

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

K/S HIMPP,
Petitioner,

v.

III HOLDINGS 7, LLC,
Patent Owner.

Case IPR2017-00563
U.S. Patent 6,694,034 B2

Before JAMES T. MOORE, JASON J. CHUNG, and
KIMBERLY McGRAW, *Administrative Patent Judges*.

McGRAW, Administrative Patent Judge.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

In this *inter partes* review, instituted pursuant to 35 U.S.C. § 314, Petitioner K/S HIMPP challenges the patentability of claims 1–7, 23–29, 34–36, and 38–40 (“the challenged claims”) of U.S. Patent No. 6,694,034 B2 (Ex. 1001, “the ’034 patent”), assigned to III HOLDINGS 7, LLC. (“Patent Owner”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, address issues and arguments raised during trial. For the reasons discussed below, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1–7, 23–29, 34–36, and 38–40 of the ’034 patent are unpatentable.

A. Procedural History

K/S HIMPP (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–7, 23–29, 34–36, and 38–40 (“the challenged claims”) of the ’034 Patent. Paper 2 (“Pet.”). The Petition was supported by a Declaration of Robert Morely, D.Sc. Ex. 1003. III Holdings 7, LLC (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). On July 19, 2017, we instituted *inter partes* review of the challenged claims. Paper 9 (“Dec. on Inst.”).

Thereafter, Patent Owner filed a Patent Owner Response (Paper 12, “PO Resp.”) accompanied by a Declaration of Clyde “Kip” M. Brown Jr., P.E. Ex. 2003. Petitioner filed a Reply to the Patent Owner Response (Paper 15, “Reply”). Oral hearing was requested by both parties. Papers 16, 17. A consolidated oral hearing for this proceeding and Case IPR2017-

00564 was held on April 16, 2018. A transcript of the consolidated hearing has been entered into the record. Paper 20 (“Tr.”).

B. Real Party in Interest

An internet search reveals the acronym K/S HIMPP appears to stand for Kommandit/Selskabet Hearing Instrument Manufacturers Patent Partnership. In the Petition, Petitioner identifies HIMPP members GN Hearing A/S (formerly GN Resound A/S), IntriCon Corporation, Phonak (Sonova Holding AG), Sivantos GmbH and Sivantos Inc. (Sivantos Group), Starkey Laboratories, Inc. (a/k/a Starkey Hearing Technologies), Widex A/S, William Demant Holding A/S, GN Store Nord A/S as real parties in interest. Pet. 1.

Petitioner requested, and was authorized, to file an updated mandatory notice to add affiliates of some HIMPP members and to reflect name changes that were not included in Petitioner’s original mandatory notice. See Paper 6, 2. Petitioner’s Updated Mandatory Notice identifies K/S HIMPP and the following HIMPP members and affiliates as real parties-in-interest: GN Hearing A/S (formerly GN Resound A/S) and GN Store Nord A/S; IntriCon Corporation; Sivantos GmbH and Sivantos Inc.; Sonova Holding AG and Sonova AG (formerly Phonak AG); Starkey Laboratories, Inc. (aka Starkey Hearing Technologies); Widex A/S; and William Demant Holding A/S. Paper 7, 2.

C. Related Matters

Petitioner identifies IPR2017-00564, which was filed concurrently with the Petition in the instant proceeding and challenges claims 8–22 and 31–33 of the ’034 patent, as a related matter. Pet. 2.

D. The '034 Patent

The '034 patent, titled “Transmission Detection and Switch System for Hearing Improvement Applications,” issued from U.S. Patent Application No. 09/752,806, which was filed on December 28, 2000 and claims priority to (1) Provisional Application No. 60/174,958, filed on January 7, 2000 and to Provisional Application No. 60/225,840, filed August 16, 2000. Ex. 1001 [22], [54], [60].

The '034 Patent generally relates to a hearing aid system having two microphones, the first located in the hearing aid itself, and the secondary microphone, such as a “head-worn or hand-held directional microphone,” an audio entertainment system, a telephone, or a microphone worn by a third party, such as a friend or colleague. *Id.* at 1:45–62.

Figure 1, below, represents a block diagram of an embodiment of the hearing aid system of the '034 Patent.

