1006, 583 (when “Dinner Party” scene is activated, music plays in “select rooms”). A POSITA would have understood that when two audio zones are selected for inclusion in the scene, the screen would display the scene (“zone group”) as including the audio zones selected. EX1003, ¶¶117-119.

“displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group”

Figure 96



EX1006, 61, Fig. 96; EX1003, ¶118.

A POSITA would have understood that once a scene is set up, like “Party,” a user would be able to select additional audio zones to include in the scene.

Section V.B.6. A POSITA would have understood that, when additional audio zones are added to the “Party” scene, the same audio source (e.g., light jazz and classical from the CD) would be played by all audio zones in the scene. EX1005, 38:7-9; EX1006, 581-583; EX1003, ¶119.

b. Geiwitz and Van Hulle render obvious “wherein any one of the players in the group serves as a zone group head;”

Geiwitz-Van Hulle teaches that any one of the players in the group serves as a zone group head and synchronizing all players in the zone group in accordance with the zone group head ([25i], Section V.B.8). EX1003, ¶¶120-126.

Like Geiwitz and the '014 patent, Van Hulle discloses an audio system including sound sources, active sound reproducers (“players”) in different rooms, and control units for controlling the sound reproducers and sources. EX1009, Abstract, 2:6-20, 8:24-9:50, Fig. 7. Van Hulle and Geiwitz are analogous to the '014 patent. EX1003, ¶¶79-83, 88, 121.

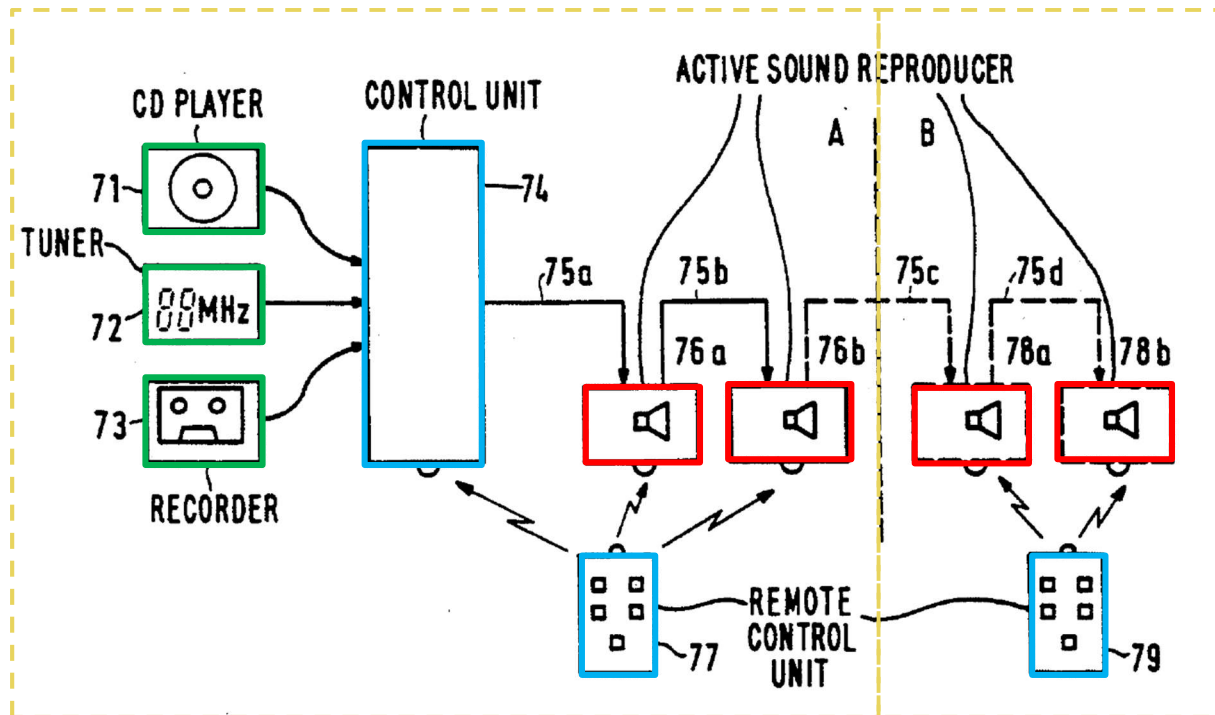


FIG. 7

EX1009, Fig. 7.

Van Hulle discloses a method of synchronizing its active sound reproducers of an audio system to play the same audio signal at the same time. EX1009, 3:33-55, 9:22-37. It further discloses any sound reproducer can operate in master mode (“serves as a zone group head”) and passes on the audio signal it plays to the remaining sound reproducers in the form of an interconnected chain. EX1009, 2:49-61, 3:1-5, 3:33-55, 9:22-10:22; EX1003, ¶122.

A POSITA would have understood that Geiwitz teaches that audio zones in a scene play the same audio source. EX1005, 25:15-25; EX1006, 20, 56, Figs. 4, 86. To the extent Geiwitz does not disclose implemental details, a POSITA would have

been motivated to find such teachings, and would have recognized that Van Hulle provides a suitable solution for audio signal routing in Geiwitz. EX1003, ¶123; *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023).

In Geiwitz-Van Hulle, a user can select any one of Geiwitz’s audio zones (“*players*”) to operate in the master mode and serve as the “*zone group head*,” which passes the audio signal to the remaining audio zones such that all audio zones in the scene would play the same audio at the same time, as taught by Van Hulle. *See* Section V.B.6 (selecting audio devices for a scene); EX1009, 2:49-61. And the displayed scene (“*zone group*”) would include the “*zone group head*.” EX1003, ¶124.

And a POSITA would have understood that such modification would improve the availability of Geiwitz’s audio system. For example, using Van Hulle’s synchronization method would allow synchronized play by audio zones in a wider range. EX1009, 3:33-55, 9:22-37; EX1003, ¶125.

A POSITA would have had reasonable expectation of success in using Van Hulle’s synchronization method in Geiwitz because Geiwitz’s audio system is well equipped for such modifications, and such modifications would have involved only ordinary skill. Like Van Hulle’s sound reproducers, Geiwitz’s audio devices include wired or wireless communication interfaces for receiving and transmitting audio and control signals. EX1005, Abstract, 1:14-18, 4:15-21, 5:3-5, 9:5-13, 13:10-12, 17:4-

20, 18:1-15; EX1006, 1-2, 4, 9, 164-167; EX1009, 1:30-37, 4:14-61, 5:8-33, 9:6-50, 10:15-22. A POSITA would have known to update Geiwitz's audio devices to include an audio detector and a control circuit for implementing synchronized play, as disclosed by Van Hulle. EX1009, 4:14-46, 5:8-53. A POSITA would have understood that implementing Van Hulle's synchronization method in Geiwitz would have been using a known technique to improve a similar device in the same way and yield predictable results of an audio system with improved availability. EX1003, ¶126; *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

8. [25i]

a. Geiwitz discloses “synchronizing all players in the zone group”

The parties agreed “*synchronizing all players*” means “*causing all players to playback the same multimedia at the same time.*” Section IV. As explained for [25h], Geiwitz teaches upon a “Party” scene is triggered, audio zones in the scene would play the same audio source, teaching “*causing all players to playback the same multimedia at the same time.*” EX1005, 38:7-9; EX1006, 581-583; EX1003, ¶¶127-128.

b. Geiwitz and Van Hulle render obvious “synchronizing ... in accordance with the zone group head;”

As discussed for [25h], in Geiwitz-Van Hulle, Geiwitz's audio zones (“*players*”) would play the same audio at the same time as the master audio zone

(“*zone group head*”), teaching “*synchronizing ... in accordance with the zone group head*”). EX1003, ¶128.

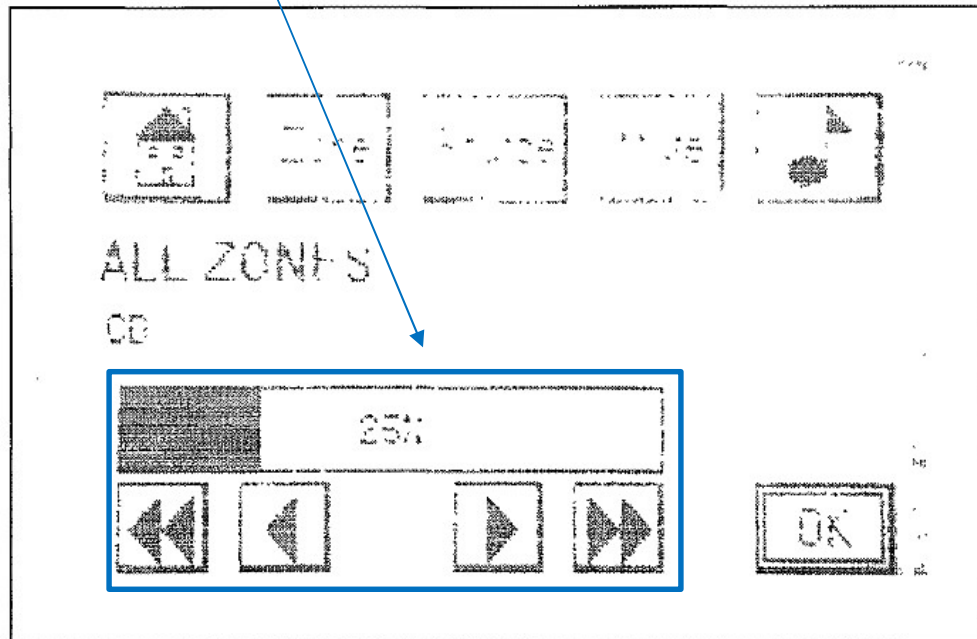
9. [25j]

- a. **Geiwitz discloses, or at least renders obvious,
“adjusting a volume meter ... includes changing a
volume of each of the group of players synchronously
in accordance with an adjustment made by a user.”**

Geiwitz’s touchscreen user interface displays a volume bar (“*volume meter*”) and volume adjusters to control the volume of the audio zones (“*players*”). EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103. Geiwitz discloses that the user can select a “House” icon to navigate to a screen that allows the user to change all the audio zones in the same fashion simultaneously. EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103. Under the “ALL ZONES” indication, adjusting the volume meter would change the volume of each audio zone synchronously in accordance with an adjustment made by a user using the volume adjusters. EX1006, 62-63, Fig. 103; EX1003, ¶¶130-134.

Adjusting the volume meter changes a volume of each of the group of players synchronously in accordance with an adjustment made by a user

Figure 103



EX1006, 63, Fig. 103.

A POSITA would have understood that Geiwitz's volume meter for "ALL ZONES" would be used for controlling the volume of all audio zones in a scene ("*group of players*"). Section V.B.7; EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103. Indeed, when all audio zones of a building are selected for a scene, Geiwitz's "ALL ZONES" control would change the volume of each audio zone in the scene ("*each of the group of players*"). EX1003, ¶132.

A POSITA also would have understood that using this volume meter for group volume control of audio zones in a scene would provide flexible and efficient

control, prevent unnecessary volume adjustment of audio zones not included in the scene, and as an alternative to individually adjusting the volume of each audio zone in the scene. EX1003, ¶133.

A POSITA would have known how to implement Geiwitz's volume meter for group volume control of audio zones in a scene and would have had a reasonable expectation of success in doing so because such modification requires only ordinary skill. Geiwitz's control system is well equipped for such modification; its microprocessor is coupled to the audio zones being controlled and is programmable to control the audio devices in a scene in the same fashion. EX1005, 8:28-9:24, 10:19-27, 14:4-21, 17:14-20, 18:4-15, 19:5-10, Figs. 1, 14; EX1006, 1-2, 62-63, 176-177, 581, 805, Fig. 103; EX1003, ¶134. A POSITA would have understood that such use of Geiwitz's volume meter would be easily implemented by updating Geiwitz's software for programming a scene, which would be executed by the microprocessor to generate control signals to the audio zones in the scene. Indeed, Geiwitz's system already performs group control of audio zones in a scene in the same fashion, such as controlling the audio zones in a scene to play the same audio source. EX1006, 581-583; EX1003, ¶134.

b. Geiwitz discloses, or at least renders obvious, “a volume meter represented by an averaged value of audio volumes of the players in the group”

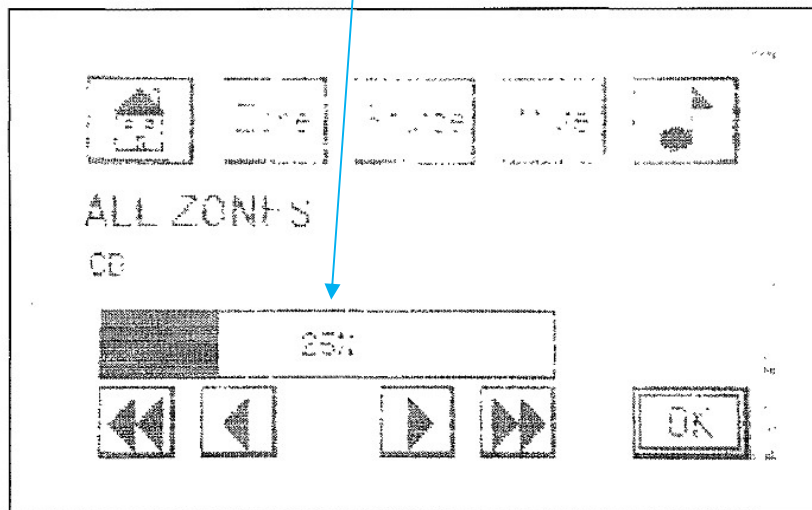
First, a POSITA would have understood that Geiwitz’s volume meter is represented by an averaged volume of all zone players being controlled. For example, as shown below, for a scene (“*group*”) having two audio zones (“*players*”), the volume meter is represented by a value of 25%,⁵ which is “*an averaged value of audio volumes*” of all audio zones having respective volumes at 25%, 25%. EX1006, 62-63, Fig. 103. Indeed, when all audio zones have the same volumes at 25% or 100%, the volume meter would be represented by the averaged value of all audio zones at 25% or 100%, respectively. EX1003, ¶¶135-137; *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) (“[C]ombinations of prior art that sometimes meet the claim elements are sufficient to show obviousness.”); *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003) (prior art that sometimes, but not always, embodies claimed method teaches that aspect of invention, for purpose of determining whether patent claim is invalid as obvious); *Target Corp. v. Proxicom Wireless, LLC*, No. 2022-1282, 2023 WL 6135787, at *5

⁵ EX1001, 13:49-57 (describing adjusting volume in percentage); EX1025, 83-89 (mapping volume meters in percentage values in accused product).

(Fed. Cir. Sept. 20, 2023) (prior art teaches a method step by teaching a server that performs that step at least some of the times).

Group volume meter represented by an averaged
value of volumes of all zone players

Figure 103



EX1006, 63, Fig. 103.

A POSITA would have understood that when used for controlling a scene having audio zones at different volumes, Geiwitz's volume meter would be represented by a value (e.g., 25% as shown in Figure 103), and a POSITA would have understood that a numerical average of the volumes of the audio zones in a scene would have been one of the finite, suitable options for representing Geiwitz's volume meter. EX1006, 62-67, 582-583, Figs. 103, 106; EX1015, [0053]; EX1008, 5:54-58; EX1024, 1:1-28. For example, Geiwitz's volume meter can be represented by a maximum, a minimum, a median, or an average volume of the audio zones in a

scene (“*group*”). A POSITA would have understood that using the average volume is an intuitive way of presenting group volume to users in a way that reflects the volume of the group. EX1003, ¶¶138-139. A POSITA would have further understood that using the average volume to represent the group volume would allow for adjusting the volumes of the individual audio zones (e.g., rooms) in the scene while maintaining the volume offset between them. EX1006, 62-67, 582-583, Figs. 103, 106; EX1015, [0053]; EX1008, 5:54-58; EX1003, ¶¶139-140.

C. Claim 32

1. [32pre]: The apparatus of claim 25, wherein said synchronizing all players in the zone group comprises:

Geiwitz-Van Hulle teaches synchronizing all players in the zone group as explained for [25i] (Section V.B.8). EX1003, ¶¶141-142.

2. [32a]: causing all players in the zone group to play an identical audio source; and

As explained for [25h]-[25i] (Sections V.B.7-V.B.8), Geiwitz teaches upon a “Party” scene (“*zone group*”) being triggered, audio zones in the scene (“*all players in the zone group*”) would play the same audio source (“*causing all players in the zone group to play an identical audio source*”), and it would be obvious to use Van Hulle’s synchronization method in Geiwitz. EX1005, 38:7-9; EX1006, 581-583; Sections V.B.7-V.B.8. A POSITA would have understood that, when the scene is modified to include additional audio zones, upon such modified scene being

triggered, the newly added audio zone would play the same music as the existing audio zone or zones in the scene. EX1003, ¶¶143-144.

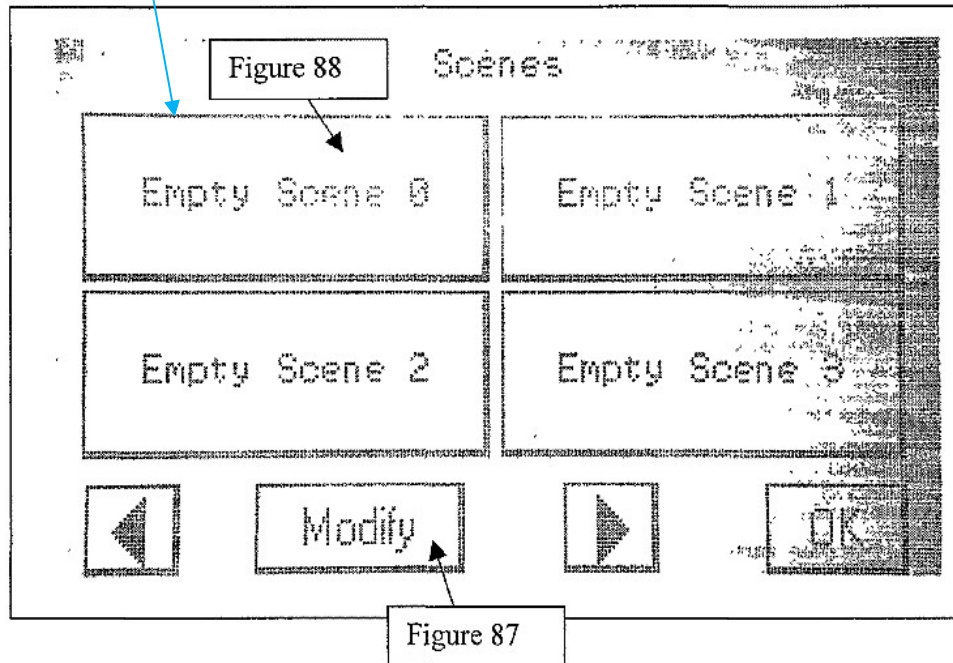
3. [32b]: presenting the zone group in a manner that indicates a grouping.

