

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CAPTIONCALL, L.L.C.,
Petitioner,

v.

ULTRATEC, INC.,
Patent Owner.

Case IPR2015-01355
Patent 5,974,116

Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

DECISION
Final Written Decision
37 C.F.R. § 42.73

I. INTRODUCTION

This *inter partes* review, instituted pursuant to 35 U.S.C. § 314, challenges the patentability of certain claims of U.S. Patent No. 5,974,116 (Ex. 1001, “the ’116 patent” or “the challenged patent”), owned by Ultratec, Inc. (“Patent Owner”). We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claims 1–13, 15, and 18 (“the challenged claims”) of the ’116 patent are unpatentable. Furthermore, we deny Patent Owner’s Motion to Exclude and grant Patent Owner’s Motions to Seal.

A. Procedural History

CaptionCall, L.L.C. (“Petitioner”) filed a Petition for *inter partes* review of claims 1–18 of the ’116 patent. Paper 1 (“Pet.”). Patent Owner filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). We instituted an *inter partes* review of claims 1–13, 15, and 18 of the ’116 patent as unpatentable under 35 U.S.C. § 103(a)¹ over the following references. Paper 9 (“Institution Decision” or “Dec.”).

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. §§ 102 and 103, effective March 16, 2013. Because the challenged patent was filed before March 16, 2013, we refer to the pre-AIA version of §§ 102 and 103 in this decision.

References	Claims Challenged
Liebermann ² and Aronow ³	1–3, 5, 9, 10, and 18
Liebermann, Aronow, and O’Toole ⁴	4, 6, 11–13, and 15
Liebermann, Aronow, and McLaughlin ⁵	7 and 8

Id. at 33.

Subsequent to institution, Patent Owner filed a Patent Owner Response to the Petition (Paper 46, “PO Resp.”), to which Petitioner filed a Reply (Paper 56, “Pet. Reply”). Patent Owner also filed a Motion to Exclude (Paper 63, “Mot. Exc.”) certain exhibits, to which Petitioner filed an Opposition (Paper 68, “Opp. Exc.”). In turn, Patent Owner filed a Reply (Paper 70, “Reply Exc.”). Patent Owner further filed observations on deposition testimony of Mr. Benedict J. Occhiogrosso (Paper 64), to which Petitioner filed a Response (Paper 67).

No oral argument was held, at the request of the parties. Paper 74.

B. Related Matters

The Petition was filed concurrently with three other petitions challenging patents owned by Patent Owner: IPR2015-01357 (U.S. Patent 6,934,366), IPR2015-01358 (U.S. Patent 7,006,604), and IPR2015-01359 (U.S. Patent 6,493,426). Pet. 4. These patents are related to a number of Patent Owner’s patents upon which Petitioner also has filed a petition,

² U.S. Patent No. 5,982,853, issued Nov. 9, 1999 (Ex. 1002, “Liebermann”).

³ U.S. Patent No. 5,521,960, issued May 28, 1996 (Ex. 1003, “Aronow”).

⁴ U.S. Patent No. 5,889,856, issued Mar. 30, 1999 (Ex. 1004, “O’Toole”).

⁵ U.S. Patent No. 6,181,736 B1, filed Mar. 18, 1998, issued Jan. 30, 2001 (Ex. 1005, “McLaughlin”).

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including IPR2013-00540–545, 549, 550, IPR2014-00780, and IPR2015-00636 and 637. *Id.*; Paper 6. We have issued Final Written Decisions in each of those cases.

The parties are involved in several lawsuits involving patents covering related subject matter: *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.), *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 14-CV-00066 (W.D. Wis.), and *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 14-CV-00847 (W.D. Wis.). Pet. 3; Paper 6.

C. The '116 Patent

The challenged patent relates to ways to assist communications between hearing impaired individuals and normally hearing individuals. Ex. 1001, 1:13–18. Conventional assistance uses a device having a keyboard and display, which may be called a text telephone (TT), a teletype (TTY), or a telecommunication device for the deaf (TDD). *Id.* at 1:29–39. A human intermediary facilitates communication between a hearing user and a hearing impaired user by communicating by voice with the hearing user and using a TDD to communicate with the hearing impaired user. *Id.* at 1:66–2:4. The system of voice-to-TDD communication used by the human intermediary (called an operator or call assistant) is referred to as a relay. *Id.*

The challenged patent describes a small, hand-held or portable device, with a microphone, a keyboard, and a display, that a hearing impaired person can carry and use to facilitate a conversation between himself or herself and a person with normal hearing. *Id.* at 3:31–60. The challenged patent explains that “the current state of the art in electronic miniaturization and

voice recognition does not yet permit the design of a totally integrated and self-sufficient portable interpreter” that others have “predicted . . . might be available someday.” *Id.* at 3:37–39.

According to the challenged patent, “the key to making this truly portable device available with current technology is to base the operation of this device on the presently available relay system to provide the actual voice to text conversion” of the hearing person’s voice. *Id.* at 3:42–45. The challenged patent terms such as a device “a personal interpreter” and further describes that it uses “a telephone function” to communicate with the relay. *Id.* at 3:34–37, 3:45; *see id.* at Abstract (“By using a wireless telephone connection, the device is made portable.”). “By using the relay system, the personal interpreter can provide effective and accurate voice to text interpretation for the deaf user with, to all outward appearances, a totally portable and small device.” *Id.* at 3:45–48.

Figure 1 of the challenged patent, set forth below, shows an illustration of “a personal interpreter constructed in accordance with the present invention.” *Id.* at 3:21–22.



FIG. 1

Personal interpreter 10 shown in Figure 1 is described as “a small, self-contained, portable hand held device typically the size of a hardbound book,” having a “keyboard of minimal size but useable by a deaf person”

and “preferably hav[ing] a two to four line display.” *Id.* at 3:52–58. The personal interpreter “would also typically have a key or switch which would initiate its operation.” *Id.* at 3:59–60.

In general, when in proximity to a normally hearing person, a hearing impaired person uses the device to translate words spoken by the normally hearing person into text displayed on the device for the hearing impaired person to read. *Id.* at 6:19–22. Words spoken by a normally hearing person are picked up by a microphone of the device. *Id.* at 6:24–26. The device transmits the words through a telephone connection to a relay, which transmits back to the device a digital stream of the words spoken by the normally hearing person. *Id.* at 6:26–33. The device then presents the words on a display screen for the hearing impaired person to read. *Id.* at 6:33–37.

To use the device to communicate to a normally hearing person, the hearing impaired person uses the device’s keyboard to type words, which then are sent to the relay. *Id.* at 6:40–42. A call assistant at the relay reads the words typed by the hearing impaired person and speaks those same words, which are transmitted in voice over a telephone connection to the device. *Id.* at 6:42–45. The device, which is equipped with a speaker, broadcasts the words as a voice communication understandable to the normally hearing person. *Id.* at 6:45–48.

The challenged patent also describes an implementation of a relay that is equipped with voice recognition software. *Id.* at 7:31–59, 8:55–61. In such an implementation, a call assistant at the relay hears the words spoken

by the normally hearing person and then repeats (or “re-voices”) the normally hearing person’s words into a microphone at the relay. *Id.* at 8:55–57. A computer having voice recognition software at the relay translates the call assistant’s speech into a digital text stream, which is sent to the device for display to the hearing impaired person. *Id.* at 8:57–64. The challenged patent indicates that the delay between the time the normally hearing person speaks into the microphone of the device and the time the words appear on the display of the device is “a modest number of seconds,” which the challenged patent characterizes as “receiving near to real time or simultaneous voice to text translation or captioning.” *Id.* at 8:64–9:3.

D. Illustrative Claim

Of the challenged claims in the ’116 patent, claims 1, 9, 12, and 18 are independent. Claim 1 is illustrative of the claimed subject matter.

1. A digital electronic personal interpreter device adapted to use a telephone relay service, the digital electronic personal interpreter device comprising:

a microphone allowing the reception of a voice of a person speaking to a user of the digital electronic personal interpreter device;

[a] microprocessor;

a modem;

a visual display readable by the user of the digital electronic personal interpreter device; and

a telephone connection which can connect to the relay;

the microphone connected so that the voice picked up is transmitted to the relay;

the modem connected to receive digital text communications representing a transcription of the voice from the relay over the telephone connection and to transmit that text to the microprocessor; and

the microprocessor connected to display the words of the text communications received through the modem on the display.

Ex. 1001, 10:21–41.

II. DISCUSSION

A. 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). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Petitioner has asserted each of the claims in the '061 patent is unpatentable under 35 U.S.C. § 103(a) over various references. 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. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). “A determination of whether a patent claim is invalid as obvious under § 103 requires consideration of all four *Graham* factors, and it is error to reach a conclusion of obviousness until all those factors are considered.” *Apple v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc) (citations omitted). “This requirement is in recognition of the fact that each of the *Graham* factors helps inform the ultimate obviousness determination.” *Id.*

B. Level of Ordinary Skill

In determining whether an invention would have been obvious at the time it was made, 35 U.S.C. § 103 requires us to resolve the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.”

Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 718 (Fed. Cir. 1991). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). The level of ordinary skill in the art is reflected by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.* Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovention Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Petitioner’s declarant Mr. Occhiogrosso concludes that one of ordinary skill in the art “would have been a person with a bachelor’s degree in electrical engineering (or electrical and computer engineering) and a few years of experience with telephone communication system architecture, design and implementation, digitization of voice, speech recognition technology, and/or traditional relay systems.” Ex. 1008 ¶ 27. Mr. Occhiogrosso also offers that “someone with less technical education but more experience, or more technical education but less experience would have also met this standard.” *Id.* Mr. Occhiogrosso enumerates several factors which he considered in determining the characteristics of a

hypothetical person of ordinary skill in the art of the '116 patent as of July 2, 1998. *Id.* at ¶ 26. Among the factors, Mr. Occhiogrosso identifies “various approaches to designing and implementing telephone communication systems in the prior art, the type of problems encountered, and the rapidity with which innovations were made in this field.” *Id.*

Patent Owner does not challenge directly Mr. Occhiogrosso’s testimony. *See generally* PO Resp. 5. Mr. Ivan Zatkovich, Patent Owner’s declarant, does not propose a level of ordinary skill in the art to be adopted, but he does testify that the opinions set forth in his declaration would not change if he “assumed that [one of ordinary skill in the art] had the qualifications set forth in Mr. Occhiogrosso’s declaration.” Ex. 2098 ¶ 24 (citing Ex. 1008 ¶ 27).

Having reviewed the prior art asserted in this proceeding (*see, e.g.*, Exs. 1002–1005), we determine that the level of ordinary skill proposed by Petitioner’s declarant and employed by both declarants is consistent with the challenged patent and the referenced prior art, and we adopt Mr. Occhiogrosso’s definition of the level of ordinary skill in the art for the purposes of the analysis below.

C. Patent Owner’s Motion to Exclude

Patent Owner filed a Motion to Exclude (Paper 63) to exclude all of the testimony of Petitioner’s declarant, Mr. Occhiogrosso, regarding patentability and the perspectives of those skilled in the art. Mot. Exc. 1–2, 6. In its Reply to Petitioner’s Opposition, Patent Owner specified, with particularity, exhibits to be excluded in their entirety: Mr. Occhiogrosso’s

declaration (Ex. 1008) filed in support of the Petition, Mr. Occhiogrosso's supplemental declaration (Ex. 1043) filed in support of Petitioner's Reply to Patent Owner's Response to the Petition, and Mr. Occhiogrosso's deposition testimony taken in this proceeding (Ex. 2105) and in other proceedings concerning similar subject matter (Exs. 2106, 2107, 2108). Reply Exc. 2.

Patent Owner seeks to exclude, under Federal Rule of Evidence ("FRE") 702,⁶ the testimony of Petitioner's declarant because, according to Patent Owner, Mr. Occhiogrosso is not qualified as an expert on the subject matter of the challenged patent.^{7,8} Mot. Exc. 1. To testify under FRE 702, one must be qualified as an expert in the "pertinent art" to testify regarding issues calling for consideration of evidence from the perspective of a person of ordinary skill in the art. *Sundance, Inc. v.*

⁶ Under 37 C.F.R. § 42.62(a), the Federal Rules of Evidence generally apply to this *inter partes* review.

⁷ The parties also discuss whether Patent Owner properly objected to Mr. Occhiogrosso's declaration (Ex. 1008) and Mr. Occhiogrosso's deposition testimony. Opp. Exc. 1, 3–4; Reply Exc. 1–4. Patent Owner filed objections to Mr. Occhiogrosso's declaration (Paper 11 ¶ 2) and supplemental declarations (Paper 57 ¶ 1). Patent Owner made a clerical error in Paper 11, however, identifying Mr. Occhiogrosso's declaration as Exhibit 1009, instead of Exhibit 1008. The exhibit to which Patent Owner objected is clear from the context of the objection, so we do not perceive any prejudice to Petitioner. We need not reach the issue of transcripts, however, because we deny the Motion on other grounds.

