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Paper 31
Date: July 13, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD, and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

STATON TECHIYA, LLC,
Patent Owner.

IPR2022-00281
Patent 9,270,244 B2

Before NATHAN A ENGELS, SCOTT B. HOWARD, and RUSSELL E. CASS, *Administrative Patent Judges.*

ENGELS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–30 (the "challenged claims") of U.S. Patent No. 9,270,244 B2 (Ex. 1001, "the '244 patent"). Paper 3, 1. Patent Owner filed a Preliminary Response. Paper 8. With our permission, Petitioner filed a Preliminary Reply (Paper 9), Patent Owner filed a Preliminary Sur-Reply (Paper 10), Petitioner filed a Supplemental Brief on Interim *Fintiv* Guidance (Paper 11), and Patent Owner filed a Brief Regarding Interim Procedure for Discretionary Denials (Paper 12). Petitioner also submitted the Declaration of Nathaniel Polish, Ph.D. (Exhibit 1002) in support of the Petition, and Patent Owner submitted the Declaration of David Kleinschmidt (Ex. 2001) in support of the Preliminary Response. The Board issued a Decision Granting Institution of *Inter Partes* Review. Paper13.

After institution, Patent Owner filed a Response (Paper 19, "PO Resp."), Petitioner filed a Reply (Paper 21, "Reply"), and Patent Owner filed a Sur-reply (Paper 22, "Sur-reply"). Patent Owner also submitted a Declaration of David Kleinschmidt (Ex. 2006) in support of Patent Owner's Response, and Petitioner also submitted a Declaration of Nathaniel Polish, Ph.D. (Ex. 1029) in support of Petitioner's Reply. With our permission, Petitioner also filed a Sur-sur-reply to Patent Owner's Sur-reply. Paper 26. Both parties presented oral arguments at a hearing, and a copy of the hearing transcript is in the record. Paper 31.

Based on the complete record in this proceeding, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–4, 6, 13, 14, 17–19, and 25–27 of the '244 patent are unpatentable.

B. Real Parties in Interest

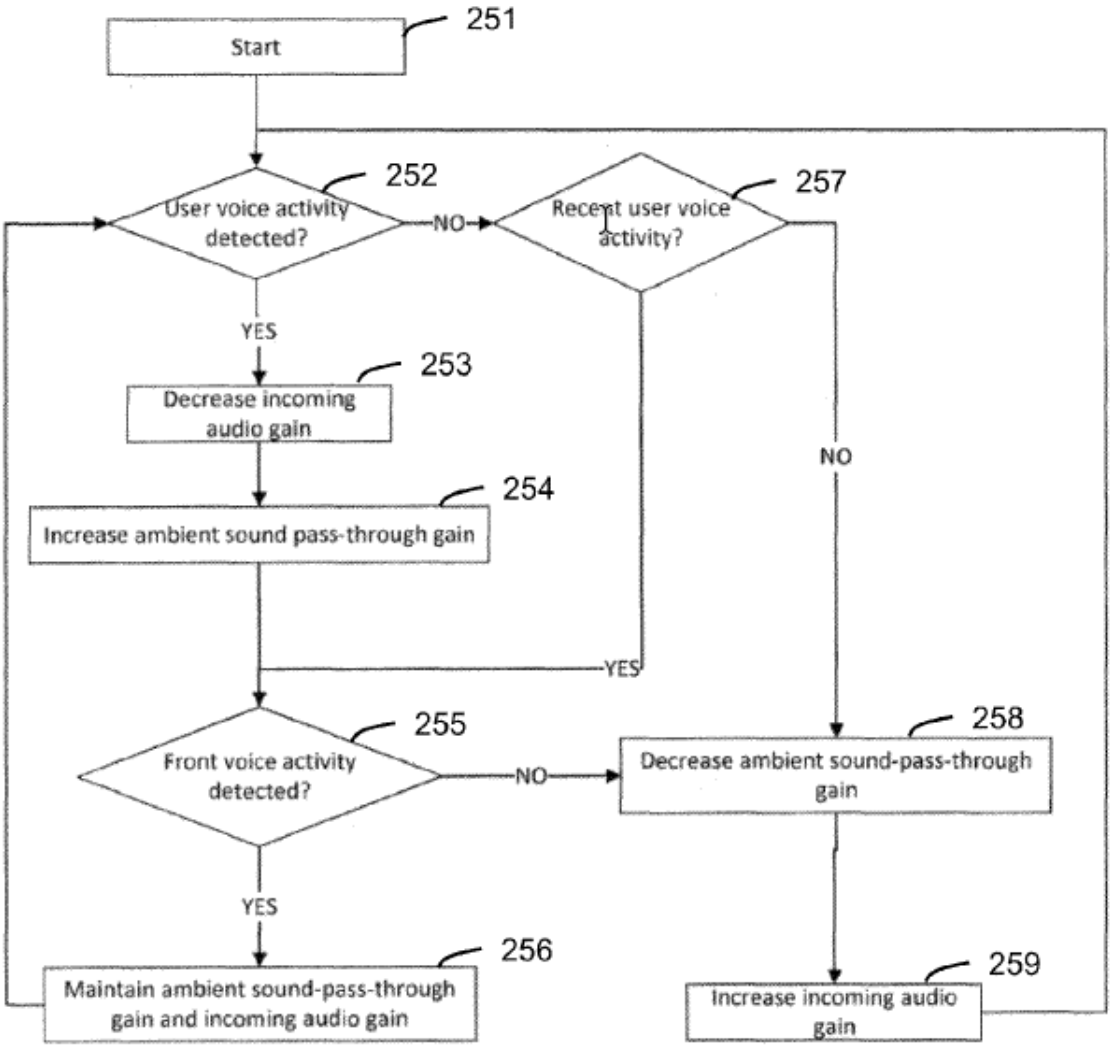
Petitioner states that the real parties in interest are Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc. Pet. 1, 71. Patent Owner states that Staton Techiya, LLC and Synergy IP Corporation are the real parties in interest. Paper 5, 1.

C. Related Proceedings

Petitioner states that the '244 patent is asserted in *Staton Techiya, LLC v. Samsung Electronics Co., Ltd.*, No. 2:21-cv-00413 (E.D. Tex.), which was filed on November 5, 2021 ("the District Court Litigation"). Pet. 71; Paper 5, 1.

D. The '244 Patent (Ex. 1001)

Titled "System and Method to Detect Close Voice Sources and Automatically Enhance Situation Awareness," the '244 patent describes systems and methods that allow a user listening to audio content with earphones to also hear sounds from the user's environment. Ex. 1001, 1:15–37, Fig. 2A, codes (54), (57). Among other things, the '244 patent describes detecting voice activity from the earphone user's environment, activating a voice timer in response to the voice activity, and adjusting a mixing gain of the audio content during activation of a voice timer. Ex. 1001, 7:52–8:14, Fig. 2D. "The step of adjusting the mixing gain of an audio content signal includes decreasing a volume of the audio content signal delivered to the internal speaker when voice activity is detected above a threshold, and/or increas[ing] the volume of the audio content signal delivered to the internal speaker when voice activity is detected below a threshold." Ex. 1001, 8:39–45. Figure 2B, copied below, depicts certain steps involved in this process.