Geiwitz teaches presenting a scene (“*zone group*”) on the screen in a manner that indicates a grouping in two ways.

First, as explained for [25h] (Section V.B.7), Geiwitz’s user can navigate to the “Scenes” icon to a screen displaying a list of scenes to create or modify a scene (“*zone group*”). EX1005, 25:15-25; EX1006, 20, 56, Figs. 4, 86. The user can name the scene, add commands, or select specific methods for triggering a scene. EX1006, 57-61, Figs. 90-92, 94, 96. A POSITA would have understood that presenting the scene with a user-specified name (e.g., “Party”) would indicate a grouping of the devices in the scene. EX1003, ¶¶145-147.

A user-named scene indicates a grouping

Figure 86

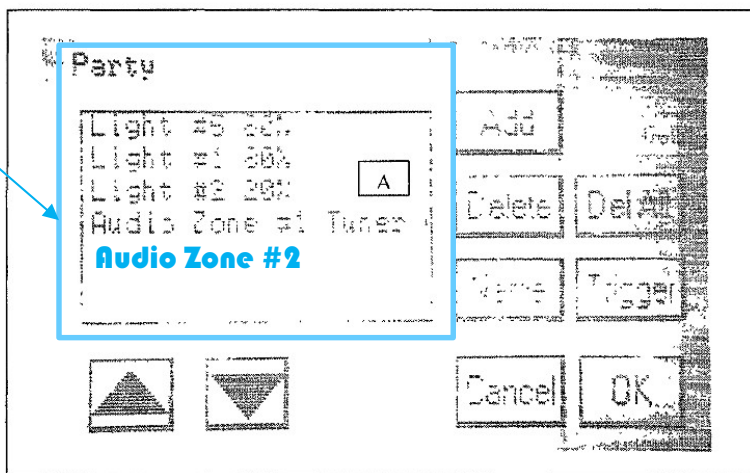


EX1006, 56, Fig. 86.

Second, Geiwitz discloses a screen presenting the zone group in a manner that indicates a grouping when a scene is being configured. As shown below, Geiwitz discloses a screen showing the devices in the scene (*"in a manner that indicates a grouping"*). A POSITA would have understood that when more than one audio zone is selected to be included in the scene, the screen would present the scene (*"zone group"*) as including all devices selected by the user for the scene (*"in a manner that indicates a grouping"*). EX1003, ¶148.

Figure 96

“presenting the zone group in a manner that indicates a grouping”



EX1006, 61, Fig. 96; EX1003, ¶148.

D. Claim 35

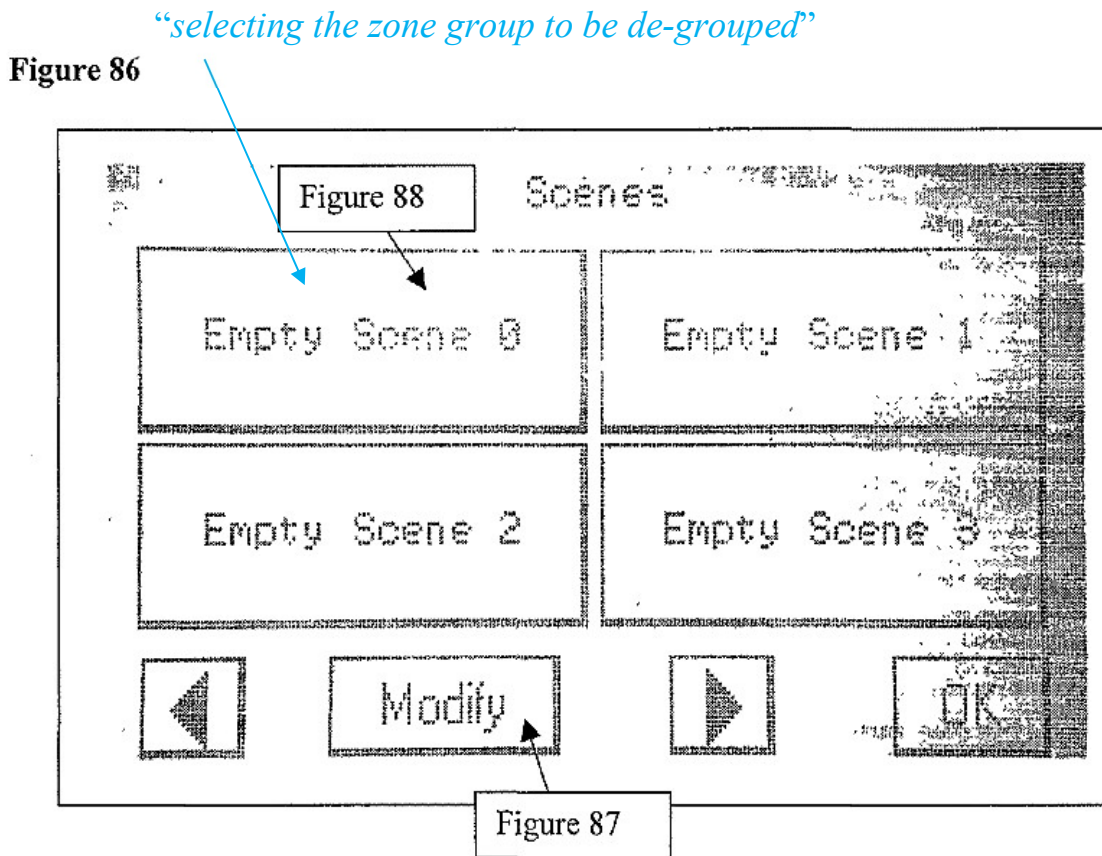
1. [35pre]: The apparatus of claim 25, wherein the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

Geiwitz teaches this limitation as explained for [25f] (Section V.B.5).

EX1003, ¶¶149-150.

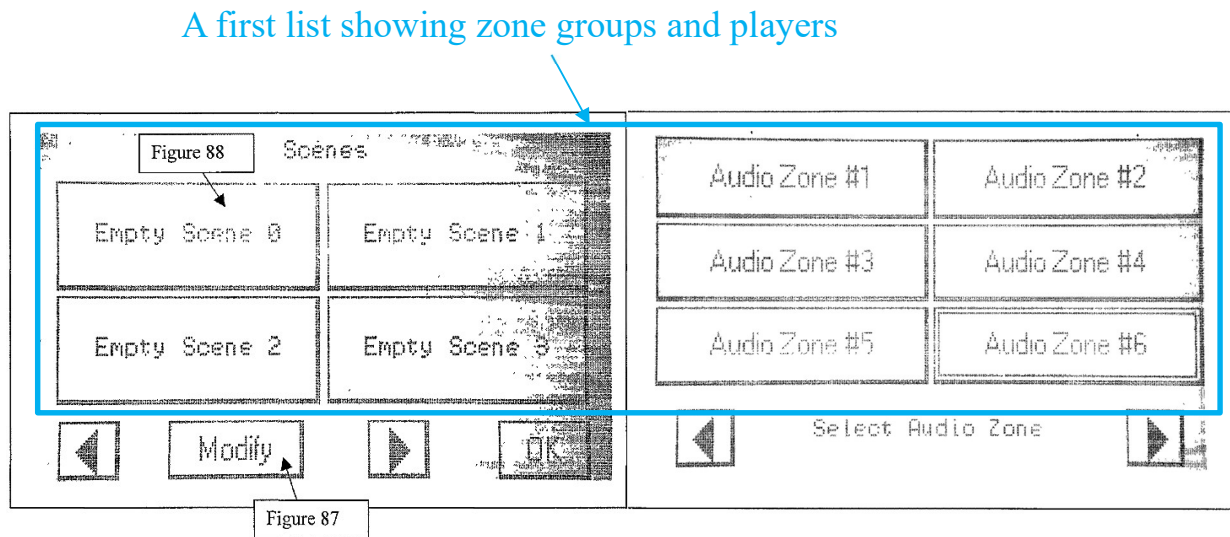
2. [35a]: selecting the zone group to be de-grouped from the first list;

Geiwitz discloses that to modify a scene, a user navigates to the “Scenes” menu and selects the scene to be modified (*“selecting the zone group to be de-grouped”*) and selects “Modify.” EX1006, 56, Fig. 86; EX1003, ¶¶151-155.



EX1006, 56, Fig. 86.

As explained for [25g] (Section V.B.6), Geiwitz discloses displaying “a *first list showing at least available players*,” but it does not expressly disclose selecting the scene “*from the first list*.” A POSITA would have found it obvious to configure Geiwitz’s touchscreen user interface to show the scenes and audio zones in the same list, as illustrated below:



EX1006, 56, 64, Fig. 86 (left), Fig. 104 (right).

As explained for [25g]-[25h] (Sections V.B.6-V.B.7), to select audio zones to include in the scene, the user needs to navigate through multiple screens, including:

- navigating to and choosing the “Scenes” icon;
- navigating to and choosing the “Audio” icon;
- navigating to the audio control screen and choosing the “Zone” icon;
- and
- navigating to a screen displaying a list of audio zones for selection (shown above on the left).

EX1005, 25:15-25; EX1006, 20-21, 56-59, 62-64, 172, 581-590, Figs. 4, 15, 86, 99, 104. A POSITA would have found it obvious to configure the touchscreen user interface to show the scenes and audio zones in the same list on the screen, as shown above, because it is a suitable option for displaying scenes and audio zones on a

screen. For example, a POSITA would have understood that listing the various items separately, on different interfaces, would be one suitable option, and displaying the various items together on a single interface would be another alternative that would potentially yield at least incremental benefit in providing a streamlined interface and user experience. EX1003, ¶154. A POSITA also would have had a reasonable expectation of success in such modification because it merely requires only ordinary skill to update the software to be executed by the microprocessor for updating the icons in the touchscreen user interface. EX1003, ¶155; EX1005, 4:6-10, 8:28-9:21, 10:19-27, 15:28-16:2, Fig. 1; EX1006, 1, 64. A POSITA also would have found such modification to the user interface a routine design choice. EX1006, 64; EX1003, ¶155.

3. [35b]: displaying on the screen an another list showing all the players within the zone group to be de-grouped;

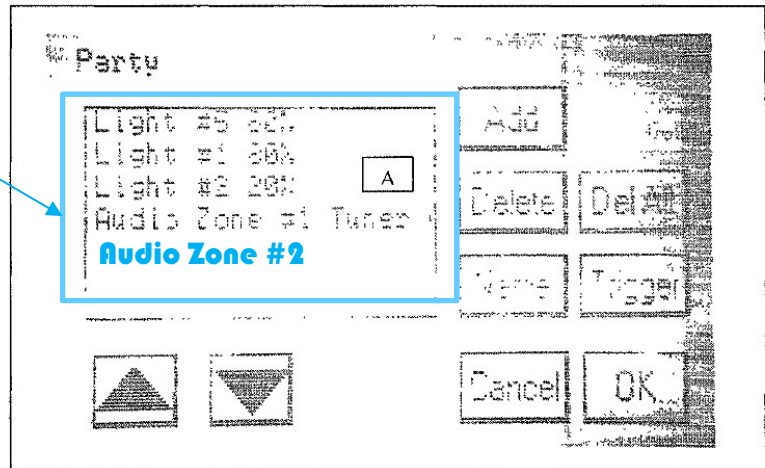
Geiwitz teaches [35b].

As explained for [35a] (Section V.D.2), Geiwitz teaches, after selecting a scene (“*zone group to be de-grouped*”), a user would choose the “Modify” icon to modify the “scene.” EX1005, 25:15-25; EX1006, 20, 56, Figs. 4, 86. The touchscreen user interface then displays a list showing the devices within the scene, as shown below. EX1006, 61, Fig. 96. A POSITA would have understood that when the scene includes more than one audio zone, the screen would display a list of all

audio zones within the scene (“displaying on the screen an another list showing all the players within the zone group to be de-grouped”). EX1003, ¶¶156-157.

“displaying on the screen an another list showing all the players within the zone group to be de-grouped”

Figure 96



EX1006, 61, Fig. 96.

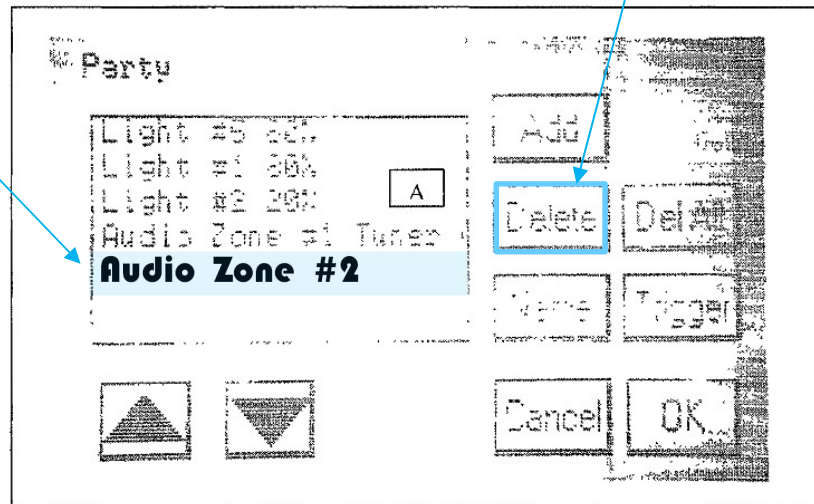
4. [35c]: selecting one or more players from the another list;
and
[35d]: disassociating the selected players from the zone group.

Geiwitz teaches a suitable option for a user to delete an audio zone from the list by scrolling the highlight to the audio zone (“selecting one or more players from the another list”) and pressing the “Delete” icon. EX1006, 57, 91, 96, 100, 104, 110, 115, 119, 127, Fig. 89. A POSITA would have understood that deleting an audio zone (“one or more players”) at the scene configuration screen would remove the

audio zone from the scene (“*disassociating the selected players from the zone group*”). EX1003, ¶¶158-161.

“*selecting one or more players from the another list*”

Figure 96



EX1006, 61, Fig. 96.

VI. Ground 2: Geiwitz and Aiso Render Obvious Claims 38, 42, and 43

A. The Combination of Geiwitz and Aiso

Geiwitz and Aiso are analogous art to the '014 patent because they are in the same field of endeavor as each other and as the '014 patent—audio output control and user interface. EX1003, ¶¶162-163.

A POSITA would have found it obvious to modify Geiwitz’s touchscreen user interface to display the individual volume meters of audio zones belonging to a scene

(“*group*”) and the group volume meter for changing the volumes of all audio zones in the scene on the same screen, in view of Aiso’s teachings. EX1003, ¶¶163-168.

Aiso discloses a level adjustment apparatus, such as a digital mixer, designed to individually and collectively control audio signals across multiple channels. EX1007, Abstract, 1:5-9, 2:43-32, 4:1-10, 4:30-35, 10:13-27. Aiso discloses a console panel with an interface that provides **individual controls** for setting control levels of individual channels and **group controls** that collectively change the levels of all channels of the same group (e.g., “GRP1”). EX1007, 1:27-30, 1:64-2:12, 3:9-32, 4:1-36, 6:11-21, Figs. 1-2, 5; EX1003, ¶165.

