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571-272-7822

Paper 41  
Date: May 31, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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BOSE CORPORATION,  
Petitioner,

v.

KOSS CORPORATION,  
Patent Owner.

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IPR2021-00297  
Patent 10,368,155 B2

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Before DAVID C. McKONE, GREGG I. ANDERSON, and  
NORMAN H. BEAMER, *Administrative Patent Judges*.

ANDERSON, *Administrative Patent Judge*.

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

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## I. INTRODUCTION

Bose Corporation (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–14 of US Patent No. 10,368,155 B2 (Ex. 1001, “the ’155 patent”). Paper 2 (“Pet.”). Koss Corporation (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Upon our authorization, Petitioner filed a Preliminary Reply relating to discretionary denial based on the factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 12 (PTAB Mar. 20, 2020) (precedential). Paper 12 (“Prelim. Reply”). Patent Owner filed a Preliminary Sur-Reply in response. Paper 13 (“Prelim. Sur-Reply”). We instituted *inter partes* review on June 3, 2021. Paper 16 (“Inst. Dec.”). Patent Owner filed a Response (Paper 22, “PO Resp.”), Petitioner filed a Reply (Paper 25, “Reply”), and Patent Owner filed a Sur-Reply (Paper 33, “Sur-Reply”). A hearing was held on March 8, 2022, and a transcript has been made of record. Paper 40 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. Upon considering the record, for the reasons discussed below, we find claims 1–14 unpatentable.

## II. BACKGROUND

### A. *Real Parties in Interest*

Petitioner states it is the real party in interest. Pet. xvi. Patent Owner asserts it is the real party in interest. Paper 4, 2.

### B. *Related Matters*

Both parties list lawsuits, prior filed United States applications and issued patents, and pending *inter partes* reviews as related matters. Pet. xvi; Paper 11, 2–3.

#### 1. *Lawsuits*

Petitioner advises us that it is a defendant in a case filed by Patent Owner asserting the ’155 patent in the Western District of Texas captioned

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*Koss Corporation v. Bose Corporation*, Case No. 6:20-cv-00661 (W.D. Tex.) (“District Court” or “District Court Lawsuit”). Pet. xvii; *see also* Paper 11, 2. The parties identify three other cases in the Western District involving the ’155 patent: *Koss Corporation v. PEAG LLC d/b/a JLab Audio*, Case No. 6:20-cv-00662 (W.D. Tex.); *Koss Corporation v. Plantronics, Inc. et al.*, Case No. 6:20-cv-00663 (W.D. Tex.); and *Koss Corporation v. Skullcandy, Inc.*, Case No. 6:20-cv-00664 (W.D. Tex.). Pet. xvii; Paper 11, 2. Patent Owner also identifies two other lawsuits, *Bose Corporation v. Koss Corporation*, Case No. 1:20-cv-12193 (D. Mass.) and *Koss Corporation v. Skullcandy, Inc.*, Case No. 2:21-cv-00203 (D. Utah). Paper 11, 2.

## 2. United States Applications and Issued Patents

Petitioner lists applications and corresponding issued patents to which the ’155 patent is a continuation. Pet. xvi; *see also* Ex. 1001, code (63) (“Related US Application Data” (“Related Applications”)).

Patent Owner identifies the following applications listed as Related Applications to which the ’155 patent claims priority: PCT application No. PCT/US2009/039754, filed April 7, 2009 (the “PCT Application”) and provisional application Serial No. 61/123,265 filed April 8, 2008 (the “Provisional Application”). Paper 11, 2. Patent Owner identifies the following pending United States patent applications that claim priority to the PCT Application and the Provisional Application: US 17/070,295, filed October 14, 2020; US 17/070,363, filed October 14, 2020; and US 17/178,946, filed February 18, 2021. *Id.* at 3.

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### 3. *Inter Partes Review Proceedings*

Patent Owner lists the following *inter partes* review proceedings<sup>1</sup> challenging patents that claim priority to the PCT Application and the Provisional Application:

*Apple Inc. v. Koss Corporation*, IPR2021-00305, filed December 15, 2020, challenging US Patent 10,506,325 B1);

*Apple Inc. v. Koss Corporation*, IPR2021-00381, filed January 4, 2021, challenging US Patent 10,491,982 B1;

*Apple Inc. v. Koss Corporation*, IPR2021-00546, filed February 22, 2021, challenging US Patent 10,206,025 B2;

*Apple Inc. v. Koss Corporation*, IPR2021-00592, filed March 2, 2021, challenging US Patent 10,469,934 B2;

*Bose Corporation v. Koss Corporation*, IPR2021-00612, filed March 3, 2021, challenging US Patent 10,206,025 B2;

*Apple Inc. v. Koss Corporation*, IPR2021-00626, filed March 17, 2021, challenging US Patent 10,206,025 B2;

*Bose Corporation v. Koss Corporation*, IPR2021-00680, filed March 17, 2021, challenging US Patent 10,469,934 B2;

*Apple Inc. v. Koss Corporation*, IPR2021-00679, filed March 22, 2021, challenging US Patent 10,506,325 B1;

*Apple Inc. v. Koss Corporation*, IPR2021-00686, filed March 22, 2021, challenging US Patent 10,491,982 B1; and

*Apple Inc. v. Koss Corporation*, IPR2021-00693, filed March 23, 2021, challenging US Patent 10,469,934 B2. Paper 11, 3.

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<sup>1</sup> *Apple Inc. v. Koss Corporation*, IPR2021-00255, filed November 25, 2020, and *Apple Inc. v. Koss Corporation*, IPR2021-00600, filed March 7, 2021, both challenging US Patent 10,298,451 B1 are also pending.

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Patent Owner further advises the following *inter partes* review proceedings involve a patent related to the '155 patent:

*Apple Inc. v. Koss Corp.*, IPR2022-00053, filed Oct. 15, 2021, challenging US Patent 10,206,025 B2; and

*Apple Inc. v. Koss Corp.*, IPR2022-00188, filed Nov. 15, 2021, challenging US Patent 10,469,934. Paper 26, 2.

### C. *The '155 Patent*

The application for the '155 patent's earliest claimed priority dates are to the PCT Application filed April 7, 2009, and the Provisional Application filed April 8, 2008. Ex. 1001, codes (63), (60); *see* Pet. xvi, 9 (acknowledging the PCT Application as a “priority application[ ]”); Prelim. Resp. 3 n.3 (“the '155 Patent claims priority to the PCT and Provisional Applications”).

#### 1. *Background Technology*

The '155 patent explains that wired headphones were large and “cumbersome.” Ex. 1001, 1:43–51. The '155 patent further explains “[r]ecently, cordless headphones that connect wirelessly via IEEE 802.11” such as via Bluetooth connection, to a laptop or personal computer “have been proposed, but such headphones are also quite large and not in-ear type phones.” *Id.* at 1:58–62; *see also* Ex. 1003 ¶ 43 (describing Bluetooth as “an ad hoc wireless network”).

#### 2. *The '155 Patent's Wireless Earphones*

The '155 patent describes and claims a wireless earphone with “a transceiver circuit for receiving streaming audio from a data source . . . over an ad hoc wireless network. When the data source and the earphone are out of range via the ad hoc wireless network, they may transition automatically to a common infrastructure wireless network.” Ex. 1001, 1:66–2:5. The

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patent defines “ad hoc wireless network” as “a network where two . . . wireless-capable devices, such as the earphone and a data source, communicate directly and wirelessly, without using an access point.” *Id.* at 3:3–6, 4:57–60.

Figure 2A of the ’155 patent is reproduced below.

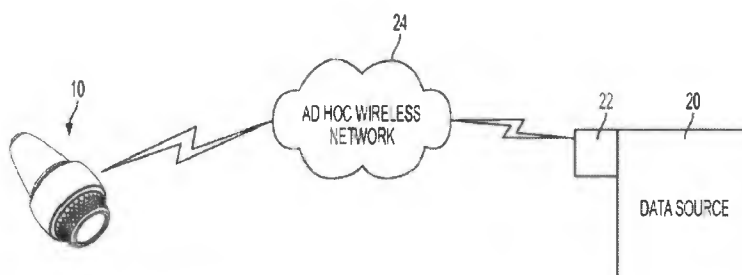


FIG. 2A

**Figure 2A illustrates one of the communication modes for the wireless earphone.**

Ex. 1001, 2:28–30. Figure 2A illustrates a data source 20 in communication with earphone 10 over ad hoc wireless network 24. *Id.* at 4:26–28. The data source may be a “digital audio player (DAP).” *Id.* at 4:33–34. The DAP transmits audio wirelessly to earphone(s) via an ad hoc network if the DAP and earphone(s) are “in range” of that network. *Id.* at 4:56–57. “When the earphone 10 and data source 20 are out of range for the ad hoc wireless network 24, that is, when the received signals degrade below the threshold minimum signal strength level, both the earphone 10 and the data source 20 may transition automatically to communicate over an infrastructure wireless network (such as a wireless LAN (WLAN)) 30 that is in the range of both the earphone and data source.” *Id.* at 5:9–17, *see also* Fig. 2B (ad hoc network replaced by “NETWORK 33”).

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*D. Illustrative Claim*

Claims 1–14 of the ’155 patent are challenged. Pet. 4. Claims 2–13 depend directly or indirectly from claim 1. All claims are directed to a “wireless headphone assembly.” Claim 1 is reproduced below as illustrative.

[1.a]<sup>2</sup> A wireless headphone assembly comprising:

[1.b] first and second earphones, wherein each of the first and second earphones comprises an acoustic transducer;

[1.c] an antenna for receiving wireless signals;

[1.d] a wireless communication circuit connected to the antenna, wherein the wireless communication circuit is for receiving and transmitting wireless signals to and from the wireless headphone assembly;

[1.e] a processor in communication with the wireless communication circuit; and

[1.f] a rechargeable battery for powering the wireless headphone assembly,

[1.g] wherein the headphone assembly is configured, with the processor, to transition automatically from playing digital audio content received wirelessly by the headphone assembly via a first wireless network to playing digital audio content received wirelessly by the headphone assembly via a second wireless network.

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<sup>2</sup> For purposes of this Decision, we follow Petitioner’s format as shown in the Summary of the Challenged Claims, where each claim recitation is identified by claim number followed by a letter for each recitation of the claim. Pet. 7. In the Patent Owner Response, Patent Owner argues certain limitations without reference to the format. *See, e.g.*, PO Resp. 9 (“processor, to transition automatically”).

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Ex. 1001, 18:2–19; Pet. 7.

*E. Evidence of Record*

This proceeding relies on the following prior art references and expert testimony:

Pelland<sup>3</sup> (Ex. 1013), WO 2009/126614 A1, published Oct. 15, 2009;  
Rezvani (Ex. 1016), US 2007/0165875 A1, published July 19, 2007;  
Skulley (Ex. 1017), US 6,856,690 B1, issued Feb. 15, 2005;  
Feder (Ex. 1018), US 2004/0142693 A1, published July 22, 2004;  
Hind (Ex. 1019), US 7,069,452 B1, issued June 27, 2006;  
Rosener (Ex. 1020), US 2008/0076489 A1, published Mar. 27, 2008;  
Wilson (Ex. 1021), US 7,457,649 B1, issued Nov. 25, 2008; and  
Nakagawa (Ex. 1022), US 2003/0223604 A1, published Dec. 4, 2003.

Petitioner also relies on the Declaration of Tim A. Williams, Ph.D. (Ex. 1003, “Williams Declaration”), Reply Declaration of Tim A. Williams, Ph.D. (Ex. 1104, “Williams Reply Declaration”) and the Declaration of John G. Casali, Ph.D., CPE (Ex. 1005, “Casali Declaration”).

Patent Owner relies on the Declaration of Joseph C. McAlexander III (Ex. 2023, “McAlexander Declaration”).

*F. Asserted Grounds*

Petitioner asserts that claims 1–14 would have been unpatentable on the following grounds (Pet. 4, 11–80):

<b>Claims Challenged</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>
1–14	102	Pelland
1–4, 6–8, 14	103	Rezvani, Skulley
11–12	103	Rezvani, Skulley, Feder
13	103	Rezvani, Skulley, Hind

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<sup>3</sup> Pelland is the published version of the “PCT Application” listed above in Section II.B.2.



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Claims Challenged	35 U.S.C. §	Reference(s)/Basis
5, 9	103	Rezvani, Skulley Rosener
10	103	Rezvani, Skulley, Wilson
1–3, 6–8, 10, 14	103	Nakagawa, Wilson
1, 4–5, 9	103	Nakagawa, Rosener
13	103	Nakagawa, Wilson, Hind
13	103	Nakagawa, Rosener, Hind

### III. PATENTABILITY ANALYSIS

#### A. *Level of Ordinary Skill in the Art*

Petitioner relies on Drs. Williams and Casali, and alleges that a person having ordinary skill in the art “would principally have had a background in wireless networks, including at least a bachelor’s degree in electrical engineering or a related field and experience with ad hoc and infrastructure wireless networks” and “would have worked on a team including a member with headphone design experience.” Pet. 8 (citing Ex. 1003 ¶¶ 29–34; Ex. 1005 ¶¶ 41–43).