⁸ Because we deny the Motion on other grounds we also need not reach the issue of whether this Motion should be denied based on Board rulings in other proceedings that are on appeal to the Federal Circuit. See Opp. Exc. 1–3.

DeMonte Fabricating Ltd., 550 F.3d 1356, 1363–64 (Fed. Cir. 2008). This is because issues of unpatentability “are analyzed in great part from the perspective of a person of ordinary skill in the art, and testimony explaining the technical evidence from that perspective may be of great utility to the factfinder.” *Id.* at 1361.

Based on a single sentence with a single citation to the challenged patent, Patent Owner asserts “[a]ccordingly, to be a person of ordinary skill in the relevant art (POSA) in the context of the [challenged patent] one must know the relevant prior art of telephone technology for the deaf and HOH.”⁹ Mot. Exc. 4 (citing Ex. 1001, 1:14–18). Patent Owner asserts that Mr. Occhiogrosso is not a person of ordinary skill in the art under Patent Owner’s proffered definition and therefore is not qualified to testify as an expert in this proceeding. *Id.* at 4, 6.

Patent Owner, however, expressly states that it applied a definition of a person of ordinary skill in the art as “a person familiar with at least” telecommunication systems in its Patent Owner Response to the Petition. PO Resp. 5–6 (citing Ex. 2098 ¶ 24). Moreover, Patent Owner’s own declarant, who Patent Owner put forth as qualified to testify under FRE 702 as an expert (Mr. Zatkovich), indicates that the opinions set forth in his declaration (Ex. 2098) are from the perspective of a person of ordinary skill in the art “defined as a person familiar with telecommunications systems.” Ex. 2098 ¶ 24. Mr. Zatkovich further testified that “[t]he opinions set forth

⁹ HOH is a common abbreviation for “hard of hearing.”

in my declaration would not change if I assumed that a POSA had the qualifications set forth in Mr. Occhiogrosso's declaration."¹⁰ *Id.*

Noticeably lacking in Mr. Zatkovich's declaration is testimony indicating that his testimony would be the same (or how it would be different) if a person of ordinary skill in the art "must know the relevant prior art of telephone technology for the deaf and HOH," as Patent Owner contends in its Motion to Exclude. *Compare* Ex. 2098 ¶ 24, *with* Mot. Exc. 4. In its Patent Owner Response, Patent Owner omits any express reference to applying the definition on which it now seeks to exclude Mr. Occhiogrosso's testimony. *Compare* PO Resp. 5 –6, *with* Mot. Exc. 4.

Thus, Patent Owner, to exclude Mr. Occhiogrosso's testimony, advocates in its Motion to Exclude a different definition of a person of ordinary skill in the art than used by *its own declarant and in its Patent Owner Response*. Thus, granting Patent Owner's Motion to Exclude Mr. Occhiogrosso's testimony would lead to discrediting Patent Owner's own declarant's testimony and Patent Owner's Response. Patent Owner does not acknowledge this procedural posture in its Motion to Exclude or Reply.

Turning to the merits of the Motion to Exclude, we find Patent Owner's assertion that a person of ordinary skill in the art "must know the relevant prior art of telephone technology for the deaf and HOH" (Mot. Exc. 4) lacks sufficient factual corroboration or explanation. For example, Patent

¹⁰ Mr. Zatkovich is referring to the level of ordinary skill discussed previously and which we adopted for this proceeding.

Owner does not address the sentence that immediately precedes the single citation in the challenged patent on which Patent Owner relies: “[t]he present invention relates to the general field of telephone communications.” Ex. 1001, 1:13–14. Nor does Patent Owner discuss the level of ordinary skill reflected in the prior art of record or other factors that may be considered, including the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Okajima*, 261 F.3d at 1355.

Even if we were to adopt Patent Owner’s definition of a person of ordinary skill in the art, we find Mr. Occhiogrosso meets Patent Owner’s proffered level of ordinary skill: “must know the relevant prior art of telephone technology for the deaf and HOH” (Mot. Exc. 4). Mr. Occhiogrosso’s experience providing expert testimony in proceedings regarding assistive technologies for the deaf or hard of hearing is uncontroverted. *See* Mot. Exc. 4–5 (identifying three *inter partes* reviews); Ex. 2105, 5:23–6:10 (deposition on August 9, 2016 indicating Mr. Occhiogrosso has been deposed between twelve and twenty times concerning Patent Owner’s patents). Furthermore, the five prior art references Mr. Occhiogrosso considered for this case (Ex. 1008 ¶ 28) all involve telephone technology for the deaf and HOH and support his qualification under the definition of a person of ordinary skill in the art now offers for the first time in its Motion to Exclude (and after it relied on the testimony of its declarant as to a different level).

Moreover, the qualifications of Mr. Occhiogrosso, as summarized in his curriculum vitae (Ex. 1009), qualify him to give expert testimony on the subject of telecommunication technologies. For example, Mr. Occhiogrosso earned a Bachelor of Science in Electrical Engineering and a Master of Science in Electrical Engineering in 1975 and has decades of experience in the field of telecommunications and information technology. Ex. 1009, 1–2. His experience includes cellular telephony, wireless communications systems, packet speech/Voice over Internet Protocol, telephone switching systems, voice digitization/voice processing, automated out dialing systems, and video digitization. *Id.* at 1.

His extensive telecommunication experience and academic degrees further support a finding that he qualifies as an expert, even if a person of ordinary skill in the art would need to know the relevant prior art of telephone technology for the deaf and HOH, as Patent Owner proffered in its Motion to Exclude.

Furthermore, we disagree with Patent Owner’s arguments purportedly regarding why Mr. Occhiogrosso would not qualify as an expert: “no experience with TRS systems for the deaf and HOH; . . . never designed a TRS system for impaired users, has never analyzed a TRS system; has never used a TDD device . . . and ha[s] never visited a TRS relay center.” Mot. Exc. 5. We find Patent Owner’s arguments to be unduly narrow in view of its proffered definition: one must know the relevant prior art of telephone technology for the deaf and HOH. Direct hands-on experience or work experience in TRS systems is not required for knowing the relevant prior art

of telephone technology for the deaf and HOH.

For these reasons, we deny Patent Owner's Motion to Exclude Mr. Occhiogrosso's testimony under FRE 702.

D. Claim Construction

In an *inter partes* review, the Board interprets claims in an unexpired patent using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[.]” 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of broadest reasonable construction standard). Consistent with the broadest reasonable construction standard, claim terms are presumed to have their ordinary and customary meaning as understood by one of ordinary skill in the art in the context of the entire patent disclosure at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with “reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Moreover, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). In addition, the Board may not “construe claims during [an *inter partes* review] so broadly that its constructions are unreasonable under general claim construction principles.” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015).

We construe the challenged claims according to these principles. To the extent it is necessary for us to expressly construe other claim terms in

this decision, we do so below in the context of analyzing whether the prior art renders the claims unpatentable.

E. Asserted Ground of Obviousness over Liebermann and Aronow

Petitioner contends that claims 1–3, 5, 9, 10, and 18 are unpatentable under 35 U.S.C. § 103 over Liebermann and Aronow. Pet. 13–39.

Petitioner liberally cites to the prior art references and relies on declaration testimony of Mr. Occhiogrosso. *Id.* (citing Ex. 1008). Furthermore, Petitioner provides analysis purportedly explaining how the combination would have conveyed to one of ordinary skill in the art the claim limitations and provides reasons why one of ordinary skill in the art would have combined the teachings of the references. *Id.* at 14–18.

With support of the declaration of Mr. Zatkovich (Ex. 2098), Patent Owner challenges Petitioner’s contentions, arguing that Petitioner failed to show several claim limitations and would not have been motivated to combine the references in the manner proposed by Petitioner. PO Resp. 9–37. In reply, Petitioner maintains its position that the claims would have been obvious. Pet. Reply 2–18.

We have reviewed the Petition, Patent Owner’s Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those papers. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence the subject matter of claims 1–3, 5, 9, 10, and 18 would have been obvious.

1. Summary of Prior Art References

a. Summary of Liebermann

Liebermann is a United States patent that describes a device that uses a central processing facility employing speech recognition algorithms for providing telephone service to a deaf person communicating with a normally hearing person. Ex. 1002, 1:11–14, 5:14–19, 5:21–23. Although Liebermann’s device enables a deaf person to communicate through the use of sign language to a normally hearing person, of particular relevance to the challenged claims are Liebermann’s techniques for how text of the normally hearing person’s words is displayed to the deaf person and Liebermann’s cellular telephone implementation called a “communicator.” *See, e.g., id.* at 1:11–15, 5:53–54, 6:29–36, 7:18–43, Figs. 6, 8.

In one embodiment, the normally hearing person speaks into a telephone and the deaf person receives a visual display of “a continuous dynamic set of animated sign language motions which portray the content of the spoken language uttered as speech by the normally hearing person.” *Id.* at 5:14–34. Liebermann’s telephone service involves a central processing facility (called a “center”) that facilitates the communication between the deaf person and the normally hearing person. *See, e.g., id.* at 5:14–25.

More specifically, the central processing facility receives the voice of the normally hearing person from a telephone, employs “speech recognition algorithms [to] convert spoken word to text,” then converts this “recognized speech” into “its equivalent signing content vocabulary and then into text.” *Id.* at 5:14–19, 5:21–23. “The text is sent via telephone lines to the device used by the deaf person and converted to signing animation.” *Id.* at 5:23–25.

The sign images then appear on the screen of the monitor used by the deaf person. *Id.* at 5:30–31.

Liebermann describes various embodiments of an apparatus that enables an deaf person to communicate through the use of sign language, including “a personal computer and video camera” (shown in Figure 5a), “a television set with a video camera” (shown in Figure 5b), “a public kiosk” (shown in Figure 5c), and “a cellular telephone” (shown in Figure 6). *Id.* at 4:15–22, 5:53–54; *see id.* at 1:11–15 (describing the invention).

Of particular importance to the challenged claims is an embodiment that directly follows Liebermann’s description of its cellular phone embodiment and describes a phone equipped with a microphone and a speaker, which “turns” the phone into a “communicator” that can be used by a deaf person to communicate with a nearby normally hearing person. *Id.* at 7:29–41; *see id.* at 7:24–25 (indicating the device is a cellular phone). Liebermann explains that “[t]he communicator enables the deaf person to conduct a ‘conversation’ with any normally hearing person in the close proximity.” *Id.* at 7:33–35. The speech of “the normally hearing person” is “picked up by the microphone and sent to the center for processing.” *Id.* at 7:39–41.

Figure 8, set forth below, depicts a layout for the visual display of Liebermann’s device.

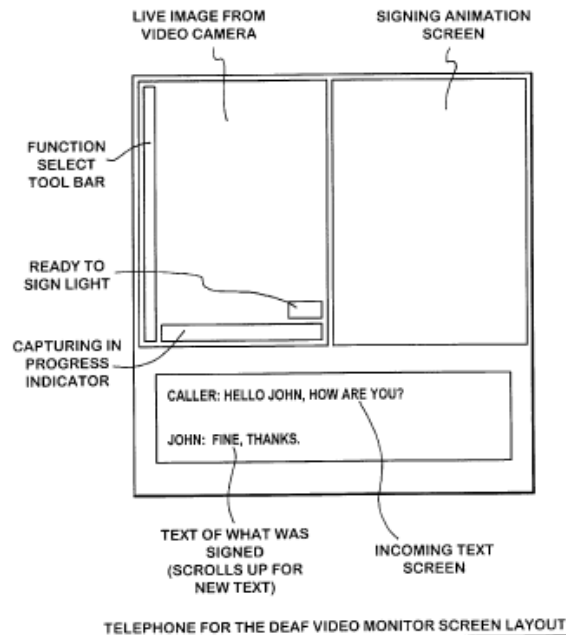


FIG. 8

Figure 8 depicts presenting, to the deaf person on a visual display, information that includes “text of the hearing person’s responses.” *Id.* 6:29–36. As shown in Figure 8, the incoming text of the hearing caller (“Hello John, how are you?”) is displayed on the screen for the deaf person to read. *Id.* at Fig. 8.

b. Summary of Aronow

Aronow relates to an interactive telephonic device for “provid[ing] hearing impaired individuals . . . simplified low cost access to the telephone RELAY system.” Ex. 1003, Abstract. Aronow describes a “simple, easy to operate” relay communication device for use in voice carry-over (“VCO”) relay systems, which allow hearing impaired individuals with speech faculties to speak directly to the hearing party.” Ex. 1003, 2:15–20, 4:6–10. According to Aronow, in a typical case, a hearing impaired individual

equipped with a traditional telephone device for the deaf (TDD) connects to a relay center and requests a VCO call. *Id.* at 2:16–23. “In practice, a VCO call works the same way as a traditional RELAY call except that the hearing impaired [individual] speaks rather than keystrokes to the other party.” *Id.* at 2:30–32.

Aronow expressly discloses its device has a “microprocessor, modem, memory, etc., . . . employed in all TDD equipment [for] generating, transmitting and receiving and decoding signals which are communicated between the apparatus and RELAY via a modem.” *Id.* at 5:36–40. Aronow also expressly discloses a “control switch” which “the user can operate” and is used “for controlling all operating functions of the interactive telephonic device.” *Id.* at 5:28–35, 8:37–39.

