

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**AMAZON.COM, INC.,
AMAZON.COM SERVICES LLC, and
AMAZON WEB SERVICES, INC.,**
Petitioners,

v.

SOUNDCLEAR TECHNOLOGIES LLC,
Patent Owner.

Case No. IPR2025-01080
Patent No. 9,804,819

DECLARATION OF RICHARD STERN, PH.D.

<p><i>Amazon v. SoundClear</i> US Patent 9,804,819 Amazon EX-1002</p>
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I, Richard Stern, Ph.D., do hereby declare:

1. I am making this declaration at the request of Petitioners Amazon.com, Inc., Amazon.com Services LLC, and Amazon Web Services, Inc. (collectively, “Amazon”). I have been retained by Amazon as a technical expert in this matter.

2. I am being compensated for my work on this case. My compensation does not depend on the content of this Declaration or the outcome of these proceedings. As part of a diversified portfolio, I own shares of Amazon stock. A financial professional manages my portfolio, and I do not. This stock ownership constitutes less than 1 percent of the total portfolio, and does not in any way affect the contents of my opinions in this Declaration.

I. BACKGROUND

A. Experience and Qualifications

3. I am a Professor at Carnegie Mellon University in the Department of Electrical and Computer Engineering, the Department of Computer Science, and the Language Technologies Institute. I have been on the faculty of Carnegie Mellon since 1977.

4. I received the S.B. degree from the Massachusetts Institute of Technology (MIT) in 1970, the M.S. from the University of California, Berkeley, in 1972, and the Ph.D. from MIT in 1977, all in electrical engineering.

5. While I was a graduate student, I worked as a Teaching and Research Assistant in the Department of Electrical Engineering at MIT, from 1973 to 1976. My teaching experience was in the areas of signal processing and acoustics. My research at MIT had been in the area of auditory processing and perception.

6. I am a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), the Acoustical Society of America, and the International Speech Communication Association (ISCA). I was the ISCA 2008-2009 Distinguished Lecturer, a recipient of the Allen Newell Award for Research Excellence in 1992, and I served as the General Chair of Interspeech 2006. Interspeech is the world's largest technical conference focused on speech processing and application.

7. Much of my current research is in spoken language systems, where I am particularly concerned with the development of techniques with which automatic speech recognition can be made more robust with respect to changes in environment and acoustical ambience. Furthermore, as a Professor, I have taught 15 courses, many of which are at the graduate level, in the general areas of signal processing, communication theory, and acoustics.

8. My relevant publications are available on Carnegie Mellon's web site at <http://www.cs.cmu.edu/afs/cs/user/robust/www/papers.html>.

9. I understand a copy of my current curriculum vitae, which lists my publications for the last ten years, is being submitted as Exhibit 1008.

B. Materials Considered

10. In preparing this Declaration, I have considered the following materials:

Exhibit No.	Description
1001	U.S. Patent No. 9,804,819
1003	Certified Translation of Japanese Patent App. Publ. No. JP2012182639A (“Kajiyama”)
1004	SHURE ULX WIRELESS SYSTEM USER GUIDE, https://web.archive.org/web/20100518230105/http://www.shure.com/idc/groups/public/documents/webcontent/us_pro_ulx_wireless_en_ug.pdf (May 18, 2010 snapshot via the Wayback Machine) (“Shure”)
1005	U.S. Patent No. 8,843,222 (“Nelson”)
1006	Japanese Patent App. Publ. No. JP2012182639A
1007	<i>ULX® Professional Series Wireless</i> , SHURE, https://web.archive.org/web/20021015124623/http://www.shure.com/wireless/ulx/ulx_professional.asp (October 10, 2002 snapshot via the Wayback Machine) (“Shure Product Page”)
1009	File History of U.S. Patent No. 9,804,819
1010	Declaration of Mina Ching
1012	Declaration of Samantha Matsunaka

11. I have reviewed the full file history of the ’819 patent. I have also relied on my education, training, and experience, and my knowledge of pertinent literature in the field of the ’819 patent.

II. APPLICABLE LEGAL STANDARDS

12. I have been asked to provide my opinion as to whether the claims of the '819 patent would have been obvious to a person of ordinary skill in the art at the time of the alleged invention, in view of the prior art.

13. I am an electrical engineer by training and profession. The opinions I am expressing in this report involve the application of my training and technical knowledge and experience to the evaluation of certain prior art with respect to the '819 patent.

14. Although I have been involved as a technical expert in patent matters before, I am not an expert in patent law. Therefore, the attorneys from Knobbe, Martens, Olson & Bear, LLP have provided me with guidance as to the applicable patent law in this matter. The paragraphs below express my understanding of how I must apply current principles related to patent validity to my analysis.

A. Claim Construction

15. It is my understanding that in determining whether a patent claim is obvious in view of the prior art, the Patent Office construes the claim by giving the claim terms their plain and ordinary meaning, as they would have been understood by a person of ordinary skill in the art at the time of the invention in view of the intrinsic record (patent specification and file history). For the purposes of this review, and to the extent necessary, I have interpreted each claim term in accordance

with its plain and ordinary meaning as it would have been understood by a person of ordinary skill in the art at the time of the invention, in view of the intrinsic record. I have been instructed that the time of the invention is December 7, 2015, which I understand to be the earliest claimed priority date of the '819 patent.

16. I understand that a patent and its prosecution history are considered “intrinsic evidence” and are the most important sources for interpreting claim language in a patent. I also understand that in reading the claim, I must not import limitations from the specification into the claim terms; in other words, I must not narrow the scope of the claim terms by implicitly adding disclosed limitations that have no express basis in the claims. The prosecution history of related patents and applications can also be relevant.

17. I understand that sources extrinsic to a patent and its prosecution history (such as dictionary definitions and technical publications) may also be used to help interpret the claim language, but that such extrinsic sources cannot be used to contradict the unambiguous meaning of the claim language that is evident from the intrinsic evidence.

18. Unless expressly stated herein, I have applied the plain and ordinary meaning of the claim terms, which I understand is the meaning that a person of ordinary skill in the art would have given to terms in December 2015 based on a review of the intrinsic evidence.

B. Obviousness

19. It is my understanding that a claim is “obvious” if the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the alleged invention. I understand that an obviousness analysis involves a number of considerations. I understand that the following factors must be evaluated to determine whether a claim would have been obvious: (i) the scope and content of the prior art; (ii) the differences, if any, between each claim of the ’819 patent and the prior art; (iii) the level of ordinary skill in the art in December 2015; and (iv) additional considerations, if any, that indicate that the invention was obvious or not obvious. I understand that these “additional considerations” are often referred to as “secondary considerations” of non-obviousness or obviousness.

20. I also understand that the frame of reference when evaluating obviousness is what a hypothetical person of ordinary skill in the pertinent art would have known in December 2015. I understand that the hypothetical person of ordinary skill is presumed to have knowledge of all pertinent prior art references.

21. It is my understanding that something is “inherent in,” and therefore taught by, the prior art, if it necessarily flows from the explicit disclosure of the prior art. I understand that the fact that a certain result or characteristic *may be* present in

the prior art is not sufficient to establish inherency. However, if the result or characteristic is *necessarily* present based upon the explicit disclosure in the prior art, it is inherent in the prior art and is therefore disclosed.

22. I understand that a prior art reference may be a pertinent prior art reference (or “analogous art”) if it is in the same field of endeavor as the patent or if it is pertinent to the problem that the inventors were trying to solve. A reference is reasonably pertinent if it logically would have commended itself to an inventor’s attention in considering the problem at hand. If a reference relates to the same problem as the claimed invention, that supports use of the reference as prior art in an obviousness analysis. Here, all of the references relied on in my obviousness analysis below are in the same field of endeavor as the ’819 patent, e.g., electronic and audio system design. (*E.g.*, EX-1001 (’819 patent), Abstract.) The references are also pertinent to a particular problem the inventor was focused on, e.g., controlling audio output. (*Id.*, Abstract, 1:29-45.)

23. It is my understanding that the law recognizes several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include:

- combining prior art elements according to known methods to yield predictable results;

- simple substitution of one known element for another to obtain predictable results;
- a predictable use of prior art elements according to their established functions;
- using known techniques to improve similar devices (methods, or products) in the same way;
- applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (in which case a claim would have been obvious to try);
- known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and
- some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

24. I understand that “secondary considerations” must be considered as part of the obviousness analysis when present. I further understand that the secondary

considerations may include: (1) a long-felt but unmet need in the prior art that was satisfied by the claimed invention; (2) the failure of others; (3) skepticism by experts; (4) commercial success of a product covered by the patent; (5) unexpected results achieved by the claimed invention; (6) industry praise of the claimed invention; (7) deliberate copying of the invention; and (8) teaching away by others. I also understand that evidence of the independent and nearly simultaneous “invention” of the claimed subject matter by others is a secondary consideration supporting an obviousness determination and may support a conclusion that a claimed invention was within the knowledge of a person of ordinary skill as of December 2015. I am not aware of any evidence of secondary considerations that would suggest that the claims of the ’819 patent would have been nonobvious in December 2015.

25. I understand that when assessing obviousness, using hindsight is impermissible; that is, what is known today or what was learned from the teachings of the patent should not be considered. The patent should not be used as a road map for selecting and combining items of prior art. Rather, obviousness must be considered from the perspective of a person of ordinary skill at the time the alleged invention was made – December 2015 in this case.

26. I also understand that an obviousness analysis must consider the invention as a whole, as opposed to just a part or element of the invention. I understand this “as a whole” assessment to require showing that one of ordinary skill in the art

at the time of invention, confronted by the same problems as the inventor and with no knowledge of the claimed invention, would have selected the elements from the prior art and combined them in the claimed manner.

III. PERSON OF ORDINARY SKILL IN THE ART

27. It is my understanding that when interpreting the claims of the '819 patent and evaluating whether a claim is anticipated or would have been obvious, I must do so based on the perspective of a person of ordinary skill in the art at the relevant priority date. I have been instructed to assume for the purposes of my opinions that the relevant priority date of the '819 patent is December 7, 2015.

28. I understand that in determining the level of ordinary skill in the art, several factors are considered. Those factors may include: (i) the type of problems encountered in the art; (ii) prior art solutions to those problems; (iii) the rapidity with which innovations are made; (iv) the sophistication of the technology; and (v) the educational level of active workers in the field. A person of ordinary skill in the art must have the capability of understanding the scientific and engineering principles applicable to the pertinent art.

29. Based on my review of the specification and claims of the '819 patent, it is my opinion that a person of ordinary skill in the art would have had a minimum of a bachelor's degree in computer engineering, computer science, electrical engineering, or a similar field, and approximately three years of industry or academic

experience in a field related to electronic and audio system design. Work experience could substitute for formal education and additional formal education could substitute for work experience.

30. My conclusions below that the claims of the '819 patent would have been obvious would remain the same even if the priority date, field of endeavor, or level of ordinary skill were slightly different.

31. I meet the above definition of a person of ordinary skill in the art, and did so as of December 2015. Also, I have worked with persons of ordinary skill in the art through my professional and academic experiences, and I have an understanding of their skill level around December 2015.

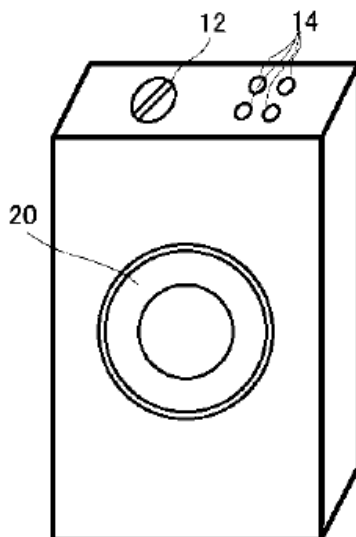
IV. TECHNOLOGY BACKGROUND

32. Locking and unlocking the volume of electronic devices was well known long before the '819 patent's earliest possible priority date in December 2015.

A. Kajiyama

33. For example, Kajiyama (EX-1003) discloses an audio output device with volume locking functionality. Kajiyama's device is shown in Figure 1B:

(B)



(EX-1003 (Kajiyama), Fig. 1B.) The device includes a volume knob (12) (referred to as “volume reception unit” or “VR 12”) “for receiving a volume setting operation from a user,” and buttons (14) (referred to as “volume fixation operation reception unit” or “UI 14”) “for receiving various operations such as content selection, a volume fixation operation, and a power on/off operation.” (*Id.* ¶¶[0022], [0028].)