Based on the McAlexander Declaration, Patent Owner proposes that a person of ordinary skill in the art “would be someone working in the electrical engineering field and specializing in or knowledgeable of speaker components for small wireless devices,” would have a “bachelor’s degree in electrical engineering and at least two or more years of work experience in the industry,” and would have practical experience with circuit design, speaker components, and wireless communication. PO Resp. 4 (citing Ex. 2023 ¶ 15).

Patent Owner states that its proposal is “not far removed” from Petitioner’s. Neither party argues the level of ordinary skill as part of their arguments on the merits. We instituted trial on Petitioner’s proposed level of ordinary skill. We are not presented with any reason to change that

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determination and, given Patent Owner's acquiescence, we maintain the level of skill proposed by Petitioner.

*B. Claim Construction*

The Petition was accorded a filing date of December 7, 2020. Paper 3. For petitions filed on or after November 13, 2018, a claim shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100 (2019). Thus, we apply the claim construction standard as set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

Petitioner, citing 37 C.F.R. § 42.100, asserts construction is unnecessary and does not propose any term for construction. Pet. 11. In the Institution Decision, we preliminarily determined that no disputed term required construction to resolve this dispute. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”). Inst. Dec. 20–21.

Limitation 1.g recites, in pertinent part, “the headphone assembly is configured with the processor, to transition automatically from . . . a first wireless network to . . . a second wireless network.” Patent Owner disputes that Rezvani's “seamless handoff” falls within the meaning of “transition automatically.” PO Resp. 15 (citing Pet. 36 (citing Ex. 1016 ¶ 41)). Patent Owner argues there is no disclosure in Rezvani of any logic or mechanism for the “handset” described in Rezvani's paragraph 41 to perform the

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seamless handoff “automatically.” *Id.* at 16 (citing Ex. 2023 ¶ 61); *see also* Ex. 1016 ¶¶ 41, 50 (both referencing “handset” and not “headphone”).

We limit the current discussion to whether a “seamless handoff” falls within the meaning of “transition automatically.” The “handset” versus “headphone” issue is addressed in connection with patentability. *See* Section III.G below.

Relying on the McAlexander Declaration (Ex. 2023), Patent Owner asserts that “‘automatically’ means by itself, without external intervention, such as from a human operator or another device.” PO Resp. 15 (citing Ex. 2023 ¶ 60). Patent Owner contends that “automatic” and “seamless” are not synonyms. Sur-Reply 15. Petitioner cites the ’155 patent where “‘automatically’ means ‘without user intervention.’” Pet. 36 (citing Ex. 1001, 2:65–66, 3:1–3, 5:21–22). Patent Owner agrees that “automatic” as used in limitation 1.g means “without external intervention.” PO Resp. 15 (citing Ex. 2023 ¶ 60; Ex. 2025,<sup>4</sup> 4; Ex. 2026<sup>5</sup>, 27).

Patent Owner asserts “[s]eamless,” on the other hand, means “without interruption.” Sur-Reply 15–16 (citing Ex. 2023 ¶ 52 (“without a gap”); Ex. 2025, 5 (“without seams”); Ex. 2026, 27–28). Patent Owner argues “[s]omething can be seamless without being automatic.” *Id.* at 16 (citing Ex. 2023 ¶¶ 52–53). Petitioner responds by arguing the prior art “uniformly confirms a ‘seamless handoff is where . . . *the user does not have to do anything.*” Reply 20 (citing Ex. 1031<sup>6</sup> ¶¶ 278–279; Ex. 1003 ¶ 139;

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<sup>4</sup> THE AMERICAN HERITAGE DICTIONARY, 143 automatic 1.a: “Acting or operating in a manner essentially independent of external influence or control; self-moving;” 1106 seamless: “without seams,” Second College Edition).

<sup>5</sup> Deposition of Tim A. Williams, Ph.D. (Ex. 2026, “Williams Deposition”).

<sup>6</sup> Tagg, US 2005/0286466 A1, published Dec. 29, 2005 (Ex. 1031).

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Ex. 1102<sup>7</sup> ¶ 6 (“seamless” handoff is one in which a user “do[es] not have to take any specific action to effectuate . . . the handover”); Ex. 1103<sup>8</sup> ¶ 47 (“‘seamless’ handoff ‘occurs without user input’”); Ex. 1104 ¶ 31).

We are not persuaded that the extrinsic evidence Patent Owner relies on, in the form of dictionary definitions and conclusory expert testimony, supports any difference between “seamless handoff” and “transition automatically.” Extrinsic evidence is, in general, less reliable than intrinsic evidence in determining how to interpret the claim. *Phillips*, 415 F.3d at 1318 (listing reasons extrinsic evidence lacks the reliability of the patent and its prosecution history).

Neither are we persuaded that Rezvani’s paragraphs 41 and 50 description of a “handset” in conjunction with the seamless handoff is “strong evidence” that the described “seamless handoff does not occur automatically.” PO Resp. 16–17 (citing Ex. 1016 ¶ 41). As detailed in Section III.G below, we find that the use of “handset” in Rezvani was a mistake in printing or drafting.

Mistake or not, Rezvani’s description of “handset” is the only fact relied on in the McAlexander Declaration supporting his conclusion that “seamless handoff” is outside the meaning of “automatically transition.” See Ex. 2023 ¶¶ 60–61. Mr. McAlexander testifies “there is no disclosure in Rezvani of any logic or mechanism for the handset to perform the seamless handoff ‘automatically.’” *Id.* ¶ 60. However, Mr. McAlexander does not

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<sup>7</sup> Krishnamurthi, US 2004/0246990 A1, published Dec. 9, 2004 (Ex. 1102).

<sup>8</sup> Chiueh, US 2005/053034 A1, published Mar. 10, 2005 (Ex. 1103).

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say anything about Rezvani’s disclosures of a “headset.” We give very little weight to the conclusory McAlexander Declaration.

Both parties agree, and the ’155 patent all but defines, that “automatic” means “without user intervention.” Pet. 36 (citing Ex. 1001, 2:65–66, 3:1–3, 5:21–22; PO Resp. 15 (citing Ex. 2023 ¶ 60 (“without external intervention”))). We are not persuaded that a “seamless handoff” is any different from “transition automatically.” We therefore maintain our preliminary determination that the term does not require express construction, adding that a “seamless handoff” is encompassed within the meaning of “transition automatically.”

### *C. Legal Standard for Obviousness*

A patent claim is invalid as obvious if the differences between the claimed subject matter 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.” 35 U.S.C. § 103(a).

The ultimate determination of obviousness is a question of law, but that determination is based on underlying factual findings. . . . The underlying factual findings include (1) “the scope and content of the prior art,” (2) “differences between the prior art and the claims at issue,” (3) “the level of ordinary skill in the pertinent art,” and (4) the presence of secondary considerations of nonobviousness such “as commercial success, long felt but unsolved needs, failure of others,” and unexpected results.

*In re NuVasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (citing *inter alia* *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)).<sup>9</sup>

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<sup>9</sup> The parties do not present argument or evidence of secondary considerations of nonobviousness.

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“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Furthermore, in assessing the prior art, the Board must consider whether a person of ordinary skill would have been motivated to combine the prior art to achieve the claimed invention. *NuVasive*, 842 F.3d at 1381.

As the Federal Circuit found, in quoting from the Supreme Court’s decision in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418–419 (2007),

“because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known,” “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.”

*Personal Web Technologies, LLC v. Apple, Inc.*, 848 F.3d 987, 991–92 (Fed. Cir. 2017).

*D. Obviousness of Claims 1–3, 6–8, 10, and 14 over Nakagawa and Wilson*

Petitioner alleges claims 1–3, 6–8, 10, and 14 would have been obvious over Nakagawa and Wilson. Pet. 4, 56–80. Petitioner also relies on the Williams and Casali Declarations. Ex. 1003 ¶¶ 225–296; Ex. 1005 ¶¶ 47–100, 103, 123–129.

*1. Nakagawa (Ex. 1022)*

Nakagawa includes a wireless audio output apparatus 11, illustrated in Figure 1, which is reproduced below.

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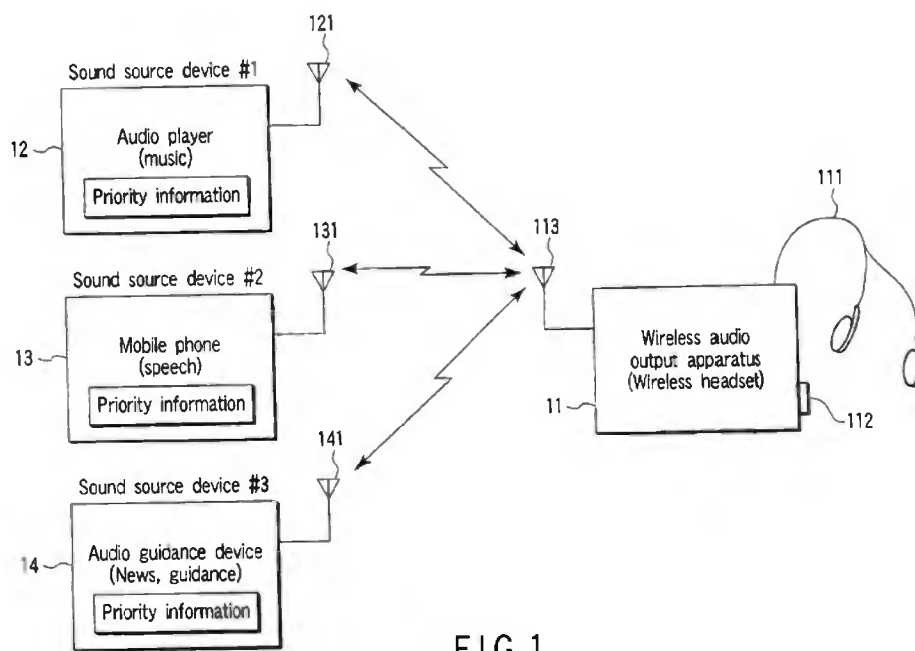


FIG. 1

**Figure 1 is a diagram showing sound source devices connected by radio to an audio output apparatus, for example a wireless headset.**

Ex. 1022 ¶¶ 15, 25. As shown in Figure 1, the audio output apparatus 11 receives audio data via a radio signal and generates sound that is output via a speaker or headphone 11. *Id.* ¶¶ 24–25. Sound source devices “are wireless audio transmitters that can transmit audio representing speech, music and the like, in the form of radio signals,” which signals can be in accord with the Bluetooth™ standard. *Id.* ¶¶ 26–27. Still referring to Figure 1, Nakagawa identifies three sound source devices: a portable audio player like a CD (Compact Disc) 12; a mobile phone 13; and an audio guidance device 14. *Id.* ¶¶ 27–31, Fig. 1.

Regarding the audio player 12 and the mobile phone 13, the user can assign a priority level to each sound source device. Ex. 1022 ¶ 38. For example, if a higher priority level is given to the phone and the user is listening to the audio player, upon receiving a call, the user is “automatically

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switched” by the audio output apparatus to the phone. *Id.* ¶ 39. Ending the call, and thus disconnecting the phone from the audio output device, the audio player or second sound source device is “automatically selected” again. *Id.* ¶ 42.

Similarly, if the third sound source device, the audio guidance device 14, is connected to the audio output apparatus 11, it may be given the “highest priority” among the three devices. Ex. 1022 ¶ 45. In this situation, the wireless output device is “automatically switched from the sound source device 12 or 13 to the sound source device 14” when “the headphone 111 is generating sound from the audio data transmitted from the sound source device 12 or 13.” *Id.*

Figure 3 of Nakagawa is reproduced below.