Ex. 1001, Fig. 2B

Figure 2B is a flowchart of a method for controlling an ambient sound pass-through for enhancing situational awareness. Ex.1001, 1:54–55. The method can start with a user listening to music through earphones when another individual begins speaking to the earphone user. Ex. 1001, 5:40–42. At step 252, the system's processor monitors sound from an ambient sound microphone and performs voice activity detection to analyze voice characteristics and properties and to distinguish between the earphone user's spoken voice and ambient sounds from the environment. Ex. 1001, 5:42–54. If user voice activity is detected, the gain of the incoming audio signal is

decreased at step 253 and the ambient sound pass-through gain is increased at step 254. Ex. 1001, 5:54–57.

"When user voice activity ceases, a user voice activity timer is started prior to step **255** at which time a front voice activity detector is invoked" to determine if there is voice activity from a second individual and to assess whether the individual is speaking and engaged in conversation with the earphone user. Ex. 1001, 5:58–65. If front voice activity from the second individual is detected, "the gain of the incoming audio signal is maintained (or decreased) and the ambient sound pass-through gain is maintained (or decreased [sic, increased]) at step **256**." Ex. 1001, 6:4–8. If voice activity from the second individual is not detected, the gain of the ambient sound pass-through is decreased at step 258, and the gain of the incoming audio signal is increased at step 259. Ex. 1001, 6:8–13.

E. Illustrative Claim

Claims 1, 17, and 28 are independent claims. Claim 1 is illustrative and is reproduced below.

> 1. A method for close proximity detection and automatic audio mixing performed by a processor suitable for use with an earphone, the method comprising the steps of:
>
> monitoring sound from an ambient sound microphone communicatively coupled to the processor;
>
> automatically activating a voice timer responsive to detecting voice activity or a cessation of voice activity in the sound as part of the close proximity detection;
>
> adjusting a mixing gain of an audio content signal delivered to the earphone with the ambient sound pass-through during a voice timer pending voice activity; and
>
> wherein the audio content is one of a voice signal, music content, or audible sound delivered to the internal speaker for audible reproduction.

F. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–30 of the '244 patent based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	References/Basis
1–3, 6, 13, 14, 17–19, 25, 26	103(a)[1]	Rosenberg[2]
4, 27, 28	103(a)	Rosenberg, Kvaløy[3]
5, 7–12, 16, 20–24	103(a)	Rosenberg, Park[4]
29, 30	103(a)	Rosenberg, Kvaløy, Park
15	103(a)	Rosenberg, Park. Olwal[5]

[1] The '244 patent lists as a related application a provisional application filed March 13, 2013. Ex. 1001, code (60). Petitioner contends claims 8, 9, and 14 of the '244 patent are not supported by the provisional application such that the priority date for the '244 patent is its own filing date, March 13, 2014. Pet. 5. Petitioner states that the priority date does not affect whether any asserted references qualify as prior art, but Petitioner contends that, based on the '244 patent's March 13, 2014 filing date, the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA") applies to this proceeding. Pet. 5. Patent Owner does not address Petitioner's arguments. We do not decide the priority issue because it would not affect our Decision, and we apply the AIA version of 35 U.S.C. § 103 based on the '244 patent's filing date. Our Decision would not change under the pre-AIA version of § 103.

[2] US Publication No. 2007/0189544 A1; publ. Aug. 16, 2007. Ex. 1005.

[3] US Patent No. 6,728,385 B2; issued Apr. 27, 2004. Ex. 1009.

[4] US Patent No. 9,037,458 B2; issued May 19, 2015. Ex. 1019.

[5] A. Olwal et al., *Interaction Techniques Using Prosodic Features of Speech and Audio Localization*, Proceedings of IUI 2005 (Int'l Conf. on Intelligent User Interfaces), pages 284–86 (ACM 1-58113-894-6/05/0001) (Jan. 9–12, 2005). Ex. 1023.

II. ANALYSIS

A. Obviousness

A claim is unpatentable under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, objective evidence of non-obviousness.[6] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the time of the alleged invention would have had "a bachelor's degree in electrical engineering, computer science, or a similar field and two years of experience in the design of digital audio systems and associated signal processing." Pet. 7 (citing Ex. 1002 ¶ 22). Petitioner also states that a person of ordinary skill "could have also obtained similar knowledge and experience through other means." Pet. 7. Patent Owner's Response applies Petitioner's level of ordinary skill. PO Resp. 17.

We adopt Petitioner's assessment of the level of ordinary skill, which is consistent with the level reflected in the '244 patent and the prior art.

[6] The record does not include objective evidence of non-obviousness.

C. Claim Construction

We construe claims using the principles set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc) and related cases. 37 C.F.R. § 42.100(b) (2021). Under that precedent, the words of a claim are generally given their "ordinary and customary meaning," which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips*, 415 F.3d at 1312–13.

1. Order of "activating"/"activates" and "adjusting"/"adjusts" and "adjusting/adjusts . . . during a/the voice timer"

Patent Owner contends the step of "adjusting"/"adjusts" is performed after the step of "activating"/"activates" in independent claim 1, 17, and 28. PO Resp. 18, 23. Patent Owner similarly contends the term "adjusting/adjusts . . . during a/the voice timer" in claims 1, 2, 17, 18, and 28 should be construed as "adjusting/adjusts . . . after a/the voice timer is activated and before the voice timer ends." PO Resp. 23. Petitioner contends that the claims do not require that the steps be performed in order and that the adjusting step is satisfied as long as the audio content is delivered during the timer along with the ambient sound passthrough. Reply 3–4.

Patent Owner contends the claim language itself compels the order of the steps. PO Resp. 18. Patent Owner argues the claims recite activating a voice timer and making adjustments during that voice timer. PO Resp. 18. Patent Owner also argues that "[t]o find that an adjustment can be made before the timer activates would render the step of activating that voice timer superfluous." PO Resp. 18. Further, Patent Owner argues that "[c]laim 1

does not recite adjusting a mixing gain and separately maintaining modified gain values during a timer. Claim 1 only recites adjusting a mixing gain during a timer. Thus, the timer cannot be separated from the adjustment." PO Resp. 20; *see also* PO Resp. 25–26 ("the step of adjusting (whether an ambient sound pass-through or a mixing gain) cannot occur before the timer is activated; it must occur after"). Patent Owner also argues its proposed order of steps is consistent with a Claim Construction Order (Ex. 2008) issued in the parties' District Court Litigation. PO Sur-reply 1–4.

