

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RØDE MICROPHONES, LLC and
FREEDMAN ELECTRONICS PTY LTD.,
Petitioner,

v.

ZAXCOM, INC.,
Patent Owner.

IPR2025-00230 (Patent 7,711,443 B1)
IPR2025-00232 (Patent 10,276,207 B1)

Before JUSTIN T. ARBES, MIRIAM L. QUINN, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

QUINN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

We instituted *inter partes* review pursuant to 35 U.S.C. § 314 to review claims 1–4, 7–9, 15, 17, 19, 20, and 22–27 of U.S. Patent No. 7,711,443 B1 (“the ’443 patent”) and to review claims 17–19, 21–23, 33, 34, 59, 60, and 66 of U.S. Patent No. 10,276,207 B1 (“the ’207 patent”) owned by Zaxcom, Inc. (“Patent Owner” or “Zaxcom”). We have jurisdiction under 35 U.S.C. § 6(b)(4). This Consolidated 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, we determine that Petitioner has not shown by a preponderance of the evidence that any of the challenged claims of the ’443 and ’207 patents are unpatentable.

II. THE TWO PROCEEDINGS

The two captioned proceedings (IPR2025-00230¹ and IPR2025-00232²) involve related patents. The 232 IPR involves the ’207 patent,³ which is an indirect continuation-in-part of the ’443 patent,⁴ involved in the 230 IPR. The disclosures of these patents have substantial overlap. The proceedings involve substantially the same asserted prior art, present overlapping expert testimony filed in both proceedings, and involve the same threshold issues. For instance, certain arguments presented by Patent Owner for both proceedings are identical as they focus on limitations recited in the independent claims, which recite substantively similar subject matter. Also, Patent Owner raises the same evidence and arguments for secondary indicia of non-obviousness in both proceedings. Given the significant

¹ Hereinafter referred to as “the 230 IPR.”

² Hereinafter referred to as “the 232 IPR.”

³ Filed as Exhibit 1001 in the 232 IPR and cited as “232 IPR, Ex. 1001.”

⁴ Filed as Exhibit 1001 in the 230 IPR and cited as “230 IPR, Ex. 1001.”

overlap of arguments and evidence across both proceedings, we issue a combined final written decision with respect to the patentability of all challenged claims in the two proceedings under 35 U.S.C. § 318(d).

III. BACKGROUND

RØDE Microphones, LLC, (“RØDE”) and Freedman Electronics Pty Ltd. (“Freedman”) (collectively, “Petitioner”) filed Petitions requesting *inter partes* review as follows:

(a) in the 230 IPR, Petitioner requested review of claims 1–4, 7–9, 15, 17, 19, 20, and 22–27 of the ’443 patent (230 IPR, Paper 1 (“230 Pet.”)⁵); and

(b) in the 232 IPR, Petitioner requested review of claims 17–19, 21–23, 33, 34, 59, 60, and 66 of the ’207 patent (232 IPR, Paper 1 (“232 Pet.”)⁶).

After review of Patent Owner’s Preliminary Responses (230 IPR, Paper 8; 232 IPR, Paper 8), and after considering the merits of each Petition and the parties’ additional briefing,⁷ we instituted *inter partes* review. 230 IPR, Paper 14 (“230 Dec. on Inst.”); 232 IPR, Paper 14 (“232 Dec. on Inst.”).

⁵ We use this nomenclature throughout (230 ____) to identify papers and exhibits filed in the 230 IPR. Unless otherwise specified, citations to papers and exhibits are to those filed in the 230 IPR.

⁶ We use this nomenclature throughout (232 ____) to identify papers and exhibits filed in the 232 IPR.

⁷ Additional briefing pre-institution includes authorized preliminary replies filed by Petitioner (230 IPR, Paper 10; 232 IPR, Paper 10) and authorized sur-replies filed by Patent Owner (230 IPR, Paper 11; 232 IPR, Paper 11). This additional briefing focused on claim construction for institution purposes of certain terms in dispute. We do not refer to any of this pre-institution briefing further.