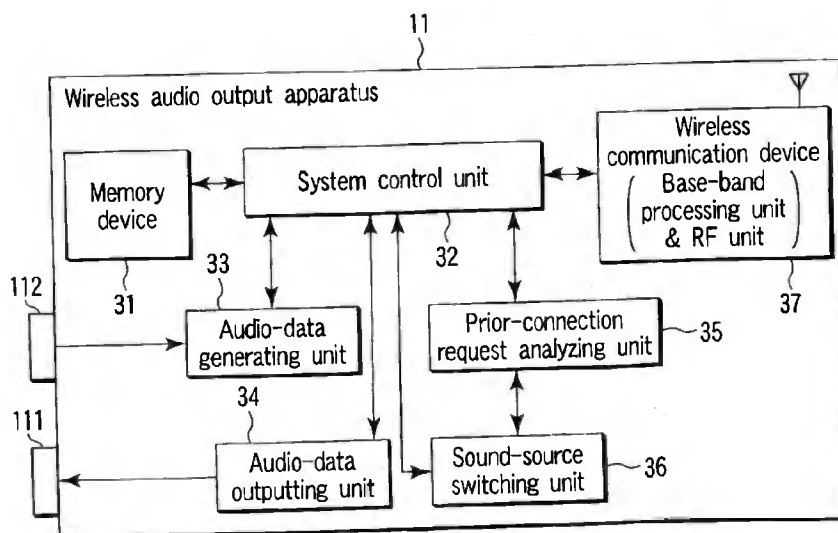


FIG. 3

**Figure 3 is a block diagram of the audio output apparatus of Figure 1.** Ex. 1022 ¶¶ 17, 52. A microphone 112 is part of the mobile phone of the second sound source device and transmits speech input to a mobile phone



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network. *Id.* ¶ 30. The audio output apparatus 11 includes a control unit 32, which is a processor that controls other components. *Id.* ¶ 54, Fig. 3. As shown in Figure 3, the control unit 32 “executes the programs stored in the memory device 31 to control the audio-data generating unit 33, audio data-outputting unit 34, prior-connection request analyzing unit 35, sound-source switching unit 36, and wireless communication device 37.” *Id.*

The sound-source switching unit 36 determines from which sound-source device the headset “should acquire audio data.” Ex. 1022 ¶ 58. When a sound-source device is triggered to send audio data to the headset, the device “transmits a wireless-connection request to the” headset and “starts a procedure to establish” a wireless connection with the headset. *Id.* ¶ 61. For example, the mobile phone, the second sound-source device 14, “is triggered when it receives a call from . . . the mobile phone network.” *Id.* ¶ 62. The sound-source device “generates a priority-level notifying command” indicating the device’s “priority level.” *Id.* ¶ 63. As discussed above, the “sound source is automatically switched in accordance with the priority levels.” *Id.* ¶ 72.

## 2. *Wilson (Ex. 1021)*<sup>10</sup>

Wilson teaches recharging wireless headsets with rechargeable batteries using “a charging station,” “also . . . referred to as [a] docking station[.]” Ex. 1021, 1:14–23. Wilson also teaches that conventional

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<sup>10</sup> Wilson was filed August 31, 2005. Ex. 1021, code (22). Petitioner alleges Wilson is prior art under pre-AIA § 102(e) or post-AIA § 102(a) depending on whether or not we agree with the priority argument Petitioner makes regarding Pelland. Pet. 54; *see also* Section III.M below (analyzing the challenge based on Pelland).

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docking stations were compatible with over-ear headphone assemblies. *Id.*  
 at 1:34–44, 2:44–47, 4:4–27, Figs. 1, 4.

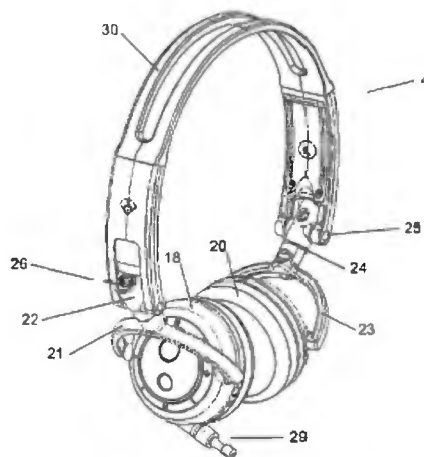


FIG. 4

**Figure 4 is a perspective view of a wireless headset.**

Ex. 1021, 2: 61–62. “The wireless headset includes a headband 30, speaker 18, speaker 20, and a wireless communication module installed within the housing of the headset.” *Id.* at 4:5–7.

*3. Claim 1*

Claim 1 is an independent apparatus claim illustrative of the claimed subject matter. *See* Section II.D above. Patent Owner argues there would have been no motivation for a person of ordinary skill in the art to combine Nakagawa with Wilson. PO Resp. 17–26. Patent Owner also argues, Nakagawa’s “control unit,” which the Petition alleges is the claimed “processor,” is not the structure of Nakagawa which “perform[s] the source-switching.” *Id.* at 27 (citing Pet. 66).

We first analyze the parties’ dispute as to reasons for combining Nakagawa and Wilson, and address Patent Owner’s arguments in support of patentability. We follow with Petitioner’s showing regarding the undisputed limitations of claim 1.

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*a. Reasons for Nakagawa and Wilson Combination*

Petitioner relies on Wilson’s Figure 4 for the “form-factor”<sup>11</sup> it combines with Nakagawa. Pet. 60–61. Petitioner advances three reasons why a person of ordinary skill would have implemented Wilson’s “form-factor” with Nakagawa’s portable audio player. *Id.* at 60–62.

The first reason Petitioner alleges is Wilson’s stereo design, using two speakers, would have been “consistent” with Nakagawa’s intended use as a portable audio player and its illustrated wireless headset having two earphones. Pet. 61 (citing Ex. 1022 ¶¶ 3, 28, Fig. 1; Ex. 1003 ¶ 236; Ex. 1005 ¶ 125). Second, Petitioner argues that Nakagawa suggests its wireless headset is battery powered which would lead a person of ordinary skill to Wilson’s teaching using rechargeable batteries and a docking station for recharging wireless headsets. *Id.* at 62 (citing Ex. 1021, 1:5–13; Ex. 1003 ¶ 237). Third, Petitioner asserts that “stereo wireless headsets were known and common” and incorporating them into the two-earphone design of Nakagawa “would have been applying a known technique to improve similar devices in the same way (*i.e.*, to produce stereo sound).” *Id.* at 62 (citing Ex. 1003 ¶ 238).

Petitioner argues a person of ordinary skill would have expected success in combining Wilson with Nakagawa. Pet. 62. According to Petitioner, the resulting combination required “only ordinary skill to implement” because Nakagawa’s headset with two connected earpieces was a “well-known configuration” that a person of ordinary skill “would have

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<sup>11</sup> “Another design consideration for headphone assemblies is the overall form factor of the assembly itself—e.g., physical design of the body and earphones’ housing.” Ex. 1005 ¶ 50.

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understood could (and likely did) comprise respective speakers,” as taught by Wilson. *Id.* (citing Ex. 1003 ¶ 239; Ex. 1005 ¶ 125).

Patent Owner disputes generally that a person of ordinary skill in the art would have reasons to combine Wilson with Nakagawa.<sup>12</sup> PO Resp. 17. Patent Owner summarizes Petitioner’s reasons as “(i) enabling a stereo design using two speakers, (ii) the absence of a power source in Nakagawa, and (iii) that stereo wireless headsets are known and common.” *Id.* at 18 (citing Pet. 61–62). Patent Owner also disputes the showing made of a need for a wireless design and application of a known technique to improve similar devices. *Id.* (citing Pet. 51).

Patent Owner argues that Nakagawa alone shows the use of two headphones and Wilson is cited to “give rise to Petitioner’s irrelevant reasons for the combinations.” PO Resp. 19 (citing Ex. 1022, Fig. 1 (annotated)). Thus, Patent Owner alleges “Nakagawa already comprises a stereo design” and that reason for the combination is “moot.” *Id.* at 20 (citing Ex. 2023 ¶ 33).

Patent Owner also argues that achieving a completely wireless design would not lead a person of ordinary skill in the art to look at Wilson. PO Resp. 20. Patent Owner points to Nakagawa as connecting the headphones by wire, not wirelessly. *Id.* (citing Ex. 2023 ¶ 34).

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<sup>12</sup> Patent Owner’s arguments for the Nakagawa and Wilson combination analyzed here are substantially the same as for the Nakagawa and Rosener combination analyzed in Section III.E below. *See* PO Resp. 17 (referring to both Wilson and Rosener). Wilson and Rosener are both argued by Petitioner as showing the recited “rechargeable battery,” limitation 1.f. Pet. 66 (Wilson), 77 (Rosener). Patent Owner focuses on Wilson and we limit our analysis here to Wilson, addressing Rosener in Section III.E.

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As to Petitioner's reason based on lack of a power source in Nakagawa, Patent Owner argues the issue is not whether a battery would have been understood as beneficial to Nakagawa. PO Resp. 20 (citing Ex. 2023 ¶ 35). Rather, the issue is "whether Rosener's battery or Wilson's battery is capable of satisfying unknown power requirements of unknown components, particularly Nakagawa's sound-source switching devices 35, 36, in addition to powering components in common between the Nakagawa design and the Rosener design or Wilson design." *Id.* at 20–21 (citing Ex. 2023 ¶ 35). Patent Owner recognizes that no power source is disclosed in Nakagawa. *Id.* at 21 (citing Pet. 62; Ex. 2023 ¶ 36). Patent Owner contends that, even if a person of ordinary skill in the art would have understood the need for a power source, the power requirements of Nakagawa's sound switching devices 35 and 36 are unknown. *Id.* (citing Ex. 2023 ¶ 36 (testifying that Nakagawa does not disclose structure of the switching devices 35 and 36 or whether they could be implemented with software)).

Patent Owner argues the design of Wilson differs from Nakagawa. PO Resp. 22 (citing Pet. 51; Ex. 2023 ¶ 38). Patent Owner argues the Nakagawa design requires "additional components, i.e., the sound-source switching devices 35, 36, with additional power requirements." *Id.* In sum, according to Patent Owner, knowledge of the "nature of Nakagawa's sound-switching devices 35, 36" and their power requirements is needed. Patent Owner alleges that without knowing the power needed for the sound-source switching devices, along with the existing common earphone components between Nakagawa and Wilson, Nakagawa would be "crippled" and adding Wilson's battery would not have been a simple substitution. *Id.* at 23 (citing Ex. 1022, Fig. 3; Ex. 2023 ¶ 39).

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In another argument based on the specific structure of Nakagawa, Patent Owner alleges the combination is based on hindsight because of Nakagawa's lack of disclosure "regarding powering the wireless audio output apparatus 11, including the sound-source switching devices 35, 36." PO Resp. 24 (citing Pet. 66, 77). Patent Owner contends the only reason "to provide a battery for powering Nakagawa's wireless audio output apparatus 11" is hindsight. *Id.* at 24–26 (citing Ex. 1022, Fig. 3). Patent Owner argues the sound-switching devices need to be described with specific structural detail. *Id.* at 27–30 (citing Ex. 1022 ¶¶ 53, 57, Fig. 3).

The Sur-Reply argues Petitioner changed theories from modifying Nakagawa with Wilson's battery powered earphones to modifying Wilson with Nakagawa's sound-source switching functionality. Sur-Reply 2 (citing Reply 4). There has not been a change in theory. Page 4 of the Reply cites to page 61 of the Petition. Reply 4 (citing Pet. 61). Page 61 alleges there are "several reasons to implement Nakagawa's wireless headset using Wilson's form-factor." Pet. 61 (citing Ex. 1003 ¶¶ 235–239). The reasons are summarized above. Regardless, there is no authority cited as to how such a reversal of a combination is relevant to the reasons cited for the combination.

We find the desirability of stereo sound playback would have motivated combining Wilson with Nakagawa. Nakagawa does not disclose or mention stereo sound but does describe using the earphones for music playback. *See* Reply 4 (citing Ex. 1005 ¶ 125 (citing Ex. 1022 ¶¶ 24, 27–31)). Paragraph 28 specifically refers to "music data." Ex. 1022 ¶ 28.

Wilson is a design having two speakers 18 and 20 where stereo is disclosed as the preferred embodiment. Pet. 61 (citing Ex. 1021, 4:4–7); *see also* Ex.1021, 7:41–43 (preferred embodiment is "stereo headset").

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Drs. Williams and Casali both testify “Wilson’s stereo design would have been consistent with Nakagawa’s intended use and its depiction of a wireless headset having two earphones (Nakagawa, Fig. 1).” *Id.* (citing Ex. 1003 ¶ 236; Ex. 1005 ¶ 125). Dr. Casali testifies that a monaural design can include two earphones. *See* Ex. 1005 ¶ 47. Dr. Casali further explains that “diotic” is where “both earphones receiv[e] and output[] the same signal.” *Id.* (citing Ex. 1017, 1:22–23 (by the filing date of the ’155 patent one or two headphones were used for “monaural or stereo listening”)); *contra* Ex. 2023 ¶ 33 (two headphones are necessarily stereo). We credit the Casali Declaration and its discussion of Nakagawa that the sound input and output of two headphones is not necessarily stereo and can be monaural.

Based on the preceding, we find that Nakagawa does not expressly disclose stereo headphones and Wilson does. A person of ordinary skill would have had reason to add stereo output taught by Wilson to the headphones of Nakagawa. Pet. 61 (citing Ex. 1003 ¶ 236; Ex. 1005 ¶ 125; Ex. 1022 ¶¶ 3, 28).