Petitioner argues neither the claim language nor syntax requires the "adjusting" step to be performed after the "automatically activating" step. Reply 3–4. Petitioner also argues "[o]n its face, the 'adjusting' step is satisfied if the mixing gain is adjusted before the automatic activation of the voice timer as long as the audio content is delivered during the timer along with the ambient sound pass-through." Reply 4. According to Petitioner, "[t]he plain language and syntax of the claim denotes that the 'audio content signal' must be 'delivered,' along with the ambient sound pass-through, 'during a voice timer pending activity,'" and the claim does not require adjustment of the mixing gain to also occur "during a voice timer pending voice activity." Reply 4 (citing *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1336 (Fed. Cir. 2008) (stating that the last antecedent rule provides that referential words or phrases refer to the last word, phrase, or clause that can be made an antecedent without impairing the meaning of the sentence)). Petitioner also cites the specification as stating that the "automatically activating" step is optional. Reply 5 (citing Ex. 1001, 8:1–14). Further, Petitioner contends Dr. Polish states that "adjusting" and "activating" could be performed in any order and that Mr. Kleinschmidt

agreed that no order is required. Reply 5 (citing Ex. 1030, 39:21–40:8; Ex. 2007, 83:13–84:5, 90:14–91:8).

"As a general rule, '[u]nless the steps of a method [claim] actually recite an order, the steps are not ordinarily construed to require one.'" *Mformation Techs., Inc. v. Research In Motion Ltd.*, 764 F.3d 1392, 1398 (Fed. Cir. 2014) (quoting *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1342 (Fed. Cir. 2001)). "However, a claim 'requires an ordering of steps when the claim language, as a matter of logic or grammar, requires that the steps be performed in the order written, or the specification directly or implicitly requires' an order of steps." *Id.* (quoting *TALtech Ltd. v. Esquel Apparel, Inc.*, 279 F. App'x 974, 978 (Fed. Cir. 2008)).

Our preliminary discussion in the Decision Granting Institution states that "logic dictates that a voice timer must be active before something can happen 'during a voice timer,'" but the Decision Granting Institution notes that the claims can be read in different ways, e.g.: "(a) changing a mixing gain at some point in time while the voice timer is active, or (b) maintaining an adjusted mix throughout a voice timer 'pending voice activity.'" Paper 13, 15. On the full record, we determine the latter reading is correct; the claims do not require performing the "activating/activate" step before the "adjusting/adjusts" step, nor that a singular act of "adjusting/adjusts" must occur "during" a voice timer.

First, we determine the claimed "adjusting/adjusts" does not "refer to a singular instance of increasing or decreasing gain," as stated by the district court. Ex. 2008, 33. As an example cited by the district court, claim 12 narrows the "adjusting" limitation of claim 1 by defining it to include *both*

increasing the volume gain *and* decreasing the volume gain of the audio content as triggered by voice activity:

> 12. The method of claim 10 [which depends from claim 1], wherein the step of adjusting the mixing gain of an audio content signal comprises:
>
> decreasing a volume gain of the audio content delivered to the earphone *when voice activity is detected above a threshold*; *and*
>
> increasing the volume gain of the audio content signal delivered to the earphone *when voice activity is detected below a threshold*.

Ex. 2008, 32–33 (quoting claim 12) (emphasis added); *see also* Ex. 1001, 14:32–39 (claim 10 defining "adjusting the ambient sound pass-through" with language mirroring claim 12), 15:62–16:3 (claim 24 mirroring claim 12), 16:63–17:3 (claim 30 reciting "maintaining ambient sound pass-through level and audio content signal level during the combined voice activity; wherein the voice activity timer bridges gaps between voice activity of the detected spoken voice and the frontal voice activity of another individual to a time length that is a function of the combined voice activity").

Consistent with the claim language, the specification describes an earphone that delivers audio content (e.g., music) to its user and monitors ambient sounds to detect voice activity (e.g., the user engaging in conversation with another individual). Ex. 1001, 2:32–36, 5:40–6:32, 7:1–39, Figs. 2A–2D. Upon the detection of voice activity, the earphone decreases audio content gain and increases ambient sound pass-through gain, and the earphone maintains those relative levels of gain while the user is engaged in conversation. Ex. 1001, 5:40–6:32. In particular, with reference to Figure 2B (reproduced above), the specification describes the use of

timers to determine whether the user is engaged in conversation such that the relative levels of gain should be maintained:

- "[w]hen user voice activity ceases, a user voice activity timer is started prior to step 255 at which time a front voice activity detector is invoked" (Ex. 1001, 5:58–60);
- "if no voice activity is detected, the voice activity timer is referenced to determine if there was any recent user voice activity at step 257" (Ex. 1001, 6:14–16);
- "when user voice activity is not detected and the user voice activity timer is below a determined threshold (in some embodiments this is approximately 10 seconds), then it is determined at 257 that there was recent user voice activity (or pending voice activity) and the method proceeds to step 255" (Ex. 1001, 6:18–23); and
- "when user voice activity is not detected at step 252 but the voice activity timer is above the determined threshold, then recent user voice activity exists [sic, no recent user voice activity exists] at step 257 and the gain of the ambient sound pass-through signal is decreased at step 258, and the gain of the incoming audio signal is increased at step 259" (Ex. 1001, 6:26–32).

Further, the specification also uses the terms "adjust" or "adjusting" consistent with maintaining an adjustment over a period of time. *See* Ex. 1001, 7:14–17 ("adjusting a mixing gain . . . during activation of the voice timer"), 7:52–8:13 (describing Fig. 2D as depicting a processor that "adjusts an ambient sound pass-through . . . at the onset and during activation of the voice timer" and "[the processor] also adjusts a mixing gain . . . during activation of the voice timer"), Fig. 2D ("adjust a mixing gain . . .

during activation of the voice timer."). In total, the specification makes clear that the invention's focus is on delivering decreased audio content gain and increased ambient sound pass-through gain to "enhance situational awareness" during a user's conversation, and increasing audio content gain and decreasing ambient sound pass-through gain after the user's conversation. *E.g.*, Ex. 1001, codes (54) ("System and Method to Detect Close Voice Sources and Automatically Enhance Situational Awareness"), (57) ("system and method for enhancing two-way conversation"), 5:27–6:32 (describing Fig. 2B), 7:1–39, Figs. 2B, 2D.