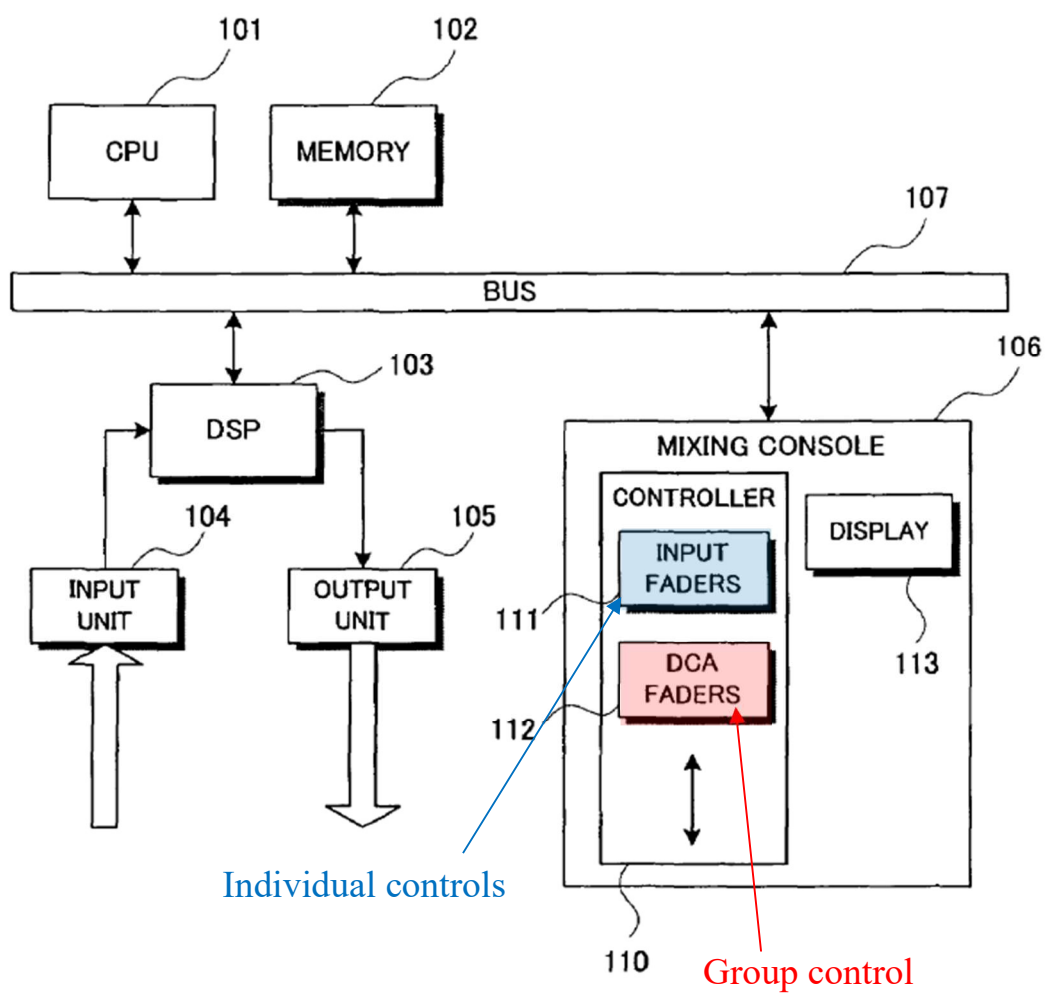


FIG. 1

EX1007, Fig. 1

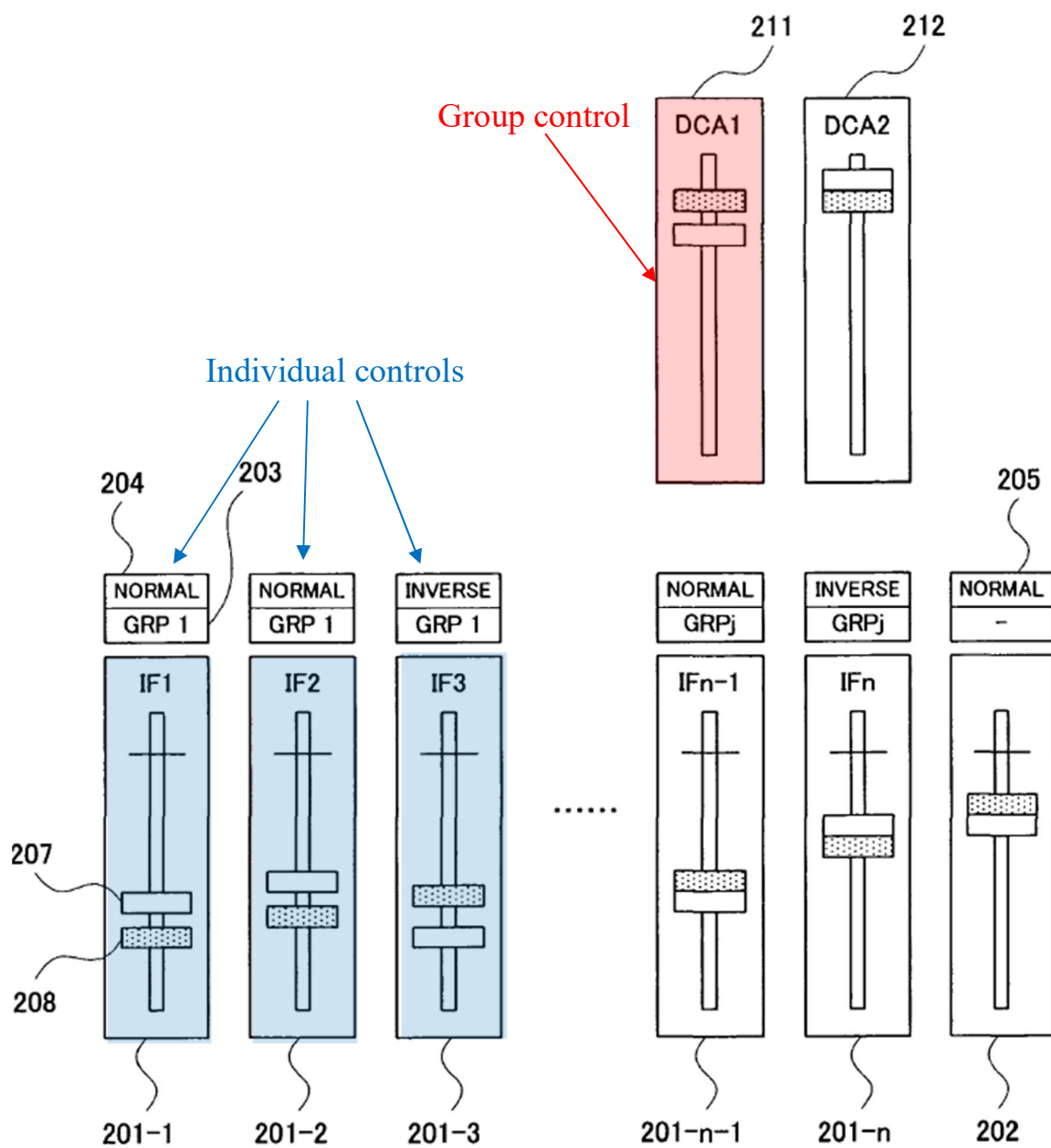


FIG. 2

EX1007, Fig. 2.

Like Aiso, Geiwitz discloses individual volume meters of audio zones and a group volume meter for changing volumes of all audio zones in a scene. EX1005, 25:26-26:8; EX1006, 62-63, 66, Figs. 103, 106. In Geiwitz-Aiso, Geiwitz's user interface would have been adapted to display Geiwitz's individual audio zone volume controls and group control volume control on a single interface display, as Aiso teaches and was well known in the art in the audio and volume control space. A POSITA would have found Aiso's teaching of providing both individual and group controls on the user interface a suitable design alternative for Geiwitz's touchscreen user interface for presenting individual and group volume meters of audio zones in a scene. EX1012, Figs. 8A-9; EX1003, ¶166.

A POSITA would have understood that such modification to Geiwitz's touchscreen user interface would offer a streamlined user experience, such as allowing the user to have immediate visual feedback of the effect of the group control on individual audio zones, reducing navigation needed to fine-tune the volume controls of individual audio zones, and quickly performing troubleshooting or calibration if needed. EX1003, ¶167. Indeed, it would have been nothing more than adopting a conventional layout, providing an intuitive and comfortable display for the user. *Id.* A POSITA would have known how to implement this modification because it would require nothing more than ordinary software programming skills, such as programming the user interface control software executed by Geiwitz's

microprocessor to adjust the size and location of the icons to present the individual volume meters and the group meter on the screen. EX1006, 64; EX1003, ¶168.

B. Independent Claim 38

1. **[38pre]: An apparatus for manipulating a plurality of players, the apparatus comprising:**

Geiwitz teaches [38pre] as explained for [25pre] (Ground 1). Section V.B.1; EX1003, ¶¶169-170.

2. **[38a]: a screen;
[38b]: a screen driver commanding the screen;
[38c]: an input interface;**

Geiwitz teaches [38a]-[38c] as explained for [25a]-[25c] (Ground 1). Section V.B.2; EX1003, ¶171.

3. **[38d]: a network interface;**

Geiwitz teaches [38d] as explained for [25d] (Ground 1). Section V.B.3; EX1003, ¶172.

4. **[38e]: a memory for storing code for an application module;**

Geiwitz teaches [38e] as explained for [25e] (Ground 1). Section V.B.4; EX1003, ¶173.

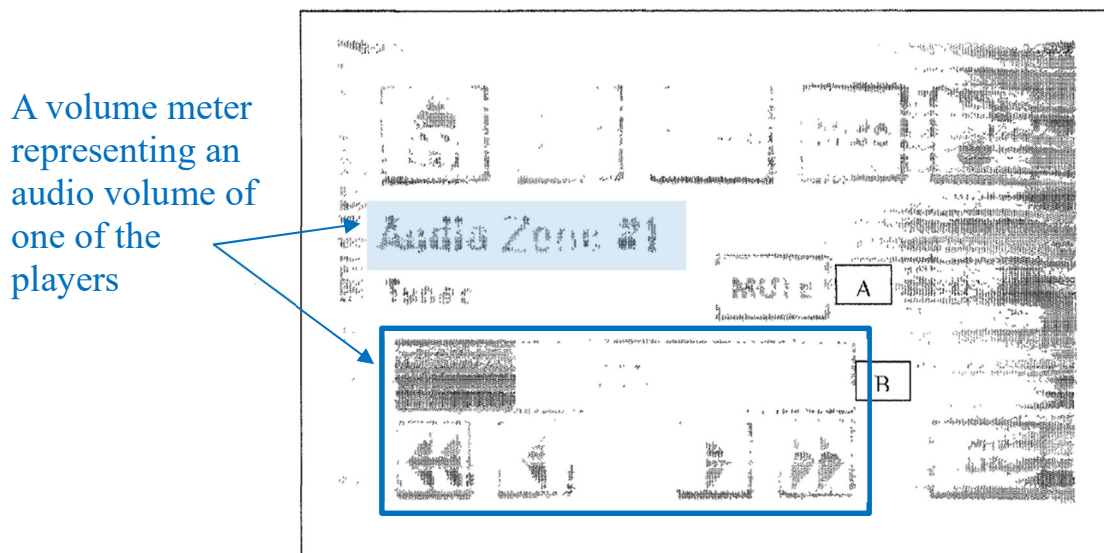
5. [38f]: a processor coupled to the memory, the input interface, the screen driver and the network interface, the processor executing the code in the memory to cause the application module and the screen driver to perform operations of:

Geiwitz teaches [38f] as explained for [25f] (Ground 1). Section V.B.5; EX1003, ¶174.

6. [38g]: displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, if there is such a group; and

Geiwitz discloses adjusting the volumes of individual audio zones and displaying a volume meter for individually adjusting the volume of an audio zone (“*player*”), as shown below. EX1006, 13, 66, Fig. 106; EX1003, ¶¶175-176.

Figure 106

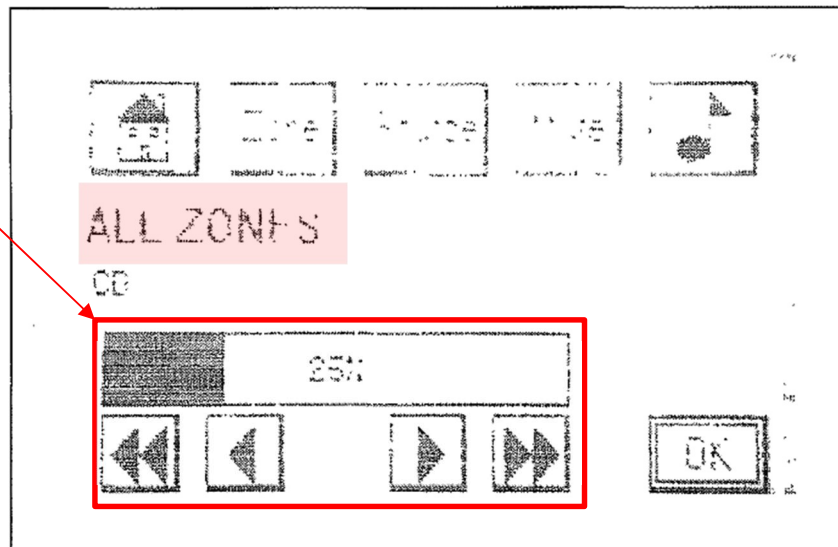


EX1006, 66, Fig. 106.

As explained for [25j] (Section V.B.9), a POSITA would have understood that Geiwitz teaches a group volume meter and volume adjusters to control the volumes of all audio zones (“*players*”) in a scene (“*group*”). A POSITA would have understood that this group volume meter would “*represent[] an audio volume of a group of players, if there is such a group.*” A POSITA would have understood that this group volume meter constitutes “*another one of the volume meters representing an audio volume of a group of players*” because it reflects the volume of the whole group. Section V.B.9; EX1003, ¶177.

Figure 103

“another one of the volume meters representing an audio volume of a group of players”



EX1006, 63, Fig. 103.

Geiwitz does not expressly disclose “*displaying on a screen a list showing a plurality of volume meters*” that includes both the individual volume meters and

group volume meter. Geiwitz and Aiso render this limitation obvious. EX1003, ¶¶178-180.

Aiso discloses a console with an interface that provides **individual controls** for setting control levels of individual channels and **group controls** that collectively change the levels of all channels of the same group (e.g., “GRP1”). EX1007, 1:27-30, 3:9-32, 4:1-10, Figs. 1-2.

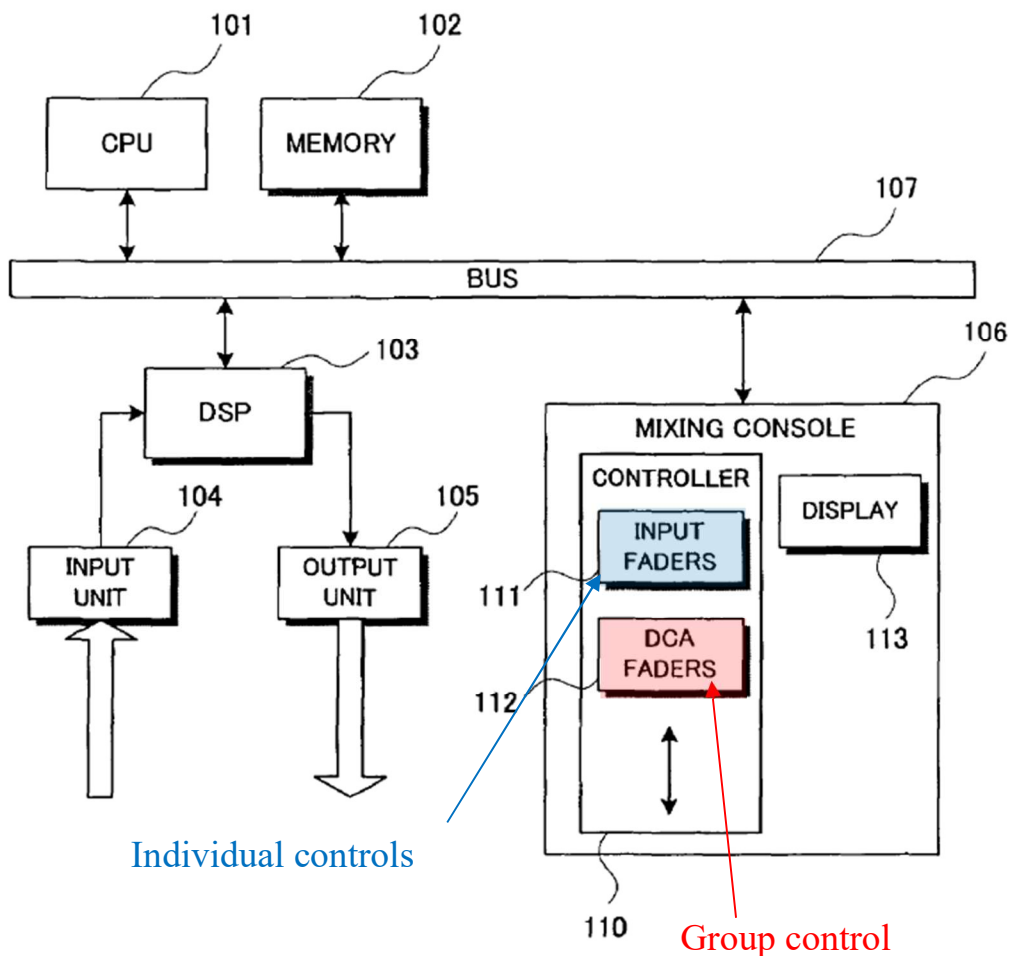


FIG. 1

EX1007, Fig. 1.