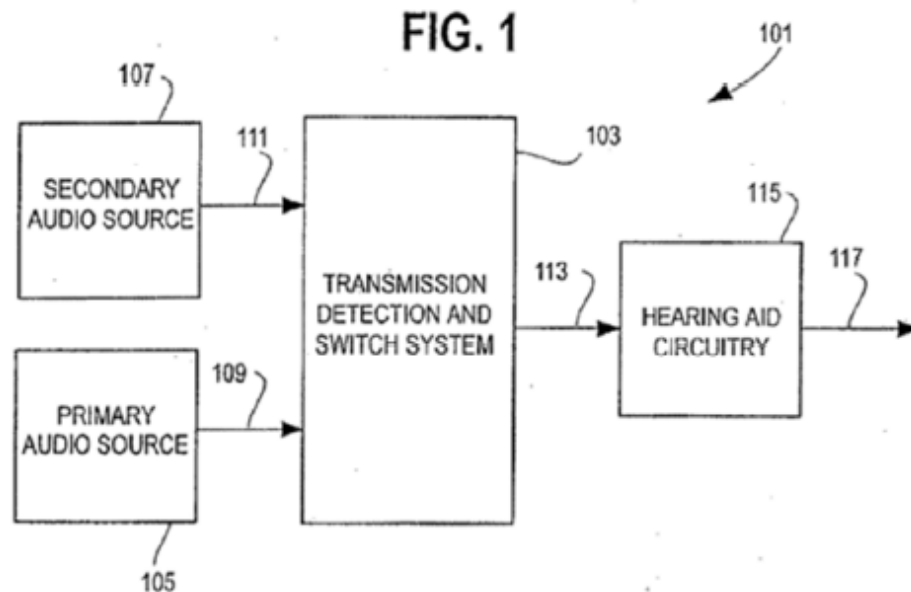


Figure 1 illustrates a block diagram of an embodiment of a hearing aid

system having primary audio source 105, secondary audio source 107, transmission detection and switch system 103, and hearing aid circuitry 115. The hearing aid system senses that the secondary audio source is transmitting audio and automatically switches from the primary audio source to the secondary audio source. *Id.* at 1:63–2:2. When the system switches to the secondary audio source, “the primary audio source may be completely switched off, or may instead be simply attenuated by the system.” *Id.* at 2:9–12. The switching between audio signals may be based on an analysis of the incoming signal from the secondary audio source, such as if the incoming signal is greater than a predetermined threshold. *Id.* at 2:5–9.

In one embodiment, transmission detection and switch system 103 selects one of signals 109 and 111 (from primary or secondary audio sources 105 and 107 respectively) and feeds the selected signal to hearing aid circuitry 113. Hearing aid circuitry, such as a hearing aid amplifier and speaker, in turn generates audio output 117 from transmission into the ear canal of the hearing aid user. *Id.* at 3:55–63, Figs. 1, 2; *see also* 4:27–36 (stating “hearing aid 203 comprises circuitry 212 that performs signal detecting, selecting, and combining functionality”).

In one embodiment, when the secondary audio source is selected for transmission to the ear, the primary audio source “is completely shut off.” *Id.* at 3:64–67. In another embodiment, “even when the secondary source is selected, the primary audio source 105 is not completely shut off. Instead, the primary audio source 105 is only attenuated so that the hearing aid user can still hear background or room sounds when listening to the secondary audio source 107.” *Id.* at 4:2–7.

E. Illustrative Claims

Of the challenged claims, claims 1 and 23–26 are the only independent claims at issue. Claim 1 is directed to a hearing aid system and claims 23 through 26 are directed to methods of operating a hearing aid system. Illustrative claims 1, 23, and 24, with bracketed material and formatting added for clarity, are reproduced below:

1. A hearing aid system comprising:

[a] hearing aid circuitry;

[b] a first audio source for generating a first audio signal;

[c] a second audio source for generating a second audio signal, the second audio source having a wireless transmitter for transmitting the second audio signal wirelessly;

[d] a receiver for receiving the second audio signal from the wireless transmitter of the second audio source; and

[e] circuitry for analyzing the second audio signal received, and for selecting at least one of the first and second audio signals for coupling to the hearing aid circuitry based on the analysis of the second audio signal received,

[f] the circuitry coupling a combination of the second audio signal and the first audio signal attenuated by less than a predetermined amount when the analysis indicates that the second audio signal meets a selected criterion, and coupling only the first audio signal to the hearing aid circuitry when the analysis indicates that the second audio signal does not meet the selected criterion.

23. A method of operating a hearing aid system comprising:

[a] generating a first audio signal;

[b] generating a second audio signal;

[c] wirelessly transmitting the second audio signal;

[d] receiving the second audio signal;

- [e] analyzing the second audio signal received;
- [f] selecting at least one of the first and second audio signals based on the analysis of the second audio signal received;
- [g] attenuating the first audio signal by less than a predetermined amount if the second audio signal is selected;
- [h] refraining from attenuating the first audio signal if only the first audio signal is selected;
- [i] combining the selected signals to produce a combined signal; and
- [j] coupling the combined signal to an input.

24. A method of operating a hearing aid system comprising:

- [a] generating a first audio signal;
- [b] receiving a wirelessly transmitted second audio signal;
- [c] analyzing the second audio signal received;
- [d] selecting at least one of the first and second audio signals based on the analysis of the second audio signal received;
- [e] attenuating the first audio signal by less than a predetermined amount if the second audio signal is selected;
- [f] refraining from attenuating the first audio signal if only the first audio signal is combining the selected signals to produce a combined signal; and
- [g] coupling the combined signal to an input.

F. Instituted Grounds

We instituted an *inter partes* review of claims 1–7, 23–29, 34–36, and 38–40 of the '034 on all of Petitioner's requested grounds as more specifically set forth in the table below.