34. A user may switch the audio device between locked and unlocked states by “pressing and holding” buttons of the volume fixation operation reception unit. (EX-1003 (Kajiyama) ¶[0031].) When the device is unlocked, pressing the buttons causes a “volume fixation operation” (also referred to as a “locking operation”) that locks the device. (*Id.* ¶¶[0012], [0031].) The device stores the volume setting at the time the device was locked and maintains that volume regardless of whether the volume knob is adjusted. (*Id.* ¶¶[0012], [0022], [0031].)

35. Pressing the buttons again when the device is locked causes a “volume fixation release operation.” (EX-1003 (Kajiyama) ¶¶[0012], [0031], [0043]-[0045].) However, the device remains locked until the volume is adjusted to match the locked volume level. (*Id.*) When the volume is sufficiently adjusted to match the locked volume level, the device is unlocked and the volume can again be changed by operating the volume knob. (*Id.*)

B. Shure

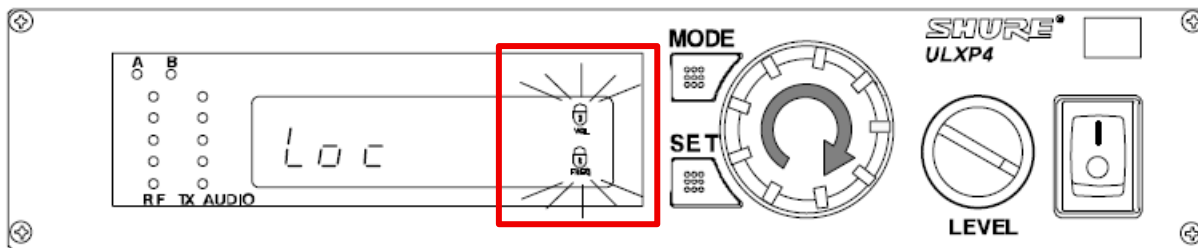
36. Shure, a global audio electronics manufacturer, released its ULXP4 receiver in 2002. (EX-1007 (Shure Product Page).) EX-1004 is a copy of the ULXP4 receiver’s user guide. (EX-1004 (Shure).) Based on my review of EX-1010, which explains that the ULXP4 receiver user guide was accessible on Shure’s website as of May 18, 2010, and provides an archived copy available from the Internet Archive’s Wayback Machine, EX-1004 is a true and accurate copy of the ULXP4 receiver user guide. (*Compare* EX-1004 (Shure) *with* EX-1010 (Internet Archive Declaration), 8-35; *see also* EX-1010 (Internet Archive Declaration), 1-2. Based on my experience, the ULXP4 user guide would have been easily accessible to a person of ordinary skill in the art on Shure’s website no later than May 18, 2010. (*See* EX-1010 (Internet Archive Declaration), 1-2, 5 (archived capture of Shure’s webpage for user guides from May 17, 2010 that suggest the “ULX” guide as a

“Popular User Guide[]”), 8-35 (archived user guide for the ULXP4 receiver from May 18, 2010).)

37. Based on their knowledge and experience, a person of ordinary skill would have been aware of major audio device manufacturers such as Shure and would have been aware of the products offered by such companies. And, a person of ordinary skill would have known that documentation and user guides on products such as Shure’s ULXP4 receiver were available online from the manufacturers’ websites. Thus, a person of ordinary skill would have considered looking at the features of audio devices available in the marketplace by consulting their documentation and user guides. EX-1004 therefore would have been publicly accessible to a person of ordinary skill by May 2010 by simply accessing it on Shure’s website.

38. The user guide for the ULXP4 receiver discloses that a user can “lock the ULXP4 receiver ... output level to prevent unauthorized or accidental changes.” (EX-1004 (Shure), 18.) This locks the volume at a “locked level.” (*Id.*)

39. Shure explains that a user operates buttons on the front of the receiver to lock the receiver. (EX-1004 (Shure), 18.) The receiver then displays “flashing lock icon(s)” as shown below:



(*Id.*, Fig. 44¹; *id.*, 18.) The upper lock icon is the “Volume Lock Indicator” and “[a]ppears after the Volume level setting has been locked.” (*Id.*, 5, Fig. 3.)

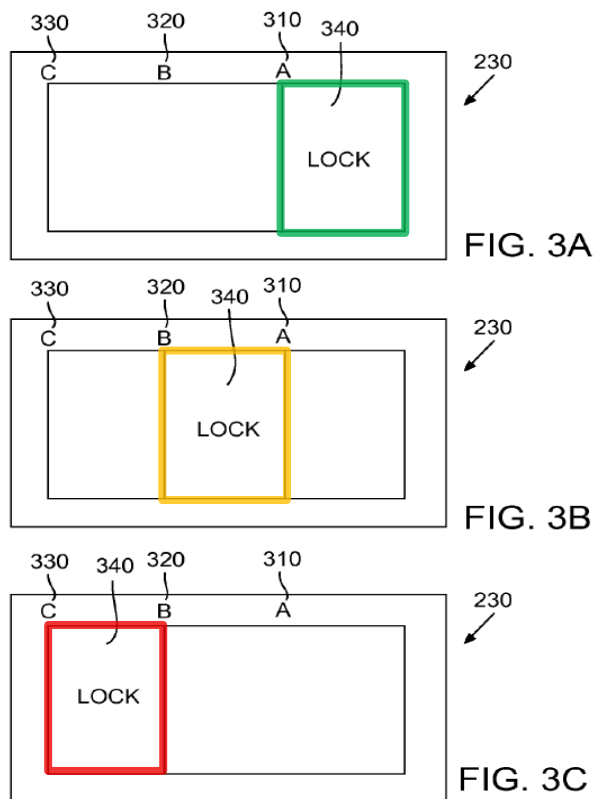
40. When a user wishes to change the output volume, the user simply uses the receiver’s buttons and control knob to unlock the receiver. (EX-1004 (Shure), 18.) However, “[i]f the volume control knob has been set to a level higher than the locked level, the output level will remain locked” until the user turns the volume down sufficiently, at which point the receiver can be unlocked. (*Id.*)

C. Nelson

41. Nelson discloses similar locking functionality for use in a media player. (EX-1005 (Nelson), Abstract, 1:62-2:16, Figs. 3A-3C.) As Nelson recognizes, “many players provide a locking mechanism that causes the player to ignore or otherwise not receive any input commands ... such as buttons, scroll wheels, touchpads and so on.” (*Id.*, 1:29-40.) Nelson provides an improved locking functionality in which a user can “selectively enable or disable one or more input controls, such as

¹ Images in this Declaration may be colored and/or annotated for clarity.

volume controls.” (*Id.*, Abstract.) Nelson’s locking functionality uses a simple locking mechanism, such as “buttons, sliding mechanisms, soft-keys, and so on,” as shown below:



(*Id.*, Figs. 3A-3C.) When Nelson’s locking mechanism is in **position A**, as shown in Figure 3A, the player is in an “unlocked state.” (*Id.*, 4:50-67.) Moving the lock to **position B** places the player in a “selectively-locked state,” as shown in Figure 3B, while moving the lock to **position C**, as shown in Figure 3C, places the player in a “fully-locked state 330 where all input controls are disabled.” (*Id.*) Thus, a user may switch from the locked to the unlocked state and vice-a-versa by simply operating the locking mechanism. (*Id.*)

V. THE '819 PATENT

A. Overview

42. The '819 patent discloses a system and methods for controlling audio output by locking the output volume. (EX-1001, Abstract, 1:46-2:27.) It admits that volume locks were known. (*Id.*, 1:19-24 (“transceiver typically has a volume lock function that locks audio volume” to “avoid a sudden output of audio ... when a volume key is inadvertently operated.”), 1:25-28 (known device “automatically returns a volume key that has been inadvertently operated to a position at any given point in time”).) And, it admits that it was known to switch between a locked and unlocked state so that a device’s volume can be adjusted. (*Id.*, 1:29-32.) The '819 patent’s purported novelty is simply preventing the device from unlocking while the volume is set to an undesirably high level, thereby preventing the output of undesirably loud audio when the device is unlocked. (*Id.*, 1:29-40.)

B. Claims

43. I have been asked to consider claims 1-5 and 7-8 in this Declaration. Of those, claims 1 and 8 are independent. Claim 1 is representative and recites “[a] receiving apparatus” comprising the following elements:

[a] an audio output unit configured to output audio corresponding to an audio signal;

- [b] a volume operating unit configured to output an operating value indicating a volume level of the audio according to a user operation;
- [c] a lock controller configured to switch between a non-locked state in which the volume level of the audio can be varied based on the operating value and a locked state in which the volume level of the audio is fixed by a constant lock value for the operating value; and
- [d] a volume controller configured to cause the audio output unit to output the audio having a volume level corresponding to the operating value in the non-locked state and to cause the audio output unit to output the audio having a volume level corresponding to the lock value in the locked state, wherein
- [e] the lock controller is further configured to switch, when a predetermined operating part is turned on in the locked state, the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value and ends when the predetermined operating part is turned off, and to update the lock value with the operating value and switch the non-locked state to the locked state when the predetermined operating part is turned off after having switched to the non-locked state.

VI. CLAIMS 1-2 AND 7-8 OF THE '819 PATENT WOULD HAVE BEEN OBVIOUS.

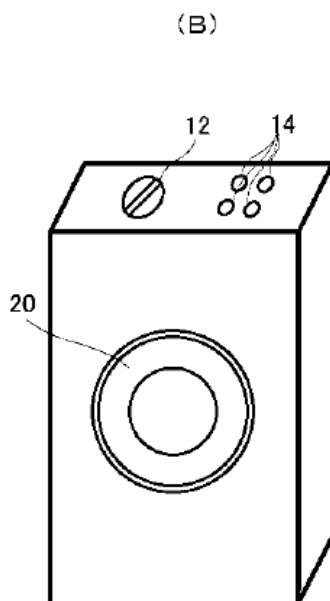
A. Claims 1-2, 4-5, and 7-8 Would Have Been Obvious in View of Kajiyama.

44. As I discuss above, Kajiyama discloses an audio output device that receives audio signals and outputs audio. (See ¶¶33-35, above.) The device includes a knob for adjusting the volume output level. (*Id.*) The device may be locked to prevent changes to the output volume and then unlocked to allow a user to adjust the volume. (*Id.*)

1. Claim 1

a. Preamble

45. The preamble recites “[a] receiving apparatus.” Kajiyama discloses an “audio output device” shown in Figure 1B:



(EX-1003 (Kajiyama) ¶[0022], Fig. 1B.) The output device receives audio signals

“from another device (such as a server).” (*Id.* ¶¶[0023].) Accordingly, a person of ordinary skill in the art would have understood the device is a receiving apparatus. Kajiyama therefore discloses the preamble of claim 1.

b. Element 1[a]: Audio Output Unit

46. Claim element 1[a] recites “an audio output unit configured to output audio corresponding to an audio signal.” Kajiyama discloses or renders obvious this claim element.

47. Kajiyama discloses an audio output device that receives audio signals (*see* ¶45, above), amplifies the signals, and outputs audio using a speaker. (EX-1003 (Kajiyama) ¶¶[0001] (“audio output device”), [0023]-[0025] (audio signals are “input from another device” and “output to an amplifier”), [0026] (“The audio signal amplified by the amp 19 is output to the speaker 20 and emitted as sound.”).) Kajiyama’s “playback unit 17” processes the audio signal and sends it to amplifiers. (*Id.* ¶¶[0023], [0025].) The amplifiers then output an amplified audio signal to the speaker, which outputs corresponding audio. (*Id.* ¶[0025].) Accordingly, Kajiyama’s amplifier(s) and speaker each receive an audio signal and output corresponding audio, similar to the ’819 patent. (*See* EX-1001 (’819 patent), 4:20-30, Fig. 2 (Audio Output Unit 62 outputting a signal to speaker 26).)