2. Petitioner Contentions

In general, Petitioner, relying on citations to Liebermann and Mr. Occhiogrosso’s declaration testimony, asserts that Liebermann’s communicator would have conveyed to one of ordinary skill in the art every limitation of claims 1–3, 5, 9, 10, and 18. Pet. 13. In addition to Petitioner’s “single-reference” Liebermann analysis relying solely on Liebermann, Petitioner provides additional analysis, relying on Aronow in combination with Liebermann for certain features. *Id.* at 13–14. Petitioner groups these contentions together in its “Asserted Ground of Obviousness over Liebermann and Aronow.” *Id.* at 13–40. For express traceability to the Petition, we adopt this same convention.

More specifically, Petitioner's position is that Liebermann's communicator embodiment *explicitly* discloses every limitation other than "a microprocessor" (recited in independent claims 1, 9, and 18) and an on/off switch (for "a user operable initiation switch" recited in independent claim 9). *Id.*; *see also id.* at 7–9 (describing Liebermann's communicator), 18–39 (analysis purportedly explaining how Liebermann's communicator would have conveyed the limitations in claims 1–3, 5, 9, 10, and 18).

Although Petitioner acknowledges Liebermann does not explicitly disclose a microprocessor, Petitioner contends that Liebermann would have suggested or conveyed to one of ordinary skill in the art the recited microprocessor. *Id.* at 13–14 (citing Ex. 1008 ¶ 58). Specifically, for example, Petitioner relies on Liebermann's disclosure that the screen layout in Figure 8 would have conveyed "the microprocessor connected to display the words of the text communications received through the modem on the display," recited in claim 1. Pet. 29–30 (identifying Liebermann's discussion of the screen layout in Figure 8 in claim chart). In the alternative, Petitioner argues that Aronow in combination with Liebermann would have conveyed to one of ordinary skill in the art the recited microprocessor (Pet. 14, 23–24, 29–30) and provides reasons one of ordinary skill in the art would have combined the teachings of the references in this way (*id.* at 14–18). Because we find, for the reasons set forth below, that Liebermann would have conveyed the microprocessor required by all the challenged

claims, we do not reach Petitioner’s alternative ground relying on Aronow’s microprocessor.¹¹

Similarly, although Petitioner acknowledges Liebermann does not explicitly disclose an on/off switch, Petitioner contends that Liebermann would have suggested or conveyed to one of ordinary skill in the art the recited user operable switch. Pet. 13–14. In the alternative, Petitioner relies on Aronow’s disclosure of an initiation switch. *Id.* at 13–14, 34–35. For reasons set forth below, regarding claim 9, we find that the combination of Liebermann and Aronow would have conveyed to one of ordinary skill in the art the recited user operable switch.

3. *Independent Claim 1*

Independent claim 1 is directed to a “digital electronic personal interpreter device” that includes four well-known elements—a microphone, a microprocessor, a modem, and a visual display. Ex. 1001, 10:21–31. The claimed apparatus also includes a telephone connection that can connect to a telephone relay service. *Id.* at 10:32. Other than the “telephone connection which can connect to the relay,” claim 1 does not specify to what each element is connected. *Id.* at 10:21–31. Claim 1, however, recites that some of the elements are “connected to” perform certain functions. *Id.* at 10:33–41.¹²

¹¹ In the Decision to Institute, we acknowledged both that Liebermann would have conveyed the recited microprocessor and Petitioner’s alternative ground relying on Aronow for the microprocessor. Inst. Dec. 9, 13 (discussing Liebermann’s suggestion of a microprocessor).

¹² Ex. 1001, 10:35–38 (“the modem [is] connected to receive digital text

Claim 1 requires the personal interpreter device to pick up the voice of a person speaking to a user of the personal interpreter device and to transmit the voice of the person speaking to a relay over a telephone connection. *Id.* at 10:32–33. Claim 1 also requires the personal interpreter device to receive from the relay over the telephone connection “digital text communications representing a transcription of the voice” of the speaking person and to “display the words of the text communications received” on the personal interpreter device’s “visual display readable by the user of the digital electronic personal interpreter device.” *Id.* at 10:29–40.

To perform these recited functions, claim 1 requires using the recited elements in particular ways: (i) the microphone of the personal interpreter device to pick up the voice of the person speaking to the user of the personal interpreter device, (ii) the modem to receive digital text from the relay over the telephone connection and to transmit the text to the microprocessor, and (iii) the microprocessor to be “connected to display the words of the text communications received through the modem on the display.”

a. Petitioner Contentions: Independent Claim 1

Petitioner contends that Liebermann would have conveyed to one of ordinary skill in the art the limitations required by claim 1. *See, e.g.*, Pet. 7–

communications representing a transcription of the voice from the relay over the telephone connection and to transmit that text to the microprocessor”), 10:39–41 (“the microprocessor [is] connected to display the words of the text communications received through the modem on the display”), 10:33–34 (“the microphone [is] connected so that the voice picked up is transmitted to the relay”).

9 (citing Ex. 1002, 6:31–36, 6:64–7:28, 7:29–43, Figs. 6, 8); *id.* at 18–30 (citing Ex. 1002, 6:30–35, 6:42–53, 7:29–43, Fig. 8; Ex. 1008 ¶¶ 32–46). Petitioner repeatedly cites Liebermann’s description of its communicator embodiment of a cellular telephone having a microphone and a speaker that is used by a deaf person in close proximity to a normally hearing person. Ex. 1002, 7:29–43. Petitioner also relies on Liebermann’s central processing facility or center that receives and converts the spoken words of the hearing user into text, which is displayed on a screen of the device for the deaf person to read (*id.* at 6:29–36, 7:29–43, Fig. 8). *See, e.g.*, Pet. 7, 19, 21, 25, 26, 27, 28. Petitioner’s position is that Liebermann’s communicator would have conveyed to one of ordinary skill in the art the recited personal interpreter device, Liebermann’s processing center would have conveyed the recited relay, Liebermann’s deaf person using its communicator would have conveyed the recited user of the personal interpreter device, and Liebermann’s normally hearing person would have conveyed the recited person using the personal interpreter device.

b. Telephone Connection, Microphone, Visual Display

Claim 1 recites “a *telephone connection* which can connect to the relay”; “a *microphone* allowing the reception of a voice of a person speaking to a user of the digital electronic personal interpreter device” and “connected so that the voice picked up is transmitted to the relay”; and “a *visual display* readable by the user of the digital electronic personal interpreter device.” Ex. 1001, 10:26–38 (emphasis added).

Liebermann's communicator, based on a telephone implementation, has a microphone and a cellular telephone connection to a processing center. Ex. 1002, 7:18–28 (describing cellular telephone implementation), 7:29–43 (describing the communicator). The communicator receives speech spoken by a person into the communicator microphone while they are near a deaf person. Liebermann describes using the communicator in the same way as the personal interpreter device of the challenged patent—a person speaking into the microphone of the communicator and the communicator sending that speech over the telephone connection to the center for processing, which results in sign language of the spoken content of the normally hearing person being displayed on the communicator. Ex. 1002, 6:30–35, 7:29–43, Fig. 8; *see, e.g.*, Pet. 21–30. Thus, the communicator of Liebermann, like the personal interpreter device recited in claim 1, (i) is used by an assisted user in proximity to a person speaking, (ii) has a microphone allowing the reception of a voice of a person speaking to a user of the digital electronic personal interpreter device and connected so that the voice picked up is transmitted to the relay, (iii) has a telephone connection which can connect to the relay, and (iv) has a visual display readable by the user of the digital electronic personal interpreter device, as required in claim 1.

c. Modem

Claim 1 recites a “modem connected to receive digital text communications representing a transcription of the voice from the relay over the telephone connection and to transmit that text to the microprocessor,”

which, in turn, is “connected to display the words of the text communications received through the modem on the display.”

For the recited modem, Petitioner relies on Liebermann’s express disclosure of an internal modem of a telephone that sends text to the processing center and Liebermann’s express disclosure of displaying text of the normally hearing person speech received from the processing center for the assisted user to read. *See, e.g.*, Pet. 24 (citing Ex. 1002, 6:42–53, 7:29–43), 29 (citing Ex. 1002, 6:30–35, Fig. 8).

In describing the “overall operation of a preferred electronic communications system,” Liebermann describes sending data to the processing center “on a regular and designated phone line using an internal modem in the device.” *Id.* at 6:40–52; *see* Pet. 24–25 (citing Ex. 1002, 6:42–53 for the recited modem). As discussed previously, Liebermann’s processing center converts the received speech to text that is sent to the communicator for display. It naturally follows that Liebermann’s modem that sends data to the processing center also uses the modem to receive text sent from the processing center to the communicator. As Mr. Occhiogrosso testifies, one of ordinary skill in the art “would understand that modems are capable both of transmitting and receiving data.” Ex. 1043 ¶ 8. Mr. Occhiogrosso supports his conclusion based on the term “modem”—which stands for “modulator-demodulator.” *Id.* (emphasis in original). Mr. Occhiogrosso further explains that modulators transmit data and demodulators receive data. *Id.*

It also naturally follows that the text of normally hearing person's speech, which is received from the processing center by the modem and displayed on the device's screen, must be transmitted by the modem to another component of the communicator to be displayed on the screen.

(i) Purportedly No Modem Receiving Data

Arguing as though Petitioner would be required to show the claimed elements in a single reference as arranged in the claim, Patent Owner asserts (with support of its declarant Mr. Zatkovich) that Liebermann's modem is not sufficient because Liebermann describes the modem as sending text to the center but not receiving text from the center. PO Resp. 10 (citing Ex. 2098 ¶ 40) ("There is no disclosure of a modem receiving anything"); Ex. 2098 ¶ 40 (testifying that Liebermann's device "is limited to certain functions, specifically: sending processed data . . . to the Center" and concluding "[t]hus, it is my opinion that Liebermann fails to disclose a modem receiving anything"). Yet Mr. Zatkovich admits that Liebermann discloses an internal modem (Ex. 1044, 68:8–11), testifies that "one of ordinary skill in the art would understand that a modem can receive data" (*id.* at 68:18–19), and acknowledges that "in July 1998 [when the application that matured into the challenged patent was filed] it was most common to use a modem to receive data sent from telephone lines" (*id.* at 67:23–68:19). See Pet. Reply 4 (citing Ex. 1044, 67:23–68:19; Ex. 1002, 7:12–14). Furthermore, Liebermann expressly teaches that data in the form of text is sent from the center to the [assisted user's] device via telephone lines." Ex. 1002, 7:12–14.

Mr. Zatkovich's narrow testimony that Liebermann does not disclose a modem that receives text data from the center has limited probative value. The issue before us does not require Liebermann to identically disclose or describe the personal interpreter device recited in claim 1. See 35 U.S.C. § 103(a) ("A patent may not be obtained though the invention is not identically disclosed or described as set forth in [35 U.S.C. § 102], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."). Rather, "the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art." *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012) (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)).

For these reasons, we find that Liebermann would have conveyed to one of ordinary skill in the art a modem receiving data from the processing center for display to the assisted user of the personal interpreter device, as required by claim 1.

(ii) Purportedly No Modem Receiving Textual Communications Representing Transcription of the Voice

Patent Owner contends that the recited modem is missing in Liebermann because the modem in Liebermann purportedly does not receive "text communications representing a transcription of the voice from the relay," as recited by claim 1. PO Resp. 9–13. According to Patent Owner, Liebermann's processing center sends "a rendering of speech into sign,

which is effectively a different language than the original spoken words” (i.e., not a transcription of “the words a person uttered”). PO Resp. 12 (citing Ex. 1002, 2:3–11, 10:59–11:51, Figs. 15–16; Ex. 2097, 97:4–18). Patent Owner concludes that one of ordinary skill in the art would not understand Liebermann to “disclose[] a transcription of the hearing user’s voice.” PO Resp. 13 (citing Ex. 2098 ¶ 42 (Mr. Zatkovich opining that Liebermann does not send a textual transcription to the user’s device)). Patent Owner, however, focuses on the claim term “transcription” in the abstract and unfettered from the context of the claim language, which requires “receiv[ing] digital text communications representing a transcription of the voice” (not merely receiving a transcription of the voice). Thus, the modem need not receive (and the relay need not send) a *transcription* of the voice of the person speaking to the user of the personal interpreter device. Rather, the recited modem needs “to receive *digital text communications representing* a transcription of the voice.” See Pet. Reply 7.

As part of the dispute of whether Liebermann discloses “a transcription,” the parties disagree about the broadest reasonable construction of “transcription.” See, e.g., PO Resp. 6–7; Pet. Reply 5–7; Inst. Dec. 13–17. We need not expressly construe “transcription,” however, because Patent Owner’s contentions adopt Mr. Occhiogrosso’s deposition testimony that one of ordinary skill in the art would understand “transcription” to mean “the words that a person uttered,” which seems reasonable in the view of the challenged patent, the claim language, and the

testimony of both declarants. *Id.* at 9 (quoting Ex. 2097, 98:8–18); *see id.* at 7 (discussing Ex. 2097, 98:8–18).