References	Basis	Challenged Claims
Scheller ¹ and Zilberman ²	§ 103	1, 4–7, 23–27, 34, and 38–40
Scheller, Zilberman, and Killion ³	§ 103	2, 3
Scheller, Zilberman, and Sharma ⁴	§ 103	28, 35
Scheller, Zilberman, and Bartschi ⁵	§ 103	29, 36

II. DISCUSSION

A. Patent Owner’s Request to Terminate Proceeding Based upon Petitioner’s Updated Mandatory Notice

As a preliminary matter, we address Patent Owner’s argument that the present proceeding should be terminated because Petitioner “added completely new parties under the Updated Petitioner’s Mandatory Notice filed March 15, 2017” and that the real party in interest, “is a jurisdictional requirement that must be satisfied at the time the Petition is filed.” PO Resp. 38.

This argument is not persuasive. It is correct that 35 U.S.C. § 312(a) states “[a] petition [for *inter partes* review] may be considered only if . . . (2) the petition identifies all real parties in interest.” However, such a listing can be corrected or changed as appropriate circumstances warrant. *See, e.g., Lumentum Holdings, Inc. v. Capella Photonics, Inc.*, Case IPR2015-00739 at 6 (PTAB March 4, 2016) (Paper 38) (precedential) (stating that a petition

¹ Scheller et al., US 5,802,183, issued Sept. 1, 1998 (Ex. 1004 “Scheller”).

² Zilberman et al., US 5,824,022, issued Oct. 20, 1998 (Ex. 1005 “Zilberman”).

³ Killion et al., US 5,524,056, issued June 4, 1996 (Ex. 1006 “Killion”).

⁴ Sharma et al., US 5,812,589, issued Sept. 22, 1998 (Ex. 1007 “Sharma”).

⁵ Bartschi et al., US 5,734,976, issued Mar. 31, 1998 (Ex. 1008 “Bartschi”).

may be corrected, including adding a real party-in-interest, without assigning a new filing date). Patent Owner has not provided any evidence or argument that Petitioner's Updated Mandatory Notice fails to properly identify all real parties in interest or any other reason that would require termination of the proceeding. Therefore, under these specific facts, we decline Patent Owner's request to terminate the present proceeding.

B. Principles of Law

To prevail in challenging Patent Owner's claims, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). A claim is unpatentable under 35 U.S.C. § 103(a) 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 of the invention to a person having ordinary skill in the art. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations.⁶ See *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Level of Ordinary Skill in the Art

Petitioner contends a person of ordinary skill in the art at the time of the alleged invention of the '034 patent ("skilled person") would have had a

⁶ The record does not contain evidence or argument of objective evidence of non-obviousness.

bachelor's degree in electrical or computer engineering, or the equivalent, and one to two years of experience in audio signal processing for audiological products. Pet. 13. Petitioner also states that graduate education could substitute for work experience, and additional work experience/training could substitute for formal education. *Id.* at 14. Patent Owner does not dispute Petitioner's proposed definition of a person of ordinary skill in the art. *See generally* PO Resp.

For purposes of this Decision, we adopt Petitioner's articulated level of skill in the art, as the references tend to support a finding that this is the appropriate level. *See Okajima v. Bordeau*, 261 F.3d 13550, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required "where the prior art itself reflects an appropriate level and a need for testimony is not shown").

D. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016). Petitioner proposes a construction for "hearing aid circuitry," which is recited in claims 1, 6, and 7. Pet. 15. In its Preliminary Response, Patent Owner did not dispute Petitioner's proposed construction. Prelim. Resp. 5–6.

In our Decision on Institution, we determined that none of the claim terms required an explicit construction. Dec. on Inst. 8. Neither party disputes, and we see no reason to modify, that determination in light of the record developed at trial. *See generally* Reply; PO Resp. 10.

*E. Asserted Obviousness of Independent Claims 1 and 23–26
over Scheller and Zilberman*

Petitioner contends that independent claims 1, 23–26 are unpatentable under 35 U.S.C. § 103(a) over Scheller and Zilberman. *See, e.g.*, Pet. 16–47; Reply 1–11. Relying on the testimony of Dr. Morely, Petitioner explains how the references allegedly teach the claim limitations and argues a person of ordinary skill in the art would have combined the teachings of Scheller and Zilberman. Pet. 16–47; Reply. 1–11. Patent Owner responds that the cited art does not teach or suggest all of the limitations of the independent claims.

We have reviewed the parties’ arguments in the Petition, Patent Owner Response, and Reply, as well as the relevant evidence discussed therein, including the declarations of Dr. Morley and Mr. Brown. For the reasons that follow, we determine that on the record more fully developed at trial, Petitioner has not shown by a preponderance of the evidence that claims 1 and 23–26 are unpatentable over Scheller and Zilberman.

1. Scheller (Ex. 1004)

Scheller is directed to a hearing aid system that includes a behind-the-ear (“BTE”) assistive listening receiver that can worn by hearing impaired persons to receive radio frequency (“RF”) transmissions in classrooms or other similar settings. Ex. 1004, 1:5–8. For example, a classroom instructor may wear a microphone and associated transmitter for transmitting audio signal over a low power frequency modulated (“FM”) frequency in the class room. *Id.* at 1:15–18. The assistive listening receiver includes an FM receiver that receives the FM transmission. *Id.* at 1:18–21. The assistive listening receiver also includes a conventional BTE hearing aid and a mixer

for mixing the hearing aid signal with the RF signal received by the RF receiver. *Id.* at 2:37–43.