Relatedly, the specification describes the purpose of the voice activity timer—to bridge gaps between spoken words in a conversation. Ex. 1001, 7:35–36 ("The voice activity timer bridges gaps between voice activity . . . ."). As Patent Owner and Mr. Kleinschmidt contend, adjusting sound signals up and down between individual spoken words of a conversation would be too frequent and too abrupt (Ex. 2006 ¶ 53; PO Resp. 21; Sur-reply 7), so the specification describes using the voice activity timer to bridge gaps between voice activity (Ex. 1001, 7:36–39; *see* Ex. 1001, 5:40–6:32, 7:1–39). We find nothing in the specification that suggests the order of activating the voice timer and adjusting the relative gains is important or even relevant to the invention. In fact, contrary to Patent Owner's argument that "[i]n claims 1 and 17, 'cessation' triggers the activation of a voice timer . . . and is followed by 'adjusting a mixing gain' during that timer . . . [which] only makes sense if it follows a permanent stop" (PO Sur-reply 7), it would be inconsistent with the specification and illogical to "decrease volume gain of the audio content," as required by claim 12, after the "permanent stop" of voice activity. *See* PO Resp. 21 ("Adjustment to sound

signals in response to detected speech of a speaker are typically performed during the entire speech of that speaker, not during selected portions of their speech."). Rather, reading the plain language of the claims in light of the specification, we agree with Petitioner that the claimed "during a voice timer pending voice activity" refers to a duration of time, not a singular moment in time. In other words, we determine the "adjusting/adjusts" includes maintaining and delivering relative levels of adjusted gains "during a voice timer pending voice activity," even if the actual moment the first adjustment is made occurs before activation of the voice timer.

2. Cessation of voice activity

The parties dispute the meaning of "cessation of voice activity." *See* PO Resp. 20–21; Reply 7–8. As reflected in the discussion below, however, we determine that it is unnecessary to construe the phrase. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Overview of Rosenberg

Titled "Ambient Sound Responsive Media Player," Rosenberg describes reducing the volume of a media player in a user's headphones based on sounds from the user's environment. Ex. 1005 ¶¶ 12–14, 20–21, codes (54), (57). Among other things, Rosenberg describes an intelligent volume control of media playing through a user's headphones that uses a microphone to capture ambient audio signals from the environment and a processor to detect a "characteristic form" in the ambient signal. Ex. 1005 ¶¶ 14, 20–25. Rosenberg states that a characteristic form is "a sound or

signal that when detected by the media player will cause an audible adjustment to the output of the media player such that the user will be enabled to better hear ambient sounds," examples of which include (A) an utterance of the user's name by another person, (B) speech from the user, and (C) alarm or siren sounds. Ex. 1005 ¶¶ 20–25, 46– 47.

In one embodiment, Rosenberg describes identifying a characteristic form, then reducing the volume of media, and then performing a time delay "to ensure that the volume reduction lasts for at least some amount of time beyond the identification of the characteristic form within the ambient signal." Ex. 1005 ¶ 50. The time delay may be a set amount of time, such as 3 to 6 seconds, and in general, "the volume reductions linger for some time delay period after each identified characteristic form." Ex. 1005 ¶ 50.

"In a unique embodiment, the time delay is set to last for as long as the user who called the media player user's name continues to speak." Ex. 1005 ¶ 51. In this embodiment, if an individual calls the media player user's name and continues to speak, the system performs an automatic reduction of volume and will maintain the volume reduction for at least as long as the system continues to identify the individual's voice "without a time-gap of more than some threshold amount of time." Ex. 1005 ¶ 51.

E. Ground 1: Alleged Obviousness of Claims 1–3, 6, 13, 14, 17–19, 25, and 26 Based on Rosenberg

Petitioner contends that claims 1–3, 6, 13, 14, 17–19, 25, and 26 are rendered obvious by Rosenberg in view of the knowledge of a person of ordinary skill in the art. Pet. 3, 8–17.

1. Claim 1

> "*A method for close proximity detection and automatic audio mixing performed by a processor suitable for use with an earphone, the method comprising the steps of:*"

Neither party addresses whether the preamble is limiting, but Petitioner contends that Rosenberg satisfies the preamble with its disclosure of a media player having a microphone and a processor for selectively mixing audio content such as music with ambient sounds from the user's environment. Pet. 8–9.

Patent Owner does not address or rebut Petitioner's contentions regarding the preamble, and we agree with Petitioner that Rosenberg satisfies the preamble.

> "*monitoring sound from an ambient sound microphone communicatively coupled to the processor;*"

Petitioner contends Rosenberg satisfies this limitation with its disclosures that its microphone captures and processes ambient audio signals to detect characteristic forms or events such as the user's name, the user's voice, and alarms or sirens. Pet. 10–11 (citing Ex. 1005 ¶¶ 12–14, 25, 27, 39, 46, 47, 55–57; Ex. 1002 ¶¶ 71–77).

Patent Owner does not address or rebut Petitioner's contentions for this limitation, and we agree with Petitioner that the cited portions of Rosenberg satisfy this limitation.

> "*automatically activating a voice timer responsive to detecting voice activity or a cessation of voice activity in the sound as part of the close proximity detection;*"

Petitioner contends Rosenberg satisfies this limitation with its disclosures regarding an Intelligent Automatic Volume Reduction routine. Pet. 11–12. According to Petitioner, the routine includes a timing circuit

that can set a time delay "to ensure that the volume reduction lasts for at least some amount of time beyond the identification of the characteristic form within the ambient signal." Pet. 11–12 (quoting Ex. 1005 ¶ 28; citing Ex. 1005 ¶¶ 23, 28, 46, 48, 50, 51, 53–55).

Patent Owner's arguments address this "automatically activating" limitation in combination with the "adjusting" limitation, addressed below. *See* PO Resp. 28–32.

> "*adjusting a mixing gain of an audio content signal delivered to the earphone with the ambient sound pass-through during a voice timer pending voice activity; and*"

Petitioner contends Rosenberg satisfies this limitation with its disclosures of mixing two signals into a single audio stream during a "time delay" or a "time gap." Pet. 13–14. More specifically, Petitioner states that Rosenberg describes adjusting the relative volume of musical audio content and ambient audio content in a mixed audio stream. Pet. 13–14 (citing Ex. 1005 ¶¶ 25, 50, 51, 54–58). Petitioner states that Rosenberg's adjustment of mixing gain of the musical media content relative to the ambient audio signal "occurs during a period in which a timer is running based on the detection of a 'characteristic form' of voice activity, for example, the voice of a first user calling the media player user's name, and based on the detection that the first user has stopped speaking." Pet. 14 (citing Ex. 1005 ¶¶ 50, 51; Ex. 1002 ¶¶ 86, 87). Petitioner also states that a person of ordinary skill would have understood that Rosenberg encompasses adjusting audio content gain during the time gap and in response to other user voice activity. Pet. 14 (citing Ex. 1002 ¶ 44). Further, Petitioner contends a person of ordinary skill would have understood Rosenberg's

references to adjustments of volume levels correspond to adjustments in gain of the audio and ambient signals. Pet. 15–16 (citing Ex. 1002 ¶¶ 89–98).