Based on the descriptions in Liebermann cited by Petitioner, we find that Liebermann would have conveyed to one of ordinary skill in the art receiving digital text communications representing a transcription of the voice. Liebermann expressly discloses displaying the normally hearing person's words on the display shown in Figure 8 and in Liebermann's description of Figure 8 that indicates the "text of the hearing person's responses" is displayed. Ex. 1002, 6:29–36; Fig. 8 (labeling displayed text ("Hello John, how are you?")) as the incoming text of the hearing caller).

Patent Owner also contends that Liebermann's disclosure related to Figure 8 is insufficient to show *the communicator* in Liebermann receives the required text and transmits it to the microprocessor for display. PO Resp. 13–14, 23–28. According to Patent Owner, Liebermann's Figure 8 refers to an implementation other than the communicator. *Id.* at 13 ("However, Fig. 8 of Liebermann and its accompanying description at 6:30–35 do not disclose Liebermann's **communicator** receiving and displaying a transcription of voice . . . because Fig. 8 does not disclose a display of the 'communicator.'") (emphasis in original). Patent Owner, relying on Mr. Zatkovich's testimony, argues that one of ordinary skill in the art would understand Figure 8 to be a display only of a fixed installation device, such as a personal computer and video camera shown in Figure 5a, and argues that one of ordinary skill in the art would not incorporate the display of

Figure 8 into a communicator because of the reduced screen space available in a portable, handheld device. PO Resp. 20– 21 (citing Ex. 2098 ¶¶ 46–48).

Patent Owner’s position, in rejecting the express disclosure of Liebermann regarding Figure 8 as not being applicable to Liebermann’s communicator, seems to suggest that Liebermann’s teachings relied on by Petitioner must be limited to those expressly describing the communicator. *See, e.g.*, Pet. 25 (citing Ex. 1002, 6:30–35, Fig. 8 as teaching the recited visual display). First, we do not agree with Patent Owner’s position because the question before us is what Liebermann would have conveyed to one of ordinary skill in the art, which (unlike anticipation) does not prohibit combining various disclosures from a reference not directly related to each other. *Compare* 35 U.S.C. § 103(a), with *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008) (To anticipate, a prior art reference must disclose more than “multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention.”); *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972) (“The [prior art] reference must clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [invention] without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.”).

Moreover, we find Liebermann teaches the display of Figure 8 can be used with the communicator embodiment. We credit Mr. Occhiogrosso’s testimony that Liebermann discloses several embodiments and one of ordinary skill in the art would understand aspects of multiple embodiments

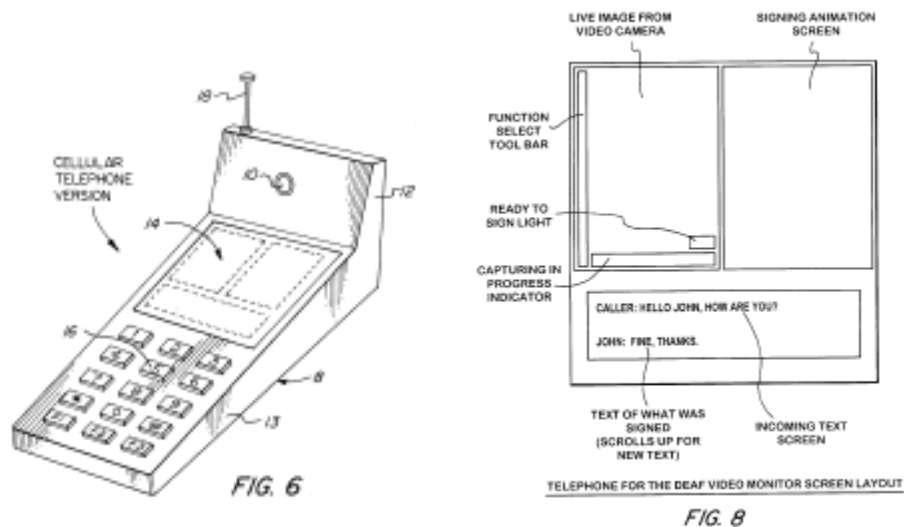
could be included in a desired device. Ex. 1043 ¶ 4. Mr. Occhiogrosso’s testimony is supported by citations to Liebermann. Ex. 1043 ¶ 4 (citing Ex. 1002, 6:40–41 for the proposition that multiple embodiments are disclosed in Liebermann; citing Ex. 1002, 7:29–33 for the proposition that multiple embodiments could be combined).

Mr. Occhiogrosso testifies that one of ordinary skill in the art “would consider the screen in Figure 6 [shown on a cellular phone] as analogous to the screen depicted in Figure 8.” Ex. 1043 ¶ 6; see Pet. Reply 9–10 (citing Ex. 1043 ¶ 4–7). Mr. Occhiogrosso’s testimony relies on, and better comports with, Liebermann’s description of Figure 8 as illustrating “a layout for the visual display to present multiple information to the deaf person.” Ex. 1002, 6:29–36; Ex. 1043 ¶ 6. Mr. Occhiogrosso opines that the layout in Figure 8 “can be applied to different devices with displays of varying dimensions,” including the cellular embodiment of Figure 6, the personal computer embodiment in Figure 5a, and the kiosk embodiment in Figure 5c. Ex. 1043 ¶ 6. Mr. Occhiogrosso explains that Figure 8 depicts a “three-part, logical screen layout [that would be] identical and would be scaled appropriately, depending on display size.” *Id.*

We credit Mr. Occhiogrosso’s testimony over that of Mr. Zatkovich because Mr. Occhiogrosso’s testimony better comports with the express disclosure of Liebermann—Figure 8 is not described as being limited to the embodiments in Figures 5a–5c or otherwise not being applicable to the cellular phone embodiment shown in Figure 6. Rather, Figure 8 is described more generally as being “a layout for the visual display.” Ex. 1002, 6:31–

36. In addition, Mr. Zatkovich opines that one of ordinary skill in the art purportedly would not incorporate the display shown in Figure 8—that is, the three-part display. At issue here, however, is only a small portion of that display—the incoming text screen—showing the text communication representing a transcription of the voice of the person speaking to a user of the personal interpreter device.

Furthermore, the cellular phone embodiment in Figure 6 includes display panel 14 that appears to have a three-part display similar to that displayed in Figure 8. Liebermann's Figures 6 and 8 are set forth below.



As shown in Liebermann's Figures 6 and 8, display 14 on the cellular phone and the three-part layout in Figure 8 both show, in similar proportions, two side-by-side rectangles depicted over a longer, narrower rectangle. *See also* Ex. 1043 ¶ 6 (Mr. Occhiogrosso opining regarding similarity between Figures 6 and 8).

For these reasons, we find that Liebermann would have conveyed to one of ordinary skill in the art a modem connected to receive digital text

communications representing a transcription of the voice from the relay over the telephone connection and to transmit that text to another component of the personal interpreter device for display to the assisted user, as required by claim 1.

d. Microprocessor

Independent claim 1 recites “the digital electronic personal interpreter device comprising: . . . [a] microprocessor; . . . the microprocessor connected to display the words of the text communications received through the modem on the display.” The plain language of claim 1 only requires the microprocessor be connected to display the words of the text communications received through the modem on the display. Claim 1 does not require a direct connection between the microprocessor and the modem, merely that the microprocessor be connected in some way to display the words that were received by the modem.

As Petitioner acknowledges, Liebermann does not expressly describe a microprocessor. Pet. 22. Petitioner relies on Mr. Occhiogrosso’s testimony that “[o]ne of ordinary skill in the art would recognize from . . . a [particular] disclosure that Liebermann suggests the use of a microprocessor.” Ex. 1008 ¶ 38; Pet. 22 (citing Ex. 1008 ¶ 38). The disclosure to which Mr. Occhiogrosso refers is that Liebermann’s device “*arranges for* other steps to be performed in order to communicate with the hearing person and the center”—including transmission of both voice and data on the telephone line. Ex. 1008 ¶ 38 (describing Ex. 1002, 6:64–7:9 (“The deaf person’s device arranges for switching . . . [and] also arranges for

the simultaneous transmission of both voice and data on the dedicated line.”)).

Mr. Occhiogrosso also indicates Liebermann’s device must include a microprocessor to perform the described processing steps, such as the image processing steps performed by the device. Ex. 1008 ¶ 38 (citing Ex. 1002, 6:42–52). In addition, Mr. Occhiogrosso explains that, because personal computers typically contain a microprocessor, Liebermann’s disclosure of a personal computer embodiment would convey to one of ordinary skill in the art that a microprocessor could be used to perform the functions of Liebermann’s device. Ex. 1008 ¶ 38 (citing Ex. 1002, 5:53–61, Fig. 5a).

We credit Mr. Occhiogrosso’s testimony that provides sufficient explanation and factual corroboration to support his opinion that Liebermann would have conveyed to one of ordinary skill in the art the recited microprocessor. Pet. 22–23 (relying on Ex. 1008 ¶ 38); see 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”).

(i) Purportedly No Microprocessor Necessarily Present

Patent Owner contends that Liebermann does not disclose the microprocessor recited in independent claim 1. PO Resp. 23–32. The parties dispute whether Liebermann *necessarily includes* a microprocessor.

Compare Pet. 22–23 (citing Ex. 1008 ¶ 38), *with* PO Resp. 24–33 (citing Ex. 2098 ¶¶ 51–60). Although showing a recited component *is necessarily present* would demonstrate inherency of an element to show a reference anticipates or to supply a missing claim limitation in an obviousness analysis, inherency also may be shown in an obviousness analysis “when the limitation at issue is the ‘natural result’ of the combination of prior art elements.” *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1195 (Fed. Cir. 2014) (“We have recognized that inherency may supply a missing claim limitation in an obviousness analysis. . . . Thus, our early precedent, and that of our predecessor court, established that the concept of inherency must be limited when applied to obviousness, and is present only when the limitation at issue is the ‘natural result’ of the combination of prior art elements.”). Thus, Patent Owner’s assertions to show a microprocessor would not be necessarily present in Liebermann—that one of ordinary skill in the art could have implemented the device of Liebermann using customer circuitry or special purpose controllers—have limited probative value in view of the other contentions of Petitioner.

(ii) Purportedly No Microprocessor to Perform Claimed Function

In response to Patent Owner challenging Petitioner’s inherency argument (PO Resp. 23–25), Petitioner maintains its position that Liebermann teaches the use of a microprocessor. Pet. Reply 13 (“[B]oth Liebermann and Aronow teach use of a microprocessor.”); Pet. 22–23. Mr. Occhiogrosso restated his opinion that Liebermann teaches the existence of microprocessors that control its devices. Ex. 1043 ¶ 19 (“It is my opinion

that both Liebermann and Aronow teach the existence of microprocessors that control their respective devices. A person of ordinary skill in the art presented with these references and the pre-existing microprocessors would not have used custom hardware or circuitry as these technologies require significant expense and limit future modification and improvement.”).

Patent Owner, relying on Mr. Zatkovich’s testimony, asserts that Liebermann would not suggest to one of ordinary skill in the art the use of a microprocessor in the communicator to perform the claimed functions. PO Resp. 29–33 (citing Ex. 2098 ¶¶ 56–60). According to Patent Owner and Mr. Zatkovich, one of ordinary skill in the art “reading Liebermann would be motivated to either (1) offload as much processing as possible onto the computers at the Center or (2) incorporate as much custom hardware as possible (e.g., a graphics controller to drive the display) at the communicator.” PO Resp. 29 (citing Ex. 2098 ¶¶ 57–59).

First, Mr. Zatkovich’s testimony does not acknowledge, much less adequately address, the function required of the microprocessor in claim 1: “to display the words of the text communications received through the modem on the display.” Mr. Zatkovich’s testimony, at best, seems tangentially related to displaying text on a local display. Mr. Zatkovich’s testimony is untethered to the claimed function of the microprocessor, and we accord it appropriate weight.

Second, we credit the testimony of Mr. Occhiogrosso in this regard over that of Mr. Zatkovich. Even taking Mr. Zatkovich’s testimony at face value that one of ordinary skill in the art would offload as much processing

as possible to the computers at the processing center, such offloading does not address adequately whether Liebermann's description would have taught or suggested to one of ordinary skill in the art the microprocessor at issue in the recited claim: a microprocessor "connected to display the words of the text communications received through the modem on the display" of the personal interpreter device. Mr. Zatkovich does not explain, nor does a reasonable explanation seem possible, how the function of displaying text received at the personal interpreter device on the display of the personal interpreter device could be offloaded to the computers at the center.