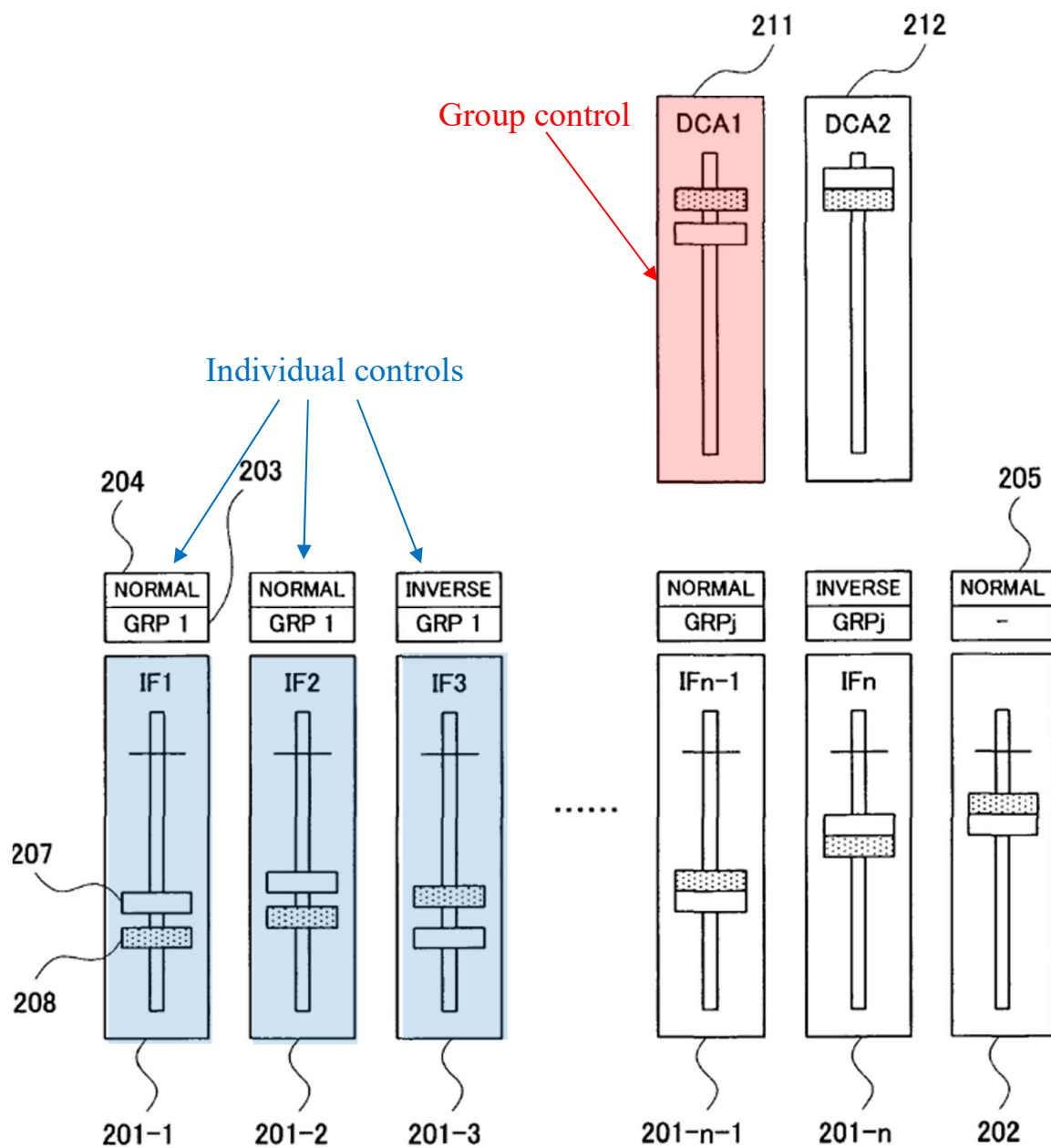


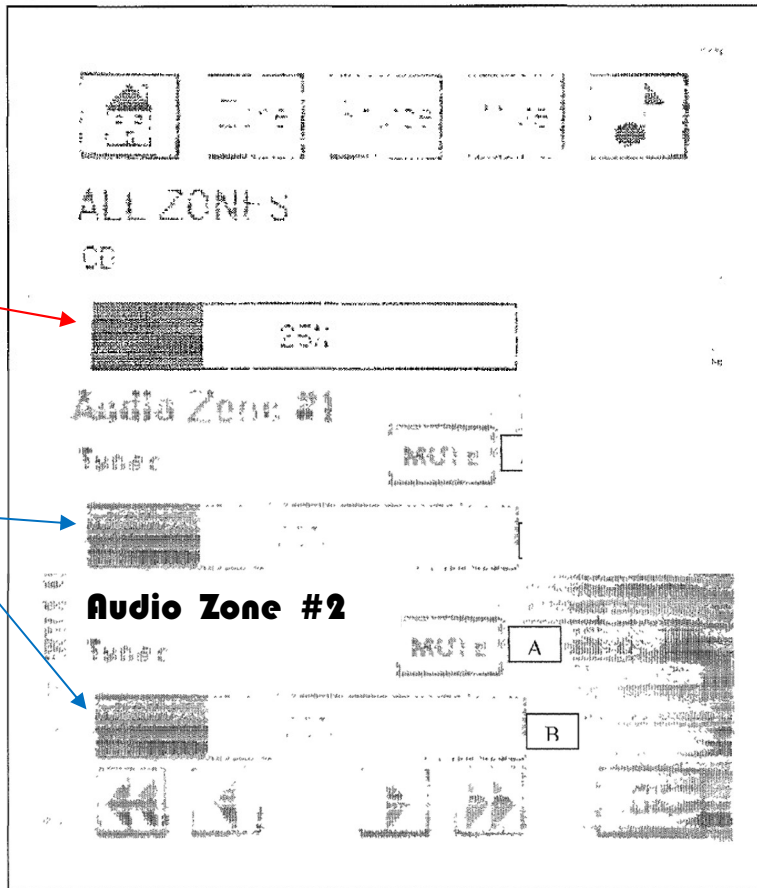
FIG. 2

EX1007, Fig. 2.

As explained in Section VI.A, a POSITA would have found Aiso's teaching of providing both individual and group controls on the user interface a suitable design alternative for Geiwitz's presentation of individual and group volume meters of audio zones ("*players*") in a scene ("*group*") on the touchscreen. EX1012, Figs. 8A-9; EX1003, ¶180. A POSITA would have understood that such modification to Geiwitz's touchscreen user interface would only require ordinary skill to combine different types of volume meters in a single consolidated screen to provide a streamlined user interface. EX1003, ¶180. When Geiwitz's touchscreen user interface is used for controlling a scene including more than one audio zone ("*if there is such a group*"), Geiwitz's touchscreen user interface modified in view of Aiso's teaching would display "*a list showing a plurality of volume meters,*" and "*at least one of the volume meters*" would represent an audio volume of an audio zone in the scene ("*one of the players*") and "*another one of the volume meters*" would represent an audio volume of all audio zones in the scene ("*a group of players*"). EX1003, ¶180.

“another one of the volume meters representing an audio volume of a group of players”

“at least one of the volume meters representing an audio volume of one of the players”



EX1006, 63, 66, Figs. 103, 106 (modified).

7. [38h]: adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players, represented by an averaged value of audio volumes of the players in the group, and

As explained for [38g], Geiwitz and Aiso render obvious displaying on Geiwitz's touchscreen *“a list showing a plurality of volume meters,”* one of which would represent an audio volume of all audio zones in the scene (*“one of the volume meters is for the group of players”*). Section VI.B.6; EX1003, ¶¶181-186.

As explained for [25j], it would have been obvious to a POSITA that such group volume meter of Geiwitz would have been represented by the averaged value of the audio volumes of the audio zones of the scene (*“players in the group”*). Section V.B.9.b. A POSITA would have understood that adjusting the group volume meter would change the volume of each audio zone in accordance with an adjustment made by a user. EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103; EX1003, ¶182.

A POSITA would have further understood that in Geiwitz’s touchscreen user interface modified in view of Aiso’s teaching, there are at least two suitable, alternative ways to adjust the group volume meter. EX1003, ¶¶183-186.

First, a POSITA would have understood that the touchscreen user interface would include a set of volume adjusters under each listed volume meter as taught in Geiwitz (*e.g.*, EX1006, 63, 66, Figs. 103, 106). Adjusting the volume adjusters under the group volume meter would have selected the group volume meter from the list of displayed volume meters. The volume adjusters would have been adjusted based on the desired listening experience of the whole group (*“adjusting one of the volume meters as desired after one of the volume meters from the list is selected”*). EX1003, ¶184.

Second, a POSITA would have understood that another suitable design would have the touchscreen user interface present one set of volume adjusters for adjusting any of the volume meters in the list, and a user would adjust the group volume meter

after selecting the group volume meter from the list (“*adjusting one of the volume meters as desired after one of the volume meters from the list is selected*”), such as by scrolling a highlight across the list of volume meters and adjusting the volume adjuster selected by the highlight. EX1006, 91; EX1003, ¶185.

A POSITA would have had a reasonable expectation of success in implementing either design because it would have only required ordinary skill to program Geiwitz’s software driving the microprocessor to update the touchscreen user interface to display the volume meters and volume adjusters at suitable locations and sizes while maintaining their existing functions. EX1003, ¶186.

8. [38i]: said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

As explained for [25j] and [38h] (Sections V.B.9, VI.B.7), a POSITA would have understood that adjusting the group volume meter displayed in the list would change a volume of each of the audio zones in a scene (“*changing a volume of each of the group of players*”) in the same fashion (“*synchronously*”) in accordance with an adjustment made by a user, such as an increase or decrease by 1% or 5%. EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103; Sections V.B.9.b, VI.B.7; EX1003, ¶¶187-188.

C. Claim 42

- 1. The apparatus of claim 38, wherein the processor executing the code in the memory causes the application module and the screen driver to perform operations of maintaining relative volume loudness difference among each of the players in the group.⁶**

As explained for [25j] (Section V.B.9), Geiwitz discloses a group volume meter that controls the volumes of all the audio zones, and adjusting the volume meter allows synchronous adjustment of the volumes of all the audio zones in the same fashion. EX1005, 25:26-26:8; EX1006, 62-63, Figs. 97, 103; EX1003, ¶¶189-190. As explained for [25j] and [38h] (Sections V.B.9, VI.B.7), a POSITA would have found it obvious that Geiwitz's group volume meter is represented by "*an averaged value of audio volumes of the players in the group.*" As such, a POSITA would have understood that adjusting Geiwitz's group volume meter would cause the relative volume loudness difference among each of the audio zones of a scene ("*players in the group*") to remain the same. EX1003, ¶190.

⁶ To the extent this limitation has discernible meaning, the prior art discloses it by disclosing or rendering obvious the relative difference of the audio volume among players in the group remains unchanged in percentage. EX1001, 11:46-52; Sections VI.C, VIII.C.

When two audio zones (“*players*”) in a scene (“*group*”) have the same volume, such as 25% or 100%, the relative volume loudness difference between the audio zones is zero, and adjusting the group volume meter represented by an average value of 25% or 100% would change the volume of each audio zone by the same amount, maintaining the relative volume loudness difference, i.e., zero. EX1003, ¶191.

When the two audio zones have different volumes at 10% and 40%, the volume offset is 30%. Increasing the group volume meter represented by the averaged value of 25% by 5% would result in the first audio zone having a volume of 15% and the second audio zone having a volume of 45%, maintaining the volume offset of 30%. Alternatively, it would have been obvious, if the user increased group volume from 25% to 50%, to change the two audio zones to 20% and 80%, thus maintaining the 4x volume difference between the two players. EX1003, ¶193 (citing EX1005, 25:26-26:8; EX1006, 62-63, Figs. 97, 103 (teaching changing volumes of all the audio zones in the same fashion)). EX1003, ¶192.

D. Claim 43

- 1. The apparatus of claim 38, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.**

As explained for [38i] (Section VI.B.8), a POSITA would have understood that adjusting the group volume meter displayed in the list (“*adjusting the one of the volume meters*”) would change a volume of each of the audio zones in a scene synchronously in accordance with an adjustment made by a user in the same fashion, such as an increase or decrease by 1% or 5% (“*causing an equal change to a volume of each of the players in the group*”). EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103; EX1003, ¶¶193-194.

A POSITA would have understood that such adjustment of Geiwitz’s group volume meter would allow it to remain represented by the averaged value of the volumes of the players of the group. For example, when all audio zones (“*players*”) in a scene (“*group*”) have the same volume, such as (i) 25%, increasing the group volume meter by 5% would result in the volumes of both audio zones increasing to 30%, while the group volume meter is represented by the averaged value 30% of the volumes of the two audio zones; or (ii) 100%, decreasing the group volume meter by 5% would result in the volumes of both audio zones to decrease to 95%, which the group volume meter is represented by the averaged value 95% of the volumes of

the two audio zones. For another example, when two audio zones (“*players*”) in a scene (“*group*”) have respective volumes at 10% and 40% and an averaged value of 25%, increasing the group volume meter from 25% by 5% would increase the first audio zone to a volume of 15% and the second audio zone to a volume of 45%, while the group volume meter is represented by the averaged value of 30%. EX1001, 11:37-40, 13:47-57; Section V.B.9; EX1003, ¶¶195-197.

VII. Ground 3: Allen, Geiwitz, and Van Hulle Render Obvious Claims 25, 32, and 35

A. The Combination of Allen, Geiwitz, and Van Hulle

Allen, Geiwitz, and Van Hulle are in the same field of endeavor and analogous to the '014 patent. EX1003, ¶¶198-200.

Allen discloses an audio system that includes **sound reproduction devices (or sound reproducers)** located in different **rooms**, **audio signal sources**, and **controllers**. EX1008, Abstract, 1:1-24, 3:11-4:17, Fig. 1. The controllers include remote controllers that wirelessly communicate with a system controller to control the audio signal sources and sound reproducers. *Id.*; EX1003, ¶¶85-87.

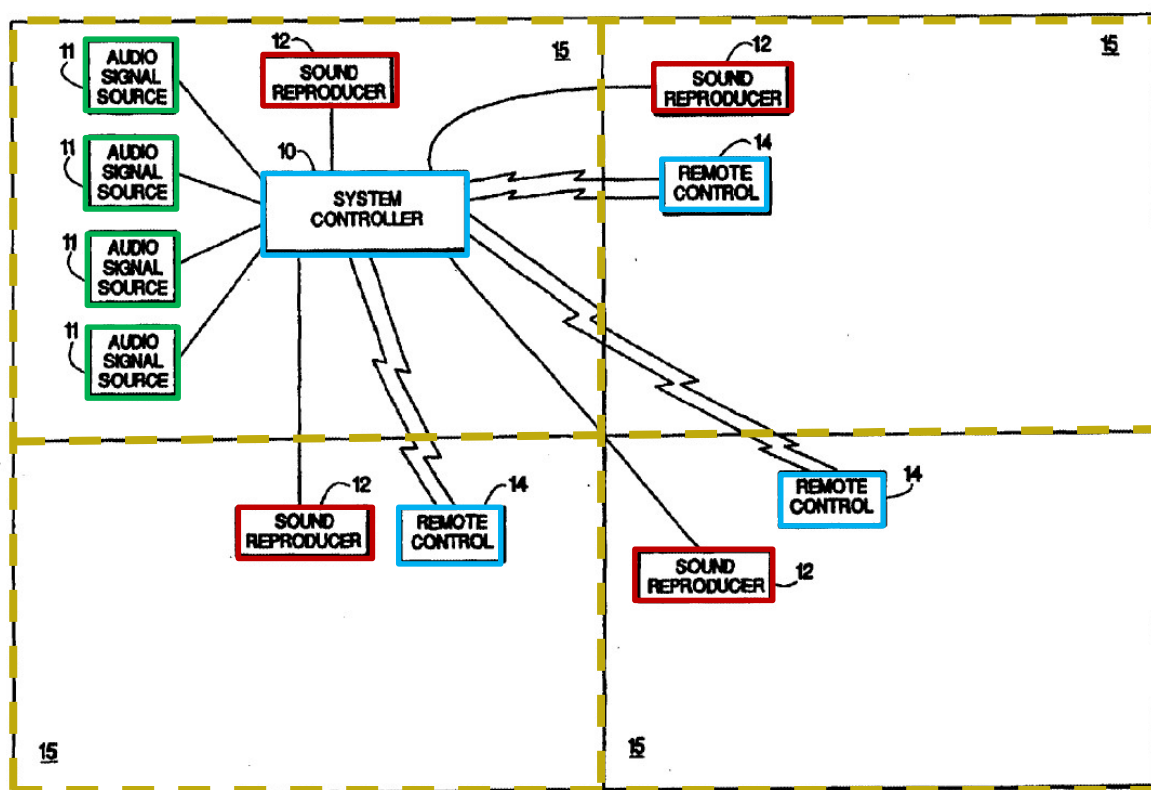


FIG. 1

EX1008, Fig. 1. As shown below, Allen's remote controller includes a user interface screen 20 having an **indicator area 22** and an **input area 23**. EX1008, 3:21-4:17, 4:59-6:13, 7:44-8:42, Figs. 3A-3C; EX1003, ¶¶86, 199-200.

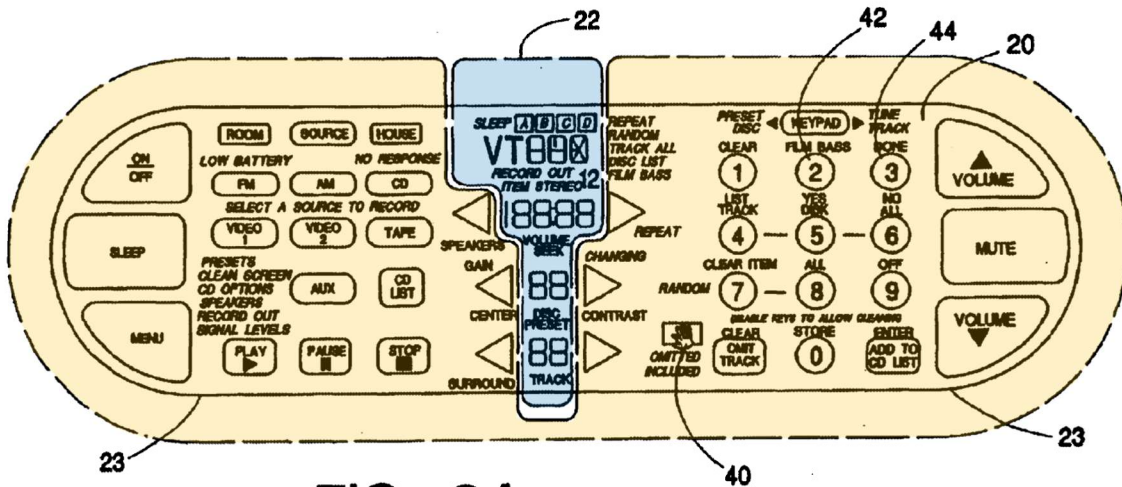


FIG. 3A

EX1008, Fig. 3A.

A POSITA would have been motivated to modify the user interface screen of Allen's remote controller to use Geiwitz's icon-based user interface designs to effect control over the audio sources and sound reproducers, as illustrated below (EX1003, ¶¶199-208):

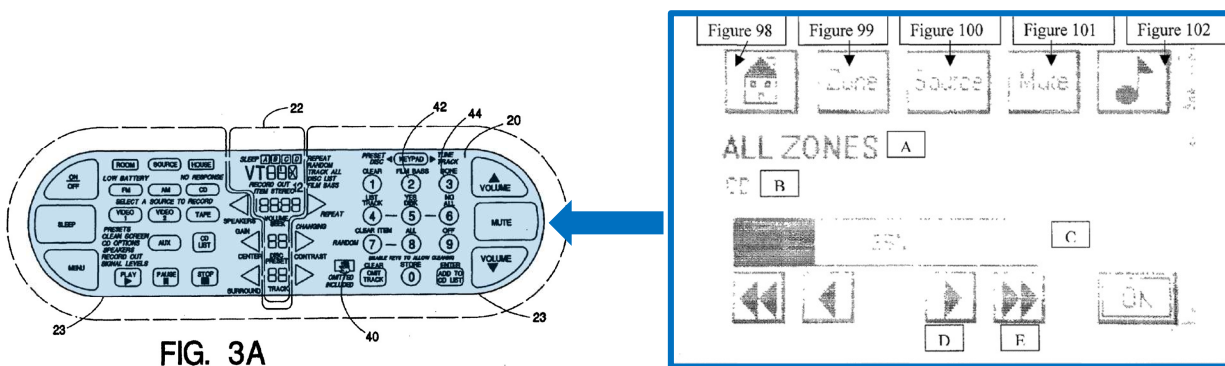


FIG. 3A

EX1008, Fig. 3A; EX1006, 62, Fig. 97; EX1008, 3:44-4:17, 5:28-6:13, 7:44-8:42; EX1005, 9:25-30, 10:9-18, 12:3-12, 17:4-23, Figs. 28-33; EX1006, 6, 172.

Both Allen and Geiwitz disclose collective control of a group of audio devices throughout a house, such as playing the same audio source and performing collective volume adjustment of a group of audio devices. EX1008, 3:21-43, 3:66-4:17, 5:28-6:13; EX1005, 25:26-26:8, 38:7-9; EX1006, 62-63, 581-583, Fig. 103. A POSITA would have understood that modifying Allen's user interface screen to use Geiwitz's icon-based user interface designs would have provided users a familiar, simplified, and flexible icon-based interface. EX1003, ¶199.