Patent Owner argues (i) Rosenberg does not disclose performing the step of adjusting "a mixing gain of an audio content signal" after the step of activating "a voice timer," (ii) Rosenberg does not disclose adjusting a mixing gain during a voice timer pending voice activity, and (iii) Rosenberg's "time-gap" is not a voice timer that activates upon detecting end of speech. PO Resp. 28, 30, 33; Sur-reply 8–12. First, with an argument premised on the order of steps, Patent Owner contends "Rosenberg's timer ('time delay') does not activate before adjusting a mixing gain." PO Resp. 28; *see also* Sur-reply 9. According to Patent Owner, Rosenberg expressly specifies that its adjustment (volume reduction) is performed before its timer activates. PO Resp. 28–29 (citing Ex. 1005 ¶ 50, Fig. 2).

Second, again advancing arguments premised on the order of steps, Patent Owner argues Rosenberg's volume reduction is not performed after Rosenberg's timer starts or before the timer ends because "Rosenberg discloses a volume reduction before its time delay/time-gap." PO Resp. 30; *see* Sur-reply 9–12. According to Patent Owner, "Rosenberg's 'time-gap' embodiment still maintains the volume reduction following detection of the second characteristic form (utterance of the user's name)" because "[f]or the volume reduction to be 'maintained' during a 'time-gap,' the volume reduction must necessarily occur before the 'time-gap.'" PO Resp. 32 (citing Ex. 1005 ¶ 51).

Third, Patent Owner argues that Rosenberg's "time-gap" embodiment is separate from Rosenberg's "time delay" and does not activate upon

detecting end of speech. PO Resp. 33; *see also* Sur-reply 12. Instead, according to Patent Owner, "Rosenberg's 'time-gap' is a 'time delay' that activates during speech; it does not activate at the 'end of speech,' as construed claim 1 requires." PO Resp. 34.

For the reasons explained above, we disagree with Patent Owner's arguments regarding the order of steps. We also disagree with Patent Owner's argument that claim 1 requires activating a timer at the end of speech; separate from the "cessation of voice activity" language, this claim element is satisfied by automatically activating a voice timer "responsive to detecting voice activity," which we find Rosenberg satisfies.

We agree with Petitioner that Rosenberg's teachings of adjusting relative volumes in a mixed audio signal upon detection of a characteristic event and maintaining the relative volumes for a set period of time pending voice activity falls within the scope of claim 1. Rosenberg describes identifying a characteristic form, then reducing the volume of media, and then performing a time delay "to ensure that the volume reduction lasts for at least some amount of time beyond the identification of the characteristic form within the ambient signal." Ex. 1005 ¶ 50. Specifically, even though Rosenberg describes its volume reduction as beginning before activation of Rosenberg's time delay, for the reasons explained above, these teachings fall within the scope of claim 1. Further, even if claim 1 required activation of the voice timer before adjusting gain, Rosenberg clearly states that its Figure 2 depicts a "continuous loop" that "includes a number of steps which may be performed in a variety of orders." Ex. 1005 ¶ 44.

Rosenberg states "[i]n general the volume reductions linger for some time delay period after each identified characteristic form within the ambient

signal" (Ex. 1005 ¶ 50) and "the time delay is set to last for as long as the user who called the media player user's name continues to speak" (Ex. 1005 ¶ 51). In addition, Rosenberg refers to a "time gap" as "some threshold amount of time" without detection of the first user's voice. Ex. 1005 ¶ 51 ("if a first user calls the name of the media player user and then continues to speak, the routines of the present invention . . . will maintain the volume reduction for at least as long as the first user's voice continues to be identified without a time-gap of more than some threshold amount of time"). Contrary to Patent Owner's arguments, we find no convincing reason that a person of ordinary skill would have understood paragraphs 50 and 51 to describe incompatible embodiments. In fact, Rosenberg expressly states in paragraph 50 that volume reductions persist for a delay period that is dependent upon the type of characteristic form, and in paragraph 51, Rosenberg states that where the characteristic form is a person speaking, the voice reduction should continue as long as the person speaks "without a time-gap of more than some threshold amount of time." Ex. 1005 ¶¶ 50, 51.

Accordingly, we determine Rosenberg satisfies the "automatically activating" and "adjusting" limitations, as claimed.

> "*wherein the audio content is one of a voice signal, music content, or audible sound delivered to the internal speaker for audible reproduction.*"

Petitioner contends that Rosenberg teaches musical audio content and ambient audio content delivered to a user's headphones. Pet. 16–17 (citing Ex. 1005 ¶¶ 25, 40, 54). Patent Owner does not address Petitioner's arguments regarding this limitation, and we agree with Petitioner that Rosenberg satisfies this limitation.

In conclusion regarding claim 1, based on the complete record developed during trial, we determine that Petitioner has shown by a preponderance of the evidence that claim 1 is unpatentable as obvious in view of Rosenberg.

2. Claim 2

> "*The method of claim 1, further comprising adjusting an ambient sound pass-through of the ambient sound microphone during the voice timer pending voice activity, wherein the voice timer exceeds a time duration of the voice activity*."

Petitioner contends Rosenberg teaches or suggests claim 2 with its description of automatically increasing the relative volume of microphone content for a period of time in response to detected ambient audio events. Pet. 17 (citing Ex. 1005 ¶ 50, 51, 55). According to Petitioner, "[t]his relative volume adjustment is 'automatically' maintained 'for a period of time' once the voice activity is detected ([Ex. 1005 ¶ 50] (the 'time delay')) and for a period after the voice activity ceases ([Ex. 1005 ¶ 51] (the 'time-gap'))." Petitioner further states that "[t]he 'time gap' ensures that the adjustment to the ambient sound signal in Rosenberg exceeds the period of voice activity." Pet. 17–18.

Patent Owner does not separately address or rebut Petitioner's contentions for claim 2. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 2, and we determine Petitioner has proven by a preponderance of the evidence that claim 2 would have been obvious in view of Rosenberg.

3. Claim 3

> "*The method of claim 1, wherein the earphone is configured to provide partial sound isolation.*"

Petitioner contends Rosenberg teaches or suggests claim 3 with its teachings that headphones separate users from the noises of daily life by providing at least partial sound isolation. Pet. 18 (citing Ex. 1005 ¶ 10; Ex. 1002 ¶¶ 104–107).

Patent Owner does not separately address or rebut Petitioner's contentions for claim 3. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 3, and we determine Petitioner has proven by a preponderance of the evidence that claim 3 would have been obvious in view of Rosenberg.

4. Claim 6

> "*The method of claim 1, further comprising detecting between a first voice of a user wearing the earphone and a second voice of another individual in proximity to the user by evaluating at least one or more of sound level, vocal pitch, resonance characteristics, sound-to-silence gap analysis, signal to noise ratios, and previously learned speaker characteristics or sound patterns.*"

Petitioner contends Rosenberg teaches claim 6 with its teachings regarding distinguishing between the voice of a user wearing the earphones and the voice of a second individual based on "sound recognition processing, speech recognition processing, and/or vocal identity recognition processing steps and/or sub-steps." Pet. 19 (quoting Ex. 1005 ¶ 45); *see* Pet. 19–21 (additionally citing Ex. 1005 ¶¶ 45–47, 53–57, 111–113; Ex. 1002 ¶ 115).