48. Kajiyama therefore discloses or renders obvious an audio output unit (e.g., amplifier or speaker) configured to output audio corresponding to an audio

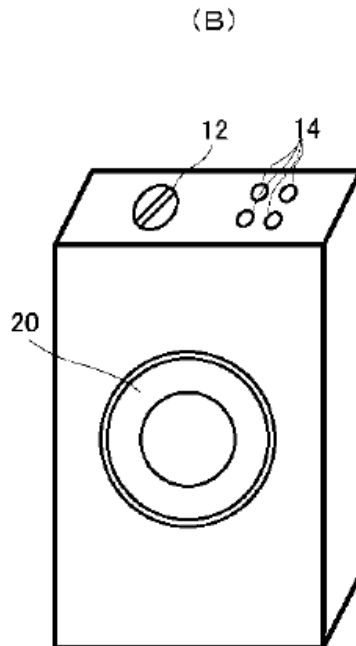
signal (e.g., the audio signal received by the amplifier or speaker).

c. Element 1[b]: Volume Operating Unit

49. Claim element 1[b] recites “a volume operating unit configured to output an operating value indicating a volume level of the audio according to a user operation.” Kajiyama discloses or renders obvious this claim element.

50. I note that the '819 patent admits this claim element was known. (EX-1001 ('819 patent), 1:19-28 (disclosing prior art devices with a “volume key” that adjusts volume).)

51. Kajiyama discloses an audio device with a “volume reception unit” 12 “for receiving a volume setting operation from a user,” as shown in Figure 1B:



(EX-1003 (Kajiyama) ¶[0022], Fig. 1B.)

52. The volume reception unit outputs a value indicating a volume level of the audio according to a user operation. (EX-1003 (Kajiyama) ¶¶[0012] (“the volume control unit controls the volume of the output audio in response to the volume setting operation received by the volume reception unit”), [0021] (device includes a “VR (hardware volume) 12”), [0022] (VR 12 is “volume reception unit”), [0027] (“the volume setting value is specified by the user using the VR 12”), [0028] (“VR 12 is a rotary knob that outputs a voltage value... [that] is converted into a digital value by the A/D converter 13 and input to the control unit 11. The control unit 11 stores a volume setting value corresponding to the input voltage value[.] ... This sets the volume of the output audio.”), claim 7 (device comprises “a volume reception unit for receiving a volume setting operation by a user”).)

53. Thus, Kajiyama discloses or renders obvious a volume operating unit (e.g., volume reception unit VR 12) configured to output an operating value indicating a volume level of the audio (e.g., voltage value and/or corresponding volume setting value) according to a user operation.

d. Element 1[c]: Lock Controller

54. Claim element 1[c] recites “a lock controller configured to switch between a non-locked state in which the volume level of the audio can be varied based on the operating value and a locked state in which the volume level of the audio is fixed by a constant lock value for the operating value.” Kajiyama discloses this

claim element.

55. Kajiyama discloses that the device switches between a locked state and unlocked state based on whether “locking” or “unlocking operations are received[.]” (EX-1003 (Kajiyama) ¶[0031].) The device may be locked or unlocked by, for example, “pressing and holding specific buttons” on the UI 14. (*Id.*)

56. In the unlocked state, Kajiyama discloses that the audio output device’s volume level can be adjusted by the volume reception unit which, as I discuss above, outputs a value indicating the volume level based on user operation. (*See* ¶¶49-53, above.)

57. When the audio output device receives a “locking operation” (also referred to as a “volume fixation operation”), the device switches from an unlocked state to a locked state and “fixes” the volume at a constant value based on the volume level at the time when the volume fixation operation was received:

When a *locking operation* is received (s11, Yes), the control unit 11 stores the volume setting value indicated by the VR 12 at that time in the setting storage unit 15, and *fixes the volume of the output audio at this volume setting value (s12)*. In the example of FIG. 2 (A), since the volume setting value of the VR 12 indicates 2, the volume setting value 2 is stored in the setting storage unit 15 and the volume setting value set in the amplifier 18 is fixed at 2. Therefore, as illustrated in FIG. 2 (A), *even when the volume setting value of the VR 12 is subsequently changed to 3 or 4, the volume setting value set in the amplifier 18 is fixed at the volume setting value of 2 at the time of the locking operation.*

(EX-1003 (Kajiyama) ¶[0032] (emphases added); *see also id.* ¶¶[0012] (“[W]hen

the volume fixation operation is received, the volume control unit maintains the volume of the output audio at the volume setting value at the time of the volume fixation operation[.]”), [0031], [0032], claim 7 (“when the volume fixation operation is received, the volume control unit maintains the volume of the output audio at a volume setting value at the time of the volume fixation operation, regardless of the volume setting operation received by the volume reception unit”).)

58. Kajiyama discloses that a “volume control unit” receives the locking and unlocking operations and switches between the locked and unlocked states. (EX-1003 (Kajiyama) ¶¶[0012] (“when the volume fixation operation is received, the volume control unit maintains the volume”), [0031], [0032], [0044], [0045], claim 7.)

59. Kajiyama therefore discloses or renders obvious a lock controller (e.g., volume control unit) configured to switch between a non-locked state in which the volume level of the audio can be varied based on the operating value (e.g., volume reception unit’s value) and a locked state in which the volume level of the audio is fixed by a constant lock value for the operating value (e.g., the volume setting value at the time when the volume locking operation was received).

e. Element 1[d]: Volume Controller

60. Claim element 1[d] recites “a volume controller configured to cause the audio output unit to output the audio having a volume level corresponding to the

operating value in the non-locked state and to cause the audio output unit to output the audio having a volume level corresponding to the lock value in the locked state.”

Kajiyama discloses or renders obvious this claim element.

61. As I discuss above, Kajiyama discloses or renders obvious an audio device that outputs audio at a volume level corresponding to the volume reception unit’s output value when unlocked. (See ¶¶49-53, above.) And, when locked, the audio device outputs audio corresponding to the volume reception unit’s output value at the time the device received a volume fixation operation (i.e., when it was locked). (See ¶¶54-59, above.) Kajiyama’s volume control unit controls this functionality. (*Id.*)

62. Accordingly, Kajiyama discloses or renders obvious a volume controller (e.g., volume control unit) configured to cause the audio output unit (e.g., amplifier or speaker) to output the audio having a volume level corresponding to the operating value (e.g., the volume reception unit’s output value) in the non-locked state and to cause the audio output unit to output the audio having a volume level corresponding to the lock value (e.g., the volume reception unit’s output value at the time the volume fixation operation was received) in the locked state.

f. Element 1[e][i]: Unlocking

63. Claim element 1[e][i] recites that the lock controller is configured “to switch, when a predetermined operating part is turned on in the locked state, the

locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value and ends when the predetermined operating part is turned off.” Kajiyama discloses or renders obvious this claim element.

64. I note that the '819 patent explains that an “operating part” may be a button or switch. (*See* EX-1001 ('819 patent), 4:2-4 (“The monitor key 40 is a momentary switch that is turned on, for example, when the user depresses the switch and turned off when the user releases the switch.”), 6:25-26 (“the predetermined operating part is the monitor key 40 in the present example”).) Turning an operating part on or off merely refers to operating a button or switch in a conventional manner such as by pressing a button. (*Id.*) The '819 patent admits that the use of an operating part to lock and unlock the output volume of audio devices was known, as was returning volume to a desired level. (*Id.*, 1:19-24 (a “transceiver typically has a volume lock function that locks audio volume”), 1:25-28 (1995 Japanese patent “discloses an apparatus that automatically returns a volume key that has been inadvertently operated to a position”).)

65. Kajiyama discloses switching from a locked to an unlocked state by pressing buttons on the audio device. (EX-1003 (Kajiyama) ¶¶[0022] (UI 14 is for receiving a volume fixation operation), [0031] (“The locking and unlocking opera-

tions are received, for example, by pressing and holding specific buttons simultaneously on the UI 14[.]”).)

66. Kajiyama also discloses unlocking the audio device only when the volume is sufficiently adjusted (e.g., by operation of the volume reception unit) to match the locked volume level. (EX-1003 (Kajiyama) ¶¶[0013] (“even after the volume fix [lock] is released, the volume of the output audio is maintained as-is ... but when the hardware volume is operated and matches the volume of the output audio, the volume is changed in response to the volume setting value of the hardware volume”), [0044] (“[W]hen an unlocking operation is received ... the volume setting of the amplifier 18 remains fixed. When the VR 12 is operated ... the control unit 11 compares the volume setting value indicated by the VR 12 and the volume setting value stored in the setting storage unit 15[], and when these volume setting values ... become identical (s26, No: not different), the volume setting value of the amplifier 18 is changed according to the volume setting value indicated by the VR 12.”), [0045], claim 7.)

67. Kajiyama discloses that the unlocked state then ends, and the lock is reset, when a volume locking operation is received, e.g., the buttons are pressed and held on the UI 14. (EX-1003 (Kajiyama) ¶[0031]; see ¶¶54-59, above.)

68. Thus, Kajiyama discloses that its lock controller is configured to switch, when a predetermined operating part (e.g., locking/unlocking buttons) is

turned on (pressed) in the locked state, the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value (e.g., matches the lock value) and ends when the predetermined operating part (locking/unlocking buttons) is turned off (are pressed again). Accordingly, Kajiyama discloses this limitation.

69. I understand the patent owner may argue that Kajiyama does not disclose this claim element because it discloses unlocking the volume when the operating value *matches* the lock value rather than being within a *predetermined range* of the lock value, but I disagree. Even if Kajiyama's disclosure of *matching* required a precise or exact match, Kajiyama would still disclose the limitation because requiring a precise match is setting a predetermined range with a lower limit equal to the lock value and an upper limit equal to the lock value.

70. This claim element also would have been obvious to a person of ordinary skill in view of Kajiyama's disclosure because, although Kajiyama describes that the operating value and the lock value must match, Kajiyama does not explain how such matching is performed. (*See generally* EX-1003 (Kajiyama).) It would have been obvious to a person of ordinary skill to perform Kajiyama's matching by comparing the volume reception unit's value to a range of values based on the stored lock value. Specifically, a person of ordinary skill would have recognized that Kajiyama does not disclose an exact degree of precision required to match the values and

that two options were available: requiring an exact match or using a range of values. Thus, as one of two options, it would have been obvious to try implementing Kajiyama's system and unlocking the volume when the volume reception unit's value is within a predetermined range of the lock value.

71. A person of ordinary skill in the art would have been motivated to implement design Kajiyama's system to allow unlocking when the volume dial is returned to within a predetermined range of the lock value for several reasons.

72. First, a person of ordinary skill would have understood that allowing for a reasonable degree of tolerance around the lock value (e.g., 5% or 10%) achieves the disclosed "matching" requirement.

73. Second, a person of ordinary skill would have understood that implementing a range, rather than a precise match, would have improved the user experience by allowing the user to more easily unlock the volume without the need for exact precision.

74. Third, the purpose of Kajiyama's "matching" requirement was intended to ensure that (1) volume changes were intended by the user and (2) sudden unlocking at high volumes would be avoided. (EX-1003 (Kajiyama) ¶¶[0004], [0013] (unlocking in this way makes it "possible to realize an appropriate change in volume that reflects the user's intention in manipulating the volume, thereby reducing the

sense of discomfort felt by the user”).) A person of ordinary skill would have understood that allowing the unlocking to occur when returning the volume dial to within a reasonable range of the lock value would achieve these same goals.

75. Fourth, the proposed modification represents the simple substitution of one known element (a numerical range) for another known element (the precise lock value) to obtain predictable results (unlocking when the volume dial returns to within the predetermined range rather than to the precise numerical value). Fifth, the combination applies a known technique (using a numerical range rather than a precise number) to a known device and method (a device that requires a precise lock value) that is ready for improvement and yields predictable results (unlocking when the volume dial returns to within the predetermined range rather than to the precise numerical value).

76. A person of ordinary skill would have reasonably expected success in allowing Kajiyama’s system to unlock when the volume reception unit’s value falls within a predetermined range of the lock value because this change would have been trivial. Kajiyama explains that the unlocking occurs by comparing the volume setting indicated by the VR 12 to the lock value. (EX-1003 (Kajiyama) ¶[0044].) It would have been trivial to modify the comparison to check whether the volume setting is with a predetermined range of the lock value.

77. Accordingly, Kajiyama discloses or renders obvious this claim element.

g. Element 1[e][ii]: Locking

78. Claim element 1[e][ii] recites that the lock controller is configured “to update the lock value with the operating value and switch the non-locked state to the locked state when the predetermined operating part is turned off after having switched to the non-locked state.” Kajiyama discloses or renders obvious this claim element.

79. Kajiyama discloses that, in the unlocked state, a new lock value will be set when the device receives a “locking operation,” e.g., when the user again presses buttons on UI 14. (See ¶¶54-59, above; EX-1003 (Kajiyama) ¶[0032] (“When a locking operation is received ... the control unit 11 stores the volume setting value indicated by the VR 12 at that time ... and fixes the volume of the output audio at this volume setting value[.]”).)