A POSITA would have understood that the indicator area of Allen's user interface screen allows for displaying a predetermined number of graphic figures and selecting multiple rooms, such as by toggling through the graphic figures. EX1008, 5:28-49; *compare* EX1008, 3:33-36 (fifteen different rooms in a house), *with* Fig. 3A (showing a list of four rooms A, B, C, D). A POSITA would have understood that using Geiwitz's icon-based user interface designs allows for more flexible and expandable options for what to display on the interface in an intuitive navigation environment. EX1006, 21, 56-59, 64, Fig. 104; EX1006, 172 (controlling 144 zones); EX1003, ¶200.

Geiwitz's icon-based user interface designs also allow for customizing the icons representing the audio devices or groups of devices, allowing for easy reconfiguration of groups, rather than using predefined graphic figures as in Allen. EX1006, 64, 214; EX1008, 5:28-49; EX1003, ¶201.

A POSITA would have understood that modifying Allen's user interface screen to use Geiwitz's icon-based user interface designs would further Allen's objective "to provide an improved remotely controllable audio system and ... improved remote controlling." EX1008, 1:6-8; EX1003, ¶202.

A POSITA would have understood Geiwitz's icon-based user interface designs to be a suitable alternative for implementing the various user interface functions of Allen's remote controller. Allen discloses displaying graphical figures representing commands appropriate to the selected audio device or group of devices, suggesting that the user interface screen can be dynamic. EX1008, 5:43-49. A POSITA would have understood that Geiwitz's icon-based user interface designs would have been suitable for such dynamic display while providing additional display and navigation functionalities. EX1003, ¶203.

A POSITA would have known how to use Geiwitz's icon-based user interface designs in Allen's user interface screen and would have had a reasonable expectation of success in doing so because such modification requires only ordinary skill. For example, a POSITA would have understood to replace Allen's fixed segment LCD screen with a graphic LCD and update the operating system and its software modules to generate instructions for addressing pixels as needed for generating the icon-based graphical user interface on the screen. A POSITA would have known to choose a microprocessor and RAM of suitable processing power and memory. As such, a

POSITA would have understood that incorporating Geiwitz's icon-based user interface designs in Allen's user interface screen would have been applying a known technique to improve a similar device in the same way to yield the predictable result of a user interface screen with improved flexibility and expandability. EX1003, ¶204.

A POSITA also would have been motivated to modify Allen in view of Van Hulle. As explained in [25h] (Ground 1, Section V.B.7), Van Hulle discloses any one of the active sound reproducers can operate in master mode (“*serves as a zone group head*”) and synchronize all players in accordance with the master, which passes on the audio signal it plays to the remaining sound reproducers. EX1009, 2:49-61, 3:1-5, 3:33-55, 9:22-10:22; EX1003, ¶205.

A POSITA would have understood that Allen teaches a combination of sound reproduction devices playing the same audio source. EX1008, 3:21-43, 3:66-4:17, 5:28-49. To the extent Allen does not describe the details of such synchronized play, a POSITA would have been motivated to find teachings on the implementation details, and would have recognized that Van Hulle provides a suitable solution. EX1003, ¶206; *Intel*, 61 F.4th at 1381.

A POSITA would have understood that using Van Hulle's synchronization method in Allen would improve the availability of Allen's audio system. For

example, using Van Hulle’s synchronization method would allow synchronized play by sound reproducers in a wider range. EX1009, 3:33-55, 9:22-37; EX1003, ¶207.

A POSITA would have had reasonable expectation of success in using Van Hulle’s method in Allen because Allen’s audio system is well equipped for such modification and such modification would have involved only ordinary skill. Like Van Hulle’s sound reproducers, Allen’s sound reproducers include wired or wireless communication interfaces for receiving and transmitting audio and control signals. EX1003, ¶208; EX1010, [0031]-[0034], [0038], [0040]-[0041]; EX1009, 1:30-37, 4:14-61, 5:8-33, 9:6-50, 10:15-22. A POSITA would have known to update Allen’s sound reproducers to include an audio detector and a control circuit for implementing synchronized play, as disclosed by Van Hulle. EX1009, 4:14-46, 5:8-53; EX1003, ¶208. A POSITA would have understood that implementing Van Hulle’s synchronization method in Allen-Geiwitz would have been using a known technique to improve a similar device in the same way and yield predictable results of an audio system with improved availability. EX1003, ¶208; *KSR*, 550 U.S. at 417.

B. Independent Claim 25

1. [25pre]

Allen discloses an audio system that includes a system controller and a **remote controller** (“*apparatus*”) for controlling **sound reproducers** (“*a plurality of players*”)

in different rooms of a house. EX1008, Abstract, 1:1-24, 3:11-4:17, 5:28-6:13, 7:44-8:42, Fig. 1; EX1003, ¶¶85, 209-211.

The system controller is coupled to (e.g., by wireless means or electrical cable) and transmits signals to and from the sound reproducers and audio signal sources (e.g., tuners, CD or DVD players). EX1008, 3:11-43, 4:18-58. The remote controller, via wireless communication with the system controller, controls the sound reproducers. EX1008, Abstract, 1:1-24, 3:11-4:17, Fig. 1; EX1003, ¶84, 210.

A POSITA would have understood that Allen's sound reproducers are part of a connected audio system ("*a data network*") and receive audio signals from audio sources connected to the system and perform signal processing, e.g., amplification and digital-to-analog conversion, before outputting audio signals. EX1008, Abstract, 1:1-24, 3:11-4:58, Fig. 1. Allen's sound reproducers are "*a plurality of players*" under the parties' agreed construction of "*player*" as "*a data network device configured to process and output audio.*" Section IV; EX1003, ¶211.

2. [25a];
[25b];
[25c]

Allen teaches [25a]-[25c]. EX1003, ¶¶212-214.

Allen's remote controller includes a user interface screen 20 ("*screen*") having an indicator area 22 and an input area 23. EX1008, 4:59-5:20, Figs. 3A-3C.

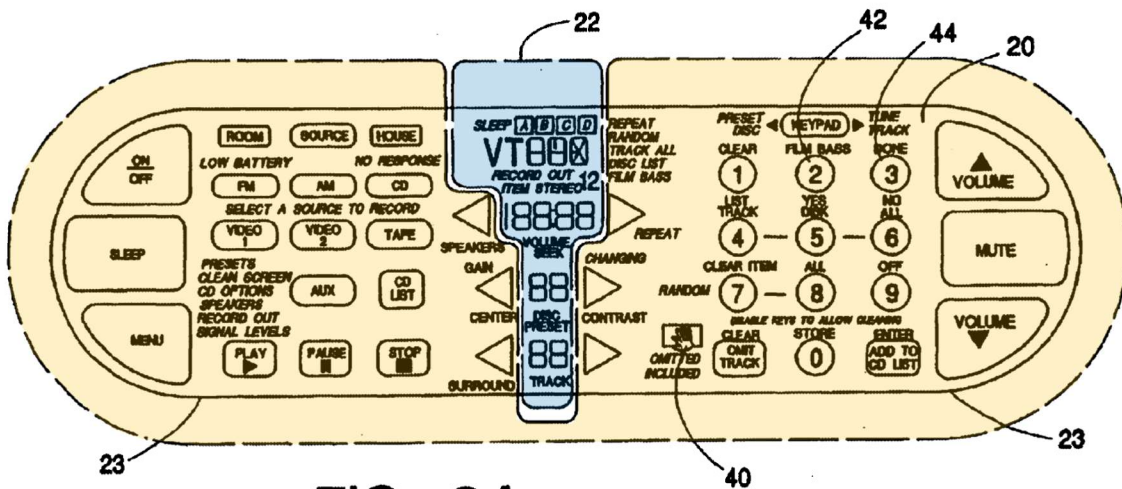


FIG. 3A

EX1008, Fig. 3A. A block diagram of the remote controller is shown below. EX1008, Fig. 5. Input area 23 corresponds to a **touchscreen 54** (“an input interface”) that receives user commands, such as selecting sound reproducers or an audio source for control. EX1008, 5:6-20, 5:28-43, 6:56-59. Indicator area 22 corresponds to **display 52** that displays current parameter values and appropriate commands for the user-selected sound reproducers or audio source. EX1008, 4:59-5:6, 5:21-27, 5:34-49, 6:14-25, 6:53-56; EX1003, ¶213.

Allen’s remote controller includes a **device driver 73** that receives information from the operating system and transforms the information into a form usable by **display 52**. EX1008, 6:67-7:8. The device driver is “typically implemented by software.” EX1008, 7:7-8. A POSITA would have understood that Allen’s device driver would send the transformed information to a control circuit that converts such

information to electric control signals to illuminate the display (“a screen driver commanding the screen”). A POSITA would have understood that such a control circuit was well known and essential to allow the display to illuminate. EX1008, 4:64-5:6; EX1011, 5:43-61, Fig. 4; EX1003, ¶214.

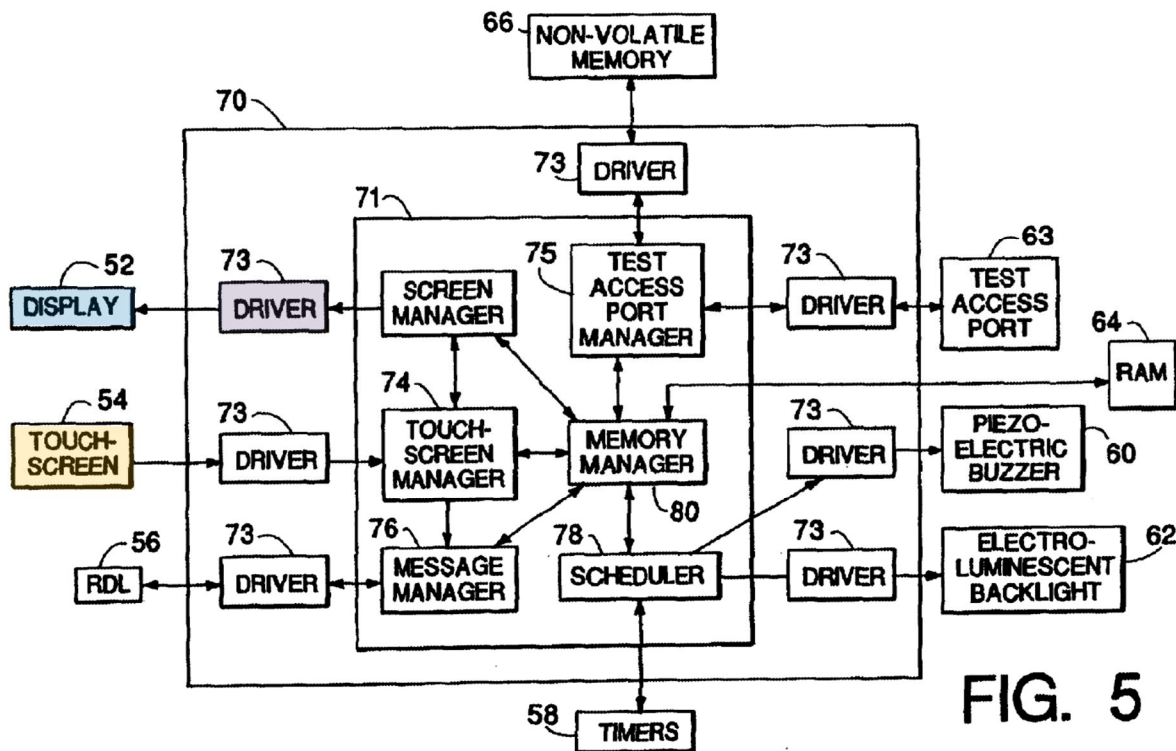


FIG. 5

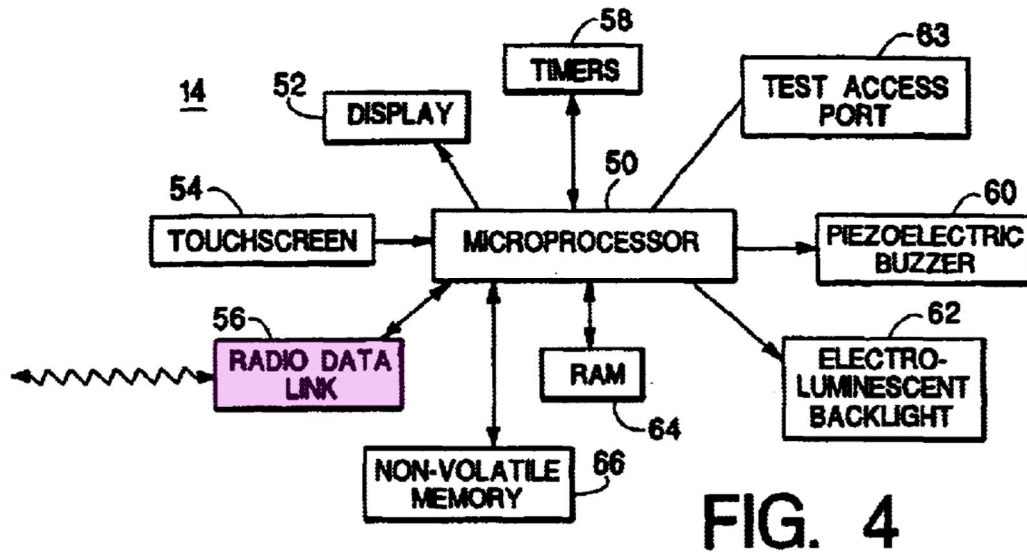
EX1008, Fig. 5.

3. [25d]

Allen teaches [25d]. EX1003, ¶¶215-218.

Allen’s remote controller includes a radio data link (RDL) 56 (“a network interface”) that communicates signals with the system controller by wireless

methods, such as by using radio frequencies. EX1008, Abstract, 1:9-24, 3:50-61, 6:46-52, 6:56-62, 7:27-30, 7:36-48, 8:5-21, Figs. 4-6.



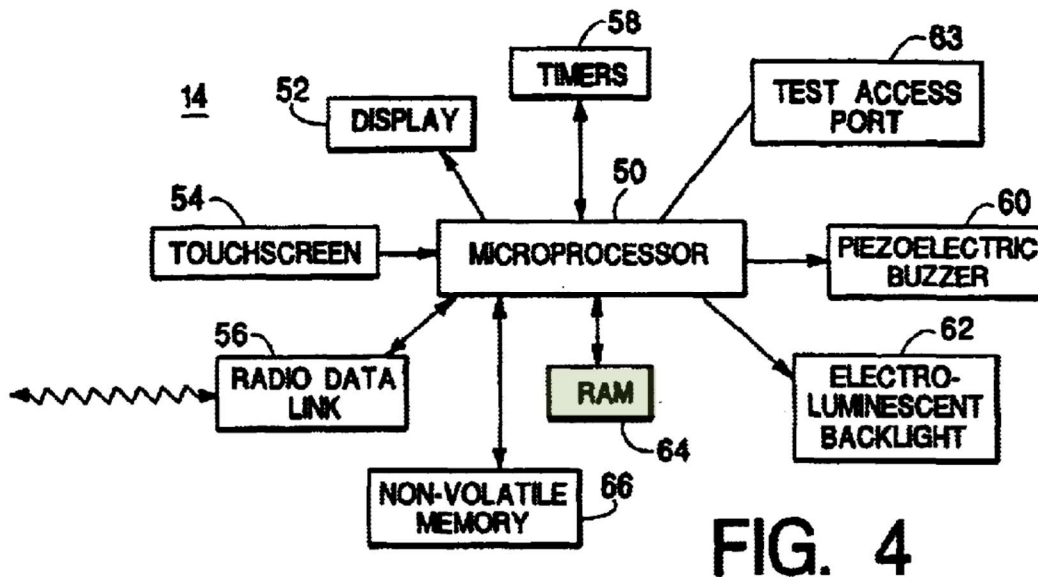
EX1008, Fig. 4.

A POSITA would have understood that Allen's audio system constitutes "*a data network*" because the system allows audio and control data to be transmitted and received by devices in communication via wired or wireless methods. EX1003, ¶218; EX1010, [0031]-[0034], [0038], [0040]-[0041]. A POSITA would have understood that Allen's **radio data link (RDL) 56** is a "*physical component*" of the remote controller ("*a device*") that, via the system controller, communicates with the sound reproducers and audio sources of the audio system ("*provides an interconnection with a data network*") under the parties' agreed construction. Section IV; EX1003, ¶218.

4. [25e]

Allen teaches [25e]. EX1003, ¶¶219-221.

Allen's remote controller includes a RAM 64 (*"a memory"*) that stores an operating system including various software modules (*"storing code for an application module"*). EX1008, 6:46-52, 7:3-16, Fig. 4. A POSITA would have understood that Allen's memory stores *"code"* for the software modules (*"an application module"*) for its microprocessor to execute for implementing the functions of the software modules. EX1003, ¶220.

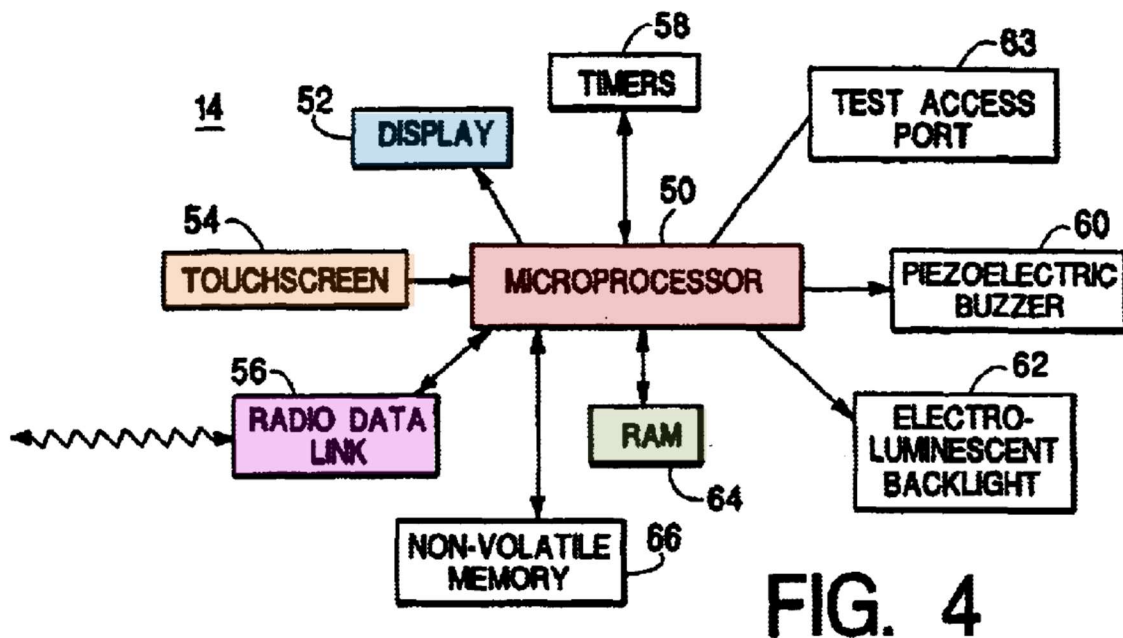


EX1008, Fig. 4.