Mr. Zatkovich's also testifies that that one of ordinary skill in the art would incorporate as much custom hardware as possible (e.g., a graphics controller to drive the display) at the communicator. Ex. 2098 ¶ 57. Mr. Occhiogrosso disagrees and testifies that one of ordinary skill in the art "would not have used custom hardware or circuitry as these technologies require significant expense and limit future modification and improvement." Ex. 1043 ¶ 19. We accord Mr. Occhiogrosso's testimony more weight because it better aligns with the limited function required by the claimed microprocessor: "to display the words of the text communications received through the modem on the display," as recited in claim 1. In view of the significant expense of custom hardware and the limited function required of the claimed microprocessor, it seems unreasonable to use custom hardware to display text on a cellular telephone from which Liebermann's communicator embodiment is derived.

Mr. Occhiogrosso’s explanation regarding how Liebermann’s description of a personal computer embodiment and Liebermann’s description that the device “arranges for” processing performed by other elements—telephone connections and simultaneous transmission of voice and data—further bolster Petitioner’s position that Liebermann would have conveyed to one of ordinary skill in the art a microprocessor connected to display the received words of the text communications.

For these reasons, we find that Liebermann would have conveyed to one skilled in the art the recited microprocessor in claim 1.

To the extent, however, that Liebermann would not have taught or suggested the recited microprocessor, we understand¹³ Petitioner to also argue that it would have been obvious to use a microprocessor to perform the function recited in claim 1: microprocessor connected to display the words of the text communications received through the modem on the display. Pet. 14 (“Moreover, the concept[] of a microprocessor . . . in a consumer electronics device [is] plainly obvious.”). We determine that Mr. Occhiogrosso’s reasoned explanation also supports the application of common sense to use a microprocessor to display text on a personal interpreter device. *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361–63 (Fed. Cir. 2016) (application of “common sense” is permitted in an

¹³ Patent Owner also understands Petitioner to argue that using a microprocessor would have been obvious. PO Resp. 28 (indicating one of ordinary skill in the art would disagree that using a microprocessor would be obvious).

obviousness analysis, even to supply a missing limitation in the prior art under certain circumstances). In addition to our findings above concerning the disclosure of Liebermann and the testimony of Mr. Occhiogrosso, we find that a microprocessor does not go to the heart of the invention, which the challenged patent describes as using a relay service to provide the voice-to-text conversion. Ex. 1001, 3:42–45. Specifically, the challenged patent explains: “the key to making this truly portable device available with current technology is to base the operation of this device on the presently available relay system to provide the actual voice to text conversion” of the hearing person’s voice. *Id.*; see *Arendi*, 832 F.3d at 1363 (distinguishing a “peripheral” limitation in an analysis of using common sense to supply a missing limitation). Claim 1 reflects the “key” of the invention—using a relay for the voice-to-text conversion—in the claim limitations of “a telephone connection which can connect to the relay”; “the microphone connected so that the voice picked up is transmitted to the relay”; and “the modem connected to receive digital text communications representing a transcription of the voice from the relay over the telephone connection.”

Based on the cited descriptions and Mr. Occhiogrosso’s testimony, we find that Liebermann would have conveyed to one of ordinary skill in the art the recited “microprocessor connected to display the words of the text communications received through the modem on the display.”

e. Conclusion: Independent Claim 1

For these reasons, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter recited in claim 1 as a

whole would have been obvious to one of ordinary skill in the art in view of Liebermann. 35 U.S.C. § 103(a).

4. Independent Claim 9

Like independent claim 1, independent claim 9 recites a digital electronic personal interpreter device including a microphone, a microprocessor, a modem, and a display. Ex. 1001, 11:6–30. In contrast to claim 1, however, independent claim 9 recites a telephone, rather than a telephone connection as in claim 1. *Id.* The microprocessor recited in independent claim 9 “control[s] the operation of the components of the digital electronic personal interpreter device.” *Id.*

Independent claim 9 also recites “a user operable initiation switch” that performs two functions—“causing the microprocessor to control the telephone to initiate a telephone connection to the relay” and “to send command codes to the relay.” *Id.* The command codes “cause the relay” to perform two functions—“receive voice over the telephone” and “transmit digital text translated from that voice communication back to the” personal interpreter device over the same telephone connection.” The relay transmits the digital text translated back to the personal interpreter device for a particular purpose—“so that the microprocessor can display the digital text interpretation of the voice communication on the display.” *Id.*

a. Petitioner Contentions: Independent Claim 9

Petitioner relies on its analysis of claim 1 for similar elements recited in claim 9. Pet. 34 (citing its arguments with particularity for elements recited in claim 1). Notably, Petitioner cites Liebermann’s telephone both

for the telephone connection recited in claim 1 and for the telephone recited in claim 9. *Id.*

Petitioner relies on Aronow's on/off switch configured to activate "all functions" of a transcription device to convey to one of ordinary skill in the art the recited "user operable switch." Pet. 34 (citing Ex. 1003, 4:31–34; Ex. 1008 ¶¶ 45–46); *see also* Pet. 35 (citing Ex. 1003, 5:28–35, 4:31–36, 8:22–39).¹⁴ Based on the cited descriptions, Aronow teaches the telephone device includes a microprocessor and modem for communicating with the relay and teaches a control switch for controlling operations of the telephone device. *Id.* at 5:28–40, 8:37–39.

¹⁴ As noted previously, Petitioner also relies on Liebermann alone as teaching or suggesting the recited user operable switch. We need not reach these arguments because we find the combination of Liebermann and Aronow teaches or suggests the user operable switch. We note, however, that Mr. Zatkovich's testimony provides some support for Petitioner's position that Liebermann alone teaches the user operable switch. Specifically, Mr. Zatkovich testifies that the "communicator/cellular phone embodiment of Fig. 6 of Liebermann . . . since it is a special case of a cellular telephone, . . . already has the ability to rapidly dial the Center by simply dialing the Center's stored telephone number." Ex. 2098 ¶ 62. Thus, Mr. Zatkovich's testimony provides support for Petitioner's position that Liebermann would have conveyed to one of ordinary skill in the art every limitation of the challenged claims, including the initiation switch. *See, e.g.*, Pet. 14 ("Petitioner submits that Liebermann alone renders obvious the concept of a microprocessor and an initiation switch. . . . To the extent that Liebermann alone fails to render these limitations obvious . . ."); Pet. Reply 15 ("Liebermann includes every limitation of the challenged claims. To the extent that it does not explicitly disclose an initiation switch and a microprocessor, Aronow discloses these elements.").

Petitioner, with support of Mr. Occhiogrosso, provides sufficient articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. Pet. 14–18; *see KSR*, 550 U.S. at 418. For example, Petitioner relies on Mr. Occhiogrosso’s testimony that combining Liebermann with Aronow would be a mere combination of prior art elements according to known methods yielding predictable results. Pet. 15–17 (citing Ex. 1002 ¶¶ 60–63). This supports the conclusion of obviousness. *KSR*, 550 U.S. at 416 (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”). Petitioner also relies on Mr. Occhiogrosso’s testimony that combining Liebermann with Aronow would use a known technique to improve similar devices in the same way. Pet. 17–18 (citing Ex. 1002 ¶¶ 64–67). This further supports the conclusion of obviousness. *KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”). Mr. Occhiogrosso testifies that incorporating Aronow’s switch and microprocessor into Liebermann’s communicator would have been within the capabilities of a person of ordinary skill in the art. Ex. 1002 ¶¶ 66–67; Pet. 18 (citing Ex. 1002 ¶¶ 66–67).

Petitioner also contends that one of ordinary skill in the art “would have had a motivation to improve Liebermann’s communicator by incorporating aspects of Aronow’s ‘simple, easy to operate’ relay

communication device.” Pet. 14 (citing Ex. 1008 ¶¶ 58–68, Ex. 1003, 4:6–10). As described in the Petition and relying on Mr. Occhiogrosso, Petitioner contends the combination “would result in an automated communicator controlled by a switch and microprocessor,” which would have “the effect of simplifying the operation of Liebermann’s communicator so that it would be more accessible to hearing impaired users.” Pet. 17 (citing Ex. 1002 ¶ 63); see Pet. 14–17 (citing Ex. 1002 ¶¶ 60–63; Ex. 1003 3:58–65).

b. Purportedly No Microprocessor

Patent Owner presents together its contentions regarding the purported deficiencies of Liebermann’s microprocessor recited in claim 1 and claim 9. The microprocessor recited in claim 9 controls the operation of the components of the digital electronic personal interpreter device: a microphone, a telephone, a modem, a visually perceptible display, and a user operable initiation switch. For the reasons discussed previously, we accord little weight to Patent Owner’s arguments (PO Resp. 29–33) regarding off-loading functions from Liebermann’s device and using custom hardware instead of a microprocessor with regard to controlling such well-known components of the personal interpreter device.

The microprocessor recited in claim 9 also is required to control the operation of the user operable initiation switch, which controls the telephone to initiate a telephone connection to the relay and to send control codes to the relay. For the same reasons discussed with regard to claim 1, we similarly accord little weight to Patent Owner’s contentions regarding off-

loading and custom hardware that seem inapplicable to a microprocessor of the device controlling the operation of the “initiation switch” of the device.

For these reasons and the reasons discussed earlier with regard to the microprocessor in claim 1, we find the combination of Liebermann and Aronow would have conveyed to one of ordinary skill in the art the recited microprocessor.

c. Purportedly No Motivation to Add Aronow’s Switch

Petitioner, relying on Mr. Occhiogrosso’s testimony, contends that “a person of ordinary skill in the art would have had a motivation to improve Liebermann’s communicator by incorporating aspects of Aronow’s ‘simple, easy to operate’ relay communication device,” quoting an object of Aronow’s invention. Pet. 14 (quoting Ex. 1003, 4:6–10; citing Ex. 1008 ¶¶ 58–68); *see also* Ex. 1008 ¶ 58 (Mr. Occhiogrosso opining: “A person of ordinary skill in the art would have had a motivation to improve Liebermann’s communicator by incorporating aspects of Aronow’s ‘simple, easy to operate’ relay communication device.”). Mr. Occhiogrosso supports his opinion with additional explanation and citations to Aronow. Ex. 1008 ¶ 60. Specifically, regarding Aronow’s intended simplification, Mr. Occhiogrosso testifies that Aronow recognized that “it would be easier for elderly users who may have developed hearing loss late in life to use such a device if it were controlled by a single button and microprocessor.” *Id.*; *see also* Ex. 1003, 4:26–29, 4:31–36 (“Further, all functions of this invention are activated by a single oversized illuminated control switch mounted in such a fashion as to provide easy [] access and operation. These

novel features are critical for older users, especially those with deficient mental, visual or mobility skills.”); Pet. Reply 15 (citing Ex. 1003, 4:26–36; Ex. 1008 ¶¶ 40–46).

Patent Owner contests Mr. Occhiogrosso’s reason that one of ordinary skill in the art would combine Aronow’s initiation switch into Liebermann’s device to save power. PO Resp. 35–36. We agree with Patent Owner that, because the initiation switch is not an “on/off switch” that would enable a user to turn off the device and save power, Mr. Occhiogrosso’s power saving rationale (Ex. 1008 ¶¶ 58–59) is an insufficient motivation to combine the initiation switch. PO Resp. 35–36 (citing Ex. 2098 ¶ 62; Ex. 2097, 141:21–142:12).

Similarly, we also agree with Patent Owner’s challenge regarding Mr. Occhiogrosso’s testimony that Aronow’s switch improves Liebermann’s communicator by making it a “low cost, self contained telephonic interface device requiring no programming for operation.” *Id.* at 36. Relying on Mr. Zatkovich’s testimony, Patent Owner indicates “the communicator/cellular phone embodiment of Fig. 6 of Liebermann[] already appears to be a self-contained device.” *Id.* (citing Ex. 2098 ¶ 61).

Nevertheless, we note that there is no dispute that Liebermann’s communicator and cellular telephone implementations provide for a user initiating a call to the center by dialing the center. *See, e.g.*, PO Resp. 36 (“As a special case of a telephone, Liebermann can initiate a call simply by dialing a stored number to the Center.”). We disagree with Patent Owner that the addition of Aronow’s switch would not simplify the communicator

of Liebermann. *Id.* Common sense suggests that a single initiation switch is a simpler way to initiate a call than by dialing the multiple digits of a telephone number. Furthermore, we credit Mr. Occhiogrosso's testimony of the simplifying benefits of a user-operated initiation switch, which is based on Aronow's discussion about the benefits of the initiation switch to simplify operations of the telephonic device, especially for elderly people who are hard of hearing. Ex. 1008 ¶ 58.

For these reasons, we determine that Petitioner has provided sufficient motivation for combining Aronow's user-operated initiation switch into Liebermann's communicator.

d. Conclusion: Independent Claim 9

For these reasons, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter recited in claim 9 as a whole would have been obvious to one of ordinary skill in the art in view of Liebermann and Aronow. 35 U.S.C. § 103(a).

5. Independent Claim 18

Independent claim 18 is a method claim for "providing portable near-to-real-time voice to text captioning for a deaf or hard of hearing user."