80. Thus, Kajiyama discloses or renders obvious that the lock controller (e.g., the control unit) is configured to update the lock value (e.g., the stored volume setting value) and switch the non-locked state to the locked state when the predetermined operating part is turned off (e.g., when the buttons are pressed) after having switched to the non-locked state.

81. Accordingly, for at least the reasons I discuss above, Kajiyama discloses or renders obvious each limitation of claim 1, and therefore renders claim 1 obvious as a whole.

2. Claim 2

82. Claim 2 depends from claim 1 and further recites that “when the predetermined operating part is turned on in the locked state, the lock controller is further configured to maintain the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value becomes a value that falls within the predetermined range based on the lock value.” Kajiyama discloses or renders obvious this claim element.

83. As I discuss above, when Kajiyama’s device is in the locked state and the predetermined operating part is turned on (e.g., “an unlocking operation is received”), the volume remains locked until the volume reception unit’s value matches the lock value. (*See* ¶¶54-77, above.) And, it would have been obvious to modify Kajiyama to unlock when the volume reception unit’s value is within a predetermined range of the lock value. (*Id.*)

84. Thus, Kajiyama discloses or renders obvious a receiving apparatus (e.g., Kajiyama’s audio output device), wherein, when the predetermined operating part (e.g., a button of the volume fixation operation reception unit) is turned on (e.g., the button is pressed) in the locked state, the lock controller (e.g., control unit) is further configured to maintain the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value

(e.g., the volume reception unit's value) becomes a value that falls within the predetermined range based on the lock value (e.g., a predetermined range based on the volume reception unit's value at the time when the volume fixation operation was received). (See ¶¶45-81, above.)

85. Accordingly, for at least the reasons I discuss above, Kajiyama discloses or renders obvious each limitation of claim 2, and therefore renders claim 2 obvious as a whole.

3. Claim 4

86. Claim 4 depends from claim 1 and further recites that “the predetermined range based on the lock value ranges from a lock value obtained by subtracting a predetermined first value from the lock value to a lock value obtained by adding a predetermined second value to the lock value.” Kajiyama renders obvious this claim element.

87. As I discuss above, Kajiyama discloses this limitation because, even if Kajiyama's “matching” requirement is understood to require a precise match, the predetermined range ranges from subtracting zero (a first value) from the lock value to adding zero (a second value) to the lock value. (See ¶¶63-77, above.) Alternatively, even if Kajiyama does not expressly disclose this limitation, Kajiyama renders obvious a predetermined range based on the lock value (e.g., near the volume reception unit's value at the time when the volume fixation operation is received).

(*Id.*) And, it would have been obvious to determine such a range using basic arithmetic by adding and subtracting desired values from the locked level to establish upper and lower bounds of the range, respectively. Indeed, using addition and subtraction would have been the simplest way to calculate such a range.

88. Accordingly, for at least the reasons I discuss above, Kajiyama discloses or renders obvious each limitation of claim 4, and therefore renders claim 4 obvious as a whole.

4. Claim 5

89. Claim 5 depends from claim 1 and further recites that “the predetermined range is a range covering values smaller than the lock value.” Kajiyama renders obvious this claim element.

90. As I discuss above for claim 4, Kajiyama renders obvious a predetermined range wherein the range’s lower limit is obtained by subtracting a desired value from the lock value. (*See* ¶¶86-88, above.) The predetermined range would therefore include “values smaller than the lock value,” as recited in claim 5. (*Id.*)

91. Accordingly, for at least the reasons I discuss above, Kajiyama discloses or renders obvious each limitation of claim 5, and therefore renders claim 5 obvious as a whole.

5. Claim 7

92. Claim 7 depends from claim 1 and further recites that “the volume controller includes a mechanical operating device.” Kajiyama discloses or renders obvious this claim element.

93. I note that the ’819 patent explains that a “mechanical operating device” may be a conventional volume knob, i.e., a “rotary variable resistor in which the position of a rotary shaft represents the volume level.” (EX-1001 (’819 patent), 3:49-60.)

94. Kajiyama discloses that the volume reception unit “VR 12 is a rotary knob that outputs a voltage value according to the rotation angle” and that the output voltage value is “converted into a digital value” by an analog-to-digital converter.” (EX-1003 (Kajiyama) ¶[0028].) A person of ordinary skill in the art would have understood that such a rotary knob would include conventional components such as a rotary variable resistor to convert the mechanical rotary movement into an electrical signal indicating the desired audio output level. Accordingly, Kajiyama discloses or renders obvious a mechanical operating device as recited in claim 7.

95. Accordingly, for at least the reasons I discuss above, Kajiyama discloses or renders obvious each limitation of claim 7, and therefore renders claim 7 obvious as a whole.

6. Claim 8

96. Independent claim 8 recites “[a] control method for a receiving apparatus” that comprises the same units and performs the same functions as the apparatus of claim 1. Kajiyama discloses a control method. (*See generally* EX-1003 (Kajiyama).)

97. I have compared the elements in claim 8 to the elements in claim 1. As shown, the units and functions recited in claim 8 mirror the elements recited in claim 1. The table below shows how the elements correspond. As I discuss above for claim 1, Kajiyama discloses or renders obvious the elements recited in claim 8. (*See* ¶¶45-81, above.)

	Claim 8		Claim 1
8[pre]	A control method for <i>a receiving apparatus, the receiving apparatus comprising:</i>	1[pre]	<i>A receiving apparatus, comprising:</i>
8[a]	<i>an audio output unit configured to output audio corresponding to an audio signal;</i>	1[a]	<i>an audio output unit configured to output audio corresponding to an audio signal;</i>
8[b]	<i>a volume operating unit configured to output an operating value indicating a volume level of the audio according to a user operation; and</i>	1[b]	<i>a volume operating unit configured to output an operating value indicating a volume level of the audio according to a user operation;</i>

	Claim 8		Claim 1
8[c]	<i>a volume controller configured to cause the audio output unit to output the audio having a volume level corresponding to the operating value in a <u>non-locked state in which the volume level of the audio can be varied based on the operating value</u> and to cause the audio output unit to output the audio having a volume level corresponding to the lock value in a <u>locked state in which the volume level of the audio is fixed by a constant lock value for the operating value</u>, the control method comprising:</i>	1[d]	<i>a volume controller configured to cause the audio output unit to output the audio having a volume level corresponding to the operating value in the non-locked state and to cause the audio output unit to output the audio having a volume level corresponding to the lock value in the locked state, wherein</i>
		1[c]	<i>a lock controller configured to switch between a <u>non-locked state in which the volume level of the audio can be varied based on the operating value</u> and a <u>locked state in which the volume level of the audio is fixed by a constant lock value for the operating value</u>; and</i>
		1[e]	<i>the lock controller is further configured</i>
8[d]	<i>when a predetermined operating part is turned on in the locked state, switching the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value and ends when the predetermined operating part is turned off; and</i>	1[e][i]	<i>to switch, when a predetermined operating part is turned on in the locked state, the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value and ends when the predetermined operating part is turned off, and</i>
8[e]	<i>when the predetermined operating part is turned off after having switched to the non-locked state, updating the lock value with the operating value</i>	1[e][ii]	<i>to update the lock value with the operating value and switch the non-locked state to the locked state when the predetermined operating part is turned</i>

	Claim 8		Claim 1
	<i>and switching the non-locked state to the locked state.</i>		<i>off after having switched to the non-locked state.</i>

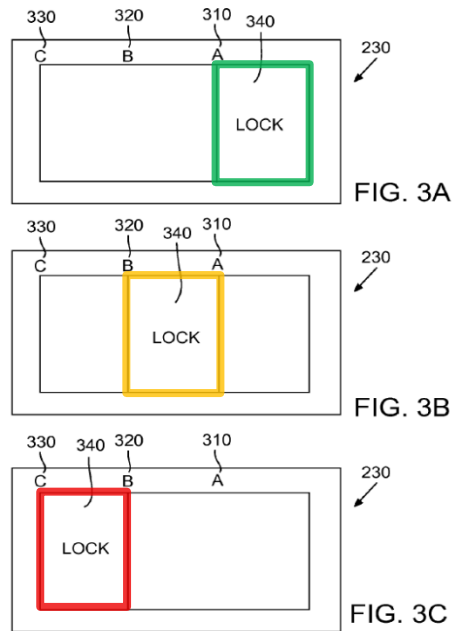
98. Accordingly, for at least the reasons I discuss above, Kajiyama renders claim 8 obvious as a whole.

B. Claims 1-2, 4-5, and 7-8 Would Have Been Obvious in View of Kajiyama and Nelson.

99. As I discuss above, Kajiyama discloses or renders obvious each limitation of claims 1-2, 4-5, and 7-8. (See ¶¶44-98, above.) For at least those reasons and the reasons I discuss below, those claims would also have been obvious in further view of Nelson. I incorporate my above discussion of Kajiyama here, and only discuss claim elements for which Kajiyama is relevant in combination with Nelson.

100. Nelson discloses that media players may use a “locking mechanism that causes the player to ignore or otherwise not receive any input commands normally received via external input controls” to “eliminate[] the receipt of inadvertent inputs that affect the playback of the player[.]” (EX-1005 (Nelson), 1:29-38; *id.*, 3:54-4:55.) Nelson’s locking mechanism may be “buttons, sliding mechanisms, soft-keys, and so on” used to lock and unlock the media player. (*Id.*, 4:55-57.)

101. Figures 3A-3C illustrate Nelson’s locking mechanism embodied as a sliding mechanism:



(EX-1005 (Nelson), Figs. 3A-3C; *id.*, 4:57-67.) Moving the mechanism’s lock to **position A**, as shown in Fig. 3A, “plac[es] the player in an **unlocked state**” while moving the lock to **position C**, as shown in FIG. 3C, “plac[es] the player in a **fully-locked state** 330 where all input controls are disabled.” (*Id.* (emphasis added).) A person of ordinary skill in the art would have therefore recognized Nelson’s locking mechanism as a predetermined operating part, as recited in claim 1, used to lock and unlock the media player. A person of ordinary skill also would have understood that the predetermined part is ON in Figure 3A (in the unlocked position) and OFF in Figure 3C (in the locked position).

1. Claim 1

a. Element 1[e][i]: Locking

102. Claim element 1[e][i] recites that the lock controller is configured “to

switch, *when a predetermined operating part is turned on in the locked state*, the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value *and ends when the predetermined operating part is turned off.*” Kajiyama and Nelson together render obvious this claim element.

103. I understand the patent owner may argue that Kajiyama does not disclose or render obvious the “predetermined operating part” limitations of this claim element. While I disagree, I note that Nelson also discloses those limitations. Specifically, as I discuss above, Nelson discloses that the device switches from the locked state to the unlocked state when a predetermined operating part (Nelson’s sliding mechanism) is turned on (to position A) and switches back to the locked state when the predetermined operating part (sliding mechanism) is turned off (to position C). (See ¶¶100-101, above.)

104. For the reasons I discuss below, a person of ordinary skill in the art would have been motivated to combine the teachings of Kajiyama and Nelson, and to implement Kajiyama’s lock/unlock functionality with Nelson’s sliding mechanism (rather than requiring the button presses described in Kajiyama), and would have had a reasonable expectation of success in doing so. (See ¶¶110-115, below.)

105. The Kajiyama-Nelson combination therefore renders obvious switching, when a predetermined operating part is turned on in the locked state (e.g., when

Nelson’s sliding mechanism is moved from position C to position A), the locked state to the non-locked state (e.g., unlocking Kajiyama’s device) for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value (e.g., when Kajiyama’s volume control knob’s value matches or is within a predetermined range of the locked level) and ends when the predetermined operating part is turned off (e.g., when Nelson’s sliding mechanism is moved back to position C).

b. Element 1[e][ii]: Unlocking

106. Claim element 1[e][ii] recites that the lock controller is configured “to update the lock value with the operating value and switch the non-locked state to the locked state when the predetermined operating part is turned off after having switched to the non-locked state.” Kajiyama and Nelson together disclose or render obvious this claim element.

107. As I discuss above, Kajiyama discloses that, after unlocking, the lock controller can update the lock value with a new value and switch from the non-locked state to the locked state using Kajiyama’s “locking operation,” which may include pressing and holding certain buttons, to re-lock the volume. (See ¶¶63-77, above.) Kajiyama discloses that, when the receiver is so locked, the output volume level is set at the then-current value of the volume control knob. (See ¶¶78-81, above.)