5. [25f]

Allen teaches [25f]. EX1003, ¶¶222-224.

Allen's remote controller includes a **microprocessor 50** ("processor") coupled to **display 52** (including "screen driver," Section VI.B.2), **touchscreen 54** ("input interface"), **radio data link (RDL) 56** ("network interface"), and **RAM 64** ("memory"). EX1008, 6:46-52; EX1003, ¶223.



EX1008, Fig. 4, 6:46-52.

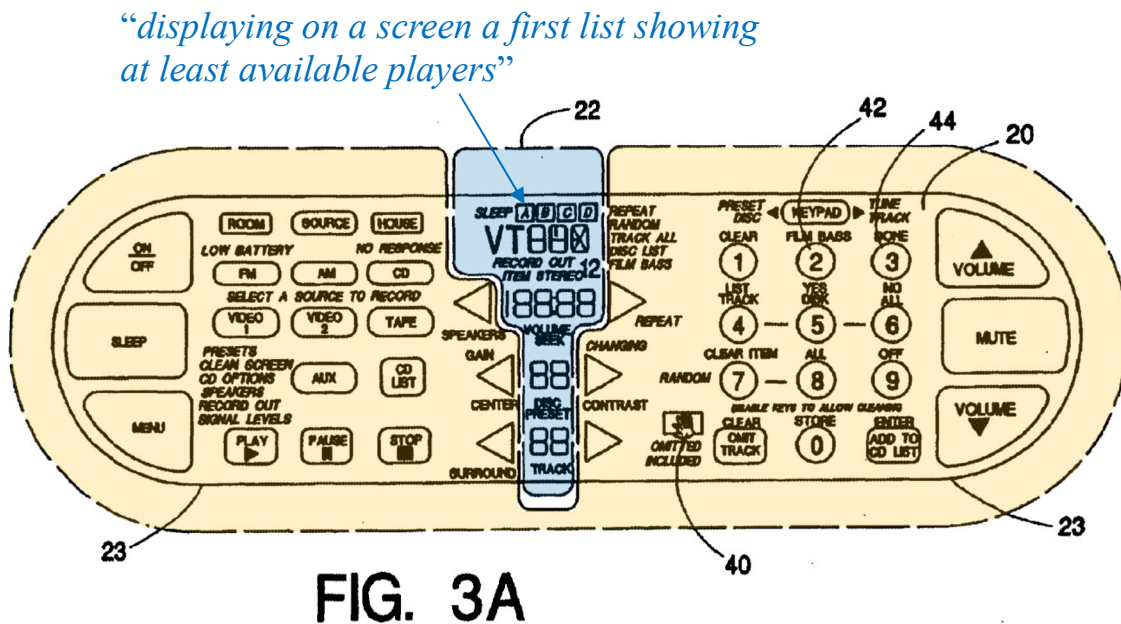
A POSITA would have understood that Allen's remote controller receives user commands via the touchscreen, updates state parameters and graphic figures shown on display based on the user commands, and transmits signals to the system controller to configure sound reproducers and audio sources based on the user's commands. EX1008, Abstract, 1:1-24, 3:11-4:17, 4:59-6:13, 7:44-8:42, Figs. 1, 3A-3C. A POSITA would have understood that the microprocessor of the remote

controller would execute the code of the operating system to cause the software modules and the screen driver to perform operations based on the user commands received by the touchscreen. EX1003, ¶224.

6. [25g]

Allen-Geiwitz teaches [25g]. EX1003, ¶¶225-231.

As explained for [25a] (Section VII.B.2), Allen's remote controller includes a user interface screen 20 ("screen") having an indicator area 22 and an input area 23. EX1008, 4:59-5:20, Figs. 3A-3C. A user selects a combination of sound reproducers by pressing the "Room" graphic figure in the input area to toggle through and select graphic figures representing sound reproducers shown in the indicator area, as shown below. EX1008, 5:28-49; EX1003, ¶226.



EX1008, Fig. 3A.

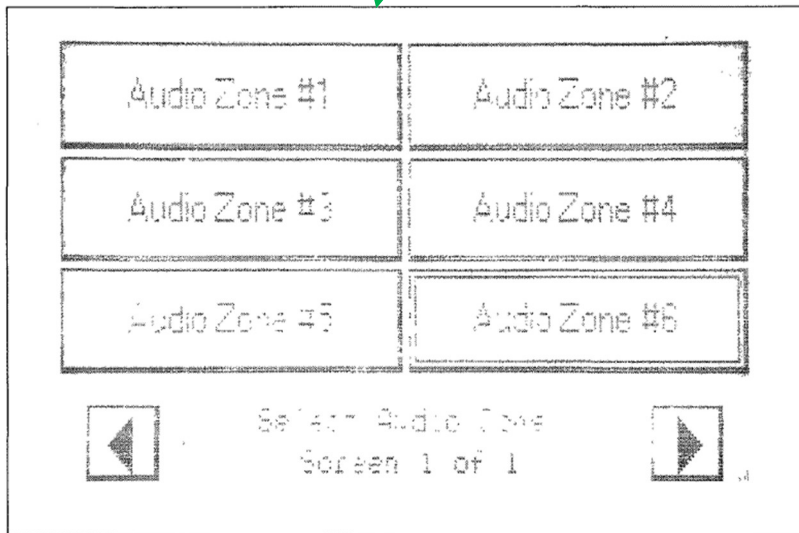
Allen discloses displaying A, B, C, D graphic figures in the indicator area, representing sound reproducers located in rooms A, B, C, and D (“*displaying on a screen a first list showing at least available players*”). EX1008, 2:2-6, 3:16-20, 3:33-43, 4:59-5:11, 5:37-43, 6:14-25, Figs. 1, 3A; Sections VII.A-VII.B.1; EX1003, ¶227.

Allen teaches not displaying the graphical figure pertaining to a room if the sound reproducers of that room are not connected to the system controller. EX1008, 3:28-43, 6:18-21. Allen thus discloses displaying “*at least available players*” that are connected to the system. EX1003, ¶228.

As explained for [25g] (Ground 1), Geiwitz discloses a touchscreen user interface that displays a list of audio zones (“*players*”) for selection to include in a scene. EX1006, 21, 56-59, 64, Fig. 104.

“displaying on a screen a first list showing at least available players”

Figure 104



EX1006, 64, Fig. 104.

Geiwitz’s touchscreen user interface “uses familiar icon-based menus that have extensive functionality,” is “logical in its layout,” “extremely simple to use,” and “efficient and user-friendly.” EX1005, Abstract, 1:14-18, 9:11-21, 14:4-10, 19:5-20:20, Figs. 1, 14; EX1006, 2, 18-20; EX1003, ¶¶229-230.

As explained in Section VII.A, a POSITA would have modified Allen’s user interface screen to use Geiwitz’s icon-based user interface designs with a reasonable expectation of success. Such modification would have been applying a known technique to improve a similar device in the same way to yield the predictable result of an improved user interface screen. EX1003, ¶231.

7. [25h]

Allen-Geiwitz teaches [25h]. EX1003, ¶¶232-241.

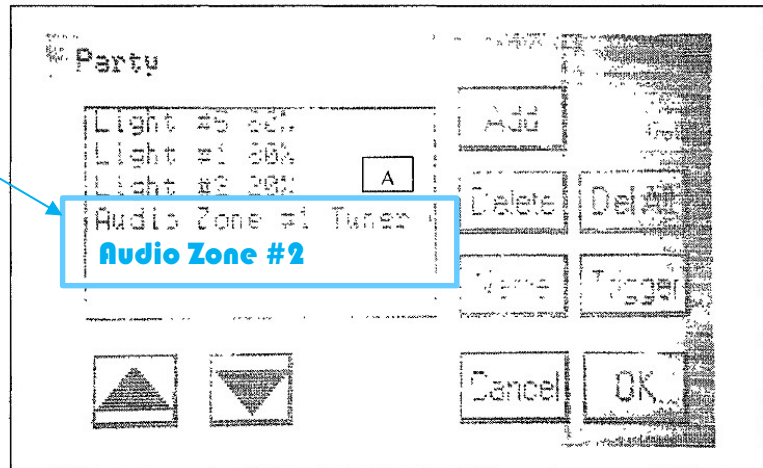
- a. **Allen and Geiwitz render obvious “displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group,”**

Allen discloses that a user can select a combination of two or more sound reproducers (rooms) for collective adjustment, such as sharing the same audio source (*“at least two of the available players are selected to form the zone group”*). EX1008, 4:1-17, 5:50-54. To the extent that Allen does not expressly disclose details of how to display and control the combination of selected sound reproducers (*“displaying a zone group”*), a POSITA would have been motivated to use Geiwitz’s icon-based user interface designs and have a reasonable expectation of success, and would have understood Geiwitz’s icon-based user interface designs provide a suitable option for the display and control of Allen’s zone group. Section VII.A; EX1003, ¶233.

As discussed for [25g]-[25h] (Ground 1), Geiwitz teaches a touchscreen user interface that displays a programmable scene including at least two audio zones selected by the user for inclusion in a scene, such as a “Party” scene. EX1006, 583. For example, as shown below, Geiwitz’s screen would display the scene as including the two audio zones selected by the user. EX1003, ¶¶234-235.

“displaying a zone group including players from the available players when at least two of the available players are selected to form the zone group”

Figure 96



EX1006, 61, Fig. 96.

A POSITA would have understood that in Allen-Geiwitz, Allen's user interface screen using Geiwitz's icon-based user interface designs would display the user-selected combination of two or more sound reproducers ("zone group") as taught in Allen. EX1008, 5:50-54; EX1005, 38:7-9; EX1006, 581-583; Section V.B.6; EX1003, ¶¶235-236.

**b. Allen, Geiwitz, and Van Hulle render obvious
“wherein any one of the players in the group serves as
a zone group head;”**

As explained in [25h] (Grounds 1), Van Hulle discloses any one of the active sound reproducers can operate in master mode ("serves as a zone group head") and synchronize all players in accordance with the master, which passes on the audio

signal it plays to the remaining sound reproducers. EX1009, 2:49-61, 3:1-5, 3:33-55, 9:22-10:22; EX1003, ¶¶237-241.

As discussed above in Section VII.A, a POSITA would have understood that Van Hulle provides a suitable solution for implementing Allen’s synchronized audio play, that such modifying Allen-Geiwitz with Van Hulle’s synchronization method would improve the availability of Allen’s audio system, and that such modification would have involved only ordinary skill. EX1003, ¶¶240-241; *Intel*, 61 F.4th at 1381.

In Allen-Geiwitz-Van Hulle, a user can select any one of Allen’s sound reproducers (“*players*”) to operate in the master mode and serve as the “*zone group head*,” which passes the audio signal to the remaining players such that all players would play the same audio at the same time, as taught by Van Hulle. And the displayed combination of devices (“*zone group*”) would include the “*zone group head*.” EX1003, ¶241.

8. [25i]

Allen-Geiwitz teaches [25i]. EX1003, ¶¶242-246.

a. Allen and Geiwitz render obvious “synchronizing all players in the zone group”

Allen discloses an audio signal source can be synchronized and shared by multiple sound reproducers in different rooms (“*synchronizing all players in the*

zone group”). EX1008, 3:21-43, 3:66-4:17, 5:28-49, Figs. 7-8. A user selects a combination of sound reproducers and controls them collectively. EX1008, 5:50-58. A POSITA would have understood that Allen discloses that all sound reproducers under the collective control (“*all players in the zone group*”) would play back the same multimedia at the same time under the parties’ constructions. EX1003, ¶¶243-244.

As explained in [25h] (Ground 3), a POSITA would have found it obvious to modify Allen’s user interface screen for selecting and collectively controlling a combination of two or more sound reproducers (“*players in zone group*”). Section VII.B.7. In Allen-Geiwitz, Geiwitz’s user interface would be used for selecting and controlling Allen’s players in the zone group to share the same audio source for synchronized play, teaching “*causing all players to playback the same multimedia at the same time*” under the parties’ construction. EX1008, 4:1-17; EX1005, 38:7-9; EX1006, 581-583; EX1003, ¶245.

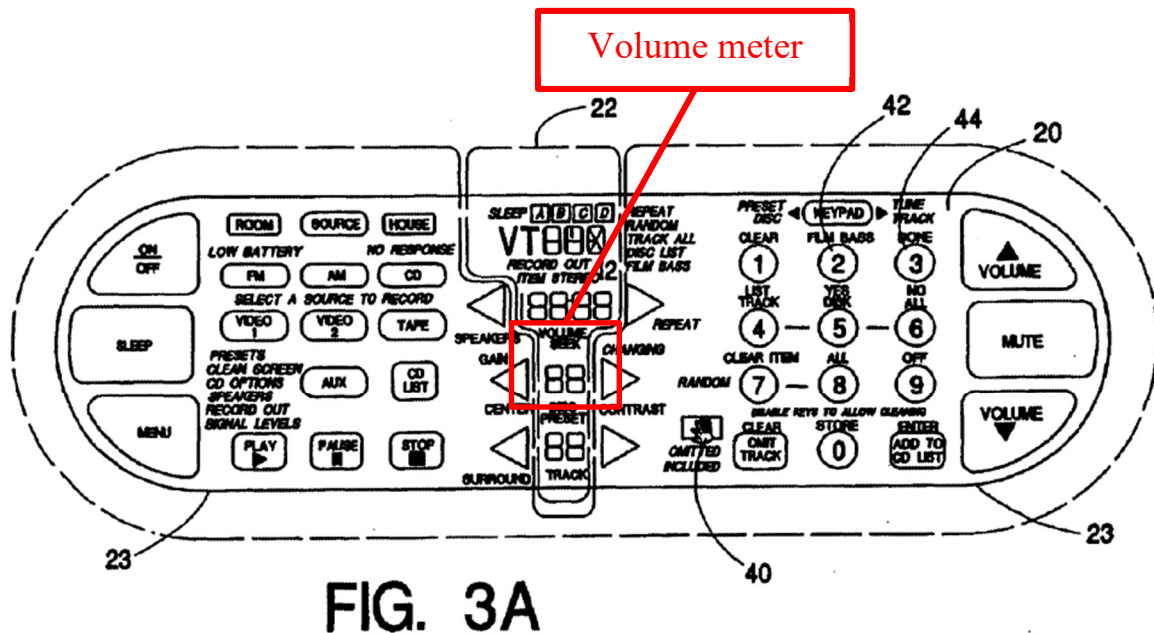
**b. Allen, Geiwitz, and Van Hulle render obvious
“synchronizing ... in accordance with the zone group
head;”**

As discussed for [25h] (Ground 3), in Allen-Geiwitz-Van Hulle, Allen’s sound reproducers (“*players*”) would play the same audio at the same time as the master (“*zone group head*”), teaching “*synchronizing ... in accordance with the zone group head.*” Sections VII.A, VII.B.7; EX1003, ¶246.

9. [25j]

Allen-Geiwitz teaches [25j]. EX1003, ¶¶247-254.

Allen discloses performing collective volume control of a combination of two or more sound reproducers (*“players in the group”*). EX1008, 5:50-6:13. Allen discloses displaying *“a volume meter”* in the indicator area of its user interface screen and volume control buttons in the input area. EX1008, 5:21-27, 5:34-49, Fig. 3A.



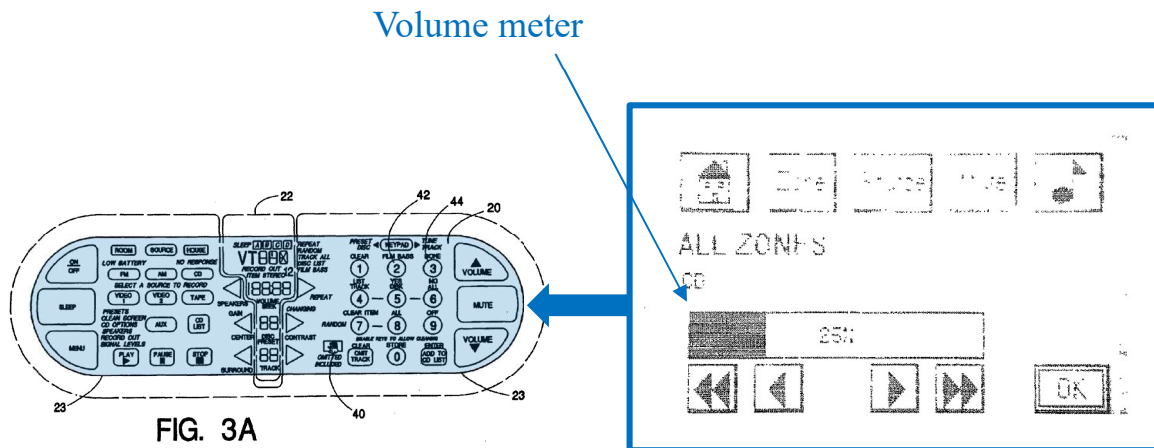
EX1008, Fig. 3A; EX1003, ¶248.

When a user selects a combination of two or more sound reproducers for playing the same audio source (*“group of players”*), Allen’s user interface screen displays information on the selected devices, which allows the user to perform

collective volume adjustment by changing the volumes of all players from their start position while maintaining the offset between the players (*“changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user”*). EX1008, 4:8-17, 5:37-6:13; EX1003, ¶249.

To the extent that Allen does not expressly disclose *“a volume meter represented by an averaged value of audio volumes of the players in the group,”* Allen-Geiwitz renders it obvious. EX1003, ¶250.