Ex. 1001, 12:45–66. The method has four steps, the first of which is "providing the user with a hand held digital electronic personal interpreter device including a microphone, a display, a modem, and a telephone." The other three claimed steps recite:

initiating operation of the hand held digital electronic personal interpreter device in the presence of a speaking person;

transmitting voice of the speaking person spoken in the presence of the hand held digital electronic personal interpreter device from the microphone over the telephone to the relay, and at the relay, translating the received voice to a digital text message and transmitting the message back over the same connection to the telephone; and

at the hand held digital electronic personal interpreter device, the modem deciphering the text message which is received by the microprocessor and displayed on the display *so that the user receives a near-to-real time text version of the words spoken by the hearing person.*

Id. (emphasis added). Notably, independent claim 18 recites the purpose of the display of text at the hand held digital electronic personal interpreter device: “so that the user receives a near-to-real time text version of the words spoken by the hearing person.”

a. Petitioner Contentions: Independent Claim 18

Petitioner relies on its analysis of claim 1 for similar elements recited in claim 18. Pet. 37–38 (citing its arguments with particularity for elements recited in claim 1). For example, for the step of “providing the user with a hand held digital electronic personal interpreter device including a microphone, a display, a modem, and a telephone.” *Id.* at 37. Petitioner relies on Liebermann’s communicator, including the same citations and arguments made with regard to the personal interpreter device recited in independent claim 1. *Id.* For the step of “initiating operation,” Petitioner relies on its analysis regarding Liebermann and Aronow disclosing the user operable switch recited in independent claim 9. *Id.* at 34– 35, 38.

For the display of “a near-to-real time text version of the words spoken by the hearing person,” Petitioner relies on a combination of Liebermann and Aronow. *Id.* at 38–39. Petitioner relies on the same reasons to combine the references as discussed previously. *See* Pet. 13–18.

b. Near-to-Real Time Text

A method step of independent claim 18 requires displaying a received text message “so that the user receives a near-to-real time text version of the words spoken by the hearing person.” Ex. 1001, 12:64–66. Neither party suggests or otherwise questions whether this is a non-limiting statement of intended use, which is suggested by the recitation of “so that” and by the absence of any claim elements that would provide conversion of speech to text that would support display of near-to-real time text.

The written description of the ’116 patent states “the delay between the time the hearing user speaks into the microphone 22 and the time the words appear on the display 14 of the deaf or hard of hearing user is a modest number of seconds.” *Id.* at 8:65–9:2 (emphasis added). According to the written description, this delay of a modest number of seconds constitutes receiving a near-to-real time text version. *Id.* at 9:2–3 (“The user is thus receiving near to real time or simultaneous voice to text translation or captioning.”).

(i) Aronow’s Purported Disclosure

Petitioner contends, with support of Mr. Occhiogrosso, that Aronow “explicitly teaches that a relay operator ‘provides real time speech to text captioning.’” Pet. 39 (Ex. 1003, 6:20–25; Ex. 1008 ¶ 44); Ex. 1003, 6:20–25

(“Once the hearing party begins to speak, the RELAY operator begins keying in a real time speech to text captioning for the benefit of the apparatus user which is transmitted via coded-signals to the apparatus which then decodes the signals and displays this information on screen 3.”).

Mr. Occhiogrosso further testifies that one of ordinary skill in the art would recognize Aronow’s “real time speech to text captioning” as “near-to-real time” transcription, as required by claim 18. Ex. 1008 ¶ 44. Patent Owner correctly indicates that the challenged patent explains that a call assistant typing captions is a problem with conventional relay systems. PO Resp. 37 n.1 (citing Ex. 1001, 2:16–46).

We agree that this disclosure discredits Petitioner’s position that Aronow’s description of typing “a real time speech to text captioning” discloses the recited displaying near-to-real time text as required by claim 18. In Reply, Petitioner does not address Patent Owner’s contentions. For these reasons, we do not find that Aronow would have conveyed to one of ordinary skill in the art displaying near-to-real time text, as recited by claim 18.

(ii) Liebermann’s Automatic Speech Recognition Software: Petitioner’s Contentions

In its Petition, Petitioner also contends, relying on Mr. Occhiogrosso’s testimony, that Liebermann’s use of automatic speech recognition software to generate text captions would have resulted in “near-to-real time” captions. Pet. 39 (citing Ex. 1002, 5:14–23; Ex. 1008 ¶ 32); Ex. 1002, 5:14–19 (indicating “speech recognition algorithms convert the spoken word to text”

at the processing center) *id.* at 5:19–23 (noting appropriate types of speech recognition will be used, including “automatic, continuous, and speaker independent”). Mr. Occhiogrosso bases his opinion that “the use of automatic speech recognition software in Liebermann’s center would have suggested or disclosed to a person of ordinary skill in the art the concept of ‘near-to-real time’ captioning as that term is used in Claim 18 of the [challenged patent].” Ex. 1008 ¶ 32.

Patent Owner has taken the position, in its Preliminary Response before institution, that the “ability of the claimed invention to display text near-to-real time with speech is made possible by the use of the described revoicing relay using call assistant voice specific speech recognition software, which allows for the rapid generation and transmission of text from the relay.” Prelim. Resp. 25 (citing Ex. 1001, 8:55–9:3). The challenged patent explains “revoicing using a call assistant at the relay” used by a personal interpreter:

The hearing person speaks in the microphone 22 in the personal interpreter 10. The words are transmitted through the single telephone line 34. . . . The call assistant would hear the voice of the hearing user . . . and then would revoice those same words into the microphone 46. The words that the user speaks into the microphone 46 would be fed to the computer 44 where the voice recognition software, trained to the voice of the call assistant, would translate those words into a digital text stream . . . [sent] on the single telephone line to the display 14 [of the personal interpreter]. The words are then read by the deaf user.

Ex. 1001, 8:49–64 (describing a relay depicted in Figure 3). The challenged patent indicates that “the delay between the time the hearing user speaks into

the microphone 22 and the time the words appear on the display 14 of [the personal interpreter] is a modest number of seconds.” *Id.* at 8:64–9:2. The challenged patent concludes: “[t]he user is thus receiving near to real time or simultaneous voice to text translation or captioning.” *Id.* at 9:2–3.

In Reply to Patent Owner’s disagreement (PO Resp. 37–38) with Mr. Occhiogrosso’s conclusion that one of ordinary skill in the art would understand Liebermann to disclose near-to-real time captioning, Mr. Occhiogrosso further explains that one of ordinary skill in the art would understand Liebermann’s method of providing text in many situations to provide captions “closer to real time” than the re-voicing technique used in the challenged patent. Ex. 1043 ¶ 22; Pet. Reply 14 (citing Ex. 1043 ¶ 22). Mr. Occhiogrosso provides two reasons, based on descriptions in Liebermann, to support his conclusion. First, Mr. Occhiogrosso points to Liebermann’s description that the device uses “automatic continuous and speaker independent voice recognition technology (Ex. 1002, 5:19–21) . . . [that] does not require the call assistant to repeat the words spoken by the normally hearing person” and one of ordinary skill in the art would understand the natural result that “eliminating the act of revoicing could save time in producing a transcript of the hearing user’s voice.” Ex. 1043 ¶ 22; Pet. Reply 14 (citing Ex. 1043 ¶ 22). Second, Mr. Occhiogrosso testifies that Liebermann discloses “transmission of data from the center to the assisted user’s device at rates of ‘64 kb or 56 Kb’ (Ex. 1002, 6:60–61)” that, according to Mr. Occhiogrosso, “is dramatically faster than transmission using Baudot and other related methods disclosed in the [challenged

patent].” Ex. 1043 ¶ 24; Pet. Reply 14–15 (citing Ex. 1043 ¶ 24); *see, e.g.*, Ex. 1001, 4:5–12 (describing the invention as “using a Baudot type code” or “the enhanced form of Baudot communications”).

Mr. Occhiogrosso supports his conclusion with explanation and factual corroboration by citing to the challenged patent and Liebermann. Thus, we credit Mr. Occhiogrosso’s testimony that Liebermann would have conveyed to one of ordinary skill in the art “near real time” captioning. *See Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368 (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”); *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another “unless no reasonable trier of fact could have done so”); *see also* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

(iii) Liebermann’s Automatic Speech Recognition Software: Patent Owner’s Contentions

We next consider Patent Owner’s contentions regarding Liebermann’s automatic speech recognition software. We evaluate Patent Owner’s contentions and evidence in view of the fact that, as always, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Patent Owner disagrees with Mr. Occhiogrosso’s conclusion that one of ordinary skill in the art would understand Liebermann to disclose near-to-

real time captioning and asserts the opposite—that one of ordinary skill in the art “reviewing Liebermann would understand that it is impossible for Liebermann’s communicator to provide near-to-real time captioning.” PO Resp. 38. In the Decision to Institute, we noted that Liebermann uses automatic speech recognition software to generate text, which also is disclosed in the ’116 patent as being used to generate real time captioning. Inst. Dec. 19–20. Patent Owner also disagrees that the use of automatic speech recognition software by Liebermann and the disclosure of the challenged patent of voice recognition software being used to display near-to-real time captioning would support a finding that Liebermann would have taught or suggested near-to-real time captioning as recited in claim 18. PO Resp. 37. Patent Owner does not offer any testimony from Mr. Zatkovich to support its position that Liebermann does not disclose near-to-real time captioning. *See generally* PO Resp. 37–38 (not citing or referencing Ex. 2013). Thus, we evaluate Patent Owner’s attorney argument against Petitioner’s declarant’s testimony.

Patent Owner correctly notes that neither Mr. Occhiogrosso nor Liebermann identifies the time required to display captions on the communicator. PO Resp. 37–38 (citing Ex. 1008 ¶ 32; Ex. 2097, 88:15–90:14). We agree that this weighs against a finding that Liebermann would have communicated near-to-real time captioning, which the challenged patent describes generally but somewhat imprecisely “as a modest number of seconds.”

Patent Owner asserts that Mr. Occhiogrosso “acknowledged that there be no asynchrony disadvantage to a long delay between speech and captions in the device of Liebermann, since the deaf user cannot hear the words of the hearing user when first spoken.” *Id.* at 38 (citing Ex. 2097, 90:15–91:14); Ex. 2097, 91:12–14 (Mr. Occhiogrosso stating “he [the deaf user] wouldn’t have the obvious asynchrony if the user is completely deaf and not capable of hearing, that is true”). Immediately following that testimony, Mr. Occhiogrosso indicated, however, timely generation of text would be advantageous to avoid latency in the textual back and forth. *Id.* at 91:21–25 (testifying “you still can introduce latency in the sense that the textual back and forth, or the signing back and forth is delayed, so there is an advantage to a timely generation of the text”).

Patent Owner, without support of Mr. Zatkovich or support other than this latency testimony of Mr. Occhiogrosso, concludes one of ordinary skill in the art would understand such long delays between the hearing person’s speech and the appearance of text on the communicator “are inevitable in the operation of Liebermann’s communicator.” PO Resp. 38. Because Patent Owner’s position lacks factual corroboration or sufficient explanation, we find this assertion to be conclusory.

Similarly, Patent Owner asserts “Liebermann discloses a relatively slow conversational exchange between a hearing person and a deaf user, with each party speaking ‘in turn.’” *Id.* (citing Ex. 1002, 7:35–43). The cited portion of Liebermann describes the communicator enabling a conversation with a normally hearing person in close proximity to the deaf

person with the communicator. Ex. 1002, 7:35–43. As Patent Owner indicates, the conversation description is of the normally hearing person’s “speech, in turn, [being] picked up by the microphone and sent to the center for processing.” *Id.* at 7:39–41. The conversation description is not described “as a slow conversational exchange.” Moreover, we do not agree that the cited portion would have conveyed to one of ordinary skill in the art “a slow conversational exchange.” The cited portion describes:

The communicator enables the deaf person to conduct a “conversation” with any normally hearing person in close proximity. The signing motion of the deaf person [is] processed by the center and is transmitted back to the device as a normal voice transmission which the speaker renders as speech to the normally hearing person. His or her speech, in turn, is picked up by the microphone and sent to center for processing. The result is animated content on the [display] of the communicator which portrays in sign language the spoken content of the normally hearing person.

Id. at 7:33–43. Thus, Patent Owner’s assertions are not sufficiently supported by the cited disclosure of Liebermann and have limited probative value. The probative value is further reduced because the cited portion of Liebermann does not disclose the display of text on the display (as other portions of Liebermann do) and, thus, does not address directly the issue of “near real time” captioning.

Patent Owner’s conclusion that one of ordinary skill in the art “reviewing Liebermann would understand that it is impossible for Liebermann’s communicator to provide near-to-real time captioning” has

little probative value in view of its lack of sufficient factual corroboration or supported expert testimony. PO Resp. 38.

(iv) Liebermann's Automatic Speech Recognition Software: Conclusion

In conclusion, we note, as we did in the Decision to Institute, the use of voice recognition software both in the challenged patent to achieve near real time captioning and in Liebermann. We find Mr. Occhiogrosso's reasoned explanation that the text captioning by Liebermann's communicator (which uses automatic speech recognition without a call assistant revoicing the words) would improve the speed of text captioning over that of the challenged patent (which uses revoicing with voice recognition software) to weigh toward a finding that Liebermann would have conveyed near real time captioning. We also find probative Patent Owner's assertions in its Preliminary Response that revoicing using voice recognition software enabled near real time captioning.