Scheller's hearing aid system allows the user to switch manually between three modes of operation that involve receiving signals from (1) "hearing aid only", (2) "FM only," and (3) combination of FM and hearing aid ("FM+(HA@4DB)"). Ex. 1004, Fig. 10, 5:35–42. Figure 10, shown below, illustrates such an embodiment.

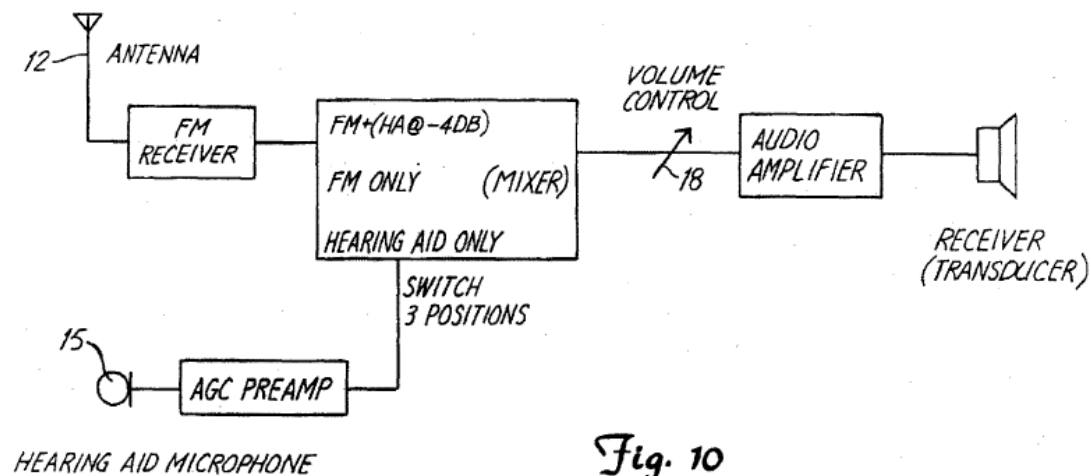


Figure 10, shown above, illustrates an assistive listening receiver that also includes conventional hearing aid microphone 15. The signal generated by hearing aid microphone 15 is passed through an automatic gain control preamplifier and is then sent to the mixer. The RF signal received by antenna 12 is also provided to the mixer. The mixer incorporates a "mode switch" that permits the user to determine which signal to listen to. The user may use the switch to select "hearing aid only," radio signal only e.g., "FM

only,” or the combination of the hearing aid signal and the FM signal. *Id.* at 5:50–6:1.

In some situations, ambient noise may make it difficult for the user to hear the RF signal. *Id.* at 5:33–35. The assistive listening device has a signal processing means that reduces the maximum loudness of the hearing aid signal to a level that is less than the maximum loudness of the RF signal. *Id.* at 5:35–39. The two signals are then mixed, amplified, and provided to the hearing aid earphone. *Id.* at 5:39–42. If the hearing aid signal and the FM signal are mixed, the maximum loudness of the hearing aid signal is reduced by about 1–10 dB below the maximum loudness of the RF signal. *Id.* at 5:42–45 (stating Figure 10 illustrates a circuit which reduces the loudness by 4dB).

2. *Zilberman (Ex. 1005)*

Zilberman is directed to a cochlear simulation system having a behind-the-ear (BTE) speech processor, a remote control unit (RCU) having a transmitter, and an implantable cochlear stimulator (ICS). Ex. 1005, Abstract.

An embodiment of a cochlear simulation system is shown in Figure 5 of Zilberman and reproduced below.