Patent Owner does not separately address or rebut Petitioner's contentions for claim 6. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 6, and we determine Petitioner has proven by a

preponderance of the evidence that claim 6 would have been obvious in view of Rosenberg.

5. Claim 13

> "*The method of claim 1, wherein the audio content is one of a voice signal, music content, or audible sound delivered from a mobile device.*"

Petitioner contends Rosenberg teaches claim 13 with its teaching of a portable media player that allows users to play musical media files. Pet. 21 (citing Ex. 1005 ¶ 21; Ex. 1002 ¶¶ 116–118).

Patent Owner does not separately address or rebut Petitioner's contentions for claim 13. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 13, and we determine Petitioner has proven by a preponderance of the evidence that claim 13 would have been obvious in view of Rosenberg.

6. Claim 14

> "*The method of claim 1, wherein the adjusting an ambient sound pass-through gain of the ambient sound microphone increases the signal to noise ratio of the ambient sound with respect to background noise and the audio content.*"

Petitioner contends Rosenberg teaches claim 14 with its teaching of filtering and processing the ambient sound signal to extract extraneous noise and that a person of ordinary skill would have understood that filtering or extracting extraneous noise from the ambient audio signal would improve the signal to noise ratio as claimed. Pet. 21–22 (citing Ex. 1005 ¶¶ 48, 50, 54–58; Ex. 1002 ¶¶ 120, 121).

Patent Owner does not separately address or rebut Petitioner's contentions for claim 14. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 14, and we determine Petitioner has proven by a

preponderance of the evidence that claim 14 would have been obvious in view of Rosenberg.

7. Claim 17

[a.] "*An communication system for close proximity detection and audio mixing, comprising:*

[b.] *a first ambient sound microphone;*

[c.] *an internal speaker for generating audible sounds configured to be directed towards an ear canal; and*

[d.] *a processor operatively coupled to the communication system, the first ambient sound microphone and the internal speaker, wherein the processor*

[i.] *monitors sound from the first ambient sound microphone;*

[ii.] *automatically activates a voice timer responsive to detecting voice activity or a cessation of voice activity in the sound as part of the close proximity detection;*

[iii.] *adjusts a mixing gain of an audio content signal delivered to the communication system by way of the internal speaker with an ambient sound pass-through during the voice timer; and*

[iv.] *wherein the audio content is one of a voice signal, music content, or audible sound delivered to the internal speaker for audible reproduction.*"

For limitations [a.], [b.], [d.i.], [d.ii.], [d.iii.], and [d.iv.], Petitioner relies on essentially the same arguments and evidence addressed above for similar limitations of claim 1. For limitation [c.], Petitioner contends Rosenberg satisfies the limitation with its teachings of headphones that play music directly into a user's ears. Pet. 23 (citing Ex. 1005 ¶¶ 10, 20, 25, 40, 54; Ex. 1002 ¶¶ 125, 126). For limitation [d.], Petitioner contends

Rosenberg teaches that its system includes a processor configured as claimed. Pet. 24 (citing Ex. 1005 ¶¶ 21, 28, 39, 40; Ex. 1002 ¶¶ 127, 128).

Patent Owner argues against Petitioner's evidence and arguments for claim 17 together with Patent Owner's arguments against claim 1, addressed above. For the same reasons addressed above, we disagree with Patent Owner, and we agree with Petitioner that the cited portions of Rosenberg satisfy each limitation of claim 17. Thus, we determine Petitioner has proven by a preponderance of the evidence that claim 17 would have been obvious in view of Rosenberg.

8. Claim 18

> "*The communication system of claim 17, wherein the processor adjusts an ambient sound pass-through of the ambient sound microphone reproduced by the internal speaker during the voice timer and wherein the voice timer is pending for voice activity and exceeds a time length of the voice activity.*"

Petitioner contends Rosenberg teaches claim 18 for the same reasons addressed above regarding claim 2. Pet. 27.

Patent Owner does not separately address or rebut Petitioner's contentions for claim 18. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 18, and we determine Petitioner has proven by a preponderance of the evidence that claim 18 would have been obvious in view of Rosenberg.

9. Claim 19

> "*The communication system of claim 17, wherein the communication system comprises one or more of a headset, a headphone, an earpiece, a mobile phone, a smart phone, a watch, a personal music player.*"

Petitioner contends Rosenberg teaches claim 17 with its teachings of a headset, headphone, earpiece, cellular phone, and personal digital assistant.

Pet. 27–28 (citing Ex. 1005 ¶¶ 9, 20, 21, 26, 39, 40, 43, 54; Ex. 1002 ¶¶ 138, 139).

Patent Owner does not separately address or rebut Petitioner's contentions for claim 19. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 19, and we determine Petitioner has proven by a preponderance of the evidence that claim 19 would have been obvious in view of Rosenberg.

10. Claim 25

> "*The communication system of claim 17, wherein the audio content is one of a voice signal, music content, or audible sound delivered from a mobile device to the internal speaker for audible reproduction.*"

Petitioner contends Rosenberg teaches claim 25 for the same reasons addressed above regarding claim 13.

Patent Owner does not separately address or rebut Petitioner's contentions for claim 25. We agree with Petitioner that the cited portions of Rosenberg satisfy claim 25, and we determine Petitioner has proven by a preponderance of the evidence that claim 25 would have been obvious in view of Rosenberg.

11. Claim 26

> "*The communication system of claim 17, wherein the adjusting an ambient sound pass-through of the ambient sound microphone increases the signal to noise ratio of the ambient sound with respect to background noise.*"

Petitioner contends Rosenberg teaches claim 26 for the same reasons addressed above regarding claim 14. Pet. 28.

Patent Owner does not separately address or rebut Petitioner's contentions for claim 26. We agree with Petitioner that the cited portions of

Rosenberg satisfy claim 26, and we determine Petitioner has proven by a preponderance of the evidence that claim 26 would have been obvious in view of Rosenberg.

F. Ground 2: Alleged Obviousness of Claims 4, 27, and 28 Based on Rosenberg and Kvaløy

1. Claim 4

"*The method of claim 1, wherein the earphone is configured to provide full sound isolation.*"

Petitioner contends Rosenberg in view of Kvaløy satisfy claim 4 based on Kvaløy's additional teachings of a protective earplug that protects a user's hearing by sealing a user's outer ear canal while allowing selected sounds to pass through. Pet. 29–30 (citing Ex. 1009 1:39–44, 3:40–46, 3:50–52, 4:22–26, 4:38–41, Fig. 1; Ex. 1002 ¶¶ 143–156). Petitioner also contends a person of ordinary skill would have been motivated to combine the teachings of Rosenberg and Kvaløy because, among other things, the references teach similar devices designed to protect users' hearing and employing Kvaløy's sealing section to provide full sound isolation in Rosenberg's device would have improved Rosenberg's hearing protection. Pet. 31–32.