108. As I also discuss above, Nelson discloses updating the lock value with the new operating value (e.g., adjusting volume based on volume controls), and switching from the non-locked state to the locked state, when the predetermined operating part (e.g., sliding mechanism) is turned off (moved to position C) after having switched to the non-locked state (position A). (See ¶¶102-105, above.)

109. Thus, Kajiyama and Nelson together disclose or render obvious this limitation. Specifically, they disclose or renders obvious updating the lock value with the operating value (e.g., Kajiyama’s volume control knob’s value) and switching the non-locked state to the locked state when the predetermined operating part (e.g., Nelson’s sliding mechanism) is turned off (e.g., moved to position C) after having switched to the non-locked state (e.g., position A).

c. Motivation to Combine Kajiyama and Nelson

110. A person of ordinary skill in the art would have been motivated to combine the teachings of Kajiyama and Nelson, and to use Nelson’s sliding mechanism in Kajiyama’s device, for several reasons.

111. First, Kajiyama discloses the need to lock and unlock the receiver using “locking and unlocking operations,” but the only example it provides “pressing and holding specific buttons simultaneously on the UI 14[.]” (EX-1003 (Kajiyama) ¶[0031].) Thus, a person of ordinary skill would have been motivated to look to

other references, such as Nelson, for simpler locking mechanisms, such as switches, sliders, and buttons.

112. Second, Kajiyama discloses the advantage of locking the receiver, including ensuring that any volume changes reflect the user's intent and reduce the "discomfort" of unlocking the volume when the volume is set higher than expected. (EX-1003 (Kajiyama) ¶[0013].) Nelson explains that its simple locking mechanism provides such functionality. (EX-1005 (Nelson), 4:50-67.) Thus, a person of ordinary skill would have been motivated to implement Kajiyama's locking and unlocking functionality using a simple button or sliding mechanism (as taught by Nelson) to simplify the locking and unlocking process, thereby improving the ease of use of Kajiyama's receiver.

113. Third, the combination represents nothing more than the simple addition of a known element (Nelson's sliding mechanism) to another known element (Kajiyama's receiver) to obtain the predictable result of locking and unlocking the receiver using a switch. Fourth, the combination uses a known technique (Nelson's sliding mechanism) to improve a similar device and method (Kajiyama's receiver and locking functionality) in the same way. Fifth, the combination merely applies a known technique (Nelson's simple sliding mechanism) to a known device and method (Kajiyama's receiver and locking functionality) that is ready for improve-

ment and yields predictable results (locking and unlocking Kajiyama's receiver using an ON-OFF sliding mechanism).

114. A person of ordinary skill would have had a reasonable expectation of success in using Nelson's locking mechanism in Kajiyama's receiver because simple locking mechanisms such as Nelson's were well understood and routinely used in a wide variety of electronic devices. Additionally, a person of ordinary skill would have recognized that Nelson's switch could easily be added in the available space on the top of Kajiyama's receiver. And, as I discuss above, such a combination reflects nothing more than using Nelson's locking mechanism in a conventional manner.

115. Accordingly, for at least the reasons I discuss above, Kajiyama and Nelson disclose or render obvious each limitation of claim 1, and therefore render claim 1 obvious as a whole.

2. Claim 2

116. Claim 2 depends from claim 1 and further recites that "when the predetermined operating part is turned on in the locked state, the lock controller is further configured to maintain the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value becomes a value that falls within the predetermined range based on the lock value." Kajiyama and Nelson together render obvious this claim element.

117. As I discuss above, Kajiyama renders obvious this claim element. (*See* ¶¶82-85, above.) In the proposed Kajiyama-Nelson combination, when the volume is locked and the slider is moved to position A to unlock the volume, the volume would not immediately unlock at the volume set by the knob. Rather, the volume would only be unlocked when the slider is moved to position A *and* the volume knob is within a predetermined range of the volume at which it was previously locked. (*See* ¶¶102-105, above.) Thus, Kajiyama and Nelson together render obvious that, when the predetermined operating part (e.g., sliding mechanism) is turned on (e.g., to position A) in the locked state, the lock controller maintains the locked state for a period of time that starts when the predetermined operating part is turned on (e.g., sliding mechanism is switched to position A) and ends when the operating value (e.g., volume control knob's value) falls within the predetermined range based on the lock value (e.g., at or near the locked level). (*Id.*)

118. Accordingly, for at least the reasons I discuss above, Kajiyama and Nelson disclose or render obvious each limitation of claim 2, and therefore render claim 2 obvious as a whole.

3. Claims 4-5 and 7

119. Claims 4-5 and 7 depend from claim 1. As I discuss above, Kajiyama discloses or renders obvious the additional claim elements of claims 4-5 and 7. (*See* ¶¶86-95, above.) Accordingly, for at least the reasons I discuss above, Kajiyama

and Nelson disclose or render obvious each limitation of claims 4-5 and 7, and therefore render claims 4-5 and 7 obvious as a whole.

4. Claim 8

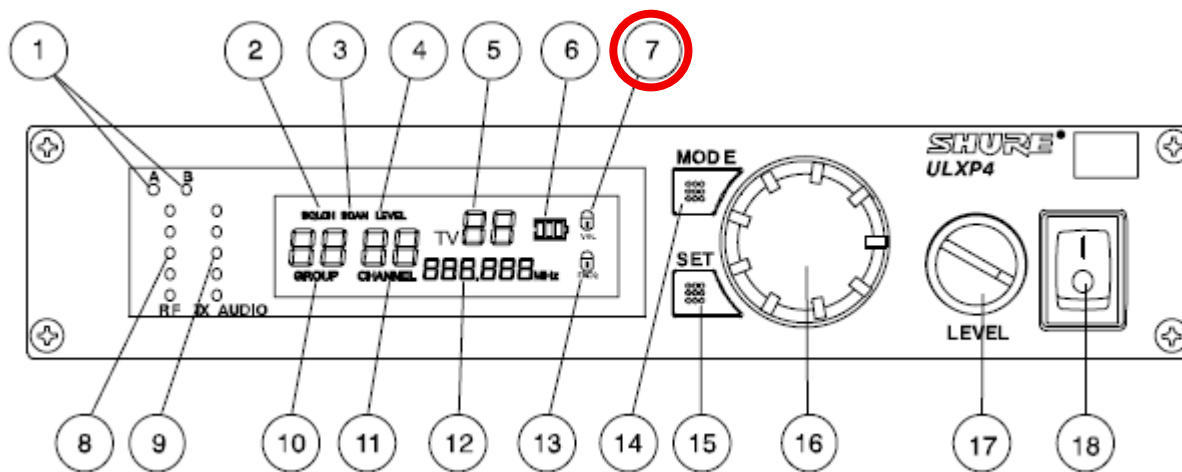
120. As I discuss above, claim 8 recites a method claim for performing the same limitations as the apparatus of claim 1. (*See* ¶97, above.) Accordingly, Kajiyama and Nelson render obvious claim 8 for the reasons I discuss above for claim 1. (*See* ¶¶45-81, 102-115, above.)

C. Claim 3 Would Have Been Obvious in View of (i) Kajiyama and Shure or (ii) Kajiyama, Nelson, and Shure.

121. Claim 3 depends from claim 2 and further recites that “when the predetermined operating part is turned on in the locked state, the lock controller is further configured to display information indicating the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value becomes a value that falls within the predetermined range based on the lock value.” As I discuss above, claim 2 would have been obvious over Kajiyama alone (*see* ¶¶82-85, above) or in combination with Nelson (*see* ¶¶116-118, above). Claim 3 would have been obvious in further view of Shure for at least the reasons I discuss below.

122. Shure discloses a “volume lock indicator” which “[a]ppears after the Volume level setting has been locked” and a “Volume Level warning indicator [that] will flash on the receiver display” “[i]f the volume control knob has been set to a

level higher than the locked level.” (EX-1004 (Shure), 5, 18.) The figure below depicts Shure’s volume lock indicator (7):



(*Id.*, Fig. 3.)

123. As I discuss above, Kajiyama, either alone or with Nelson, discloses and renders obvious maintaining the locked state after the predetermined operating part is turned on (e.g., Kajiyama’s buttons are pressed and held or Nelson’s slider is moved to the unlock position) until the volume control knob’s value falls within a predetermined range based on the locked level. (See ¶¶63-77, 102-105, above.) Shure teaches that, once the volume control knob’s value falls within an appropriate range, the “Volume Level warning indicator stops flashing.” (EX-1004 (Shure), 18.)

124. It would have been obvious to a person of ordinary skill in the art to modify Kajiyama’s receiver to include, on the “top surface of the housing” or on UI 14, a “volume lock indicator” which “[a]ppears after the Volume level setting has been locked” and a “Volume Level warning indicator [that] will flash on the receiver

display” “[i]f the volume control knob has been set to a level higher than the locked level,” as taught by Shure. A person of ordinary skill would have been motivated to do so for several reasons.

125. First, Kajiyama discloses a “user interface” 14 for “receiving various operations such as content selection, a volume fixation operation, and a power on/off operation.” (EX-1003 (Kajiyama) ¶[0022].) And while Kajiyama discloses a locking mechanism and an unlocking mechanism similar to that described in Shure (*see* ¶¶149-163, below), Kajiyama discloses no way of providing the user with feedback indicating that the volume is still locked. A person of ordinary skill would have immediately recognized that such an indication would be beneficial.

126. Second, the combination represents nothing more than the simple addition of a known element (Shure’s volume lock indicator and volume level warning indicator) to another known element (Kajiyama’s receiver) to obtain the predictable result of indicating to a user when the volume is locked or the volume level exceeds the lock value. Third, the combination uses a known technique (Shure’s indicators) to improve a similar device and method (Kajiyama’s receiver) in the same way (to provide helpful indications to users). Fourth, the combination merely applies a known technique (indicators) to a known device and method (Kajiyama’s receiver and UI) that is ready for improvement and yields predictable results (providing beneficial indicators to users).

127. A person of ordinary skill in the art would have reasonably expected success in using Shure's volume lock indicator in Kajiyama's device because simple displays and status indicators such as Shure's volume lock indicator were well understood and routinely used in a wide variety of electronic devices. For example, electronic devices routinely included displays that indicate information about the device (e.g., on/off, volume level, battery level, current audio track, etc.). Additionally, a person of ordinary skill would have understood that a display and volume lock indicator could easily be added to the top surface or UI 14 of Kajiyama by simply adding a conventional display. And, as I discuss above, this combination reflects nothing more than using Shure's volume lock indicator in a conventional manner (to indicate whether the device's volume is locked).

128. Accordingly, (i) Kajiyama and Shure and/or (ii) Kajiyama, Nelson, and Shure render obvious displaying information indicating the locked state (e.g., the volume lock indicator and Volume Level warning indicator) for a period of time that starts when the predetermined operating part is turned on and ends when the operating value (e.g., volume control knob's value) becomes a value that falls within the predetermined range based on the lock value.

129. Thus, for at least the reasons I discuss above, (i) Kajiyama and Shure and/or (ii) Kajiyama, Nelson, and Shure disclose or render obvious each limitation of claim 3, and therefore render claim 3 obvious as a whole.

D. Claims 1-5 and 7-8 Would Have Been Obvious in View of Shure and Nelson.

130. Shure discloses a wireless audio system consisting of an audio transmitter and an audio receiver. (EX-1004 (Shure), 3, Fig. 1.) The receiver includes a dial for adjusting the receiver volume output level. (*Id.*, 5.) The receiver may be locked “to prevent unauthorized or accidental changes to the settings,” including the volume output level. (*Id.*, 18.)