For these reasons, and based on the cited descriptions on the references, Liebermann would have conveyed to one of ordinary skill in the art the display of "nearly real time" text as recited in independent claim 18.

c. Conclusion: Independent Claim 18

For these reasons, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter recited in claim 18 as a whole would have been obvious to one of ordinary skill in the art in view of Liebermann and Aronow. 35 U.S.C. § 103(a).

6. Dependent Claims 2, 3, 5, and 10

Claim 2 additionally recites a wireless telephone, whereas claims 3 and 10 each additionally recites a cellular telephone. For these features, Petitioner relies on Liebermann's cellular telephone embodiment shown in Figure 6. Pet. 31–32 (claims 2 and 3), 36 (claim 10). As discussed previously, Petitioner provides reasons why one of ordinary skill in the art would have combined the teachings of the references. Patent Owner does not separately challenge these claims, but the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378; *see also* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

Based on the cited descriptions in Liebermann, we find that Liebermann would have conveyed to one of ordinary skill in the art the additional limitations recited in claims 2, 3, and 10.

Claim 5 additionally recites “the telephone connection is one telephone line and the voice and digital text share the one telephone line.” For these features, Petitioner relies on Liebermann's description of using a second telephone channel in the communicator embodiment. Pet. 32–33 (citing Ex. 1002, 7:29–43). Based on the cited descriptions in Liebermann, we find that Liebermann would have conveyed to one of ordinary skill in the art the additional limitations recited in claim 5.

For these reasons, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter recited in claims 2, 3, and 5, which depend directly or indirectly from claim 1, as a whole would have been obvious to one of ordinary skill in the art in view of Liebermann.

35 U.S.C. § 103(a). Similarly, we determine that claim 10, which depends from independent claim 9, as a whole would have been obvious to one of ordinary skill in the art in view of Liebermann and Aronow. 35 U.S.C. § 103(a).

F. Asserted Ground of Obviousness over Liebermann, Aronow, and O'Toole

Petitioner contends claims 4, 6, 11–13, and 15 are unpatentable under 35 U.S.C. § 103 in view of Liebermann, Aronow, and O'Toole. Pet. 40–48. Petitioner liberally cites to the prior art references and relies on declaration testimony of Mr. Occhiogrosso. *Id.* (citing Ex. 1008). Furthermore, Petitioner provides analysis purportedly explaining how the combination would have conveyed to one of ordinary skill in the art the claim limitations and provides reasons why one of ordinary skill in the art would have combined the teachings of O'Toole to its proposed combination of Liebermann and Aronow. *Id.* at 40–42.

With support of the declaration of Mr. Zatkovich (Ex. 2098), Patent Owner challenges Petitioner's contentions, arguing that Petitioner's combination fails to disclose or suggest the limitations of claim 13. PO Resp. 39–45. In reply, Petitioner maintains its position that claim 13 would have been obvious. Pet. Reply 18–21. Although Patent Owner does not separately challenge other claims, the burden remains, as always, on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378; *see also* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

We have reviewed the Petition, Patent Owner's Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence the subject matter of claims 4, 6, 11–13, and 15 would have been obvious.

1. Subject Matter of the Challenged Claims

Independent claim 12, like independent claims 1 and 9, is directed to a “digital electronic personal interpreter device” that uses the services of a telephone relay. Ex. 1001, 11:39–67. Similarly to independent claims 1 and 9, the personal interpreter device of independent claim 12 includes a microphone, a modem, a microprocessor, a telephone, and a visually readable display telephone to display the words of received text. *Id.* Independent claim 12 additionally recites a speaker and “a filter connected in between the speaker and the telephone so that digital communication signals used by the modem are filtered from the signal transmitted to the speaker so that person[s] listening to voice transmitted by the speaker do not hear the digital communication signals.” *Id.*

Claims 4 and 11 depend from independent claims 1 and 9, respectively, and, like independent claim 12, additionally require (i) a speaker to create audible voice in the presence of the person speaking to the user if voice signals are received over the telephone from the relay and (ii) a filter to prevent digital communication frequencies from being broadcast on the speaker.

Claim 6, which depends ultimately from independent claim 1, additionally requires the bandwidth of a telephone line divided into frequency portions with the voice using a lower frequency portion and the digital text using the high frequency portion.

Claim 13 requires the personal interpreter device of independent claim 12 to use digital communication frequencies that are “substantially at and above 2800 Hertz and the filter is a low pass filter.”

Claim 15 depends from independent claim 12 and, similar to independent claim 9, requires an initiation key that dials the relay and transmits command codes to the relay.

2. Summary of O’Toole

O’Toole “relates to telephone systems, and more particularly to central-office equipment for Digital Subscriber Lines (DSL) that use frequency-division-multiplexing to share the line with Plain Old Telephone Service (POTS) equipment.” Ex. 1004, 1:7–11. O’Toole recognized that “[t]he demand for telephone bandwidth [would] continue[] to increase as more telephone customers send data traffic over phone lines” and also recognized the desirability of higher bandwidth technologies that use the existing copper-cable phone lines. *Id.* at 1:12–15, 1:19–21. O’Toole indicates that some DSL technology has “the advantage that ordinary voice calls can share the same line with data calls.” *Id.* at 1:41–42. The lower-frequency band of such DSL technology is used for voice calls, while the upper frequencies are used for data calls. *Id.* at 1:43–44.

3. Petitioner's Contentions

Regarding claims 4, 6, 11–13, and 15, Petitioner generally relies on the combination of Liebermann and Aronow as teaching many elements in the claimed device along the lines discussed above with respect to claim 1. *See, e.g.*, Pet. 41. Petitioner relies on O'Toole's DSL connection and description of filtering the received signal to avoid playing broadcast digital communications frequencies. *Id.* Petitioner also provides reasons why one of ordinary skill in the art would have combined the teachings of O'Toole with its proposed combination of Liebermann and Aronow. *Id.* at 40–42.

4. Reason to Combine O'Toole with Liebermann/Aronow

Petitioner contends one of ordinary skill in the art would have incorporated O'Toole's voice and data filtering to improve the device based on Liebermann and Aronow to avoid playing distracting tones of the broadcast digital communication frequencies. *Id.* at 41–42. Both Mr. Zatkovich and Mr. Occhiogrosso agree that the use of Liebermann's speaker, without O'Toole's frequency filtering, would result in “high pitched whining” (according to Mr. Zatkovich). Ex. 1008 ¶ 72; Ex. 2098 ¶ 67.

Petitioner further contends, with support of Mr. Occhiogrosso, that applying O'Toole's voice and data filtering to the combination of Liebermann and Aronow would be the “mere substitution of one element for another known in the field” and would have been obvious. Pet. 41 (citing *KSR*, 550 U.S. at 416 (“when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a

predictable result’’)). Also with support of Mr. Occhiogrosso, Petitioner contends that using a DSL connection, such as one described by O’Toole, “would be readily within the skill of a person of ordinary skill in the art.” *Id.* at 42.

In contrast, Patent Owner contends that Mr. Occhiogrosso’s purported reason to combine, rather than being a reason to combine the features, “suggests that [one of ordinary skill in the art] would not look to Liebermann **at all**, since doing so would produce an unworkable device, which could be made to work only upon the incorporation of elements from other references.” PO Resp. 40 (citing Ex. 2098 ¶¶ 66–67). Mr. Zatkovich explains further that Liebermann’s device with a speaker “could be made to work only upon reworking the device including other devices such as frequency filters.” Ex. 2098 ¶ 67.

Thus, in our view, rather than discrediting Petitioner and Mr. Occhiogrosso’s reason one of ordinary skill in the art would combine Liebermann and O’Toole, Mr. Zatkovich seems to provide additional support that one of ordinary skill in the art would look to O’Toole to add a frequency filter to use with Liebermann’s communicator having a speaker.

We determine that Petitioner has articulated sufficient reasoning with some rational underpinning to support the legal conclusion that the subject matter of claims 4, 6, 11–13, and 15 would have been obvious to one of ordinary skill in the art in view of the teachings of Liebermann, Aronow, and O’Toole as combined in the manner proposed by Petitioner.

5. Analysis: Claims 4, 6, 11, 12, and 15

Based on the descriptions of the references and testimony of Mr. Occhiogrosso cited in the Petition for claims 4, 6, 11, 12, and 15, we determine that the combination of Liebermann, Aronow, and O'Toole would have conveyed to one of ordinary skill in the art the limitations recited in those claims. *See* Pet. 42–48. For the reasons discussed previously, we find that Liebermann teaches the required microphone, telephone, modem, microprocessor, and display required by independent claim 12 and the combination of Liebermann and Aronow would have conveyed to one of ordinary skill in the art an “initiation key,” required by claim 15.

Regarding the additional features, Petitioner relies on Liebermann's express disclosure of a speaker on its communicator and O'Toole's express disclosures of using high frequencies of a telephone line for data traffic, low frequencies for voice, and a filter that separates data and voice. *See, e.g., id.* at 42–43 (citing Ex. 1002, 7:29–43; Ex. 1004, 2:24–36). We find that Liebermann teaches the required speakers (claims 4, 11, 12) and O'Toole teaches the required filters (claim 4, 11, 12, 15) and frequency-divided telephone line (claim 6), as Petitioner contends.

For these reasons, we conclude that Liebermann, Aronow, and O'Toole would have conveyed to one of ordinary skill in the art the limitations recited in claims 4, 6, 11, 12, and 15.

6. Analysis: Claim 13

Claim 13, which depends from independent claim 12, requires the personal interpreter device of independent claim 12 to use digital

communication frequencies that are “substantially at and above 2800 Hertz and the filter is a low pass filter.” Petitioner relies on O’Toole for these additional limitations. We agree that O’Toole expressly discloses a low pass filter. Pet. 47 (citing Ex. 1004, 2:24–36).

Petitioner and Patent Owner dispute whether O’Toole’s express disclosure of a bandwidth of a telephone line operating “from about 100 Hz to 4kHz” (Ex. 1004, 1:43–49) and used for data calls meets the claim limitation requiring the personal interpreter device “the digital communication frequencies used are substantially at and above 2800 Hertz.” See Pet. 47; PO Resp. 39–40; Pet. Reply 18–21. Petitioner’s position is that “the digital communication frequencies used are substantially at and above 2800 Hertz” encompasses a range of frequencies beginning substantially at 2800 Hertz and continuing above 2800 Hertz (as opposed to, perhaps, beginning substantially at 2800 Hertz and including frequencies lower than 2800 Hertz).

Patent Owner contends that the claim language of claim 13 requires use of at least two digital communication frequencies, one of which must be “substantially at 2800 Hertz” and the other “above 2800 Hertz.” PO Resp. 39–40, 43 (citing Ex. 2098 ¶¶ 68–70). Mr. Zatkovich adopts Patent Owner’s position for his analysis but does not offer in his declaration testimony an opinion as to how one of ordinary skill in the art would understand the language of claim 13 in view of the Specification. Ex. 2098 ¶¶ 68, 70. During deposition, however, Mr. Zatkovich testifies that one of ordinary skill in the art would understand claim 13 to require any two frequencies

above 2800 Hertz, which undermines Patent Owner's position. Ex. 1044, 41:8–42:4.¹⁵ For support, Patent Owner points to the plain language of the claim that recites “at and.”

Despite lacking support of its declarant Mr. Zatkovich, Patent Owner's position has some merit because the claim uses the conjunction “and.” We note, however, that the claim is not so clear as to eliminate Petitioner's reading of the language. For example, claim 13 does not recite using at least one digital communication frequency of substantially at 2800 Hertz and using at least one digital communication frequency of above 2800 Hertz, which is how Patent Owner interprets the claim language.

The claim language “the digital communication frequencies used are substantially at and above 2800 Hertz” also supports Petitioner's position—that all of the “digital communication frequencies used are” within a range of “substantially at and above 2800 Hertz.” The use of the plural verb “are” with the subject “digital communication frequencies used” indicates Petitioner's position also has merit.

The Specification supports Petitioner's reading of claim 13 and is inconsistent with Patent Owner's position. Three times the Specification refers to “the range of 2800–3500 Hertz.” Ex. 1001, 4:12–15 (“The modem also preferably operates in a variant of the Turbo Code which uses a higher carrier frequency, in the range of 2800 to 3500 Hertz”), 4:15–18 (“the modem can communicate with a counterpart to selected suitable high

¹⁵ Ex. 1044, 42:1–4 (“Q: Okay. As far as the transmission goes, it could be any two frequencies above 2800. A: Yes.”).

frequencies in the range of 2800–3500 Hertz), 4:50–52 (“[i]f the communication frequencies are the preferred higher frequencies between 2800 and 3500 Hertz”). In contrast, Patent Owner does not identify any, and we are unaware of any, discussion in the Specification of using digital communication frequencies “substantially at 2800 Hertz.” Neither party has identified relevant prosecution history to support its respective position.