We credit the Williams Declaration and find that a person of ordinary skill would have understood that “wireless headsets (like Nakagawa’s) by 2008 were ‘often battery powered,’ ‘generally [by] rechargeable [batteries] so that the batteries can be re-used instead of being discarded after use.’” Ex. 1003 ¶ 237 (citing Ex. 1021, 1:5–13) (alterations in original). We further find that, although Nakagawa does not expressly disclose that its wireless headset is battery powered, power is needed for the electrical components and is suggested. *See* Pet. 62 (citing Ex. 1021, 1:5–13; Ex. 1003 ¶ 237); *see also* PO Resp. 23 (acknowledging a battery is needed to power common components of Wilson and Nakagawa). A person of ordinary skill would have reason to look to Wilson’s teaching of

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rechargeable batteries and a docking station for recharging wireless headsets. *See* Ex. 1003 ¶ 237.

We are not persuaded that the power requirements for Nakagawa's sound-switching devices 35, 36 are needed in order to add Wilson's battery. Specifications of components like power requirements for Nakagawa's sound-source devices are not needed in order for a person of ordinary skill to have had reason to combine the references.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

*In re Keller*, 642 F.2d 413, 425 (C.C.P.A. 1981).

Patent Owner has not persuaded us that the addition of Wilson's battery would "cripple" Nakagawa and therefore would not have been a simple substitution. *See* PO Resp. 23 (citing Ex. 1022, Fig. 3; Ex. 2023 ¶ 39). The citation to paragraph 39 of the McAlexander Declaration copies the Patent Owner's Response. Copying argument from the Patent Owner Response adds nothing new for us to consider. The verbatim adoption of Patent Owner's argument by Mr. McAlexander demonstrates the conclusory nature of the testimony. The testimony does not identify the basis for the opinion. As such, we give the McAlexander opinion little weight. 37 C.F.R. § 42.65.

Petitioner has shown a reasonable "expectation of success without undue experimentation." There are not multiple design choices here. The proposed combination is finite, a one for one substitution of Wilson's headset with a rechargeable battery for the headphone of Nakagawa. *See*



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Pet. 62 (combination requires “only ordinary skill”), 66 (“Nakagawa-Wilson includes Wilson’s rechargeable battery.” (citing Ex. 1021, 3:19–21; Ex. 1003 ¶ 248; *KSR*, 550 U.S. at 421 (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”))). Petitioner has provided sufficient evidence that a person of ordinary skill would have expected success in making the combination. *Id.* (citing Ex. 1003 ¶ 239; Ex. 1005 ¶ 125; Ex. 1021, 1:5–13).

On this record, Petitioner has sufficiently shown that a person of ordinary skill would have had reason to combine Wilson with Nakagawa.

*b. Limitations of Claim 1*

We have reviewed Petitioner’s showing on the recitations of claim 1, recitations 1.a–g.<sup>13</sup> Pet. 56–66; Ex. 1003 ¶¶ 225–248; Ex. 1005 ¶¶ 93–94, 123–128. Petitioner’s argument and evidence are summarized below. For the reasons stated below, we find Petitioner’s argument and evidence is sufficient to show all the limitations of claim 1.

We first analyze the one disputed limitation, limitation 1.e. Limitation 1.e recites “a processor in communication with the wireless communication circuit.” Nakagawa includes a system control unit which is asserted by Petitioner to be the claimed processor. Pet. 65 (citing Ex. 1022

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<sup>13</sup> Recitation 1.a is the preamble of claim 1. Pet. 63. Neither party argues whether or not the preamble is limiting. Nor do we determine whether or not the preamble is limiting. Regardless, Petitioner presents argument and evidence that the claimed “headphone” is taught by Wilson. *Id.* (citing Ex. 1021, 1:5–13, Fig. 1” Ex. 1003 ¶241; Ex. 1005 ¶¶ 47, 125). We determine that, if the preamble is limiting, Petitioner has sufficiently shown it is taught by the combination of Wilson and Nakagawa.

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¶ 54). Petitioner alleges the control unit 37 is connected to the RF unit 37. *Id.* at 65–66 (citing Ex. 1022 ¶¶ 53–56, 59, Fig. 3 (annotated at Pet. 66 outlining “System control unit” and showing the connection between control unit 32 and RF unit 37); Ex. 1003 ¶ 247).

Patent Owner disputes this limitation is taught because the “sound-source switching devices” 35 and 36 disclosed in Nakagawa are not described as part of the “control unit.” PO Resp. 27 (citing Ex. 1022, Fig. 3). Patent Owner argues “Nakagawa merely depicts the [sound-source switching] devices 35, 36 as boxes and describes them in functional terms only.” *Id.* at 28 (citing Ex. 1022 ¶¶ 53, 57, Fig. 3).

Petitioner responds that a person of ordinary skill in the art would need to exercise “ordinary creativity” to “include components performing Nakagawa’s sound-source switching functionality even if doing so required modifications to account for specific aspects of Wilson or Rosener.” Reply 11 (citing Ex. 1003 ¶¶ 239, 278). Petitioner also cites to the ’155 patent for the same proposition that a person of ordinary skill in the art “would be able to design software and control hardware to implement the embodiments.” *Id.* (citing Ex. 1001, 17:1–9).

We are not persuaded that the sound-source switching devices 35 and 36 are not a part of the system control unit 32. As Petitioner shows in its annotated Figure 3, all three components are shown as interconnected in Nakagawa’s Figure 3 as part of the “audio output apparatus 11.” Ex. 1022, Fig. 3; Pet. 66. Further, the “sound source devices are connected by radio to the audio output apparatus.” Ex. 1022 ¶ 24.

We agree with Petitioner and find that the function of the component is sufficient to allow a person of ordinary skill in the art to make the necessary component. More specifically, a person of ordinary skill in the art

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is “not [an] automaton[] forced to ‘blindly incorporate’ Nakagawa’s ‘exact’ components into the Wilson or Rosener headphones.” Reply 10–11 (citing *PGS v. Iancu*, 891 F.3d 1354, 1366 (Fed. Cir. 2018)). In view of our findings, as summarized above, Petitioner has shown that limitation 1.e is taught by Nakagawa.

Patent Owner does not dispute that the Nakagawa and Wilson combination shows all the remaining limitations of claim 1. *See* PO Resp. 17–31. Patent Owner’s arguments are limited to whether a person of ordinary skill in the art would have had reason to combine Wilson with Nakagawa. *Id.* These arguments were analyzed immediately above in Section III.D.3.a.

The preamble recites as recitation 1.a “[a] wireless headphone assembly comprising.” Neither party argues whether or not the preamble is limiting. Nor do we determine whether or not the preamble is limiting. Petitioner presents argument and evidence that the claimed “headphone” is taught by Wilson’s “headset.” Pet. 63 (citing Ex. 1021, 1:5–13, Fig. 1). Dr. Casali testifies that a person of ordinary skill in the art would have understood a headset to be a “headphone.” *Id.* (citing Ex. 1005 ¶¶ 47, 125). Petitioner alleges that adding “Nakagawa’s collection (*i.e.*, assembly) of functional components (*e.g.*, ‘system control unit 32,’ ‘wireless communication device 37,’ ‘antenna 113’) and Wilson’s rechargeable battery,” the preamble is shown. *Id.* (citing Ex. 1022 ¶¶ 52–59, Fig. 3; Ex. 1021, 1:5–13; Fig. 1; Ex. 1003 ¶ 241). We determine that, if the preamble is limiting, Petitioner has sufficiently shown it is taught by the combination of Wilson and Nakagawa.

Limitation 1.b recites “first and second earphones, wherein each of the first and second earphones comprises an acoustic transducer.” Petitioner

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relies on “Wilson’s speakers 18, 20 (‘earphones’) comprising ‘acoustic transducer[s]’ as claimed.” Pet. 63 (citing Ex. 1021, 4:4–15, 4:28–35; Fig. 4; Ex. 1005 ¶ 125; Ex. 1003 ¶¶ 242–243) (alteration in original).

Limitation 1.c recites “an antenna for receiving wireless signals.” Nakagawa is cited by Petitioner as having an antenna for “*wireless communication* with [*i.e.*, ‘for receiving wireless signals’ as claimed] various sound-source devices.” Pet. 64–65 (citing Ex. 1022 ¶¶ 26, 30–34, 52–59, Fig. 3; Ex. 1003 ¶ 244) (alteration in original).

Limitation 1.d recites “a wireless communication circuit connected to the antenna, wherein the wireless communication circuit is for receiving and transmitting wireless signals to and from the wireless headphone assembly.” Nakagawa teaches a wireless communication device 37 and RF unit receiving and transmitting wireless signals. Ex. 1022 ¶¶ 30, 53–56, 59, 69, 76, 79, Fig. 3. Petitioner cites the preceding from Nakagawa to show limitation 1.d. Pet. 64–65.

Limitation 1.f recites “a rechargeable battery for powering the wireless headphone assembly.” Petitioner relies on Wilson’s rechargeable battery to show this limitation. Pet. 66 (citing Ex. 1021, 3:19–21; Ex. 1003 ¶ 248).

Limitation 1.g recites

wherein the headphone assembly is configured, with the processor, to transition automatically from playing digital audio content received wirelessly by the headphone assembly via a first wireless network to playing digital audio content received wirelessly by the headphone assembly via a second wireless network.

Petitioner cites to two teachings of Nakagawa to meet this limitation. The first, and the one we summarize, is that Nakagawa’s headset is

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“automatically switched” from one to another sound source device based on “priority information.” Ex. 1022 ¶¶ 45–46. For example, one sound source device is “connected by radio” and may provide music data for listening.” *Id.* ¶ 39. The second sound source device can output audio and can receive a call. *Id.* If the call receiving sound source device has been assigned a higher priority level than the music device the headphone is automatically switched to the call. *Id.* ¶¶ 39, 72. The preceding, along with the Williams Declaration are cited, among other disclosures of Nakagawa, to show limitation 1.g. Pet. 66–67 (citing Ex. 1022 ¶¶ 27–32, 33, 39, 45–46, 56, 72; Ex. 1003 ¶¶ 249–250).

We adopt the findings and conclusions of Petitioner’s analysis of recitations 1.a., 1.b, 1.c, 1.d, and 1.f. above, which are not contested by Patent Owner. On this record, Petitioner has sufficiently shown that the combination of Nakagawa and Wilson teaches claim 1.

#### 4. Claims 2–3, 6–8, 10, and 14

Claims 2, 3, 6–8, 10, and 14 all depend directly or indirectly from claim 1. We have reviewed Petitioner’s showing with respect to claims 2, 3, 6–8, 10, and 14. Pet. 68–74. Patent Owner does not dispute the showing for these claims. *See* PO Resp. 17–31. Petitioner’s argument and evidence are summarized below. We agree with Petitioner’s argument and evidence and find it sufficiently shows all the limitations of claims 2, 3, 6–8, 10, and 14.

Claim 2 recites that the processor be “configured to, upon activation of a user-control of the headphone assembly, initiate transmission of a request to a remote network server.” Petitioner relies on Wilson’s disclosure of a “‘user interface’ comprising ‘buttons’ on the headset allowing a user to control functions like ‘volume’ and ‘link active/end.’” Pet. 68 (citing

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Ex. 1021, 4:16–23). Dr. Williams points to these teachings as “conventional for allowing users to control headset functionality.” *Id.* (quoting Ex. 1003 ¶ 255).

Claim 3 depends from claim 2 and recites that claim 2 further includes a “microphone” to “process audible utterances” of a user and to transmit the audible utterances “via the first or second wireless networks.” Nakagawa discloses that a “user’s speech” is “input to the microphone.” Ex. 1022 ¶ 30; claim 3. Petitioner cites the preceding as well as Nakagawa’s teaching that the microphone then “generate[s]” a “voice signal” from the user’s speech which is converted, or processed as claimed, into “audio data.” Pet. 70 (citing Ex. 1022 ¶ 55, claim 3; Ex. 1003 ¶¶ 261–262) (alteration in original). It is alleged the control unit, i.e., “processor,” performs this function in controlling the “audio-data generating unit.” *Id.* (citing Ex. 1022 ¶ 54; Ex. 1003 ¶ 262). It is further alleged that the “microphone” transmits speech of the user. *Id.* (citing Ex. 1022 ¶ 30; Ex. 1003 ¶ 263).

Claim 6 depends from claim 1 and recites a “headband connected between the first and second earphones.” Claims 7 and 8 depend from claim 6 and recite, respectively, “speaker elements” are housed in “on-ear headphones” and “over ear headphones.” Petitioner cites Wilson’s Figure 4 showing a headset 4, headband 30 connecting two speakers 18, 20 housed within the earphones. Pet. 71 (citing Ex. 1021, 4:5–6; Ex. 1005 ¶ 127; Ex. 1003 ¶¶ 264–265). Petitioner alleges “[a]lthough Wilson does not explicitly state which design Figure 4 depicts, it would have been routine to implement Nakagawa-Wilson with either over-ear or on-ear earphones ([Ex. 1017], 1:28–34), as those are the two possible options for the headphone depicted in Wilson, and each option had its own benefits, giving [a person of ordinary skill in the art] reason to implement Nakagawa-Wilson

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using either option.” *Id.* at 72 (citing Ex. 1005 ¶¶ 54–55, 58–59; Ex. 1003 ¶¶ 266–267).