1. Claim 1

a. Preamble

131. The preamble recites “[a] receiving apparatus.” Shure discloses a wireless audio system, including an audio receiver, as shown in Figure 1:

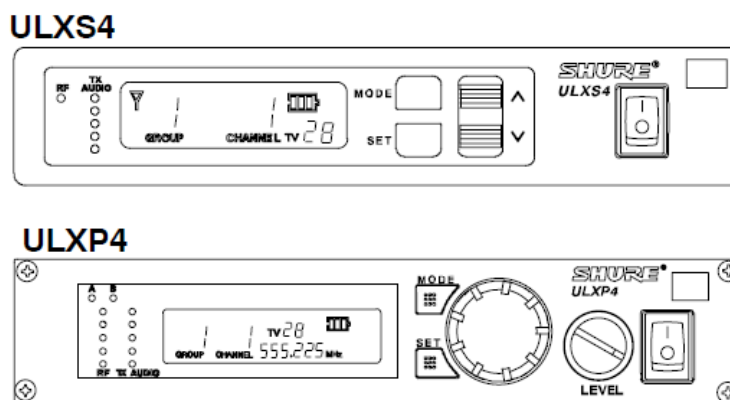


FIGURE 1

(EX-1004 (Shure), Fig. 1; *id.*, 3 (“Each Shure ULX® Wireless System includes ... a “ULXS4 Standard Diversity Receiver or a ULXP4 Professional Diversity Receiver[.]”).) Accordingly, Shure discloses the preamble of claim 1.

b. Element 1[a]: Audio Output Unit

132. Claim element 1[a] recites “an audio output unit configured to output audio corresponding to an audio signal.” Shure discloses or renders obvious this claim element.

133. Shure discloses an audio receiver with multiple “output connectors” which provide an audio output. (EX-1004 (Shure), 5, Fig. 3.) As shown in Figure 6, the receiver outputs audio signals:

3. Connect audio cable(s) (not supplied) from the audio output(s) to the audio input(s) of your audio system, mixer and/or amplifier, as shown in Figure 6.

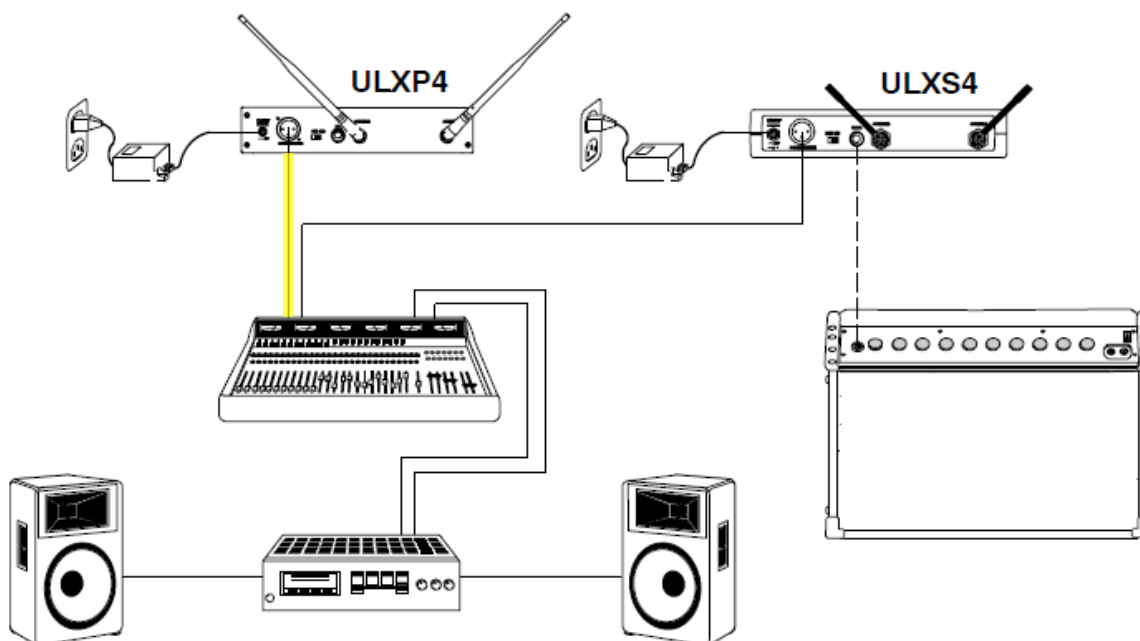


FIGURE 6

(*Id.*, 6, Fig. 6.) And, the audio output from the audio outputs corresponds to an audio signal received from an audio transmitter such as a microphone. (*See id.*, 3 (each Shure system includes a microphone transmitter and a receiver), 5 (receiver receives audio signals using receiving antennas).)

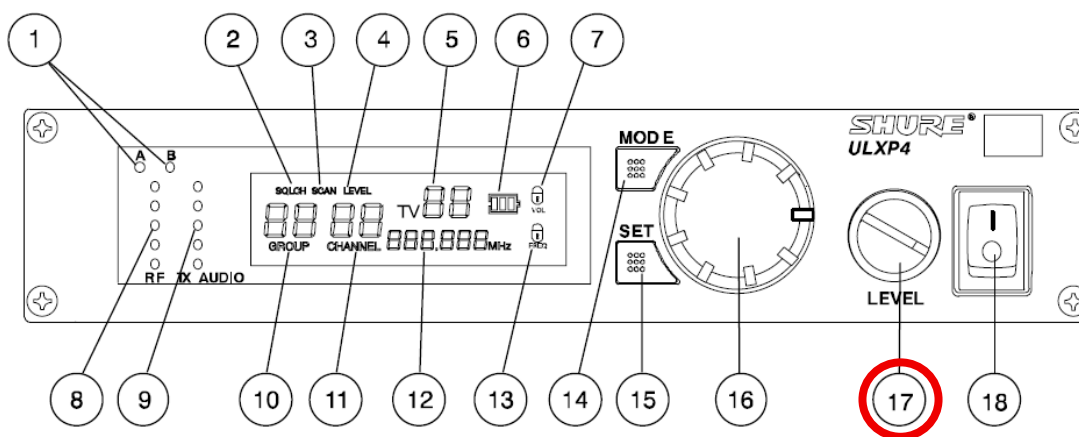
134. Accordingly, Shure discloses or renders obvious an audio output unit (e.g., output connector) configured to output audio corresponding to an audio signal (e.g., audio signal received from a microphone).

c. Element 1[b]: Volume Operating Unit

135. Claim element 1[b] recites “a volume operating unit configured to output an operating value indicating a volume level of the audio according to a user operation.” Shure discloses or renders obvious this claim element.

136. I note that the '819 patent admits this element was known. (EX-1001 ('819 patent), 1:19-28 (disclosing prior art devices with a “volume key” that adjusts volume).)

137. Shure discloses an audio receiver with a volume level control knob (17), as shown in Figure 3:



(EX-1004 (Shure), Fig. 3; *id.*, 5.)

138. The level control, also referred to as a “Volume control knob,” “[a]djusts the receiver audio output level[.]” (EX-1004 (Shure), 5.) Thus, a user can

adjust the audio output level using the level control. (*Id.*) And, a person of ordinary skill in the art would have understood that the “audio output level” is “an operating value indicating a volume level of the audio” as recited in element 1[b].

139. Accordingly, Shure discloses or renders obvious a volume operating unit (e.g., level control/volume control knob) configured to output an operating value indicating a volume level of the audio (e.g., audio output level) according to a user operation.

d. Element 1[c]: Lock Controller

140. Claim element 1[c] recites “a lock controller configured to switch between a non-locked state in which the volume level of the audio can be varied based on the operating value and a locked state in which the volume level of the audio is fixed by a constant lock value for the operating value.” Shure discloses or renders obvious this claim element.

141. Shure discloses that a user “can lock the ... output level to prevent unauthorized or accidental changes to the settings.” (EX-1004 (Shure), 18; *see also id.*, 5 (disclosing a “volume lock indicator” which “[a]ppears after the Volume level setting has been locked”).) Because Shure’s volume lock prevents changes in volume, a person of ordinary skill in the art would have understood that the volume level is fixed by a constant lock value (e.g., the audio output level when the receiver is locked). Moreover, the ’819 patent admits such volume locks were known.

(EX-1001 ('819 patent), 1:18-20 (a portable transceiver “typically has a volume lock function that locks audio volume”).)

142. Shure also discloses that the output level setting may be unlocked. (EX-1004 (Shure), 18 (disclosing unlocking to adjust “output level settings”).) Thus, Shure discloses switching between a locked and an unlocked state. And, when unlocked, the output level can be changed using the volume control knob. (*See* ¶¶135-139, above.)

143. Shure therefore discloses or renders obvious switching between a non-locked state in which the volume level of the audio can be varied based on the operating value (e.g., volume control knob value) and a locked state in which the volume level of the audio is fixed by a constant lock value for the operating value (e.g., the audio output level when the receiver is locked).

144. Further, a person of ordinary skill in the art would have understood that Shure’s receiver necessarily includes a “controller” such as a microcontroller and related circuitry to control its locking functionality. A person of ordinary skill would have understood this because conventional electrical components such as microcontrollers and other integrated circuits, as well as related circuitry to connect such components, were widely used in digital devices for decades before 2015. Accordingly, Shure discloses or renders obvious claim element 1[c].

e. Element 1[d]: Volume Controller

145. Claim element 1[d] recites “a volume controller configured to cause the audio output unit to output the audio having a volume level corresponding to the operating value in the non-locked state and to cause the audio output unit to output the audio having a volume level corresponding to the lock value in the locked state.” Shure discloses or renders obvious this claim element.

146. As I discuss above with respect to elements 1[b] and 1[c], Shure discloses or renders obvious an audio receiver with a volume operating unit and a volume lock controller. (See ¶¶135-144, above.) When unlocked, the audio output level corresponds to the volume control knob’s value. (See ¶¶135-139, above.) When locked, the audio output level corresponds to the volume control knob’s value when the receiver was locked. (See ¶¶140-144, above.) Shure inherently discloses the recited “volume controller” because such a controller would have been necessary for Shure’s receiver to operate as described.

147. Even if the recited volume controller was not inherently disclosed by Shure, it would have been obvious. Including a volume controller, which may be comprised of conventional circuitry such as a microcontroller and well-known mechanical and electrical components, to control the audio output level based on input values would have been obvious to a person of ordinary skill and represents nothing

more than the use of conventional and well-known components for their intended purpose.

148. Accordingly, Shure discloses or renders obvious a volume controller (e.g., microcontroller) configured to cause the audio output unit (e.g., output connector) to output the audio having a volume level corresponding to the operating value (e.g., volume control knob's value) in the non-locked state and to cause the audio output unit to output the audio having a volume level corresponding to the lock value (e.g., volume control knob's value when the receiver was locked) in the locked state.

f. Element 1[e][i]: Unlocking

149. Claim element 1[e][i] recites that the lock controller is configured “to switch, when a predetermined operating part is turned on in the locked state, the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value and ends when the predetermined operating part is turned off.” Shure and Nelson together render obvious this claim element.

150. As I discuss above, the '819 patent admits that: (1) an “operating part” is a button or switch; (2) turning an operating part on or off is simply operating it in a conventional manner such as by pressing a button; (3) such use of an operating part to lock and unlock the volume of audio devices was known; and (4) returning

volume to a desired level was known. (*See* ¶64, above.)

151. Shure discloses switching between the locked and unlocked states by a series of button pushes on the user interface. To switch from the unlocked state to the locked state, the user “hold[s] down the receiver SET button and press[es] the MODE button three times.” (EX-1004 (Shure), 18.) To switch from the locked state to the unlocked state, the user “hold[s] down the SET button and rotat[es] the control knob one quarter turn left-right-left.” (*Id.*) However, the receiver will remain locked if “the volume control knob has been set to a level higher than the locked level.” (*Id.*) The volume control knob must be turned down to unlock the receiver. (*Id.* (“Rotate the volume control knob counterclockwise until the Volume Level warning indicator stops flashing. This will unlock the output level setting.”).)

152. Shure does not describe what level the user must turn the volume level to in order to unlock the receiver. However, a person of ordinary skill in the art reading Shure would have understood that there are a finite number of options for the return level required to unlock the receiver. One option would be to unlock the volume as long as the volume level is adjusted down to a predetermined level (e.g., 50% volume). A second option would be to unlock the volume when the volume level is adjusted back to the lock value. A third option would be to unlock the volume when the volume level is adjusted to be within a range of the lock value (e.g.,

plus or minus 10% of the locked volume). Implementing Shure's volume unlocking with the third option, as claimed, would have been obvious for many reasons.

153. First, as one of a finite number of options, it would have been obvious to try.

154. Second, a person of ordinary skill in the art would not have been motivated to choose the first option because it would result in either loud spikes or large reductions in volume. Take, for example, a system that will unlock the volume as long as the volume is at or below 50%. If a user locks this system at a volume of 15%, there would be a significant jump in volume when the user unlocks the volume with the volume control adjusted to 50%. As another example, the system could be designed to unlock the volume as long as the volume is at or below 15%. If a user locks the volume at 50%, the user must adjust the volume down to 15% to unlock the volume, which will cause a significant reduction in volume. Thus, a person of ordinary skill would not have been motivated to implement a predetermined value to unlock the volume as it could result in either loud spikes or large reductions in volume, which is undesirable for the user.