As explained in Section VII.A, a POSITA would have found it obvious to modify Allen’s user interface screen to use Geiwitz’s icon-based user interface designs, and would have found Geiwitz’s icon-based user interface designs a suitable option for selecting and collectively controlling Allen’s combination of two or more sound reproducers (*“group of players”*). Section VII.B.7. A POSITA would have found it obvious to use Geiwitz’s icon-based user interface design showing a group volume meter for Allen’s collective volume control (EX1003, ¶251):



EX1008, Fig. 3A; EX1006, 63, Fig. 103.

A POSITA would have understood that the group volume meter in Allen combined with Geiwitz would be represented by a value (e.g., 25% as shown in Figure 103), and that a numerical average of the volumes of the players in the group would have been one of the finite, suitable options for representing the group volume meter in Allen combined with Geiwitz. A POSITA would have understood that the group volume meter can be represented by, for example, a maximum, a minimum, a median, or an average volume of the players of the group. A POSITA would have understood that using the average volume to represent the group volume would allow for adjusting the volumes of the individual players in the group while maintaining the volume offset between them as desired by Allen. EX1008, 5:37-6:13; EX1003, ¶¶252-253.

Further, a POSITA would have understood that Allen-Geiwitz's volume meter is represented by an averaged volume of players being controlled at least some

of the times. For example, when all players have the same volumes at 25% or 100%, the volume meter would be represented by the averaged value of all audio zones at 25% or 100%, respectively. EX1003, ¶254; *Unwired Planet*, 841 F.3d at 1002; *Hewlett-Packard*, 340 F.3d at 1326; *Target*, 2023 WL 6135787, at *5.

C. Claim 32

1. [32pre]

Allen-Geiwitz-Van Hulle teaches synchronizing all players in the zone group as explained for [25i] (Ground 3). EX1003, ¶¶255-260.

2. [32a]

As explained for [25h]-[25i] (Ground 3), in Allen-Geiwitz-Van Hulle, Geiwitz's user interface would be used for selecting and controlling Allen's all players in the zone group to share the same audio source for synchronized play, teaching "*causing all players in the zone group to play an identical audio source.*" EX1008, 4:1-17; EX1005, 38:7-9; EX1006, 581-583; EX1003, ¶256.

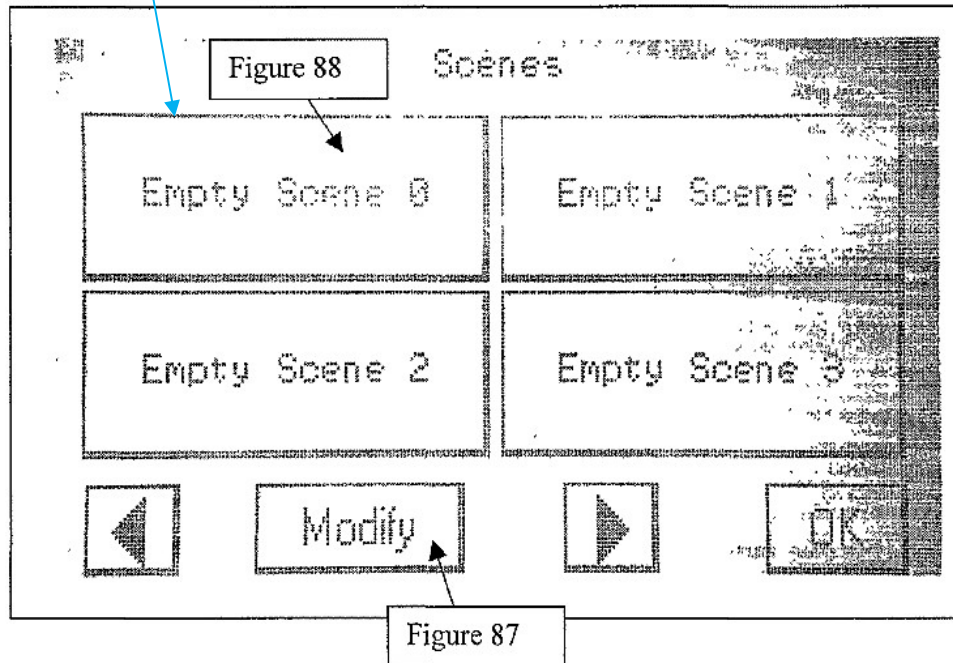
3. [32b]

Allen-Geiwitz teaches [32b]. EX1003, ¶¶258-260.

As explained for [32b] (Ground 1), Geiwitz discloses presenting a scene with a customized name indicating a grouping of the devices in the scene. EX1005, 25:15-25; EX1006, 20, 56-61, Figs. 4, 86, 90-92, 94, 96.

A named scene indicates a grouping

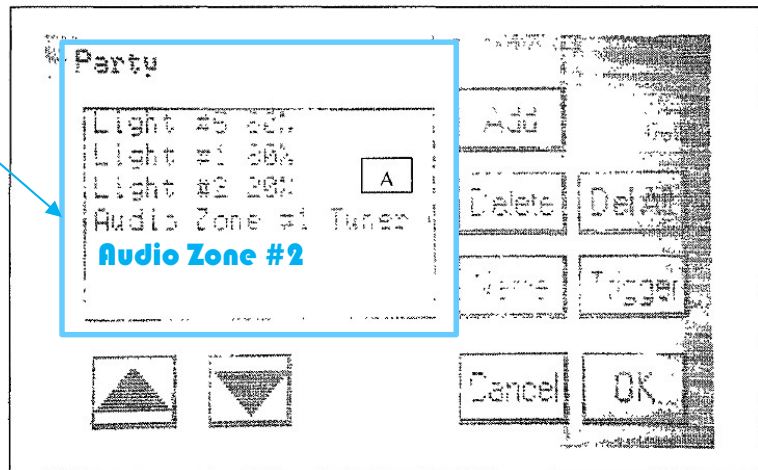
Figure 86



EX1006, 56, Fig. 86. Geiwitz also discloses presenting the zone group in a manner that indicates a grouping when a scene is being configured. Section V.C.3 (Ground 1, [32b]).

Figure 96

“presenting the zone group in a manner that indicates a grouping”



EX1006, 61, Fig. 96; EX1003, ¶259.

As explained in Section VII.A, a POSITA would have found it obvious to modify Allen’s user interface screen to use Geiwitz’s icon-based user interface designs, and would have found Geiwitz’s icon-based user interface designs a suitable option for selecting and collectively controlling a combination of two or more sound reproducers (“*zone group*”). Section VII.B.7. In Allen-Geiwitz-Van Hulle, a “*zone group*” would include two or more sound reproducers (“*players*”) (EX1008, 4:1-17, 5:50-54), and the screen would present the zone group as including all players in the group (“*in a manner that indicates a grouping*”). EX1003, ¶260.

D. Claim 35

1. [35pre]

Allen discloses [35pre] as explained for [25f] (Ground 3). EX1003, ¶¶261-262.

2. [35a]-[35d]

Allen-Geiwitz teaches [35a]-[35d]. EX1003, ¶¶263-264.

As explained for [35a]-[35d] (Ground 1), Geiwitz discloses these limitations. As explained in Section VII.A, a POSITA would have found it obvious to modify Allen's user interface screen to use Geiwitz's icon-based user interface designs, and would have found Geiwitz's icon-based user interface designs a suitable option for selecting and collectively controlling a combination of two or more sound reproducers ("*zone group*"). Section VII.B.7. In Allen-Geiwitz-Van Hulle, a user would use Geiwitz's icon-based user interface designs to select players and disassociate the selected players from the zone group by navigating and interacting with the screens as shown in Sections V.D.2-V.D.4. EX1003, ¶264.

VIII. Ground 4: Allen, Geiwitz, and Aiso Render Obvious Claims 38, 42, and 43

A. The Combination of Allen, Geiwitz, and Aiso

As explained for Ground 3, a POSITA would have been motivated to modify Allen's user interface screen to use Geiwitz's icon-based user interface designs and would have achieved success in doing so. Section VII.A. A POSITA would have been motivated to further combine Allen-Geiwitz with Aiso. EX1003, ¶¶265-267. These references are in the same field of endeavor and analogous to the '014 patent. EX1003, ¶265.

A POSITA would have been motivated to further modify Allen's user interface screen using Geiwitz's icon-based user interface designs to display the individual volume meters of players belonging to a group and the group volume meter for collectively changing the volumes of all players of the group on the same screen, in view of Aiso's teachings of a known, conventional layout for presenting the user with both options in a single interface. EX1026, [0039], [0042]-[0057], Fig. 1; EX1027, 10:23-27, 11:12-16, Figs. 6, 7. A POSITA would have found that this modification would offer a streamlined user experience with an intuitive and comfortable layout, which furthers Allen's goal of providing "an improved remotely controllable audio system" and "improved remote controlling." EX1008, 1:6-8; EX1003, ¶266.

A POSITA would have known how to implement this additional modification to Allen's user interface screen as modified by Geiwitz and would have had a reasonable expectation of success in doing so because such modification requires only ordinary skill. A POSITA would have programmed the operating system and its software modules to generate additional individual volume meter icons and adjust the size and location of the icons to present the individual volume meters and the group volume meter on the graphic LCD screen of Allen combined with Geiwitz. A POSITA would have understood to display even more volume meters in additional

screens for the user to cycle between them using navigation arrows. EX1006, 64; EX1003, ¶267.

B. Independent Claim 38

1. [38pre]

Allen discloses [38pre] as explained for [25pre] (Ground 3). Section VII.B.1; EX1003, ¶¶268-269.

**2. [38a];
[38b];
[38c]**

Allen teaches [38a]-[38c] as explained for [25a]-[25c] (Ground 3). EX1003, ¶270.

3. [38d]

Allen discloses [38d] as explained for [25d] (Ground 3). EX1003, ¶271.

4. [38e]

Allen discloses [38e] as explained for [25e] (Ground 3). EX1003, ¶272.

5. [38f]

Allen discloses [38f] as explained for [25f] (Ground 3). EX1003, ¶273.

6. [38g]

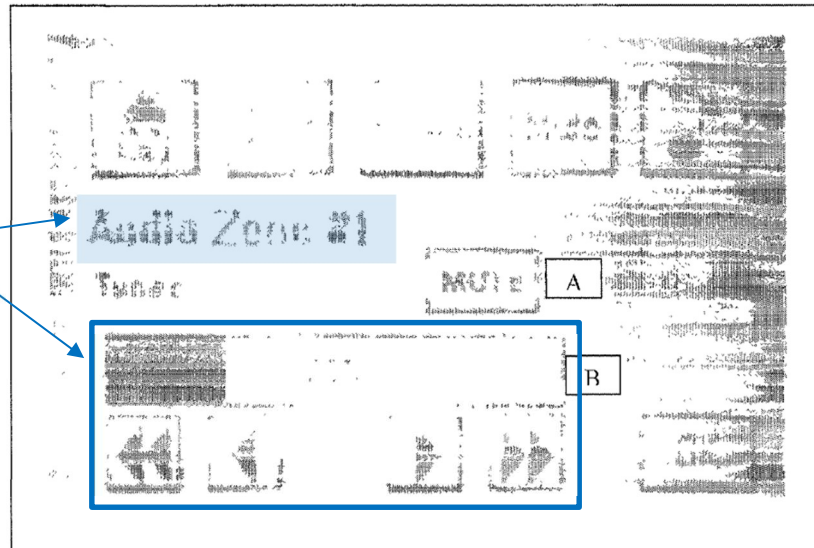
Allen-Geiwitz-Aiso teaches [38g]. EX1003, ¶¶274-277.

As explained for [38g] (Ground 2), Geiwitz discloses displaying a volume meter representing an audio volume of one of the players and a group volume meter

representing the volume of a group of players, as shown below. EX1006, 13, 66, Fig. 106; EX1003, ¶275.

Figure 106

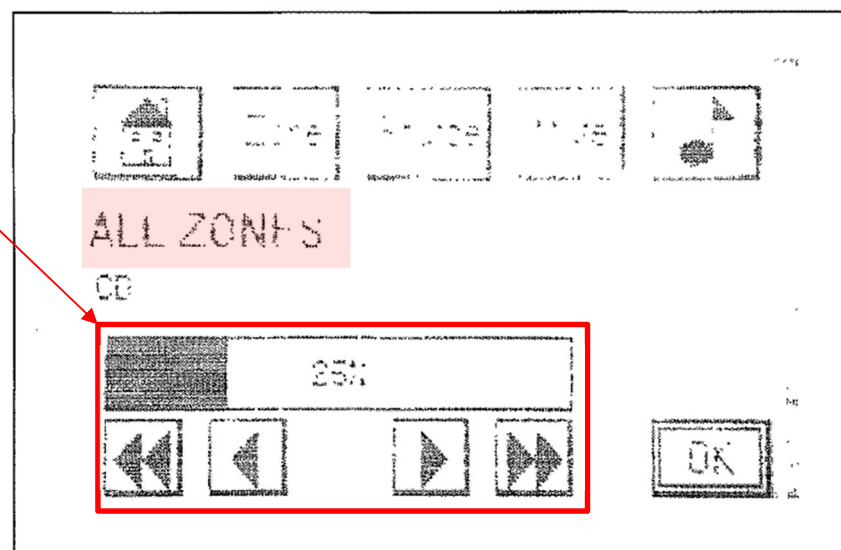
A volume meter
“representing an
audio volume of
one of the
players”



EX1006, 66, Fig. 106.

Figure 103

“another one of the
volume meters
representing an
audio volume of a
group of players”



EX1006, 63, Fig. 103.

As explained for [38g] (Ground 2), Aiso discloses a console with an interface that provides **individual controls** for setting control levels of individual channels and **group controls** that collectively change the levels of all channels of the same group (e.g., “GRP1”). EX1007, 1:27-30, 3:9-32, 4:1-10, Figs. 1-2; EX1003, ¶276.

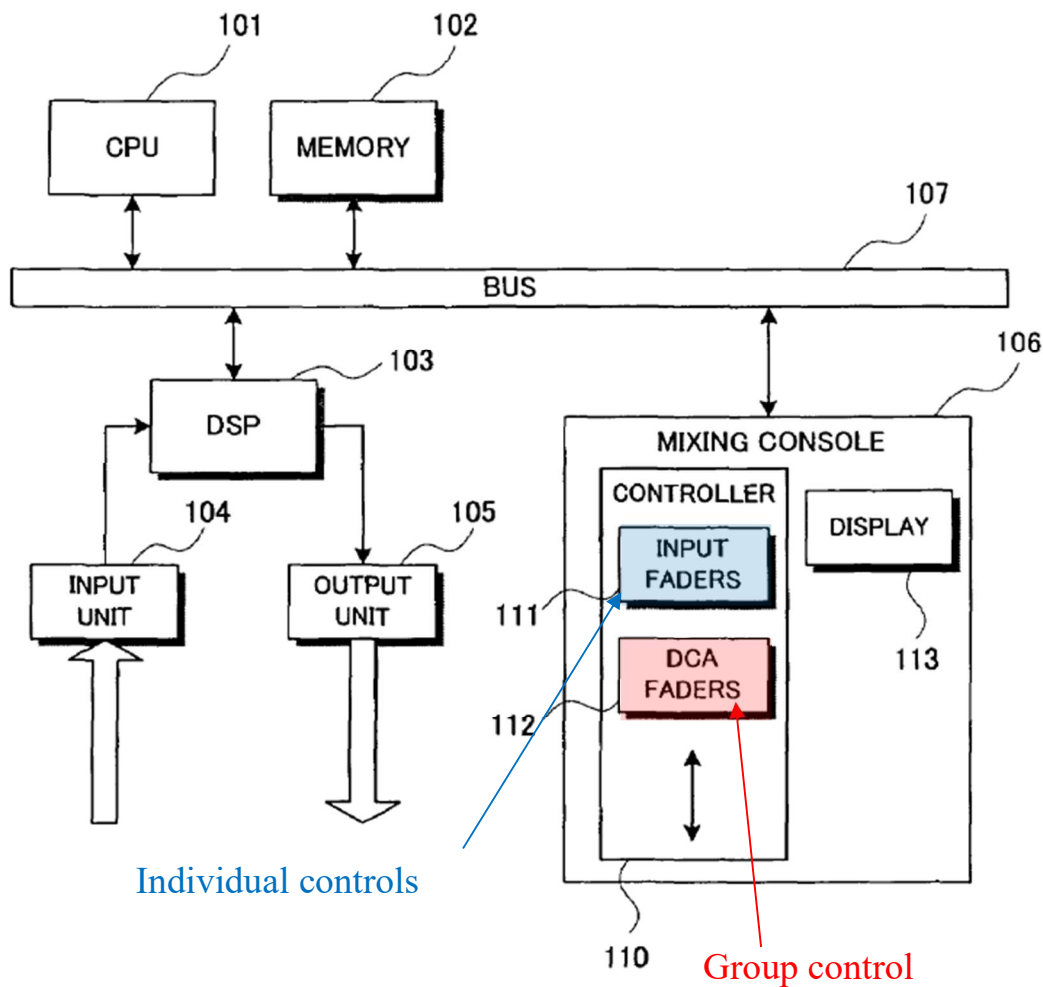
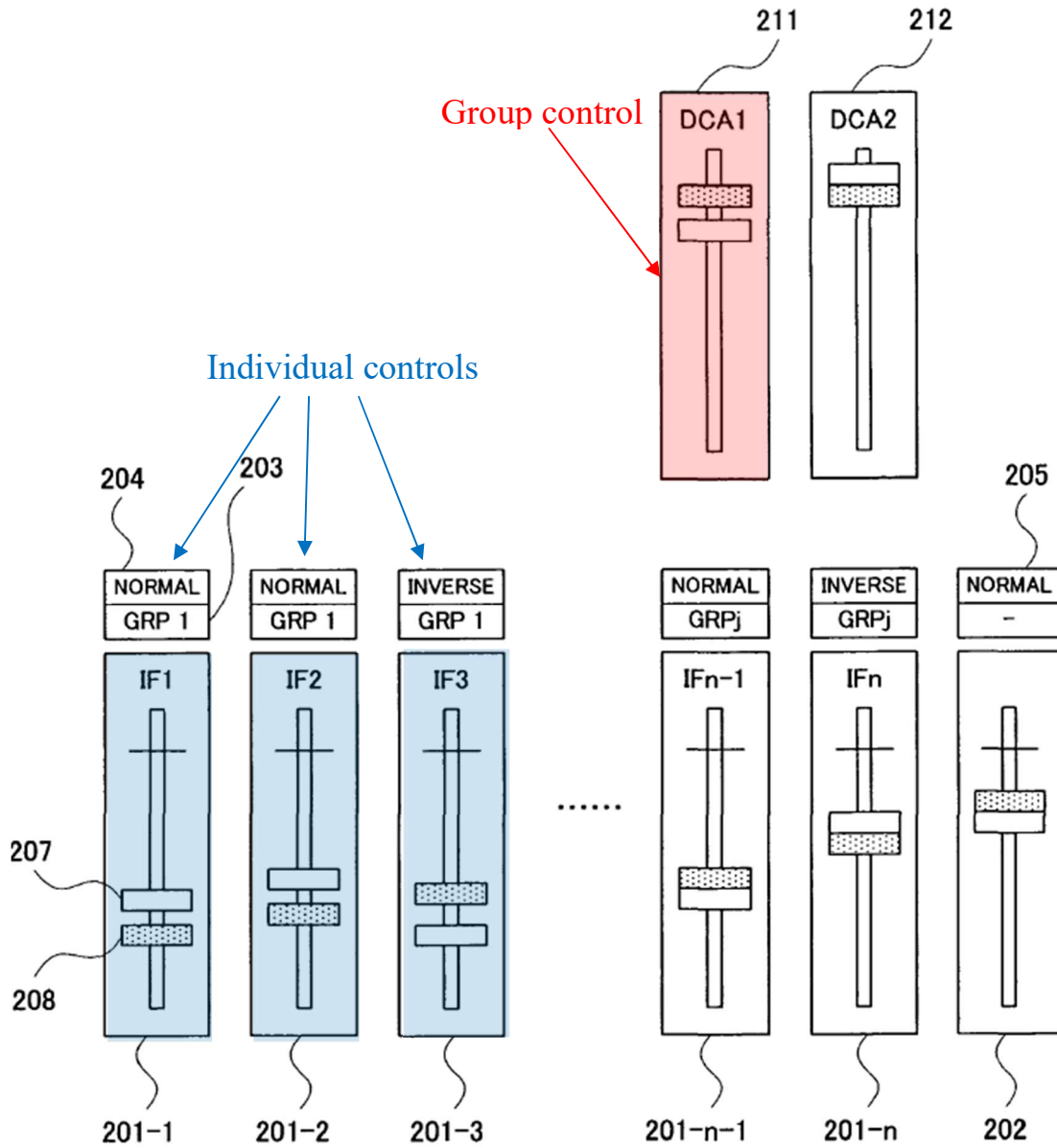