Claim 10 depends from claim 1 and additionally recites “a docking station to charge the rechargeable battery.” Petitioner relies on Wilson’s headset 4 which is intended for use with a “docking station.” Pet. 72–73 (citing Ex. 1021, 1:5–45, 2:45–62), Fig. 1 (element 2 (“charging station”)).

Claim 14 depends from claim 1 and requires “a memory unit that stores network identifiers for the first and second wireless networks.” Nakagawa is cited by Petitioner for teaching a “memory device 31” that “stores programs and various data items.” Pet. 73 (citing Ex. 1022 ¶¶ 53–54, Fig. 3). The Williams Declaration testimony is cited to show the programs are used to control an operation, including automatic transitioning between wireless networks. *Id.* at 74 (citing Ex. 1003 ¶ 269 (citing Ex. 1046<sup>14</sup> ¶ 166; Ex. 1047<sup>15</sup> ¶ 51)). Exhibits 1046 and 1047 are cited by Dr. Williams to corroborate that “Bluetooth devices exchanged network identifiers.” *Id.*

We adopt the findings and conclusions Petitioner’s analysis of claims 2–3, 6–8, 10, and 14 above, which are not contested by Patent Owner. On this record, Petitioner has sufficiently shown that the combination of Nakagawa and Wilson teaches claims 2–3, 6–8, 10, and 14.

### 5. Conclusion

Petitioner has shown by a preponderance of the evidence that claims 1–3, 6–8, 10, and 14 would have been obvious over Nakagawa and Wilson.

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<sup>14</sup> Terlizzi, US 2008/0166005 A1, published July 10, 2008 (Ex. 1046).

<sup>15</sup> Barnes, US 2003/0065805 A1, published Apr. 3, 2003 (Ex. 1047).

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*E. Obviousness of Claims 1, 4–5, and 9 over Nakagawa and Rosener*

Petitioner alleges claims 1, 4–5, and 9 would have been obvious over Nakagawa and Rosener. Pet. 4, 74–79. Petitioner also relies on the Williams and Casali Declarations. Ex. 1003 ¶¶ 270–293; Ex. 1005 ¶¶ 81–95, 99–104.

*1. Nakagawa (Ex. 1022)*

Nakagawa was described in Section III.D.1 above.

*2. Rosener (Ex. 1020)*

Rosener relates to wireless communication between an external data or audio device, like a cell phone or PDA, MP3, or CD player, radio personal computer or game console, and first and second earphones. Ex. 1020 ¶¶ 1, 30. Rosener explains that conventional wireless earphones came in different designs, each with “its own unique benefits and drawbacks.” *Id.* ¶¶ 5–10, Figs. 2–4. Rosener focuses on wireless “earbuds.” *Id.* at Abs., ¶¶ 11, 30, Fig. 5. Each earbud includes a “transceiver” “configured to receive data signals over one or more single-access wireless links or over a multi-access wireless link.” *Id.* ¶ 11. Each earbud also contains a speaker, an RF receiver or transceiver, and a battery. *Id.* ¶ 30.

*3. Claim 1*

*a. Reasons for Nakagawa and Rosener Combination*

Patent Owner’s arguments disputing Petitioner’s proffered reasons for combining Rosener with Nakagawa are the same arguments made with respect to the Nakagawa and Wilson challenge. *See* PO Resp. 17–31; *see* Section III.D.3.a, n.12. We address only arguments that differ from those made for the Nakagawa and Wilson combination, which are discussed in Section III.D.3.a above.



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Patent Owner argues “Rosener does not constitute a finite number of identified, predictable solutions, that a [person of ordinary skill in the art] has good reason to pursue.” PO Resp. 23 (citing Ex. 2023 ¶ 40). Patent Owner alleges Rosener’s earbuds “are small in size to fit into a user’s ear and, as such, include small batteries with limited power capabilities.” *Id.*

We give the McAlexander testimony little weight. The testimony repeats the attorney argument of the Response and does not state the basis for the testimony. *Compare* PO Resp. 23–24 *and* Ex. 2023 ¶ 40. In addition, the argument is based on specifications of components like the physical size of the battery which are not needed in order for a person of ordinary skill to have had reason to combine the references. *See* Ex. 2023 ¶ 40. Thus, we are not persuaded by Patent Owner’s argument that Rosener’s earbud construction would not have been accomplished without impermissible hindsight or would have “frustrated any expectation of success.” *See* PO Resp. 24–25 (hindsight), 28–29 (expectation of success).

*b. Limitations of Claim 1*

We have reviewed Petitioner’s showing on the recitations of claim 1, recitations 1.a–g. Pet. 74–79; Ex. 1003 ¶¶ 270–285; Ex. 1005 ¶¶ 93–94, 123–128. Patent Owner does not dispute that the Nakagawa and Rosner combination shows all the limitations of claim 1. *See* PO Resp. 17–31. Patent Owner’s arguments are limited to whether a person of ordinary skill in the art would have had reason to combine Wilson with Rosener. *Id.* These arguments were analyzed immediately above in Section III.E.3.a.

Petitioner’s argument and evidence are summarized below. We find Petitioner’s showing is sufficient on all the limitations of claim 1 and adopt Petitioner’s argument and evidence.

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For the preamble, recitation 1.a, Petitioner cites “Rosener’s earbud-based headphone and battery with Nakagawa’s functional components.” Pet. 76 (citing Ex.1022 ¶¶ 52–59, Fig. 3; Ex. 1020 ¶ 30; Ex. 1003 ¶ 281).

For the “first and second earphones” of limitation 1.b., Petitioner cites Rosener’s Figure 5, showing two earbuds. Pet. 76 (citing Ex. 1020 ¶ 30; Ex. 1003 ¶282; Ex. 1005 ¶¶ 118–120)

Petitioner alleges the Nakagawa and Rosener combination show limitations 1.c (“antenna”), 1.d (wireless communication circuit”), and 1.e (“processor”) as discussed above in connection with the Nakagawa and Wilson challenge. Pet. 77 (citing Ex. 1003 ¶ 283); *see* Section III.D.3.b above.

For the “rechargeable battery” recited in limitation 1.f, Petitioner relies on Rosener for its teaching of a battery along with the understanding of a person of ordinary skill in that art that the battery would have been rechargeable. Pet. 77 (citing Ex. 1022 ¶ 30. 3; Ex. 1003 ¶ 284 (citing Ex. 1022 ¶ 30)).

For limitation 1.g Petitioner relies on reasons set forth in the Nakagawa and Wilson combination. Pet. 78 (citing Pet. 66–67; *see* Section III.D.3.b above).

#### *4. Claims 4 and 9*

Claims 4 and 9 depends from claim 1. We have reviewed Petitioner’s showing with respect to claims 4 and 9. Pet. 78–79. We agree that Petitioner’s evidence shows that Nakagawa and Rosener teach each limitation of claims 4 and 9. Patent Owner does not dispute the showing made with respect to any of the challenged claims. *See* PO Resp. 17–31.

For dependent claims 4 and 9 Petitioner relies on reasons for the combination set forth above with respect to claim 1. Pet. 78–79 (citing Pet.

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75–77 (claim 4), 76–77 (citing Pet. 76–78)); *see* Section III.D.3.a above. Petitioner also cites to the Williams and Casali Declarations. *Id.* at 78 (citing Ex. 1003 ¶ 286; Ex. 1005 ¶¶ 61–63). For claim 9, reciting a “hangar bar [and] body,” Petitioner cites to Rosener. *Id.* at 79 (citing Ex. 1020 ¶¶ 8, 30, Fig. 4); 52–54 (analyzing claim 9 (applying Rosener to subject matter of claim 9)).

We adopt the findings and conclusions Petitioner’s analysis of claims 4 and 9, which are not contested by Patent Owner. On this record, Petitioner has sufficiently shown that the combination of Nakagawa and Rosener teaches claims 4 and 9.

#### 5. Claim 5

Claim 5 depends from claim 4. We have reviewed Petitioner’s showing with respect to claim 5. Pet. 78–79. Claim 5 recites that each of the first and second headphones comprises the structure recited in claim limitations 1.c, 1.d, 1.e, and 1.f of claim 1. Petitioner relies on those showings for claim 5. Pet. 78 (citing Pet. 77; Ex. 1003 ¶¶ 287–288)). We adopt as our own Petitioner’s argument and evidence that Nakagawa and Rosener teach each limitation of claim 5.

Patent Owner disputes the showing made with respect to claim 5. *See* PO Resp. 31–37. Patent Owner first relies on its arguments for the Nakagawa and Rosener combination made in connection with claim 1. PO Resp. 31–32. As discussed above, these arguments were not persuasive. *See* Section III.E.3.a above.

Specific to claim 5, Patent Owner argues “Nakagawa discloses a particular form factor, namely two headphones connected by a wire to a separate wireless audio output apparatus.” PO Resp. 32 (citing Ex. 1022, Fig. 1). Rosener differs from Nakagawa in disclosing a design where,

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according to Patent Owner, “all components, including its battery, are housed in headphones that are ‘physically and electrically’ separated.” *Id.* (citing Ex. 1020, Abs., Fig. 5). Because of this alleged structural difference, Patent Owner argues a person of ordinary skill in the art “cannot simply ignore the power and weight repercussions that would need to be addressed to effectively combine Nakagawa’s function with Rosener’s form-factor.” *Id.* at 33 (citing Ex. 2024, 55:10 (Williams Deposition testimony that implementation is “immaterial”); Ex. 2023 ¶¶ 34, 38, 40).

Patent Owner next argues that Rosener discloses a battery but not a “rechargeable battery.” PO Resp. 34–35. Although this is a dispute about limitation 1.f, which Patent Owner did not dispute with respect to claim 1, we address it here. *See id.* at 34 (alleging a “rechargeable battery” is “required by limitation 1.f of claim 1”). Patent Owner alleges “Rosener’s battery to power the Nakagawa components in addition to Rosener’s components does not constitute applying a known technique to improve similar devices in the same way.” *Id.* at 34 (citing Ex. 2023 ¶¶ 38–40). Patent Owner further alleges the size and power requirements of both Nakagawa’s components common with Rosener as well as Rosener’s earbuds need to be known before a person of ordinary skill could have made the combination operable.

For the “rechargeable battery” recited in limitation 1.f, Petitioner relies on Rosener for its teaching of a battery along with the understanding of a person of ordinary skill in that art that the battery would have been rechargeable. Pet. 77 (citing Ex. 1022 ¶ 30; Ex. 1003 ¶ 284 (citing Ex. 1022 ¶ 30)).

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Patent Owner's arguments are not persuasive. As already discussed, the question of obviousness does not turn on physical combinability, which is the lynchpin to Patent Owner's arguments.

Patent Owner also argues the combination is based on hindsight. PO Resp. 35–37. Despite the question being raised in the Institution Decision, Patent Owner “failed to identify any specific reason ‘how or why’ [persons of ordinary skill in the art] needed to know the specific power required by Nakagawa and/or provided by Wilson or Rosener to pursue the combinations.” *See* Reply 11–12 (citing Inst. Dec. 30). Patent Owner does not respond to Petitioner's assertion regarding the Institution Decision in its Sur-Reply. *See generally* Sur-Reply. We are not persuaded the combination is based on hindsight.

## 6. Conclusion

Petitioner has shown by a preponderance of the evidence that claims 1, 4–5, and 9 would have been obvious over Nakagawa and Rosener.

### *F. Obviousness of Claim 13 over Nakagawa, Wilson, and Hind or Nakagawa, Rosener, and Hind*

Petitioner alleges claim 13 would have been obvious over Nakagawa, Wilson, and Hind or Nakagawa, Rosener, and Hind. Pet. 4, 80. Petitioner also relies on the Williams and Casali Declarations. Ex. 1003 ¶¶ 294–296; Ex. 1005 ¶¶ 116–128.

#### *1. Nakagawa (Ex. 1022)*

Nakagawa was described in Section III.D.1 above.

#### *2. Rosener (Ex. 1020)*

Rosener was described in Section III.E.2 above.

#### *3. Wilson (Ex. 1021)*

Wilson was described in Section III.D.2 above.

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#### 4. *Hind (Ex. 1019)*

Hind relates to “[m]ethods, systems and computer program products which provide secure updates of firmware (i.e. data stored in a programmable memory device of a processing system.” Ex. 1019, Abs. Hind explains that “[m]any devices today” include “software instructions embedded in the device to give the device its functional personality.” *Id.* at 1:23–25. This software, “often called firmware,” can be “communicated” to a device via “a network connection” with a remote server accessible over a network like the Internet. *Id.* at 1:40–44, 18:51–64, Fig. 10. Hind teaches that a “pair of wireless stereo headphones” could receive such firmware updates securely. *Id.* at 19:40–53.