155. Between the remaining two options, a person of ordinary skill would have been motivated to choose the second option. A person of ordinary skill would have understood that adjusting the volume within a range of the lock value (e.g. 10%

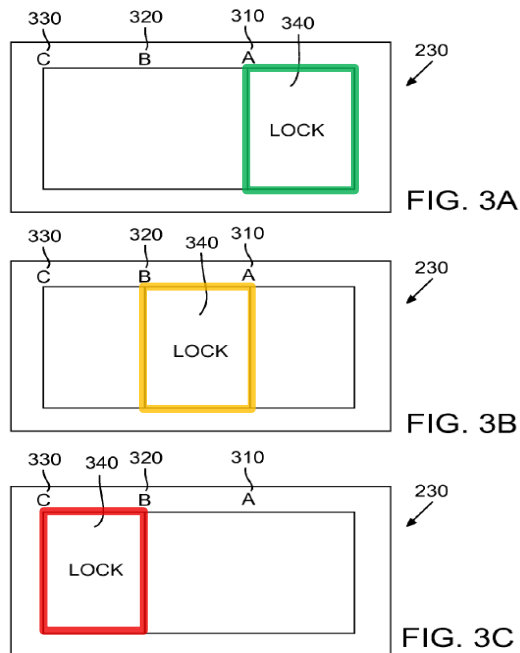
of the lock value) would accomplish the goal of preventing the volume from unreasonably spiking. Moreover, this option would require a less precise adjustment from the user, as it would allow the system to unlock as long as the volume level is close to the locked level. Thus, the system would be easier for the user to use.

156. Accordingly, Shure renders obvious switching, when a predetermined operating part is turned on in the locked state (e.g., when the SET button is pressed and the receiver is locked), the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value (e.g., when the volume control knob's value is within a range based on the lock level) and ends when the predetermined operating part is turned off (e.g., when the SET button is pressed again).

157. I understand the patent owner may argue that Shure does not disclose the claimed “predetermined operating part.” While I disagree, I note that this feature is also taught by Nelson and claim element 1[e][i] would have been obvious over Shure in view of Nelson. As I discuss above, Nelson discloses that many media players use a “locking mechanism that causes the player to ignore or otherwise not receive any input commands normally received via external input controls” to “eliminate[] the receipt of inadvertent inputs that affect the playback of the player.” (EX-1005 (Nelson), 1:29-38; *see also id.*, 3:54-4:55.) Nelson's locking mechanism

may be “buttons, sliding mechanisms, soft-keys, and so on” used to lock and unlock the media player. (*Id.*, 4:55-57.)

158. Figures 3A-3C illustrate Nelson’s locking mechanism embodied as a sliding mechanism:



(EX-1005 (Nelson), Figs. 3A-3C; *id.*, 4:57-67.) As I discuss above, moving the locking mechanism’s lock to **position A**, as shown in Figure 3A, places the player in an “unlocked state” while moving the lock to **position C**, as shown in Figure 3C, places the player in a “fully-locked state 330 where all input controls are disabled.” (*Id.*) A person of ordinary skill would have therefore recognized Nelson’s locking mechanism as a predetermined operating part, as recited in claim 1, used to lock and unlock the media player.

159. For the reasons I discuss below, a person of ordinary skill in the art would have been motivated to combine the teachings of Shure and Nelson to implement Shure’s lock/unlock functionality with Nelson’s sliding mechanism, and would have had a reasonable expectation of success in doing so. (See ¶¶164-169, below.) The Shure-Nelson combination therefore renders obvious switching, when a predetermined operating part is turned on in the locked state (e.g., when Nelson’s sliding mechanism is moved from position C to position A), the locked state to the non-locked state (e.g., unlocking Shure’s receiver) for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value (e.g., when Shure’s volume control knob’s value is within a predetermined range of the locked level) and ends when the predetermined operating part is turned off (e.g., when Nelson’s sliding mechanism is moved back to position C).

g. Element 1[e][ii]: Locking

160. Claim element 1[e][ii] recites that the lock controller is configured “to update the lock value with the operating value and switch the non-locked state to the locked state when the predetermined operating part is turned off after having switched to the non-locked state.” Shure and Nelson render obvious this claim element.

161. As I discuss above, Shure discloses that, after unlocking, the lock controller can update the lock value with a new operating value and switch the non-locked state to the locked state by operating Shure's SET button to re-lock the volume. (See ¶¶140-144, 149-159, above.) Shure discloses that, when the receiver is so locked, the output volume level is set at the then-current value of the volume control knob, the "locked level," and cannot be changed until the receiver is unlocked. (EX-1004 (Shure), 18.)

162. As I also discuss above, Nelson discloses updating the lock value with the new operating value, and switching from the non-locked state to the locked state, when the predetermined operating part (e.g., sliding mechanism) is turned off (moved to position C) after having switched to the non-locked state (position A). (See ¶¶149-159, above.)

163. Thus, Shure and Nelson together disclose or render obvious this limitation. Specifically, they disclose or render obvious updating the lock value (e.g., locked level) with the operating value (e.g., Shure's volume control knob's value) and switching the non-locked state to the locked state when the predetermined operating part (e.g., Nelson's locking mechanism) is turned off (e.g., moved to position C) after having switched to the non-locked state (e.g., position A).

h. Motivation to Combine Shure and Nelson

164. A person of ordinary skill in the art would have been motivated to combine the teachings of Shure and Nelson, and to use Nelson’s locking mechanism in Shure’s receiver, for several reasons.

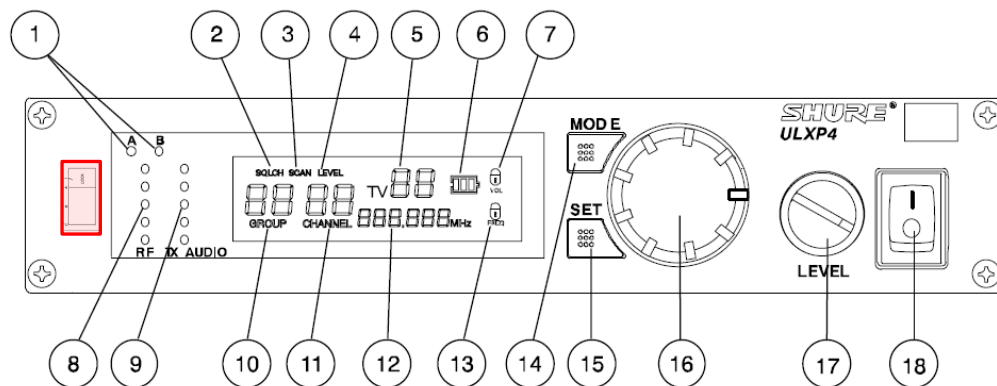
165. First, Shure discloses the need to lock and unlock the receiver but uses a complex locking and unlocking process that involves holding down one button while simultaneously pressing another button repeatedly or rotating a knob back and forth several times. (EX-1004 (Shure), 18.) Thus, a person of ordinary skill in the art would have been motivated to look to other references, such as Nelson, for simpler locking mechanisms.

166. Second, Shure discloses the advantage of locking the receiver “to prevent unauthorized or accidental changes to the settings.” (EX-1004 (Shure), 18.) Nelson explains that its simple locking mechanism provides such functionality. (EX-1005 (Nelson), 4:50-67.) Thus, a person of ordinary skill would have been motivated to implement Shure’s locking functionality using Nelson’s locking mechanism to simplify the locking and unlocking process, thereby improving the ease of use of Shure’s receiver.

167. Third, the combination represents nothing more than the simple addition of a known element (Nelson’s locking switch) to another known element

(Shure's receiver) to obtain the predictable result of locking and unlocking the receiver using a switch. Fourth, the combination also uses a known technique (Nelson's locking switch) to improve a similar device and method (Shure's receiver and locking functionality) in the same way. Fifth, the combination merely applies a known technique (Nelson's simple locking mechanism) to a known device and method (Shure's receiver and locking functionality) that is ready for improvement and yields predictable results (locking and unlocking Shure's receiver using Nelson's simple sliding mechanism).

168. A person of ordinary skill in the art would have had a reasonable expectation of success in using Nelson's locking mechanism in Shure's receiver because simple locking mechanisms such as Nelson's were well understood and routinely used in a wide variety of electronic devices. Additionally, a person of ordinary skill would have recognized that Nelson's switch could easily be added in the available space on the front panel of Shure's receiver, as shown below:



(EX-1004 (Shure), Fig. 3.) And, as I discuss above, such a combination reflects nothing more than using Nelson's locking mechanism in a conventional manner.

169. Accordingly, for at least the reasons I discuss above, Shure and Nelson disclose or render obvious each limitation of claim 1, and therefore render claim 1 obvious as a whole.

2. Claim 2

170. Claim 2 depends from claim 1 and further recites that “when the predetermined operating part is turned on in the locked state, the lock controller is further configured to maintain the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value becomes a value that falls within the predetermined range based on the lock value.” Shure and Nelson together render obvious this claim element.

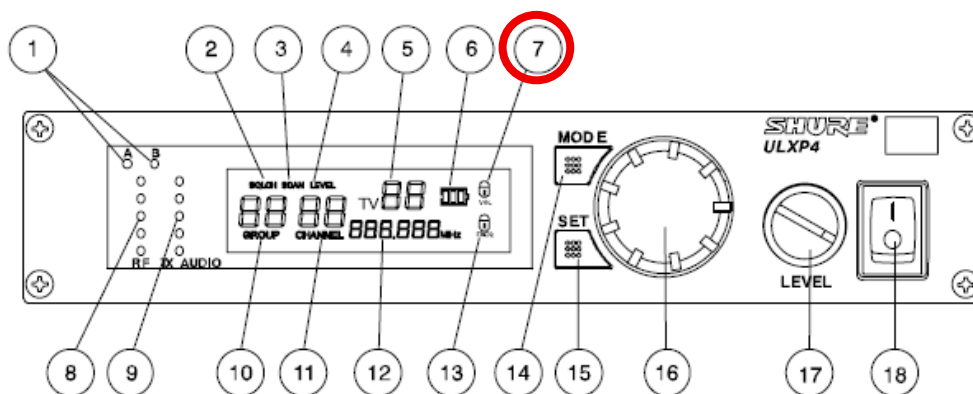
171. In the proposed Shure-Nelson combination, when the volume is locked and the slider is moved to position A to unlock the volume, the volume would not immediately unlock at the volume set by the knob. (*See* ¶¶149-159, above.) Rather, the volume would only be unlocked when the slider is moved to position A *and* the volume knob is within a predetermined range of the volume at which it was previously locked. (*Id.*) Thus, Shure and Nelson together render obvious maintaining the locked state until the operating value (e.g., volume control knob’s value) falls within the predetermined range based on the lock value (e.g., near or below the locked level). (*Id.*)

172. Accordingly, for at least the reasons I discuss above, Shure and Nelson disclose or render obvious each limitation of claim 2, and therefore render claim 2 obvious as a whole.

3. Claim 3

173. Claim 3 depends from claim 2 and further recites that “when the predetermined operating part is turned on in the locked state, the lock controller is further configured to display information indicating the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value becomes a value that falls within the predetermined range based on the lock value.” Shure and Nelson together render obvious this claim element.

174. Shure discloses a “volume lock indicator” which “[a]ppears after the Volume level setting has been locked” and a “Volume Level warning indicator [that] will flash on the receiver display” “[i]f the volume control knob has been set to a level higher than the locked level.” (EX-1004 (Shure), 5, 18.) The figure below depicts the volume lock indicator (7) of Shure:



(*Id.*, Fig. 3.)

175. As I discuss above, Shure and Nelson render obvious maintaining the locked state after the predetermined operating part is turned on (e.g., after the slider taught by Nelson is moved to the unlock position) until the volume control knob's value falls within a predetermined range based on the locked level. (See ¶¶149-159, above.) Shure teaches that, once the volume control knob's value falls within an appropriate range, the "Volume Level warning indicator stops flashing." (EX-1004 (Shure), 18.)

176. Thus, Shure and Nelson render obvious displaying information indicating the locked state (e.g., the volume lock indicator and Volume Level warning indicator) for a period of time that starts when the predetermined operating part is turned on (e.g., sliding the switch) and ends when the operating value (e.g., volume control knob's value) becomes a value that falls within the predetermined range based on the lock value (e.g., near the locked level).