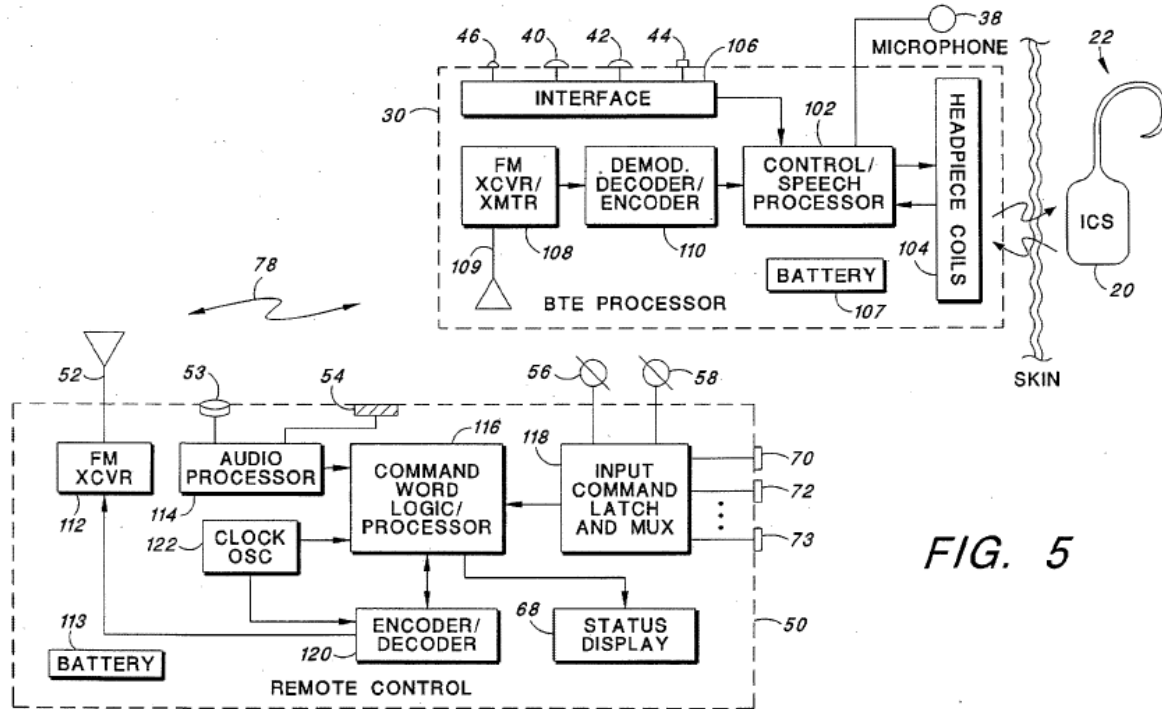


FIG. 5

Figure 5 of Zilberman, shown above, illustrates an electrical block diagram of the cochlear simulation system having BTE speech processor 30, RCU 50, and ICS 20. *Id.* at 4:40–41. Audio signals sensed by first microphone 38, being in or near the BTE processor 30, and second microphone 54, being part of or coupled to the RCU, are combined before being coupled into the ICS. *Id.* at 3:9–13, 8:60–66. Such signal combining is accomplished via appropriate processing controls (e.g., software and/or firmware) used within (or coupled to) the control/speech processor 102. *Id.* at 8:66–9:2. For example, when second microphone 54 at RCU 50 is turned ON, the level of the signal from first microphone 38 at BTE processor 30 is significantly reduced or masked. *Id.* at 9:2–7. As a result, the audio signal received from the RCU 30 over the FM (or other wireless) link 78 predominates what the user “hears.” *Id.* at 9:7–10. However, as soon as the signal received from

the RCU over the FM link fades away, i.e., when the audio source at the remote site ceases to provide an audio signal input, then the signal level from the BTE microphone returns to a normal level, so that the audio sounds sensed by the BTE microphone predominate what the ICS user hears. *Id.* at 3:18–24, 9:10–16. These adjustments between the BTE microphone and the RCU microphone “may be done dynamically so that the appropriate audio signals heard by the ICS user fade in and fade out as a function of whether one signal exceeds a prescribed threshold level.” *Id.* at 3:24–29, 9:16–21. “Thus, for example, so long as the signal from RCU microphone is above a certain level, it masks out any signal from the BTE microphone.” *Id.* at 3:30–31, 9:22–24. However, “as soon as the RCU microphone signal drops below that certain level, the BTE microphone signal is no longer masked out.” *Id.* at 3:32–34, 9:24–26.

3. Analysis

i. Independent Claims 1, 23–26

The parties’ dispute focuses on whether the asserted art teaches claim limitations that require selective coupling of audio signals based on an analysis (or a determining) of the second audio signal received, as recited in independent claims 1 and 23–26. For example, claim element 1[e] recites “circuitry for analyzing the second audio signal received, and for selecting at least one of the first and second audio signals for coupling to the hearing aid circuitry based on the analysis of the second audio signal received.” Claim element 1[f] recites “circuitry coupling a combination of the second audio signal and the first audio signal attenuated by less than a predetermined amount when the analysis indicates that the second audio signal meets a selected criterion, and coupling only the first audio signal to the hearing aid

circuitry when the analysis indicates that the second audio signal does not meet the selected criterion.” Similar limitations are recited in independent claims 23–26.⁷

Petitioner contends Scheller discloses most of the limitations of the challenged claims but admits that Scheller does not disclose the disputed claim limitations and relies upon Zilberman to make up for this deficiency. *See, e.g.*, Pet. 19–21 (stating Scheller discloses circuitry for coupling first and second audio signals (“FM+(@HA-4Db”) and circuitry for coupling only the first audio signal (“hearing aid only”) to the hearing aid circuitry and that “Scheller does not explicitly disclose ‘circuitry for analyzing the second audio signal received’ and for selecting at least one of the first and second audio signals for coupling to the hearing aid circuitry ‘based on the analysis of the second audio signal received’”), *see generally* Pet. 21–28, 32–35, 37–38, 40–45, 47; Reply 6.

Petitioner relies upon the following disclosure of Zilberman for teaching the disputed limitations:

For example, when the RCU microphone is turned ON, or when another audio source (e.g., tape player) is connected to the RCU, *the level of the signal from the BTE microphone is significantly reduced so that the audio signal received from the RCU over the FM link predominates what the ICS user hears.* However, as soon as the signal received from the RCU over the FM link fades away, i.e., when the audio source at the remote site ceases to

⁷ *See, e.g.*, Reply 8 (“Claims 1, 23, and 24 require ‘circuitry for analyzing the second audio signal received,’ and for selecting at least one of the first and second audio signals for coupling to the hearing aid circuitry ‘based on the analysis of the second audio signal received.’ Claims 25 and 26 require ‘determining whether the second audio signal received meets a selected criterion,’ and coupling the audio signals accordingly.”).

provide an audio signal input, then the signal level from the BTE microphone returns to a normal level, *so that the audio sounds sensed by the BTE microphone predominate what the ICS user hears*. These adjustments between the BTE microphone and the RCU microphone (or other audio source) may be done dynamically so that the appropriate audio signals heard by the ICS user fade in and fade out as a function of whether one signal exceeds a prescribed threshold level.