Patent Owner does not separately address or rebut Petitioner's contentions for claim 4. We agree with Petitioner that the cited portions of Kvaløy satisfy claim 4, and we determine Petitioner has adequately articulated reasons a person of ordinary skill would have been motivated to combine the teachings of Rosenberg and Kvaløy, including to improve the hearing protection of Rosenberg's device with the Kvaløy's teachings of a sealing section. Accordingly, we determine Petitioner has proven by a

preponderance of the evidence that claim 4 would have been obvious in view of the combined teachings of Rosenberg and Kvaløy.

2. Claim 27

"*The communication system of claim 17, wherein the communication system provides sound isolation from ambient sounds external to an ear canal of the user in which the communication system is inserted and from acoustic sounds internal to the ear canal of the user.*"

Petitioner contends Rosenberg and Kvaløy satisfy claim 27 for the same reasons addressed above regarding claim 4. Pet. 33.

Patent Owner does not separately address or rebut Petitioner's contentions for claim 27. We agree with Petitioner that the cited portions of Kvaløy satisfy claim 27, and we determine Petitioner has adequately articulated reasons a person of ordinary skill would have been motivated to combine the teachings of Rosenberg and Kvaløy. Accordingly, we determine Petitioner has proven by a preponderance of the evidence that claim 27 would have been obvious in view of the combined teachings of Rosenberg and Kvaløy.

3. Claim 28

[a.] "*A method for enhancing two-way conversation, the method implemented by a processor operatively coupled to an earphone comprising the steps of:*

[b.] *detecting a spoken voice from sounds captured at an ambient sound microphone communicatively coupled to the earphone;*

[c.] *automatically activating a voice timer and setting a voice activity threshold for the voice timer responsive to detecting spoken voice as part of a close proximity detection;*

> [d.] *adjusting an ambient sound pass-through of the ambient sound microphone reproduced by an internal speaker of the earphone during activation of the voice timer while a level of the spoken voice is above the voice activity threshold; and*
>
> [e.] *adjusting a mixing gain of an audio content signal delivered to the earphone by way of the internal speaker with the ambient sound pass-through during activation of the voice timer and the close proximity detection,*
>
> [f.] *wherein the earphone is configured to provide sound isolation from ambient sounds external to an ear canal in which the earphone is inserted and from acoustic sounds internal to the ear canal,*
>
> [g.] *wherein the audio content is one of a voice signal, music content, or audible sound delivered from a mobile device to the internal speaker for audible reproduction.*"

In relevant part, limitations [c.] of claim 28 recites "setting a voice activity threshold for the voice timer responsive to detecting spoken voice." Petitioner contends Rosenberg satisfies this limitation with its teachings that a user can configure Rosenberg's system to be responsive only to characteristic sounds that exceed a certain voice threshold. Pet. 35–37 (citing Ex. 1005 ¶ 53; Ex. 1002 ¶¶ 163, 164, 167). Further, Petitioner contends a person of ordinary skill "would have understood that Rosenberg activates a time delay in response to detecting a characteristic form in the ambient audio sound signal ('automatically activating a voice timer') when the characteristic form constitutes spoken words exceeding a voice threshold ('and setting a voice activity threshold for the voice timer responsive to detecting spoken voice as part of a close proximity detector')." Pet. 35–36 (citing Ex. 1002 ¶ 164).

Patent Owner contends "Rosenberg fails to disclose setting a voice activity threshold *after* detecting a spoken voice as the claim recites. Rosenberg instead discloses a volume threshold set before detecting a characteristic form (including spoken voice)." PO Resp. 35 (emphasis added). Stated differently, Patent Owner argues "Rosenberg's volume threshold is set before characteristic form (which the Petition equates to detecting spoken voice . . .) is ever detected, but claim 28 requires a threshold be set responsive to (in other words, after) detection of a spoken voice." PO Resp. 36.

We agree with Patent Owner that Petitioner has not shown that Rosenberg teaches limitation [c.] of claim 28. The express language of claim 28 requires "setting a voice activity threshold for the voice timer *responsive to* detecting spoken voice." Thus, the plain language of the claim expressly requires an order—the threshold must be set responsive to, and therefore after, detecting spoken voice. Even if Petitioner is correct that claim 28 includes applying a preconfigured voice activity threshold (Pet. 35; Reply 16), the plain language of the claim requires that such an application of a preconfigured voice activity threshold must be "responsive to detecting spoken voice." The cited portion of Rosenberg teaches applying a volume threshold continuously such that the system is "responsive only to name utterances that exceed a certain volume threshold." Ex. 1005 ¶ 53. Because the volume threshold is applied before detection of a spoken voice, Petitioner has not persuasively shown that Rosenberg's teachings of a continuous application of a preconfigured threshold for the purpose of detecting a characteristic form satisfies the claim's requirement of "setting a

voice activity threshold for the voice timer responsive to detecting spoken voice," as claimed.

Accordingly, we determine Petitioner has not shown by a preponderance of the evidence that claim 28 is unpatentable.

G. Ground 3: Alleged Obviousness of Claims 5, 7–12, 16, and 20–24 Based on Rosenberg and Park

1. The Combination of Rosenberg and Park

The Petition includes a claim-by-claim, limitation-by-limitation comparison of claims 5, 7–12, 16, and 20–24 to the combined teachings of Rosenberg and Park. Pet. 38–58. Petitioner also presents reasons for combining the references. Pet. 42–43. Specifically, addressing claim 5, Petitioner contends "*Rosenberg* suggests the desirability of distinguishing between a media player wearer's voice and that of another user and filtering or otherwise processing the ambient sound signal to extract extraneous noise and/or sound content that is outside certain magnitude and/or frequency limits or thresholds." Pet. 42. Further, "*Rosenberg* likewise suggests that the processor of its system would perform additional signal processing on the captured ambient signal, and directs a [person of ordinary skill in the art] to signal processing techniques known in the art." Pet. 42.

Petitioner contends a person of ordinary skill "looking to the art for signal processing techniques to use with *Rosenberg* would have been motivated to incorporate *Park*'s signal processing techniques." Pet. 42. According to Petitioner, incorporating Park's signal processing techniques, "would advantageously improve *Rosenberg*'s capability to facilitate a media player user's hearing of 'detected ambient sound events within the user's local environment,' including the voice of the other person" and "*Park* illustrates the desirability of such techniques in . . . precisely the same

context disclosed by *Rosenberg*, another individual trying to get the attention of the headset wearer." Pet. 42. Further, Petitioner contends:

> Modifying *Rosenberg* to include *Park's* capability to determine a direction and proximity of the other person with respect [to] the media player user and adjust the gain of the ambient sound pass-through of the ambient sound microphone as a function of the direction would have amounted to the application of a known technique (using spatially selective processing) to yield a predictable result (reducing ambient noise contamination of the second speaker's voice) with a reasonable expectation of success.