#### 5. *Claim 13*

Claim 13 depends from claim 1 and recites “wherein the processor is further configured to receive firmware updates from a remoter computer device.” Petitioner cites Nakagawa for teaching the “sound source automatic switching functionality can be implemented with ‘firmware.’” Pet. 80 (citing Ex. 1022 ¶ 84; Ex. 1003 ¶ 295). Petitioner argues a person of ordinary skill would have had reason to configure either the combination of Nagakawa and Wilson or Nagakawa and Rosener to receive updates of Hind from a remote network server for reasons stated in connection with its challenge based on Rezvani, Skulley, and Hind. *Id.* (citing Pet. 45–48; Ex. 1003 ¶ 296).

Patent Owner does not separately argue claim 13. As discussed above in Section III.D.3.a, Patent Owner makes the same argument regarding reasons for combining either Wilson or Rosener with Nakagawa. We refer to our prior analysis analyzing the argument.

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Petitioner has shown by a preponderance of the evidence that claim 13 would have been obvious over Nakagawa, Rosener, and Hind, or Nakagawa, Wilson, and Hind.

*G. Obviousness of Claims 1–4, 6–8, and 14 over Rezvani and Skulley*

Petitioner alleges claims 1–4, 6–8, and 14 would have been obvious over Rezvani and Skulley. Pet. 4, 43. Petitioner also relies on the Williams and Casali Declarations. Ex. 1003 ¶¶ 102–169; Ex. 1005 ¶¶ 106–112.

*1. Rezvani (Ex. 1016)*

Rezvani discloses a “wireless multi-media headset with high fidelity sound” that performs “seamless handoff between multiple wireless interfaces.” Ex. 1016, Abs., ¶¶ 15–16, Fig. 1. The headset is capable of several applications and multiple wireless systems may be incorporated. *Id.* ¶ 19. For example, support may be provided for cellular standards (*e.g.*, 3G), WiFi standards (*e.g.*, IEEE 802.11n), and the Bluetooth standard among others. *Id.*

The headset also “supports Voice over IP (VoIP)” communications using the Internet. Ex. 1016 ¶ 19. The headset supports “simultaneous operation on the different wireless interfaces” in order to maintain a voice conversation while switching networks. *Id.* ¶ 40.

Figure 8 is reproduced below.

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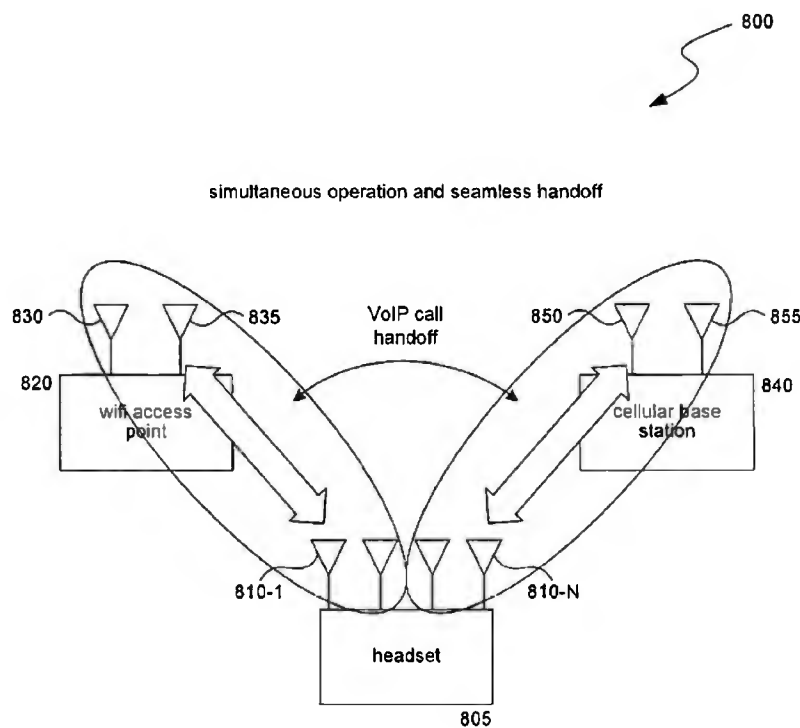


FIG. 8

**Figure 8 illustrates simultaneous operation over a cellular system and Wifi system.**

Ex. 1016 ¶ 12. Figure 8 illustrates a “headset” but is described as a “handset.” *Id.* ¶ 41. Simultaneous operation where a seamless handoff occurs between two systems by a “handset” is also described in connection with a VoIP call from a wide-area wireless network to a local area network. *Id.* ¶ 50.

## 2. Skulley (Ex. 1017)

Skulley explains that headsets “can be classified into three general types:” (1) “‘In-the-ear’. . . sometimes referred to as ‘ear buds,’” (2) “‘On-the-ear,’” and (3) “‘Over-the-ear.’” Ex. 1017, 1:22–34. Skulley explains that



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headsets “typically” included a “headband” to “forcefully maintain[]” the earphone against (or in) the ear. *Id.* at 1:35–38.

### 3. Claim 1

#### a. Arguments based on Rezvani’s “handset” disclosure

Patent Owner’s arguments relate to the disclosure in Rezvani of a “handset” as well as a “headset.” Compare Ex. 1016, Fig. 8 (“headset”) and Ex. 1016 ¶¶ 41, 50 (“handset”). For the reasons below, we find that an error in printing or drafting led to the appearance of “handset” in Rezvani. Petitioner alleges “handset” is a “typo[.]” Reply 15 (citing Ex. 1104 ¶¶ 15–22). We discuss Patent Owner’s arguments below.

#### (1) Rezvani’s “handset”

Patent Owner argues that Rezvani’s “seamless handoff” is not supported by the disclosed “handset,” which is not the claimed “headset.” PO Resp. 11–13 (citing Ex. 1016 ¶¶ 41, 50; Ex. 2023 ¶¶ 48–49, 50–51). Thus, according to Patent Owner, claim 1’s recitations of a “headphone assembly” are not taught. *Id.* at 12. Patent Owner argues that Dr. Williams knew “handset” was wrong and intentionally avoided the issue by interpreting paragraph 41 as “headset.” Tr. 50:14–51:6; *see also* Sur-Reply 10–12 (arguing the “typo” theory is neither credible nor supported by the record).

Petitioner alleges “handset” was a “typo” in paragraph 41 that went unnoticed at the time of filing the Petition. Tr. 19:16–25; *see also* Reply 15–18 (arguing “handset” in Rezvani is a “typo”). Further, Petitioner contends the error in printing “handset” is “obvious” and a person of ordinary skill in the art would have understood “headset” was intended. Reply 15 (citing Ex. 1104 ¶¶ 15–22; *In re Yale*, 434 F.2d 666, 668–669 (CCPA 1970) (“Since it is an obvious error, it cannot be said that one of ordinary skill . . . would

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do anything more than mentally disregard [it] as a misprint or mentally substitute [the correct word] in its place.”)).

We are not persuaded any deception has been shown or, if shown, how it might impact this proceeding. Patent Owner proposes the “handset” of Rezvani does not meet the “headphone” limitations of claim 1, which is presumably supported by the alleged deception, and this challenge should fail. Tr. 52:23–53:25 (Patent Owner agreeing counsel “might not have been aware of [the ‘typo’], but Dr. Williams was”). Essentially, Patent Owner suggests without citation to any authority, dismissal of the challenge based in part on a misrepresentation by omission of a material fact. We decline to go so far on this record. *See Glaros v. H.H. Robertson Co.*, 797 F.2d 1564, 1574 (Fed. Cir. 1986) (denying motion to dismiss appeal based on “misrepresentation of fact” as “too draconian a remedy”).

We accept the representation of counsel that a mistake occurred. We asked counsel for an explanation of the failure to give us notice that Rezvani actually referred to a “handset” and not a “headset.” *See* Tr. 19:10–25. The explanation was candid and credible and we accept it for purposes of this Decision. Furthermore, we do not find that Dr. Williams’ testimony regarding reading “handset” as referring to “headset” is unreasonable or deceptive. Petitioner’s other expert, Dr. Casali, also cited paragraph 41 of Rezvani while testifying “Rezvani is directed to ‘a High-Fidelity Multimedia Wireless *Headset*’ for providing ‘a high fidelity sound system’ for use with applications like VoIP calling and playback of music.” Ex. 1005 ¶ 108 (emphasis added).

Rezvani supports a conclusion that “handset” was a mistake and “headset” was intended. Paragraph 41 describes Figure 8, which clearly labels “headset 805.” Ex. 1016, Fig. 8; *see also* Ex. 1104 ¶ 8 (Rezvani

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paragraphs 41 and 50 “mistakenly refer to ‘handset’”) (citing Ex. 1016 ¶¶ 15–16, 19, 21, 41, 50, Figs. 1–3, 8). Paragraph 41 also references “a headset 805” *before* referring to “*the* handset.” Ex. 1016 ¶ 41 (emphasis added). Paragraph 50 is identical in describing that “the handset can support seamless handoff between two systems.” *Id.* ¶ 50. The remaining description in Rezvani universally refers to “headset” and “handset” is never referenced outside paragraphs 41 and 50. *Id.* (see, e.g., Title, Abs., Figs. 1, 8, ¶¶ 2, 4, 15–19, 33–35, 38–41). For the above reasons, we find that “handset” was “an obvious typographical error” that “would be apparent to one of ordinary skill in the art.” *In re Yale*, 434 F.2d 668–69.

Because the testimony of Dr. Williams interprets paragraph 41 to read out “handset” and read in “headset,” Patent Owner argues, Rezvani is no longer a printed publication. Sur-Reply 9 (citing 35 U.S.C. § 311); *see also* Tr. 52:6–23 (making same argument). We disagree. We find the understanding of a person of ordinary skill in the art as testified to by both of Petitioner’s experts that Rezvani is directed to a “headset” establishes that Rezvani, as printed, is a printed publication. Regardless, even if the use of “handset” is not a mistake in printing or drafting, both of Petitioner’s experts cite Rezvani paragraph 41 and assert it discloses a “headset,” without mention of the fact that the paragraph literally discloses a “handset.” *See* Ex. 1003 ¶ 106; Ex. 1005 ¶ 108.

We are not persuaded that the “typo” theory should have been presented earlier. *See* Sur-Reply 13–15. Patent Owner has not alleged prejudice from any delay. Upon the discrepancy being raised, Petitioner alleged “handset” was a “typo” in its Reply. Reply 15–18. Patent Owner responded in its Sur-Reply. Sur-Reply 13–15. We find the argument was timely raised and Patent Owner had notice and opportunity to respond.

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(2) A “seamless handoff” by the “handset” would not have suggested the claimed “headphone assembly configured with the processor to transition automatically”

Patent Owner argues a “seamless handoff” by the “handset” would not have suggested the claimed “headphone assembly configured with the processor to transition automatically.” PO Resp. 13–15. Even if paragraph 41 is not a “typo,” the question is whether or not a person of ordinary skill would understand that there is a “seamless handoff” that occurs automatically. The precise structure for doing so need not be disclosed. *See In re Keller*, 642 F.2d at 425. Petitioner has provided evidence that a seamless handoff is taught by Rezvani. Pet. 26 (citing Ex. 1003 ¶¶ 39, 106–107), 35 (citing Ex. 1016 ¶ 50, Fig. 8 (“illustrat[ing] *the seamless handoff* of a VoIP call between a cellular and Wifi system”), claims 32, 36; Ex. 1003 ¶ 136).

We are not persuaded that reserving the “seamless handoff” of Rezvani to the “handset” would have prevented a person of ordinary skill from understanding that the claimed “headset” would have been modified to perform the handoff. *See* PO Resp. 13 (citing Ex. 2023 ¶ 55). The Petition did not address the fact that the use of “handset” was a “typo.” *See* Pet. 36 (citing Ex. 1016 ¶ 41). As discussed above, both experts proceeded on the basis that a “headset” was disclosed and was understood to perform the “seamless handoff.” Ex. 1003 ¶ 106; Ex. 1005 ¶ 108. Dr. Williams testifies that “even if it were not a typographical error,” the Rezvani disclosures using “handset” “do not create ambiguity in the several additional, unambiguous disclosures in Rezvani of the ‘headset’ executing the automatic transition between two wireless networks.” Ex. 1104 ¶ 8 (citing Ex. 1003 ¶¶ 105–107, 110, 133, 136–138 (citing Ex. 1016 ¶¶ 15–16, 19–21,

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Figs. 1–3, 8)). Mr. McAlexander repeats the attorney argument but does not contradict Dr. Williams’ testimony. *See* Ex. 2023 ¶¶ 47–61. We credit the Williams Declaration and Reply Declaration, which is based on Rezvani. The McAlexander Declaration is conclusory, cites to a disputed issue regarding the “handset,” and accordingly we give it little weight.