Ex. 1005, 3:13–29 (emphases added); Pet. 23–24, 28, 32–35, 40–45, 47.

Specifically, Petitioner asserts that when Zilberman teaches “reducing the signal from the BTE (‘first’) microphone based on an analysis of the RCU (‘second’) microphone, the device selects a combination of the ‘first’ and ‘second microphones for coupling to the device circuitry.” Pet. 23. Petitioner further asserts Zilberman teaches “fading away the signal from the RCU (‘second’) microphone and returning the BTE (‘first’) microphone signal to a normal level based on an analysis of the second signal (when the RCU ‘ceases to provide an audio signal’), the device selects the first microphone for coupling to the device circuitry.” *Id.* at 23–24 (citing Ex. 1003 ¶¶ 60-61).

Based upon the now complete record, we agree with Patent Owner that Petitioner has not shown persuasively that Zilberman, either alone or in combination with Scheller, teaches the disputed limitations. *See id.* at 21–28, 32–35, 37–38, 40–45, 47.

To the extent Petitioner is arguing that Zilberman teaches selecting the first audio signal for coupling and “coupling only the first audio signal to the hearing aid circuitry” when the signal received from the RCU over the FM link (i.e., the second audio signal) has “*ceased*,” this argument is not persuasive. *See* Pet. 23–24, 28, 35, 40, 45; Reply 4. In its Reply, relying on

the testimony of Mr. Brown, Petitioner contends that when the audio source at the remote site ceases to provide an audio signal input, then “no audio signal from that particular input would be output.” Reply 4 (citing Ex. 1012, 62:24–63:7. 66:3–8). “An audio signal that is not present cannot be coupled to the hearing aid circuitry.” *Id.*; see also Tr. 11:22–12:5 (stating that audio from the RCU microphone will not be output when “it’s not present”).

The problem with this argument is that the claims requires analyzing “the second audio signal *received*” and selecting which audio signal to couple based on the analysis of the of the *received second audio signal*. If Zilberman’s second audio signal has “ceased” such that the signal is not present, then the second audio signal could not be received by the circuitry or analyzed, as required by the claims.⁸ During his cross-examination, Petitioner’s expert testified that an audio signal that has “ceased” is not received by the circuitry. Specifically, Dr. Morely testified:

If the FM signal ceases, then that means that it is not received at the BTE unit. In figure -- figure 5, I believe the BTE processor element 30, its antenna at 109, going into the FMXCER/XMTR, which is a transmitter receiver 108, there is, if the FM signal has stopped, has ceased, then there is no signal to be passed on from block 108 to the demodulator or decoder/encoder block 110. And no signal to be passed into the control speech processor 102, and no signal from the FM to go into the head piece coil. So there can't be a signal that is coupled into the ICS across the skin. It ceased. It doesn't exist.

⁸ See, e.g., Reply 8 (“Claims 1, 23, and 24 require ‘circuitry for analyzing the second audio signal *received*,’ and for selecting at least one of the first and second audio signals for coupling to the hearing aid circuitry ‘based on the analysis of the second audio signal.’ Claims 25 and 26 require ‘determining whether the second audio signal *received* meets a selected criterion,’ and coupling the audio signals accordingly.”) (emphasis added).

Ex. 2005, 30:4–16 (emphases added).

Therefore, we do not agree with Petitioner’s position that Zilberman teaches selecting the first audio signal for coupling based on an analysis of the second audio signal *received* when the RCU *ceases* to provide an audio signal.

To the extent that Petitioner is arguing that Zilberman teaches selecting the first audio signal *only* for coupling and “coupling *only* the first audio signal to the hearing aid circuitry” when the audio signal received from the RCU over the FM link “*fades away*” but has not yet “ceased,” this argument is also not persuasive. *See, e.g.*, Pet. 25–26 (“Zilberman describes . . . selecting the hearing assistance device signal [first audio signal] at a normal level if the radio signal [second audio signal] fades away.”).

The problem with this argument is that if the second audio signal has not yet “ceased,” the second audio signal is still being coupled to the ICS, and as a result, Petitioner has failed to persuasively show how “*only* the first audio signal” is coupled “to the hearing aid circuitry when the analysis indicates that the second audio signal does not meet the selected criteria” as recited by claim 1 and similarly required by the other challenged independent claims.