FIG. 1

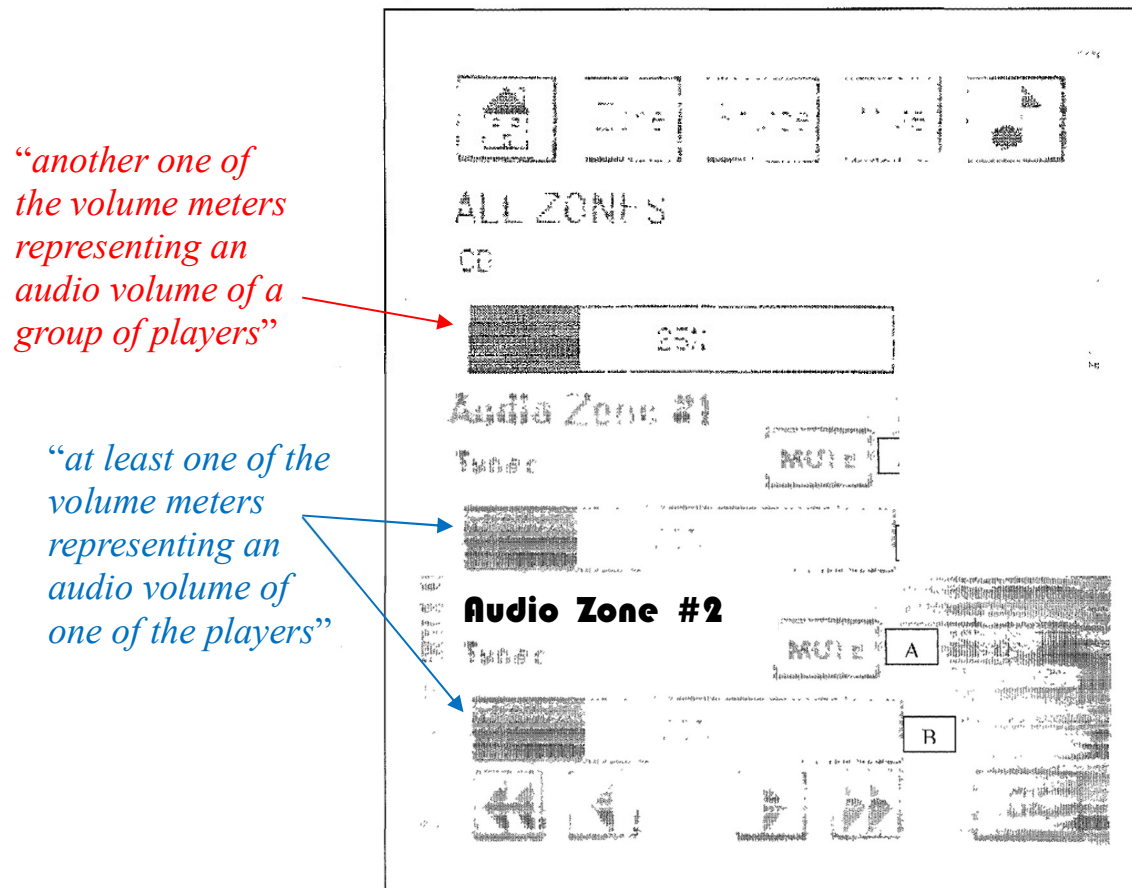
EX1007, Fig. 1.



F I G . 2

EX1007, Fig. 2. Allen-Geiwitz-Aiso renders obvious “*displaying on a screen a list showing a plurality of volume meters*” that includes a volume meter for representing

an audio volume of an individual player and a group volume meter that represents an audio volume of a group of players, as shown below (Section VI.B.6):



EX1006, 63, 66, Figs. 103, 106.

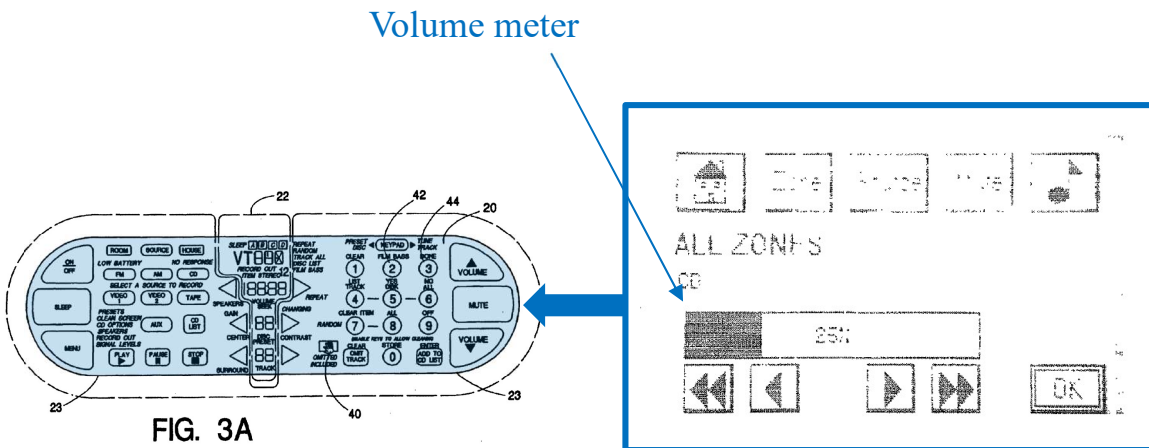
As explained in Section VIII.A, a POSITA would have been motivated to further modify Allen’s user interface screen using Geiwitz’s icon-based user interface designs to display the individual volume meters of players belonging to a group and the group volume meter for collectively changing the volumes of all players of the group on the same screen, in view of Aiso’s teachings. Section VI.A. A POSITA would have known how to implement this additional modification to

Allen's user interface screen as modified by Geiwitz in view of Aiso and would have had a reasonable expectation of success in doing so because such modification requires only ordinary skill. Sections VIII.A, VI.A; EX1003, ¶277.

7. [38h]

Allen-Geiwitz-Aiso teaches [38h]. EX1003, ¶¶278-283.

As explained for [25j] (Ground 3), a POSITA would have found it obvious to use Geiwitz's icon-based user interface design showing a group volume meter for Allen's collective volume control:



EX1008, Fig. 3A; EX1006, 63, Fig. 103. As explained for [38g] (Ground 4, Section VII.B.6), Allen-Geiwitz-Aiso renders obvious displaying “a list showing a plurality of volume meters,” one of which would be the group volume meter (“one of the volume meters is for the group of players”). EX1003, ¶279.

As explained for [25j] (Ground 3), it would have been obvious to a POSITA that such a group volume meter for collective volume control in Allen-Geiwitz

would have been represented by the averaged value of the volumes of a combination of two or more sound reproducers (“*players in the group*”). A POSITA would have understood that in Allen-Geiwitz-Aiso, adjusting the group volume meter, such as by using the volume adjusters, would change the volume of each player in the group in accordance with an adjustment made by a user. EX1008, 4:8-17, 5:37-6:13; EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103; EX1003, ¶280.

As explained in [38h] (Ground 2), a POSITA would have understood that Allen’s user interface screen as modified with Geiwitz would allow at least two suitable, alternative options for adjusting the group volume meter. A first suitable design would present a set of volume adjusters under each listed volume meter as taught in Geiwitz (e.g., EX1006, 63, 66, Figs. 103, 106). Adjusting the volume adjusters under the group volume meter would have selected the group volume meter from the list of displayed volume meters and would have been based on the desired listening experience of the whole group (“*adjusting one of the volume meters as desired after one of the volume meters from the list is selected*”). EX1003, ¶281. A second suitable design would present one set of volume adjusters for adjusting any of the volume meters in the list, and adjust the group volume meter after selecting the group volume meter from the list (“*adjusting one of the volume meters as desired after one of the volume meters from the list is selected*”), such as by scrolling a

highlight across the list of volume meters and adjusting the volume adjuster selected by the highlight. EX1006, 91; EX1003, ¶282.

As explained for Ground 3, a POSITA would have known how to implement either alternative design to Allen's user interface screen as modified by Geiwitz and Aiso, and would have had a reasonable expectation of success in doing so because such modification requires only ordinary skill. A POSITA would have programmed Allen's operating system and its software modules to generate instructions for addressing pixels as needed for showing the additional icons with the suitable sizes, shapes, and locations on the screen while maintaining the volume display and adjustment functions of the icons. EX1003, ¶283.

8. [38i]

Allen-Geiwitz-Aiso teaches [38i]. EX1003, ¶¶284-286.

Allen discloses performing collective volume adjustment of a group of players by changing the volumes of all players from their start position while maintaining the offset between the players ("*changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user*"). EX1008, 4:8-17, 5:37-6:13; EX1003, ¶285.

As explained for [25j] and [38h] (Sections VII.B.9, VIII.B.7), in Allen-Geiwitz-Aiso, a POSITA would have understood that adjusting the group volume meter displayed in the list would change a volume of each of the players in the group

(“*changing a volume of each of the group of players*”) in the same fashion (“*synchronously*”) in accordance with an adjustment made by a user, such as an increase or decrease by 1% or 5%. EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103; EX1003, ¶286.

C. Claim 42

Allen-Geiwitz-Aiso teaches claim 42. EX1003, ¶¶287-289.

Allen discloses that when the volume of a group of players is adjusted collectively, “all rooms are adjusted accordingly from their starting position, and any offset between the rooms is remembered” (“*maintaining relative volume loudness difference among each of the players in the group*”). EX1008, 4:8-17, 5:37-6:13. As explained for [38i] (Ground 4), a POSITA would have understood that in Allen-Geiwitz-Aiso, adjusting the group volume meter displayed in the list would change the volume of each of the players in the group in the same fashion while maintaining the offset between the players. EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103; EX1008, 4:8-17, 5:37-6:13; EX1003, ¶289.

D. Claim 43

Allen-Geiwitz-Aiso teaches claim 43. EX1003, ¶¶290-292.

As explained above, a POSITA would have understood that in Allen-Geiwitz-Aiso, adjusting the group volume meter displayed in the list (“*adjusting the one of the volume meters*”) would change the volume of each of the players in the group in

the same fashion (“*causing an equal change to a volume of each of the players in the group*”). EX1005, 25:26-26:8; EX1006, 62-63, Fig. 103; EX1008, 4:8-17, 5:37-6:13; Sections VIII.B.6-VIII.B.7; EX1003, ¶292.

IX. Grounds 2 and 4 Render Obvious Claims 16, 19, and 23

Claims 16, 19, and 23 are substantially similar to claims 38, 42, and 43 and recite “a method for controlling a plurality of players.” Geiwitz (Ground 2) and Allen (Ground 4) both teaches a method of controlling audio devices (“*a plurality of players*”) of a connected audio system. Sections V.B.1, VII.B.1. The following chart identifies the analysis applicable for each element of these claims under Grounds 2 and 4. EX1003, ¶293.

Claim Element	Ground 2	Ground 4
[16a] displaying on a screen a list showing a plurality of volume meters, at least one of the volume meters representing an audio volume of one of the players, and another one of the volume meters representing an audio volume of a group of players, when there is such a group; and	[38g] Section VI.B.6	[38g] Section VIII.B.6

Claim Element	Ground 2	Ground 4
[16b] adjusting one of the volume meters as desired after one of the volume meters from the list is selected, wherein the one of the volume meters is for the group of players represented by an averaged value of audio volumes of the players in the group, and	[38h] Section VI.B.7	[38h] Section VIII.B.7
[16c] said adjusting of the one of the volume meters includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.	[38i] Section VI.B.8	[38i] Section VIII.B.8
19. The method of claim 16, further comprising maintaining relative volume loudness difference among each of the players in the group.	Claim 42 Section VI.C	Claim 42 Section VIII.C

Claim Element	Ground 2	Ground 4
23. The method of claim 16, wherein the one of the volume meters from the list selected is for the group of players, and wherein said adjusting the one of the volume meters includes causing an equal change to a volume of each of the players in the group.	Claim 43 Section VI.D	Claim 43 Section VIII.D

X. *Sotera* Stipulation

Petitioner stipulates that, if the Board institutes IPR, Petitioner will not pursue in *Sonos, Inc. v. Google LLC*, No. 2:20-cv-00169 (C.D. Cal.), an invalidity defense based on any ground that was raised or reasonably could have been raised in the IPR. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, 18-19 (PTAB Dec. 1, 2020) (precedential as to §II.A). If the Board denies institution or institutes and later vacates institution, Petitioner reserves the right to pursue in *Sonos*, No. 2:20-cv-00169 any ground that was raised or reasonably could have been raised in the IPR.

XI. Discretionary Denial Would Be Inappropriate

The Board should reach the merits of this Petition and should not exercise its discretion to deny based on 35 U.S.C. §325(d) because the *Advanced Bionics* factors

favor institution. None of the references or any of their combinations presented in this Petition were presented to the Office. EX1002; EX1019. Thus, the same or substantially the same art or arguments were not previously presented to the Office. And, because the Office never considered the references or the specific combinations presented in the Petition, the Examiner materially erred by failing to consider and apply them.

Discretionary denial under 35 U.S.C. §314(a) is not appropriate because the *Fintiv* factors weigh in favor of institution and Patent Owner has no settled expectations. Petitioner includes a *Sotera* stipulation, removing duplication; the trial date is yet uncertain for this patent given the large number of patents at issue in the parallel litigation; and Petitioner's arguments on the merits are strong.

Petitioner will address discretionary denial in full during the bifurcated briefing process.

XII. Standing

The '014 patent is available for IPR. Petitioner is not barred or estopped from requesting IPR challenging the claims.

XIII. Mandatory Notices

A. Real Party-in-Interest

Google LLC⁷ is the real party-in-interest for this Petition.

B. Related Matters

The '014 patent is, or has been, involved in the following proceedings:

Name	Number	Venue	Filed
<i>Sonos, Inc. v. Google LLC</i>	2:20-cv-00169	C.D. Cal.	Originally filed Jan. 7, 2020 '014 patent added in First Amended Complaint, filed Oct. 15, 2024
<i>Sonos, Inc. v. Linkplay Technology Inc.</i>	1:24-cv-00131	D. Del.	Feb. 1, 2024
<i>Sonos, Inc. v. D&M Holdings Inc. d/b/a The D+M Group et al.</i>	1:14-cv-01330	D. Del.	Oct. 21, 2014
<i>Ex Parte</i> Reexamination	Control No. 90/013,882	USPTO	Dec. 21, 2016

⁷ Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

C. Lead and Back-Up Counsel, and Service Information

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Please address all correspondence to counsel at the address above. Petitioner consents to electronic service by e-mail at the above e-mail addresses and at Google-Sonos-IPRs@finnegan.com.

XIV. Conclusion

Petitioner has established a reasonable likelihood of success and requests the Board institute review and cancel the Challenged Claims.

Date: October 15, 2025

By: /Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Lead Counsel

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing **Petition for *Inter Partes* Review of U.S. Patent No. 7,571,014** contains 13,933 words, excluding those portions identified in 37 C.F.R. §42.24(a), as measured by the word-processing system used to prepare this paper.

By: /Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Lead Counsel

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§42.6(e) and 42.105(a), the undersigned certifies that on October 15, 2025, a copy of the foregoing **Petition for *Inter Partes* Review of U.S. Patent No. 7,571,014, the associated Power of Attorney, and Exhibits 1001-1027** were served by FedEx Priority Overnight on the correspondence address of record indicated in the Patent Office's public Patent Center system for U.S. Patent No. 7,571,014:

Jeffrey Armstrong
Akerman LLP / Sonos, Inc.
777 S. Flagler Drive, Suite 1100 West Tower
West Palm Beach, FL 33401

Dated: October 15, 2025

Respectfully submitted,

/Lisa C. Hines/

Lisa C. Hines
Case Manager
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