*(3) Rezvani’s disclosure of a “seamless handoff” is not the “transition automatically” recited in limitation 1.g*

Patent Owner contends Rezvani’s disclosure of a “seamless handoff” is not the “transition automatically” recited in claim 1. PO Resp. 15–16. We determined above that “transition automatically” includes Rezvani’s “seamless handoff.” *See* Section III.B above.

*b. The European prosecution and Rezvani*

In the European prosecution of the corresponding application to the one here, Petitioner alleges that “Rezvani (‘D1’) anticipated even the narrowed independent claims.” Pet. 10 (citing Ex. 1011<sup>16</sup>, 4). Petitioner argues Patent Owner conceded the determination and rewrote the claims in “two part form with respect to prior art document D1 [Rezvani].” *Id.* (citing Ex. 1012<sup>17</sup>, 3). Based on the European prosecution, Petitioner argues Patent Owner admitted that Rezvani teaches limitation 1.g, the “transition automatically” limitation. *See* Pet. 10, 36.

We agree with Patent Owner that the proceedings in the European Patent Office have little relevance here. *See* PO Resp. 16–17. Petitioner does not respond to Patent Owner’s argument regarding relevance of the European prosecution. *See generally* Reply. We do not find Patent Owner’s

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<sup>16</sup> European Patent Application No. 09731146.8 Office Action.

<sup>17</sup> Patent Owner response to European Office Action.

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actions constitute a “blatant admission.” *See* Pet. 33 (citing *Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1374 (Fed. Cir. 2005)).

*c. The combination of Rezvani and Skulley*

Petitioner alleges there are three reasons for combining the two earphones of Skulley with Rezvani. Pet. 28–29 (citing Ex. 1005 ¶¶ 47–48, 110; Ex. 1003 ¶¶ 103–105, 117–118, 121–125). Petitioner alleges that a person of ordinary skill would have expected success in implementing the combination. *Id.* at 29 (citing Ex. 1005 ¶ 111; Ex. 1003 ¶ 125). As part of its arguments made regarding the “handset” disclosure addressed above, Patent Owner argues there is an insufficient showing of reasons to combine Skulley with Rezvani. PO Resp. 13–15.

Patent Owner argues modification of Rezvani requires an understanding of “what attribute or components of the handset to transfer from the handset to the headset to support a seamless handoff.” *Id.* at 15 (citing Ex. 2023 ¶ 58). This argument is not persuasive because it relies on physical combinability and not what would have been obvious to a person of ordinary skill in the art. *In re Etter*, 756 F.2d 852, 859–860 (Fed. Cir. 1985).

Patent Owner argues the combination would be inoperable because the “seamless handoff” occurs randomly. PO Resp. 15 (citing Ex. 2023 ¶¶ 60–61). The inoperable argument is not stated with clarity and Petitioner does not respond in its Reply. The McAlexander Declaration citations do not discuss operability at all. For these reasons, we do not find the argument persuasive.

*d. Limitations of claim 1*

Patent Owner argues Rezvani does not show the claim “headphone assembly” of claim 1 because of the “typo” discussed above. *See, e.g.*, PO Resp 11 (citing Ex. 2023 ¶ 48). Patent Owner argues that paragraphs 41 and

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50 of Rezvani “explain that the handset—*not the headset*—supports the seamless handoff.” *Id.* Patent Owner argues that the “handset” disclosed in Rezvani would not have suggested the claims “headphone assembly.” *Id.* at 13–15 (citing Ex. 2023 ¶ 54). No other arguments relating to claim 1 are presented by Patent Owner.

We adopt the findings and conclusions Petitioner’s analysis as our own, which are predicated on Rezvani disclosing a “headset.” Pet. 25–26 (citing Ex. 1016 ¶¶ 41, 50 (which describe Figure 8 and include the “handset” disclosure), Fig. 8 (described in paragraphs 41 and 50 but depicting a “headset”), 29–36; Ex. 1003 ¶¶ 39, 106–107).

On this record, Petitioner has sufficiently shown that the combination of Rezvani and Skulley teaches the limitations of claim 1.

#### 4. *Claims 2–4, 6–8, and 14*

Claims 2–4, 6–8, and 14 all depend directly or indirectly from claim 1. We have reviewed Petitioner’s showing with respect to claims 2–4, 6–8, and 14, Pet. 37–42, and agree that Rezvani and Skulley teach each limitation of claims 2–4, 6–8, and 14. Patent Owner does not dispute the showing made with respect to claims 2–4, 6–8, and 14.

#### 5. *Conclusion*

Petitioner has shown by a preponderance of the evidence that claims 1–4, 6–8, and 14 would have been obvious over Rezvani and Skulley.

##### *H. Obviousness of Claims 11–12 over Rezvani, Skulley, and Feder*

Petitioner alleges claims 11–12 would have been obvious over Rezvani, Skulley, and Feder. Pet. 4, 43–45. Petitioner also relies on the Williams Declaration. Ex. 1003 ¶¶ 170–184.

##### *1. Rezvani (Ex. 1016)*

Rezvani was described in Section III.G.1 above.

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2. *Skulley (Ex. 1017)*

Skulley was described in Section III.G.2 above.

3. *Feder (Ex. 1018)*

Feder “relates to wireless and wire-line communication,” specifically “a method for a mobile client to choose amongst wireless and wireline service providers.” Ex. 1018 ¶ 1. Feder discloses “a system selection algorithm (SSA)” allowing a “mobile client” to “seamlessly switch” between wireless networks based on “various criteria,” including each network’s wireless signal strength according to a “received signal strength indication (RSSI).” *Id.* ¶¶ 4, 44.

Feder explains that “seamless switching” is provided between cellular networks like 3G and wireless packet data networks like WiFi. Ex. 1018 ¶¶ 16–17. For example, “[t]hresholds for handoff from 3G to system to an 802.11 system [both IEEE and Bluetooth systems]” are set according to “preference rules” which are reported to the SSA to determine the best available system. *Id.* ¶¶ 12, 16, 83. The SSA determines if the RSSI measurement for the WiFi network exceeds a minimum RSSI the selected WiFi system “must achieve in order to perform a handoff.” *Id.* ¶ 83. Feder compares the signal strength to “high” and “low” thresholds to avoid a “ping-pong effect,” “whereby the mobile station is repeatedly handed off between the two systems because the measured RSSI of the 802.11 network fluctuates above and below” a single threshold. *Id.* ¶¶ 84–85.

4. *Claims 11 and 12*

Claims 11 and 12 depend directly or indirectly from claim 1. Claim 11 recites switching networks based on signal strength. Claim 12 also recites switching based on signal strength but the signal needs to be “above a threshold level.” We have reviewed Petitioner’s showing with respect to



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claims 11 and 12, which includes citations to Feder for the claimed subject matter. Pet. 45 (citing Ex. 1018 ¶¶ 83–85; Ex. 1003 ¶ 184). We agree with Petitioner that Rezvani, Skulley, and Feder teach each limitation of claims 11 and 12. Patent Owner does not dispute the showing made with respect to claims 11 and 12 on this ground. *See generally* PO Resp.

Petitioner has shown by a preponderance of the evidence that claims 11 and 12 would have been obvious over the combination of Rezvani, Skulley, and Feder.

*I. Obviousness of Claim 13 over Rezvani, Skulley, and Hind*

Petitioner alleges claim 13 would have been obvious over Rezvani, Skulley, and Hind. Pet. 4, 45–48. Petitioner also relies on the Williams Declaration. Ex. 1003 ¶¶ 185–196.

*1. Rezvani (Ex. 1016)*

Rezvani was described in Section III.G.1 above.

*2. Skulley (Ex. 1017)*

Skulley was described in Section III.G.2 above.

*3. Hind (Ex. 1019)*

Hind was described in Section III.F.4 above.

*4. Claim 13*

Claim 13 depends from claim 1. We have reviewed Petitioner’s showing with respect to claim 13. Pet. 45–48. We agree that the combination of Rezvani, Skulley, and Hind teach each limitation of claim 13. Patent Owner does not dispute the showing made with respect to claim 13. *See generally* PO Resp.

*5. Conclusion*

Petitioner has shown by a preponderance of the evidence that claim 13 would have been obvious over Rezvani, Skulley, and Hind.

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*J. Obviousness of Claims 5 and 9 over Rezvani, Skulley, and Rosener*

Petitioner alleges claims 5 and 9 would have been obvious over Rezvani, Skulley, and Rosener. Pet. 4, 48–54. Petitioner also relies on the Williams and Casali Declarations. Ex. 1003 ¶¶ 197–216; Ex. 1005 ¶¶ 105–122.

*1. Rezvani (Ex. 1016)*

Rezvani was described in Section IV.G.1 above.

*2. Skulley (Ex. 1017)*

Skulley was described in Section IV.G.2 above.

*3. Rosener (Ex. 1020)*

Rosener was described in Section IV.F.2 above.

*4. Claims 5 and 9*

Claim 5 depends from claim 4 and claim 9 depends from claim 1. We have reviewed Petitioner’s showing with respect to claims 5 and 9. Pet. 48–54. We agree that Rezvani, Skulley, and Rosener teach each limitation of claims 5 and 9. Patent Owner does not dispute the showing made with respect to claims 5 and 9 on this ground. *See generally* PO Resp. Petitioner has shown by a preponderance of the evidence that claims 5 and 9 would have been obvious over Rezvani, Skulley, and Rosener.

*K. Obviousness of Claim 10 over Rezvani, Skulley, and Wilson*

Petitioner alleges claim 10 would have been obvious over Rezvani, Skulley, and Wilson. Pet. 4, 54–56. Petitioner also relies on the Williams and Casali Declarations. Ex. 1003 ¶¶ 217–224; Ex. 1005 ¶¶ 105–115.

*1. Rezvani (Ex. 1016)*

Rezvani was described in Section III.G.1 above.

*2. Skulley (Ex. 1017)*

Skulley was described in Section III.G.2 above.

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### 3. *Wilson (Ex. 1021)*

Wilson was described in Section III.D.2 above.

### 4. *Claim 10*

Claim 10 depends from claim 1. We have reviewed Petitioner's showing with respect to claim 10. Pet. 54–60. We agree that the combination of Rezvani, Skulley, and Wilson teach each limitation of claim 10. Patent Owner does not dispute the showing made with respect to claim 10 on this ground. *See generally* PO Resp.

Petitioner has shown by a preponderance of the evidence that claim 10 would have been obvious over Rezvani, Skulley, and Wilson.

#### *L. Legal Standard for Anticipation*

Anticipation “requires that every element and limitation of the claim was previously described in a single prior art reference, either expressly or inherently, so as to place a person of ordinary skill in possession of the invention.” *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008) (citing *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1379 (Fed. Cir. 2003); *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1267–69 (Fed. Cir. 1991)).

#### *M. Anticipation of Claims 1–14 by Pelland*

Petitioner alleges claims 1–14 would have been anticipated by Pelland. Pet. 4, 11–24. Petitioner also relies on the Williams Declaration. Ex. 1003 ¶¶ 62–100, 101 (Claim Chart Comparing Claims 1–14 to Pelland).

The issue on this challenge is whether or not the '155 patent is entitled to the filing date of the PCT Application. Petitioner asserts that Pelland is prior art under pre-AIA 35 U.S.C. § 102(a) because the challenged claims are not entitled to claim priority to the PCT Application due to an alleged

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lack of adequate written description<sup>18</sup> for the claims of the '155 Patent.  
Pet. 12. If the '155 patent is entitled to the PCT Application filing date, then Pelland is not prior art. *Id.* Specifically, Petitioner asserts that limitation 1.g, the “transition automatically” limitation, which is present in all claims of the '155 patent is not supported by sufficient written description. *Id.* Conversely, if the PCT Application has written description support, the challenged claims are entitled to claim priority to the PCT Application and Pelland is not prior art.

*1. Pelland (Ex. 1013)*

Pelland is the published version of the PCT Application. Ex. 1013.<sup>19</sup> Exhibit 1013, “Pelland,” is what Petitioner relies on for this challenge. Pet. xi (Exhibit 1013 is “Pelland”), 4 (“Unpatentability Grounds”). The '155 patent claims priority to Pelland. *See* Ex. 1001, code (63) (“Related U.S. Application Data”). As we find below, the disclosures of the '155 patent and Pelland are identical. *See* Section II.C.2 (describing the '155 patent).

*2. Claim 1*

As already stated, claim 1 is the only independent claim and is illustrative of the challenge. Dr. Williams testifies that the Pelland specification and all applications in the priority chain are “substantively identical” to the written description of the '155 patent. Ex. 1003 ¶ 91 (citing

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<sup>18</sup> Because the '155 patent is not entitled to the priority date of the PCT Application, Petitioner alleges the AIA changes to Title 35 of the United States Code apply. *See* Pet. 12 n.7. As is relevant here, there is no difference in our analysis under pre-AIA or the AIA and neither party argues otherwise.