We do not credit Dr. Morely’s supporting declaration testimony that Zilberman in view of Scheller teaches the disputed limitations because Dr. Morely does not explain persuasively why the cited portion of Zilberman teaches the disputed claim language. *See* Ex. 1003 ¶¶ 59–61, 79–83. Rather, Dr. Morely merely states that Zilberman teaches the disputed claim language, recites language from Zilberman, then states, without meaningful elucidation, that “[i]n fading away the signal from the RCU (‘second’)

microphone and returning the BTE ('first') microphone signal to a normal level based on an analysis of the second signal (when the RCU 'ceases to provide an audio signal'), the device selects the first microphone for coupling to the device circuitry. *Id.* ¶¶ 59–61; *see also id.* at ¶¶ 79–83. Dr. Morely's opinion in this respect is in our view conclusory, and therefore, unpersuasive. *See Verlander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (Board has discretion to accord little weight to broad conclusory statements from expert witness).

Dr. Morely testified during his deposition that if a signal has faded so as to be "inaudible," that the signal "it's not there" because "the user can't hear it." Ex. 2005, 22:8–18. Dr. Morely further testified that one skilled in art "might be persuaded that if a signal is inaudible, that it doesn't even have to deliver it, because it's wasted on the user. They are not going to listen to it. They can't hear it." *Id.* at 23:1–7.

We do not find Dr. Morely's testimony credible as it is contradicted by Zilberman's teaching that during the fade in/fade out process, the RCU and BTE microphone signals are "appropriately combined before being coupled into the ICS." *See generally*, Ex. 1005, 3:9–29. Specifically, Zilberman states:

One feature of the present invention relates to the manner in which the control/speech processor 102 (FIG. 5) within the BTE processor 30 responds to the informational signals received over the wireless link 78 and/or audio signals received from the BTE microphone 38. *Audio signals sensed by the two microphones used with the system – a first microphone 38 being in or near the BTE processor 30, and a second microphone 54 being part of or coupled to the RCU (or other audio source plugged into the audio input port 53 in lieu of the second microphone 54) – are appropriately combined before being coupled into the ICS.* Such

signal combining is accomplished via appropriate processing controls (e.g., software and/or firmware) used within (or coupled to) the control/speech processor 102.

Ex. 1005, 8:56–9:2) (emphases added).

Thus, for the foregoing reasons, Petitioner has not explained persuasively how selecting *only* a first audio signal based on an analysis of a second audio signal that is “fading away” but not yet “ceased” results in the selective coupling of *only* the first audio signal to hearing aid circuitry.

Petitioner also contends that Patent Owner’s arguments attack Zilberman individually whereas Petitioner’s unpatentability argument relies upon a combination of Scheller and Zilberman. Reply 1–5. Based upon a review of the full record, we are also not persuaded by this contention. As described above, Petitioner has not shown persuasively the combination of Zilberman and Scheller teaches each of the limitations of the claimed invention.

We also find that Petitioner has not shown persuasively that it would have been obvious to combine the teachings of the cited reference to arrive at the claimed invention. Petitioner asserts that that it would have been obvious “to add the functionality” of Zilberman’s processor 102 to Scheller’s hearing aid in order to “provide for the automatic analysis and selection of modes based on which signals are present” so as to avoid operation of the problematic manual switch. Pet. 25 (citing Ex. 1003 ¶ 64). Petitioner asserts that would “improve the user’s experience by manually avoiding the need for manually adjusting the device depending on the strength of the signal,” which can be difficult for the young, disabled, or elderly users. *Id.* at 25–26, 28. Petitioner also asserts that it would have

been obvious to modify Schell's hearing aid with Zilberman's automated mode selection to account for frequent movements out of the range of the transmitter. *Id.* at 28.

These arguments are not persuasive as Petitioner has not explained adequately how the cited art teaches selecting a mode based upon *signal analysis* or how Zilberman's teaching to change signal amplitude would leave a skilled artisan to automate mode selection.

Petitioner generically asserts that such a combination would benefit person particularly for young, disabled, or elderly users. *See, e.g.*, Pet. 25–27, 28 (citing Ex. 1003 ¶¶ 64, 66, 69). Petitioner also contends that it would have been obvious to modify Scheller's hearing aid “with the automated mode selection of Zilberman to account for frequent movements out of range of the transmitter, and to avoid” use of Scheller's problematic manual switch. *See id.* at 28 (citing Ex. 1004, 1:24–32; Ex. 1003 ¶ 69). Petitioner asserts that these adjustments between the BTE and RCU microphones “may be done dynamically” so that the appropriate audio signals heard by the user “fade in and fade out as a function of whether one signal exceeds a prescribed threshold level” and that such a modification was within the technical ability of a person skilled in the art. *Id.* (citing Ex. 1005, 3:24–29; Ex. 1003 ¶ 69). Petitioner presents similar arguments for claims 23–26. *See id.* at 32–35, 37–38, 40–45, 47.

However, Petitioner's articulated rationale for combining the references is based on Petitioner's conclusory argument that Zilberman teaches “selecting the hearing assistance device signal [first audio signal] if the radio signal fades away.” Pet. 25–26; *see also generally id.* at 25–28. As stated above, we are not persuaded by this argument. Petitioner has also

not explained persuasively how Zilberman's teachings of *automated adjustment of signal magnitude* based on an analysis of the second audio signal, would have lead one skilled in the art to *automate* Scheller's *manual mode selection switch*, based on analysis of the second audio signal. As described above, we have observed that Zilberman's analysis results in a fading in and out of signals, not mode selection.