Pet. 42–43.

Patent Owner argues a person of ordinary skill would not have combined Rosenberg and Park because Park requires integration with a headset providing active noise cancelation while Rosenberg's "passive headset" lacks active noise cancelation and is insufficient for Park's teachings of audio augmentation. PO Resp. 39–40 (citing Ex. 1019, 3:40–46; Ex. 2006 ¶ 88). Further, according to Patent Owner, Park teaches away from use with "passive headsets" like Rosenberg's. PO Resp. 40.

In Reply, Petitioner argues Rosenberg discloses active noise cancelation. Reply 16–18. In its subsection titled "*Rosenberg* Discloses an Active Noise Cancellation and *Park* Does Not Teach Away" (Reply 16), Petitioner argues Rosenberg discloses "noise reduction," and Petitioner contends noise reduction is a form of noise cancelation (Reply 17–18 (citing Ex. 1030, 128:21–129:12)).

We find Petitioner's arguments insufficient and agree with Patent Owner that Petitioner has not adequately explained reasons to combine Rosenberg and Park to arrive at the claimed invention. First, Rosenberg does not disclose active noise cancelation, and Petitioner's attempt to equate

noise reduction and noise cancelation is unconvincing. As noted by Patent Owner (Sur-reply 14), Park explains that passive hearing aids and headsets are insufficient for Park's augmented audio purposes, and Petitioner's general reference to Park's signal processing (Pet. 42) does not adequately explain how or why a person of ordinary skill would have implemented processing designed for active noise cancelation headsets in a system that does not include active noise cancelation. Notably, Petitioner does not suggest modifying Rosenberg to include active noise cancelation; the Petition instead generically suggests modifying Rosenberg "to perform additional signal processing on the captured ambient signal" (Pet. 42) and "using spatially selective processing" for "reducing ambient noise contamination of the second speaker's voice" (Pet. 43) without explaining how those goals would be implemented and accomplished in Rosenberg's passive headset (*cf.* Ex. 1019, 3:40–46 (noting that passive headsets have insufficient noise blocking capabilities)).

Accordingly, we determine Petitioner has not shown by a preponderance of the evidence that claim 5 is unpatentable in view of the combined teachings of Rosenberg and Park. Petitioner's arguments for the combination of Rosenberg and Park for each of claims 7–12, 16, and 20–24 equally lacks adequate explanation, and we determine Petitioner has not shown by a preponderance of the evidence that claims 7–12, 16, and 20–24 are unpatentable in view of the combined teachings of Rosenberg and Park for the same reasons.

H. Ground 4: Alleged Obviousness of Claims 29 and 30 Based on Rosenberg, Kvaløy, and Park

Claims 29 and 30 depend from claim 28. The Petition does not allege that the combined teachings of Rosenberg, Kvaløy, and Park remedy the

deficiency in Petitioner's showings for claim 28, explained above. *See* Pet. 59–66. Accordingly, we determine Petitioner has not shown by a preponderance of the evidence that claim 29 or claim 30 is unpatentable in view of the combined teachings of Rosenberg, Kvaløy, and Park.

I. Ground 5: Alleged Obviousness of Claim 15 Based on Rosenberg, Park, and Olwal

1. The Combination of Rosenberg, Park, and Olwal

The Petition includes comparisons of the limitations of claim 15 to the combined teachings of Rosenberg, Park, and Olwal, with Olwal cited for its teachings of an array of microphones for three-dimensional audio tracking and improved speech recognition. Pet. 66–68. More particularly, Petitioner cites Olwal for its disclosures of coarse audio localization that distinguishes sentences that are spoken from different directions. Pet. 67 (citing Ex. 1023 pp. 284–85). Petitioner also presents reasons for combining the references. Pet. 68–69.

Patent Owner argues Petitioner failed to adequately explain how the components of Rosenberg, Park, and Olwal would be combined. PO Resp. 60–61. Patent Owner also argues Olwal is not analogous art because Olwal's disclosure of a user interface for a desktop computer is in a different field of endeavor as the '244 patent and not reasonably pertinent to the problems involved in the '244 patent. PO Resp. 61–63.

As stated in our Decision Granting Institution, the Petition does not establish that Olwal qualifies as analogous art. Paper 13, 24. Petitioner argues for the first time in its Reply that Olwal is "from the same field of endeavor or, at the very least, reasonably pertinent to the particular problems with which the '244 patent inventors were involved." Reply 23. Further, for the first time in its Reply, Petitioner describes the '244 patent's field of

endeavor as "processing audio and acoustic signals" such that Olwal is directed to the same field, processing verbal and nonverbal metrics of speech. Reply 23–24.

First, we determine Petitioner forfeited these arguments by failing to show in the Petition that Olwal qualifies as analogous art. Even if these arguments were timely, Petitioner's arguments are unpersuasive because Olwal describes a user interface for use with a desktop computer, which is well removed from the relevant field of endeavor, and Petitioner has not adequately established that Olwal's teachings are reasonably pertinent to the problems with which the inventor of the '244 patent was involved.

Accordingly, we determine Petitioner has not shown by a preponderance of the evidence that claim 15 is unpatentable in view of Rosenberg, Park, and Olwal.

III. CONCLUSION

After considering the full record established through trial, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1–4, 6, 13, 14, 17–19, and 25–27 are unpatentable. We also determine Petitioner has not established by a preponderance of the evidence that claims 5, 7–12, 15, 16, 20–24, and 28–30 are unpatentable.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4, 6, 13, 14, 17–19, and 25–27 of the '244 patent have been proven by a preponderance of the evidence to be unpatentable;

FURTHER ORDERED that claims 5, 7–12, 15, 16, 20–24, and 28–30 of the '244 patent have not been proven by a preponderance of the evidence to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

Claim(s)	**35 U.S.C. §**	**Reference(s)/Basis**	**Claims Shown Unpatentable**	**Claims Not Shown Unpatentable**
1–3, 6, 13, 14, 17–19, 25, 26	103(a)	Rosenberg	1–3, 6, 13, 14, 17–19, 25, 26	
4, 27, 28	103(a)	Rosenberg, Kvaløy	4, 27	28
5, 7–12, 16, 20–24	103(a)	Rosenberg, Park		5, 7–12, 16, 20–24
29, 30	103(a)	Rosenberg, Kvaløy, Park		29, 30
15	103(a)	Rosenberg, Park, Olwal		15
Overall Outcome			1–4, 6, 13, 14, 17–19, 25–27	5, 7–12, 15, 16, 20–24, 28–30

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