Mr. Occhiogrosso testifies that one of ordinary skill in the art would not understand claim 13 to require transmission at 2800 Hz but would cover transmitting at any two frequencies above 2800 Hz (Ex. 1043 ¶ 28), as Mr. Zatkovich testifies as well.

After weighing the analysis and evidence presented, we agree with Petitioner’s position. We, therefore, conclude that claim 13 would encompass digital communication frequencies that are only above 2800 Hertz and would not require use of a digital communication frequency substantially at 2800 Hertz.¹⁶ We find that O’Toole discloses that “the digital communication frequencies used are substantially at and above 2800 Hertz,” as required by claim 13 and as Petitioner contends. Ex. 1004, 1:43–

¹⁶ The Decision to Institute applied the same claim construction—interpreting claim 13 as requiring a range of frequencies and not requiring the use of a frequency “substantially at 2800 Hertz.” Inst. Dec. 25–26; PO Resp. 43 (criticizing construction of claim 13 in the Decision to Institute). Thus, Petitioner and Patent Owner both have had fair notice and an opportunity to be heard during the *inter partes* review regarding our claim construction of claim 13. See Administrative Procedure Act, 5 U.S.C. § 551 et seq.

49, 2:24–36; Pet. 47. As noted previously, we find Liebermann teaches the recited speaker.

For these reasons, we conclude that Liebermann, Aronow, and O’Toole would have conveyed to one of ordinary skill in the art the limitations recited in claim 13.

7. Conclusion: Obviousness over Liebermann, Aronow, and O’Toole

Accordingly, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claims 4, 6, 11–13, and 15 would have been obvious over the combination of Liebermann, Aronow, and O’Toole.

G. Asserted Ground of Obviousness over Liebermann, Aronow, and McLaughlin

Petitioner contends that claims 7 and 8 are unpatentable under 35 U.S.C. § 103 in view of Liebermann, Aronow, and McLaughlin. Pet. 48–53. Petitioner liberally cites to the prior art references and relies on declaration testimony of Mr. Occhiogrosso. *Id.* (citing Ex. 1008). Furthermore, Petitioner provides analysis purportedly explaining how the combination would have conveyed to one of ordinary skill in the art the claim limitations and provides reasons why one of ordinary skill in the art would have combined the teachings of McLaughlin with its proposed combination of Liebermann and Aronow. *Id.* at 48–51 (citing Ex. 1008).

With support of the declaration of Mr. Zatkovich (Ex. 2098), Patent Owner challenges Petitioner’s contentions, arguing that one of ordinary skill in the art would not have been motivated to combine Liebermann, Aronow,

and McLaughlin. PO Resp. 45–50. In reply, Petitioner maintains its position. Pet. Reply 21–25. Although Patent Owner does not separately challenge other issues regarding claims 7 and 8, the burden remains, as always, on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378; *see also* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

We have reviewed the Petition, Patent Owner’s Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those papers. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 7 and 8 would have been obvious.

1. Summary of McLaughlin

McLaughlin describes a simultaneous voice and data (SVD) modem used in connection with a relay service in which an operator mediates communications between a hearing person and a hearing impaired person. Ex. 1005, 30:13–31:63. In one embodiment described in McLaughlin, the hearing impaired user has an answering device or system, comprising two SVD modems, connected to two communication links, Line A and Line B. *Id.* at 30:59–63, 32:17–19. These communication links may use local area network (LAN), wide area network (WAN), or Internet communications over analog lines or digital lines, such as Integrated Services Digital Network (ISDN) or digital subscriber line (DSL) technology. *Id.* at 30:46–53. When a voice call from the hearing user arrives on Line A, the answering device sets up an SVD link with the relay service on Line B.

Id. at 31:35–40. Voice sounds received from the hearing user on Line A are sent to the relay operator on Line B. *Id.* at 31:41–43. The relay operator translates the voice sounds into text, which is sent over Line B to appear on the screen of the hearing impaired user’s answering device. *Id.* at 31:43–47. The hearing impaired user also types responses back to the relay operator over Line B. *Id.* at 31:47–49. The relay operator voices the text, and the relay operator’s voice sounds are carried on Line B to the hearing impaired user’s answering device and passed over to Line A to be heard by the hearing user. *Id.* at 31:49–52. Conversation among all three parties is “full duplex,” so that all parties may talk or type simultaneously. *Id.* at 31:55–62.

In addition, as an alternative to using single telephone line SVD modem connections, McLaughlin describes a two-telephone line solution (called a “2-line VCO” technique) in which voice is sent over one PSTN line and text is sent over another PSTN line. *Id.* at 28:37–46; *see also id.* at 1:14–16 (equating “plain old telephone system” or “POTS,” with the “public switched telephone network” or PSTN); *id.* at 27:13–15 (describing “2-line VCO” in the same way).

2. Claims 7 and 8

Claim 7 depends directly from claim 5 and indirectly from independent claim 1. Claim 7 requires that the telephone connection is one telephone line that is shared by voice and digital text and that digitized samples of voice and digital text are combined for transmission. Ex. 1001, 10:57–60 (claim 5), 10:66–11:2 (claim 7). For the additional limitations recited in claim 7, Petitioner additionally relies on McLaughlin’s description

of digitizing voice in the context of a SVD modem on a single telephone line. Pet. 52 (citing Ex. 1005, 30:1–4, 32:20–32).

In contrast, claim 8, which depends directly from independent claim 1, requires that the telephone connection is two telephone lines, in which one is used for voice and one is used for digital text. For these additional limitations, Petitioner relies on McLaughlin's description of a two-line VCO technique that uses one telephone line for communicating voice and another telephone line for communicating text. *Id.* at 53 (citing Ex. 1005, 28:40–56).

Based on the cited descriptions and the testimony of Mr. Occhiogrosso, we agree with Petitioner's analysis and we determine that Petitioner demonstrates by preponderance of the evidence that the combination of Liebermann, Aronow, and McLaughlin would have conveyed to one of ordinary skill in the art the limitations recited in claims 7 and 8.

3. Reason to Combine McLaughlin with Liebermann/Aronow

Regarding a reason to add McLaughlin's techniques to the combination of Liebermann and Aronow, Petitioner contends, with support from Mr. Occhiogrosso, that one of ordinary skill in the art would look to McLaughlin for techniques to send voice and data between the transcription communicator (which results from the combination of Liebermann and Aronow) and the relay. Pet. 49–51. According to Petitioner, McLaughlin recognized that not all relays had SVD modems and that one of ordinary skill in the art would have looked to McLaughlin's two-line solution to

connect to a relay that did not have SVD modems. *Id.* at 50 (citing Ex. 1005, 28:40–67; Ex. 1008 ¶¶ 54, 79). Petitioner continues along these lines by contending that one of ordinary skill in the art would have looked to McLaughlin’s simultaneous voice and data modem to connect to a relay that did have SVD modems. *Id.* (citing Ex. 1008 ¶ 80). According to Mr. Occhiogrosso, one of ordinary skill in the art would have done so to avoid the cost of paying for two telephone lines. Ex. 1008 ¶ 80. In other words, Mr. Occhiogrosso testifies that one of ordinary skill in the art would use one of McLaughlin’s techniques to connect to a relay that did not have SVD modems and would use another of McLaughlin’s techniques to connect to a relay that did have SVD modems. Ex. 1008 ¶¶ 79, 80.

Petitioner, with support of Mr. Occhiogrosso, also contends that the combination of Liebermann/Aronow with McLaughlin “would still operate as a personal communicator where voice is transmitted to a relay via a telephone connection [and] captions would be transmitted from the relay to a personal interpreter via a telephone connection.” Pet. 51 (citing Ex. 1008 ¶ 81). According to Petitioner, because each element in the proposed combination would perform the same function as it did separately, the combination would have a predictable result. *Id.* Thus, the combination would be “an assembly of elements that were known in the prior art, used for their intended purposes, yielding only predictable results.” *Id.* (citing *KSR*, 550 U.S. at 416). We agree that this lends support to a conclusion of obviousness. *KSR*, 550 U.S. at 416 (“when a patent claims a structure already known in the prior art that is altered by the mere substitution of one

element for another known in the field, the combination must do more than yield a predictable result”).

Patent Owner contends that one of ordinary skill in the art would not have been motivated to combine Liebermann, Aronow, and McLaughlin in the manner proposed by Petitioner. PO Resp. 45–50. According to Patent Owner, Petitioner and Mr. Occhiogrosso fail to explain *why* one of ordinary skill in the art would modify Liebermann/Aronow with either of McLaughlin’s connection schemes. *Id.* at 46–48.

We disagree with Patent Owner. Rather, we find Petitioner, with support from Mr. Occhiogrosso, has provided sufficient reasoning for combining the references—(i) McLaughlin’s recognition of the problem that not all relays have SVD modems and that one of ordinary skill in the art would have looked to McLaughlin’s two-line solution to connect to a relay that did not have SVD modems and (ii) Mr. Occhiogrosso’s testimony regarding using a single line when SVD modems are available to reduce costs of using a second telephone line by digitizing and combining voice and text to transmit both over a single line. Pet. 50–51 (citing Ex. 1005, 28:40–67; Ex. 1008 ¶¶ 54, 79, 80); *see KSR*, 550 U.S. at 420 (“Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.”).

Patent Owner also contends that McLaughlin teaches away because “that combination relies on automatic speech recognition, which is criticized and disparaged by McLaughlin.” PO Resp. 48–49 (citing Ex. 1005, 26:59–

62 (indicating “speech recognition engines fail to recognize accented, slurred, non-standard, or even conversational speech”)). The question is whether McLaughlin’s disclosure regarding speech recognition teaches away from the invention in claims 7 and 8. A reference teaches away “when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Mouttet*, 686 F.3d 1322, 1333–34 (Fed. Cir. 2012) (quoting *In re Gurley*, 27 F.3d 551, 553 (Fed.Cir.1994)). As Petitioner correctly points out, neither claim 7 nor claim 8 requires speech recognition, so McLaughlin’s comment cannot teach away from the claimed inventions. Pet. Reply 24–25.

We determine that Petitioner has articulated sufficient reasoning with some rational underpinning to support the legal conclusion that the subject matter of claims 7 and 8 would have been obvious to one of ordinary skill in the art in view of the teachings of Liebermann, Aronow, and McLaughlin as combined in the manner proposed by Petitioner.

4. Conclusion: Obviousness over Liebermann, Aronow, and McLaughlin

Accordingly, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claims 7 and 8 would have been obvious over the combination of Liebermann, Aronow, and McLaughlin.

H. Motions to Seal

Patent Owner filed several unopposed Motions to Seal (Papers 15, 25, 31, 37, and 41) the following exhibits and papers: Exhibits 2010, 2086,

2091, 2093, and 2094; portions of Patent Owner's Motion to Dismiss (Paper 29); portions of Patent Owner's Reply in Support of the Motion to Dismiss (Paper 42); and the content of two Motions to Seal (Papers 31 and 41). These exhibits and papers are directed to Patent Owner's Motion to Dismiss, not the case-in-chief. We denied Patent Owner's Motion to Dismiss. Paper 69. Given the sensitive nature of the contents of the documents Patent Owner wishes to seal, and those documents' ultimate use in this case (i.e., in a denied motion to dismiss and not in the case-in-chief), we grant Patent Owner's Motions to Seal Exhibits 2010, 2086, 2091, 2093, and 2094, the redacted portions of Papers 29 and 42, and the entirety of Papers 31 and 41.

We remind the parties that the documents in a proceeding may be made public. 37 C.F.R. § 42.14. The parties may move to expunge confidential information from the record after final judgment (and appeals, if any). 37 C.F.R. § 42.56.

*I. Motion for Observation
Regarding Cross-Examination Testimony*

Patent Owner filed a motion for observations directed to the cross-examination testimony of Mr. Occhiogrosso obtained on August 9, 2016. Paper 64; Ex. 2105 (Deposition Transcript). We have considered Patent Owner's observations and Petitioner's responses (Paper 67) in rendering our decision, and have accorded the testimony appropriate weight. *See, e.g., Yorkey*, 601 F.3d at 1284 (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of

fact could have done so”); *Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368 (indicating the Board is entitled to weigh declaration testimony).

III. CONCLUSION

Based on the evidence and arguments, Petitioner has demonstrated by a preponderance of the evidence that (i) claims 1–3 and 5 would have been obvious over Liebermann, (ii) claims 9, 10, and 18 would have been obvious over Liebermann and Aronow, (iii) claims 4, 6, 11–13, and 15 would have been obvious Liebermann, Aronow, and O’Toole, and (iv) claims 7 and 8 would have been obvious Liebermann, Aronow, and McLaughlin.

IV. ORDER

Accordingly, it is:

ORDERED that claims 1–13, 15, and 18 of U.S. Patent No. 5,974,116 have been shown to be unpatentable;

FURTHER ORDERED that Patent Owner’s Motion to Exclude is denied;

FURTHER ORDERED that Patent Owner’s Motions to Seal are granted; 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.

IPR2015-01355
Patent 5,974,116

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