Additionally, we do not credit Dr. Morely's supporting testimony that a person skilled in the art would have been motivated to provide Zilberman's processor in Scheller's hearing aid to provide an *automated* analysis and *selection of the hearing aid mode* "depending on a *strength* of the FM signal" as, again, we find this testimony to be conclusory and not convincingly supported by the evidence. See Ex. 1003 at 66 (emphasis added); see also generally *id.* at ¶¶ 64–69.

Dr. Morely's testimony does not provide a sufficient factual background to show why a skilled artisan would have been motivated to automate *mode selection* (e.g., select coupling only the first audio signal) as opposed to *automate adjustment of signal magnitude*. *Id.*

For example, Dr. Morely asserts that "Zilberman describes automatically selecting . . . the hearing assistance device signal at a normal level if the radio signal fades away or the amplitude of the audio signal from the secondary microphone, conveyed by the FM signal is determined to be insufficient." *Id.* at ¶ 64. However, it appears to us that adjusting the signal magnitude so that the "hearing assistance device signal [is] at a normal level" does not address the claimed invention which requires selective coupling of signals, not adjustment of signal magnitude.

Similarly, Dr. Morely states that if Scheller's hearing aid is in the hearing aid mode, and the FM signal resumes, the user would need to determine that the FM signal had resumed and then manually adjust the switch to one of the FM modes in order to receive the FM signal. *Id.* at 65. However, Dr. Morely fails to articulate convincingly how these examples would lead a skilled artisan *to couple only* the first audio signal when the analysis indicates that the second audio signal does not meet the selected criterion, as required by the claims.

In other words, while we are aware of Dr. Morely's opinion that it would have been obvious to provide Zilberman's processor in Scheller's hearing aid to provide an *automated analysis and selection of the hearing aid mode* "depending on a *strength of the FM signal*," we find it to be conclusory, and therefore, insufficiently unpersuasive. *See Verlander*, 348 F.3d at 1371 (Board has discretion to accord little weight to broad conclusory statements from expert witness).

Finally, we are also not persuaded by Petitioner's argument that Patent Owner's expert, Mr. Brown, "acknowledged on cross examination that the individual elements claimed by the '034 patent were known" and "confirmed" that Zilberman teaches "outputting only the audio signal from the BTE microphone ("the first audio signal") when the signal from the RCU (the "second audio signal") has ceased and is below the threshold." Reply 1 (citing Ex. 1012, 17:18–19:1, 19:17–22, 26:14–27:11), 10 (citing Ex. 1012, 54:19–55:20).

We have reviewed the cited testimony and find that Mr. Brown did not admit that all of the individual elements were known. On pages 54 and 55 of Mr. Brown's testimony, Mr. Brown responded to questions about what

the user perceives and not about what signals are coupled to the circuitry as recited in the claims. On pages 17 through 19 and 26 through 27, Mr. Brown responded to questions about claim limitations not in dispute.

For the foregoing reasons, we conclude Petitioner has not established by a preponderance of the evidence that independent claims 1 and 23–26 would have been obvious over the combined teachings of Scheller and Zilberman.

ii. Dependent Claims 2–7, 27–29, 34–36, 38–40

Claims 2–7, and 27–29 depend directly or indirectly from claim 1; claim 34 depends from claim 23; claims 38, 39, and 40 depend from claims 24, 25, and 26, respectively. Relying on the declaration of Dr. Morley, Petitioner contends that claims 4–7, 27, 34, and 38–40 would have been obvious over Scheller and Zilberman, that claims 2 and 3 would have been obvious over Scheller, Zilberman, and Killion, that claims 28 and 35 would have been obvious Zilberman, and Sharma, and that claims 29 and 36 would have been obvious over Scheller, Zilberman, and Bartschi. Pet. 29–50–62.

Because Petitioner did not establish that the independent claims are unpatentable, and does not present arguments in connection with the dependent claims to remedy this deficiency, we determine that Petitioner has not established by a preponderance of the evidence that dependent claims 2–7, 27–29, 34–36, and 38–40 are unpatentable under 35 U.S.C. § 103.

III. CONCLUSION

For the foregoing reasons, Petitioner has not demonstrated by a preponderance of the evidence that the challenged claims of the '034 patent are unpatentable.

IV. ORDER

Accordingly, it is:

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1–7, 23–29, 34–36, and 38–40 of U.S. Patent No. 6,694,034 B2 are unpatentable;

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.

IPR2017-00563
Patent 6,694,034 B2

For PETITIONER:

Donald R. Steinberg
Haixia Lin
Christopher R. O'Brien
Yung-Hoon Ha
WILMER CUTLER PICKERING HALE AND DORR LLP
don.steinberg@wilmerhale.com
haixia.lin@wilmerhale.com
christopher.obrien@wilmerhale.com
sam.ha@wilmerhale.com

For PATENT OWNER:

Henry A. Petri
James P. Murphy
Margaux A. Savee
POLSINELLI PC
hpetri@polsinelli.com
jpmurphy@polsinelli.com
msavee@polsinelli.com

Tim R. Seeley
Russell Rigby
INTELLECTUAL VENTURES
tims@intven.com
rrigby@intven.com