177. Accordingly, for at least the reasons I discuss above, Shure and Nelson disclose or render obvious each limitation of claim 3, and therefore render claim 3 obvious as a whole.

4. Claim 4

178. Claim 4 depends from claim 1 and further recites that "the predetermined range based on the lock value ranges from a lock value obtained by subtract-

ing a predetermined first value from the lock value to a lock value obtained by adding a predetermined second value to the lock value.” Shure renders obvious this claim element.

179. As I discuss above, Shure renders obvious a predetermined range based on the lock value. (See ¶¶149-159, above.) And, it would have been obvious to determine such a range using basic arithmetic by adding and subtracting desired values from the locked level to establish upper and lower bounds of the range, respectively. Indeed, using addition and subtraction would have been the simplest way to calculate such a range.

180. Accordingly, for at least the reasons I discuss above, Shure and Nelson disclose or render obvious each limitation of claim 4, and therefore render claim 4 obvious as a whole.

5. Claim 5

181. Claim 5 depends from claim 1 and further recites that “the predetermined range is a range covering values smaller than the lock value.” Shure discloses or renders obvious this claim element.

182. As I discuss above with respect to claim 4, Shure discloses or renders obvious a “predetermined range based on the lock value,” wherein the range’s lower limit is obtained by subtracting a desired value from the lock value. (See ¶¶178-180, above.) Thus, it would have been obvious to a person of ordinary skill in the art that

the predetermined range “is a range covering values smaller than the lock value,” as recited in claim 5. (*Id.*)

183. Additionally, claim 5 would have been obvious because, as I discuss above regarding element 1[e][i], a person of ordinary skill would have recognized that an undesirably loud spike in volume can be avoided by allowing the device to unlock when the volume knob’s value was at or below the lock value. (*See* ¶¶149-159, above.) A person of ordinary skill would have also understood that this would have provided the benefit of improved user experience by ensuring that the device is only unlocked when the volume knob’s value is at or below the lock level and thereby avoiding such volume spikes.

184. Accordingly, for at least the reasons I discuss above, Shure and Nelson disclose or render obvious each limitation of claim 5, and therefore render claim 5 obvious as a whole.

6. Claim 7

185. Claim 7 depends from claim 1 and further recites that “the volume controller includes a mechanical operating device.” Shure discloses or renders obvious this claim element.

186. Shure discloses a volume control knob that controls the audio output level. (*See* ¶¶135-139, above.) A person of ordinary skill in the art would have understood that Shure’s volume control knob includes conventional components

such as a rotary variable resistor to convert the mechanical rotary movement into an electrical signal indicating the desired audio output level. Accordingly, Shure discloses or renders obvious a mechanical operating device as recited in claim 7.

187. Accordingly, for at least the reasons I discuss above, Shure and Nelson disclose or render obvious each limitation of claim 7, and therefore render claim 7 obvious as a whole.

7. Claim 8

188. As I discuss above, claim 8 recites a method claim for performing the same limitations as the apparatus of claim 1. (*See* ¶97, above.) Accordingly, Shure and Nelson render obvious claim 8 for the reasons I discuss above for claim 1. (*See* ¶¶131-169, above.)

E. Claims 1-5 and 7-8 Would Have Been Obvious in View of Shure, Nelson, and Kajiyama.

189. As I discuss above, Shure and Nelson disclose or render obvious each limitation of claims 1-5 and 7-8. (*See* ¶¶130-188, above.) For at least those reasons and the reasons I discuss below, those claims would also have been obvious in further view of Kajiyama. I incorporate my above discussion of Shure and Nelson here, and only discuss claim elements for which Kajiyama is relevant in combination with Shure and Nelson.

190. I understand the patent owner may argue that Shure and Nelson do not disclose or render obvious the limitations relating to unlocking “when the operating

value becomes a value that falls within a predetermined range based on the lock value” (e.g., as recited in claim 1). While I disagree, I note that those limitations are also disclosed by and/or would have been obvious in further view of Kajiyama.

1. Claim 1, Element 1[e][i]: Unlocking

191. Element 1[e][i] recites that the lock controller is configured “to switch, when a predetermined operating part is turned on in the locked state, the locked state to the non-locked state for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value and ends when the predetermined operating part is turned off.” Kajiyama discloses or renders obvious this claim element because, as I discuss above, Kajiyama discloses switching to the unlocked state when the operating value matches the lock value. (See ¶¶63-77, above.)

192. A person of ordinary skill in the art would have been motivated to combine the teachings of Kajiyama and Shure (as modified by Nelson), and to modify Shure’s device to unlock when the operating value matches the lock value (or otherwise falls within a predetermined range as Kajiyama renders obvious) for many reasons.

193. First, as I discuss above, Shure explains that the receiver should remain locked while the volume is turned “to a level higher than the locked level,” and that the volume level should be turned down sufficiently before the receiver is unlocked.

(See ¶¶149-159, above.) But Shure does not explain how this functionality should be implemented. (*Id.*) A person of ordinary skill would have been motivated to look to other references, including Kajiyama, for a simple way to achieve this functionality by unlocking the volume when the volume level matches the lock value or a range of values around the lock value.

194. Second, as I discuss above, such a modification is one of a finite number of solutions that a person of ordinary skill would have been motivated to try. (See ¶¶149-159, above.)

195. Third, a person of ordinary skill would have understood that Shure's receiver is designed to avoid large changes in volume when it is unlocked. Thus, a person of ordinary skill would have been motivated to combine Shure and Kajiyama and thereby avoid large changes in volume when unlocking Shure's receiver by matching the volume level with the lock value or bringing the volume level within a predetermined range.

196. Fourth, the combination represents nothing more than the simple addition of a known element (unlocking when volume matches or is within a predetermined range of the lock value) to another known element (Shure's receiver) to obtain the predictable result of unlocking Shure's receiver when the volume level and lock level match. Fifth, the combination also uses a known technique (unlocking when volume matches or is within a predetermined range of the lock value) to improve a

similar device and method (Shure's receiver and locking functionality) in the same way. Sixth, such a modification reflects merely applying a known technique (unlocking when volume matches or is within a predetermined range of the lock value) to a known device (Shure's receiver) that is ready for improvement and yields predictable results (unlocking only when the volume level matches the lock value or a range of values around the lock value).

197. A person of ordinary skill would have reasonably expected success in modifying Shure in this way. The combination would have been trivial, involving the application of simple arithmetic to match the volume level and lock value of Shure's receiver to unlock the receiver.

198. Accordingly, for at least the reasons I discuss above, Shure, Nelson, and Kajiyama disclose or render obvious each limitation of claim 1, and therefore render claim 1 obvious as a whole.

2. Claim 2

199. Claim 2 depends from claim 1 and further recites that "when the predetermined operating part is turned on in the locked state, the lock controller is further configured to maintain the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value becomes a value that falls within the predetermined range based on the lock value." Shure, Nelson, and Kajiyama together render obvious this claim element.

200. As I discuss above, Shure and Nelson render claim 2 obvious. (*See* ¶¶170-172, above.) Shure and Kajiyama render obvious switching to an unlocked state only when the volume level matches the lock value or a predetermined range around the lock value. (*See* ¶¶191-198, above.) A person of ordinary skill in the art would have understood that such a predetermined range is “based on the lock value” because it is a range of values centered around the lock value. (*Id.*)

201. Accordingly, Shure, Nelson, and Kajiyama render obvious switching, when a predetermined operating part is turned on in the locked state (e.g., when Nelson’s lock is moved from position C to position A), the locked state to the non-locked state (e.g., unlocking Shure’s receiver) for a period of time that starts when the operating value becomes a value that falls within a predetermined range based on the lock value (e.g., when Shure’s volume control knob’s value matches the locked level or is within a predetermined range of the locked level) and ends when the predetermined operating part is turned off (e.g., when Nelson’s lock is moved back to position C).

202. Accordingly, for at least the reasons I discuss above, Shure, Nelson, and Kajiyama disclose or render obvious each limitation of claim 2, and therefore render claim 2 obvious as a whole.

3. Claim 3

203. Claim 3 depends from claim 2 and further recites that “when the predetermined operating part is turned on in the locked state, the lock controller is further configured to display information indicating the locked state for a period of time that starts when the predetermined operating part is turned on and ends when the operating value becomes a value that falls within the predetermined range based on the lock value.” As I discuss above, Shure and Nelson render obvious displaying information indicating the locked state while Shure’s receiver is locked. (See ¶¶173-177, above.) Shure, Nelson, and Kajiyama render obvious remaining in a locked state after the operating part is turned on until the volume level matches the lock value or is within a predetermined range based on the lock value. (See ¶¶149-159, 170-172, 191-202, above.)

204. Shure, Nelson, and Kajiyama therefore render obvious displaying information indicating the locked state (e.g., Shure’s volume lock indicator and Volume Level warning indicator) for a period of time that starts when the predetermined operating part is turned on (e.g., sliding Nelson’s switch to position A) and ends when the operating value (e.g., volume control knob’s value) becomes a value that falls within the predetermined range based on the lock value (e.g., matches the lock value or a predetermined range of values around it).

205. Accordingly, for at least the reasons I discuss above, Shure, Nelson, and Kajiyama disclose or render obvious each limitation of claim 3, and therefore render claim 3 obvious as a whole.

4. Claim 4

206. Claim 4 depends from claim 1 and further recites that “the predetermined range based on the lock value ranges from a lock value obtained by subtracting a predetermined first value from the lock value to a lock value obtained by adding a predetermined second value to the lock value.” As I discuss above, Kajiyama renders obvious the additional claim element of claim 4. (See ¶¶86-88, above.)

207. Accordingly, for at least the reasons I discuss above, Shure, Nelson, and Kajiyama disclose or render obvious each limitation of claim 4, and therefore render claim 4 obvious as a whole.

5. Claim 5

208. Claim 5 depends from claim 1 and further recites that “the predetermined range is a range covering values smaller than the lock value.” As I discuss above for claims 4 and 5, Kajiyama renders this obvious. (See ¶¶86-91, above.) A person of ordinary skill in the art would have been motivated to implement a range covering values smaller than the lock value for the reasons I discuss above. (*Id.*; see ¶¶206-207, above.)

209. Accordingly, for at least the reasons I discuss above, Shure, Nelson, and Kajiyama disclose or render obvious each limitation of claim 5, and therefore render claim 5 obvious as a whole.

6. Claim 7

210. Claim 7 depends from claim 1 and further recites that “the volume controller includes a mechanical operating device.” Shure, Nelson, and Kajiyama render claim 7 obvious for the reasons I discuss above. (See ¶¶92-95, 185-187, above.)

211. Accordingly, for at least the reasons I discuss above, Shure, Nelson, and Kajiyama disclose or render obvious each limitation of claim 7, and therefore render claim 7 obvious as a whole.

7. Claim 8

212. As I discuss above, claim 8 recites a method claim for performing the same limitations as the apparatus of claim 1. (See ¶97, above.) Accordingly, Shure, Nelson, and Kajiyama render obvious claim 8 for the reasons I discuss above for claim 1. (See ¶¶131-169, 191-198, above.)

VII. SECONDARY CONSIDERATIONS OF NONOBVIOUSNESS

213. I am not aware of any secondary considerations of nonobviousness. If the patent owner identifies any alleged evidence of secondary considerations in the future, I reserve the right to respond to that information.

VIII. CONCLUSION

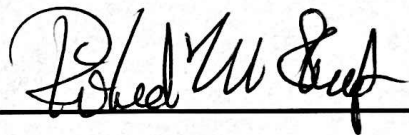
214. For the foregoing reasons, it is my opinion that claims 1-5 and 7-8 of the '819 patent would have been obvious to a person of ordinary skill in the art at the time of the alleged invention in view of the prior art discussed above.

215. I reserve the right to supplement my opinions in the future to address or respond to any issues that the patent owner may raise, as well as new information including, but not limited to, any claim constructions advanced by the patent owner or adopted by the Board in the Institution Decision, and respond to any alleged secondary considerations as they become available to me.

Amazon.com, Inc. v. SoundClear Technologies LLC
Declaration of Richard Stern, Ph.D. – Patent 9,804,819

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on 5/30/25 at Pittsburgh, PA.

A handwritten signature in black ink, appearing to read "Richard Stern", is written over a solid black horizontal line.

Richard Stern, Ph.D.