<sup>19</sup> Patent Owner cites to Pelland (Ex. 1013), and not the PCT Application (Ex. 1007). As discussed below, Exhibits 1007 and 1013 are all but identical, differing only in that Exhibit 1007 lacks the publication page of Exhibit 1013.

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“Redline comparisons of written description text in alleged priority chain of US Patent No. 10,368,155” (Ex. 1054)). Patent Owner agrees that the written descriptions of “all applications in the priority chain are substantively identical to the written description of the ’155 Patent.” PO Resp. 6.

Petitioner argues that the PCT Application/Pelland describes an example falling within claim 1, but does not provide written description for the full scope of claim 1. Pet. 17 (“While Pelland fails to support the claims’ breadth as required by Section 112, . . . it discloses embodiments within their scope—reflecting the difference ‘between the requirements for claim-anticipating disclosures and for claim-supporting disclosures.” (quoting *Chester v. Miller*, 906 F.2d 1574, 1577 (Fed. Cir. 1990))). Specifically, Petitioner argues that Pelland describes an automatic transition in response to a lost connection, but does not describe an automatic transition that is not in response to a lost connection (which Petitioner argues is within the scope of claim 1). *Id.* 13–15. Petitioner also argues that Pelland describes an automatic transition from an ad hoc network to an infrastructure network, but does not describe an automatic transition from an ad hoc network to another ad hoc network. *Id.* at 16.

We find that the ’155 patent description is identical to that of Pelland. Thus, if Pelland is prior art because it does not provide written description support, every element and limitation of claim 1 was previously described in Pelland’s written description and claim 1 is anticipated. *See Sanofi-Synthelabo, Inc. v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008); *see also* Pet. 17–24 (claim chart comparing written description of Pelland to the claims of the ’155 patent showing anticipation absent priority).

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Petitioner argues that the PCT Application's<sup>20</sup> original reference to a “transition” is limited to describing that “the earphone (1) *transitions when out of range of a first network (2) between ad hoc and infrastructure networks.*” Pet. 12. Petitioner argues the earphone transition is the “focus” of the Summary and every embodiment. *Id.* (citing Ex. 1001,<sup>21</sup> 1:66–2:6, 5:9–16, 5:37–41, 10:7–17, 10:27–42, 11:8–21, 14:8–11, 14:24–36, 14:44–55, 15:33–37, 15:60–64, 16:12–22, 16:29–35; Ex. 1003 ¶¶ 49–52, 93–95); *see also* Ex. 1001, 3:3–12 (describing “ad hoc wireless network” and “infrastructure network”).

Petitioner further notes that the Specification discusses certain features as “not limited” by the description but does not say the same for “transition,” limiting the disclosure to loss of connection between networks and not “transition automatically” between networks, without qualification based on why the transition occurs. Pet. 13 (citing Ex. 1001, 2:64, 3:42, 16:63, 17:40–43; Ex. 1003 ¶¶ 95–96; *Rivera v. Int'l Trade Comm'n*, 857 F.3d 1315, 1317, 1320, 1322 (Fed. Cir. 2017) (written description requirement lacking where it was silent on type of coffee filter)). Thus, according to Petitioner the only transition described is one based on a loss of connection, including loss of connection when the devices are “not in range” of the first or ad hoc network. *Id.* at 14–15. In other words, Petitioner argues that the claims broadly claiming “transition automatically” between

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<sup>20</sup> Unless otherwise indicated, the PCT Application is the only application in the '155 patent family discussed in the Petition or here.

<sup>21</sup> As Petitioner does, our cites to the Specification are to the '155 patent Specification. *See* Pet. 12 n.8.

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generic “first” and “second wireless networks” are not supported by the limited disclosure.

We are not persuaded that the PCT Application is limited to lost connection transitions. We do not find *Rivera* persuasive authority. The patent specification in *Rivera* defined a “pod” in a coffee brewer, but the court found the written description made a distinction between “pods” and a receptacle. *Rivera*, 857 F.3d at 1320–21. Thus, the court determined there was no written description support for broad claims covering a receptacle. *Id.* Other than the argument that only lost connections are described, the written descriptions here do not expressly limit what “transition automatically” supports, as was the case in *Rivera* where “pod” was distinguished from a receptacle.

We agree with Patent Owner and find Figure 6 of the PCT Application shows that “when the headphone assembly is not communicating via an ad hoc wireless network (block 61), it can *transition to a highest priority infrastructure wireless network* (block 63) and keep transitioning to other infrastructure wireless networks by priority order when the current infrastructure wireless network is not ‘ok’ (block 65, feedback back to blocks 61 and 63).” *See* PO Resp. 6–7 (citing Ex. 1013, 12:24–13:19) (emphasis added). The description is not limited to lost connections and the prioritization described may be based on signal strength. Ex. 1013, 13:11–15.

We also agree with Patent Owner and find that the PCT Application explains that “[f]or purposes of the description to follow, it is assumed that the data source 20 and the earphone communicate using a Wi-Fi protocol, ***although the invention is not so limited and other wireless communication protocols may be used in other embodiments of the invention.***” PO Resp. 7

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(citing Ex. 1013, 5:17–20). The PCT Application describes “various embodiments.” Ex. 1013, 16:20. We are not persuaded by Petitioner that Figure 6’s disclosure is limited by referring to “the present invention.” Reply 25 (citing Ex. 1001, 2:39–42). Petitioner ignores that part of the citation relied upon states that the diagram of Figure 6 shows “transition automatically between wireless networks according to *various embodiments* of the present invention.” Ex. 1001, 2:40–42; *see also* Ex. 1013, 2:19–21 (including the identical description of Figure 6) (emphasis added).

In addition to the “transition” of the earphone, discussed above, Petitioner argues “[t]he only other transition is from an infrastructure network back to an ad hoc network (if the infrastructure connection is lost).” Pet. 15 (citing Ex. 1001, Fig. 6 (steps 65, 69), 11:31–33, 11:46–48). Further, Petitioner argues that none of the intermediate priority applications “disclose, as the challenged claims cover, transitioning from one ad hoc network to another ad hoc network. Such a transition would be inconsistent with the focus on transitioning *when ad hoc communication fails*.” *Id.* at 16 (citing Ex. 1003 ¶¶ 95–100).

We agree with Patent Owner that limiting claim 1 to the scope of the disclosure specifically identified in the Specification is not warranted because “[t]he PCT Application also does not unambiguously limit the invention to switching from an ad hoc network to an infrastructure network.” PO Resp. 6. The PCT Application explains that

[f]or purposes of the description to follow, it is assumed that the data source 20 and the earphone communicate using a Wi-Fi protocol, *although the invention is not so limited and other wireless communication protocols may be used in other embodiments of the invention.*

*Id.* at 7 (citing Ex. 1013, 5:17–20).



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The PCT Application conveys that the networks include both ad hoc and infrastructure networks. *See, e.g.*, Ex. 1013, 5:8–9 (“a wireless network (e.g., the ad hoc wireless network 24 or an infrastructure wireless network).”). We find that whether or not the network transition is described as between ad hoc and infrastructure networks, or between ad hoc networks only, is not a failure to “reasonably convey[]” to a person of ordinary skill in the art that “the claimed genericized network transition at the time that application was filed.” *See* Reply 22 (citing *Ariad v. Eli Lilly*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc)).

Petitioner has not shown that a person of ordinary skill in the art would have failed to understand any distinction of significance between transitioning from an ad hoc network to an infrastructure network and, for example, transitioning between ad hoc networks. *See* Reply 25–27. Petitioner argues “ad hoc networks use wireless protocols to create direct connections between devices whereas infrastructure networks use wireless protocols to create indirect connections between devices using access points as intermediaries.” *Id.* at 26 (citing Ex. 1001, 3:3–11; Ex. 1104 ¶ 43). But the ’155 patent recognizes the distinction and a person of ordinary skill would have been presented with this information. Ex. 1001, 3:3–11.

The Williams Reply Declaration limits, without sufficient explanation, what a person of ordinary skill would have understood. The end result is a conclusion, without any stated basis, that “wireless protocols that can be used for the ad hoc network does not in any way convey to [a person of ordinary skill in the art] that the inventors possessed an automatic transition between one ad hoc network and another ad hoc network.” Ex. 1104 ¶ 43. The descriptions in Pelland show transition from an ad hoc network to an infrastructure network and describe both. Ex. 1013, 2:32–

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3:10. Petitioner has not shown that this would have not conveyed enough information that a person of ordinary skill in the art would have understood that transition could occur between generic networks, both ad hoc and infrastructure.

We have reviewed the relevant portions of the Williams Declaration. Ex. 1003 ¶¶ 93–99. Dr. Williams repeats Petitioner’s central theme that the “focus of all embodiments” is “transitions between an ad hoc network and an infrastructure network due to a lost connection.” *Id.* ¶ 95. But this is not the question we need to answer. The question is: do the descriptions of the intermediate priority applications, as represented by the PCT Application, “reasonably convey” to a person of ordinary skill in the art the claimed limitation of “transition automatically” between networks, as recited in limitation 1.g?

Dr. Williams partially answers the question by stating “none of the priority applications’ specifications showed possession, by the inventors, of a ‘transition’ for reasons other than due to lost connection.” Ex. 1003 ¶ 96. Dr. Williams’ answer is but one example of why a transition would happen and his answer is more limiting than what a person of ordinary skill would have understood from the disclosure. Indeed, Dr. Williams testifies that “the transition can occur because audio received over a second network is higher-priority than audio from a first network.” *Id.* As discussed above, the PCT Application describes transitions based on network priority, all in the context of Figure 6. *See* PO Resp. 6–7. Specifically, “transition to a highest priority infrastructure wireless network” is suggested and would have been considered by a person of ordinary skill in the art. *Id.* (citing Ex. 1013, 12:24–13:19). We are not persuaded that a person of ordinary skill would have required more than the lost connection example plus the suggestion that

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network priority would also be a consideration. As discussed above, prioritization is described based on signal strength, which would have conveyed additional understanding to a person of ordinary skill in the art. Ex. 1013, 13:11–15.

We note that Patent Owner also argues Dr. Williams’ direct testimony that “transitions between an ad hoc network and an infrastructure network due to a lost connection” is arguably contradicted by his deposition testimony. PO Resp. 8–9 (citing Ex. 1003 ¶ 95; Ex. 2024, 41, 45). Petitioner also criticizes Patent Owner’s failure to have expert testimony regarding written support. Reply 22. First, we do not fault Patent Owner for not repeating its arguments through an expert. The arguments are made with or without expert support. As to the criticism of Dr. Williams’ alleged inconsistency, we do not find it diminishes his testimony in any significant way.

Petitioner argues there is an extended time between the filing of the ’155 patent and the PCT Application, almost ten years. Pet. 2. The delay is not a reason to find the claim unpatentable and Petitioner does not present any argument supporting such a position.<sup>22</sup>

For the reasons discussed above, we find the ’155 patent is entitled to the filing date of the PCT Application. Accordingly, Pelland is not prior art and claim 1 is not anticipated by it.

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<sup>22</sup> The “long ago discredited ‘late claiming’ label . . . is and always was without merit.” *R.R. Dynamics, Inc. v. A. Stucki Co.*, 727 F.2d 1506, 1517 (Fed. Cir. 1984) (finding the disclosure supported amended claims).

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### 3. *Claims 2–14*

Claims 2 through 14 depend from claim 1 and, because Petitioner has not shown claim 1 would have been anticipated by Pelland, it has not shown claims 2 through 14 would have been anticipated by Pelland.

### 4. *Conclusion*

Petitioner has not shown by a preponderance of the evidence that claims 1–14 are anticipated by Pelland.

## IV. CONCLUSION<sup>23</sup>

For the reasons discussed above, Petitioner has shown by a preponderance of the evidence that claims 1–14 of the '155 patent are unpatentable as summarized in the table below.

## V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has shown that challenged claims 1–14 are 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.

In summary:

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<sup>23</sup> Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

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<b>Claims</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Claims Shown Unpatentable</b>	<b>Claims Not Shown Unpatentable</b>
1-14	102	Pelland		1-14
1-4, 6-8, 14	103	Rezvani, Skulley	1-4, 6-8, 14	
11-12	103	Rezvani, Skulley, Feder	11-12	
13	103	Rezvani, Skulley, Hind	13	
5, 9	103	Rezvani, Skulley Rosener	5, 9	
10	103	Rezvani, Skulley, Wilson	10	
1-3, 6-8, 10, 14	103	Nakagawa, Wilson	1-3, 6-8, 10, 14	
1, 4-5, 9	103	Nakagawa, Rosener	1, 4-5, 9	
13	103	Nakagawa, Wilson, Hind	13	
13	103	Nakagawa, Rosener, Hind	13	
<b>Overall Outcome</b>			1-14	

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