Patent Owner filed a Response in each proceeding. 230 IPR, Paper 23 (“230 PO Resp.”); 232 IPR, Paper 23 (“232 PO Resp.”). Petitioner filed a Reply in each proceeding. 230 IPR, Paper 43 (“230 Reply”); 232 IPR, Paper 43 (“232 Reply”). Subsequently, Patent Owner filed a Sur-Reply. 230 IPR, Paper 58 (“230 Sur-Reply”); 232 IPR, Paper 59 (“232 Sur-Reply”).

During the trial phase, Patent Owner filed a motion to terminate each proceeding, which we ultimately denied. *See* 230 IPR, Paper 59 (identical copy filed as Paper 62 in the 232 IPR). Further, both parties filed motions to exclude, discussed in more detail further below. Finally, we held oral argument for both proceedings, the consolidated transcript of which is filed in the record of each proceeding. 230 IPR, Paper 73 (“Tr.”) (identical copy filed as Paper 71 in the 232 IPR).

A. Related Matters

The parties indicate that the ’443 and the ’207 patents are the subject of *Zaxcom, Inc. v. RODE Microphones, LLC, et al.*, No. 1:23-cv-01245-JFM (D. Del.) (“the district court case”). *See, e.g.*, 230 Pet. xi; 230 IPR, Paper 6, 2. In the district court case, a Claim Construction Order has issued and is filed in the record as Exhibit 1037 in the 230 IPR.⁸

Furthermore, the Board has issued final written decisions in other proceedings involving patents related to the ’443 and the ’207 patents:

- 1) IPR2018-00972: determining claims 1–14 of U.S. Patent No. 9,336,307 B2 (Ex. 1015, “the ’307 patent”) unpatentable and granting Patent Owner’s motion to amend seeking to add proposed substitute claims 15–28. Ex. 1014.

⁸ Citations to filed exhibits hereinafter are to the 230 IPR, unless the exhibit is filed only in the 232 IPR.

- 2) IPR2018-01129: finding challenged claims 7, 8, 11, 12, 14, and 15 of U.S. Patent No. 7,929,902 B1 (Ex. 1030, “the ’902 patent”) unpatentable and granting Patent Owner’s motion to amend seeking to add proposed substitute claims 21–26. Ex. 1017.
- 3) IPR2018-01130: finding challenged claims 1–4, 9, 10, 12, 15, 31, 36, 37, and 41–45 of U.S. Patent No. 8,385,814 B2 (Ex. 1028, “the ’814 patent”) unpatentable and granting Patent Owner’s motion to amend seeking to add proposed substitute claims 50–65. Ex. 1018.

These final written decisions are informative as to prior claim construction disputes of terms recited in the claims in the instant proceedings, and are relevant insofar as they discuss the asserted prior art and issues of objective indicia of non-obviousness also at issue here. Moreover, the Board’s final written decisions in these proceedings have been affirmed, and the Office has issued *inter partes* review certificates cancelling the challenged claims and adding the substitute claims. See 230 IPR, Pet. 12; Exs. 1015, 1028, 1030; *Zaxcom, Inc. v. Lectrosonics, Inc.*, No. 2020-1350, 2022 WL 499843 (Fed. Cir. Feb. 18, 2022); *Zaxcom, Inc. v. Lectrosonics, Inc.*, No. 2020-1921, 2022 WL 499848 (Fed. Cir. Feb. 18, 2022). When discussing these earlier Board proceedings, we refer to them collectively as “the Lectrosonics IPRs.”

Petitioner also filed a petition challenging claims 1–6, 9, 10, 13, and 16–20 of the ’902 patent. An *inter partes* review was instituted but later terminated. See IPR2025-00231, Papers 23, 33.

B. The Patents-at-Issue

The '207 patent issued from U.S. App. No. 15/225,056, which is the last in a chain of continuations that ultimately began from a continuation-in-part of the application that issued as the '443 patent, U.S. App. No. 11/181,062. 230 IPR, Ex. 1001, code (21); 232 IPR, Ex. 1001, code (63). Both patents are directed to virtual wireless multitrack recording systems. 230 IPR, Ex. 1001, code (54); 232 IPR, Ex. 1001, code (54).

1. Overview of the '443 Patent

The '443 patent discloses a system and method “for wirelessly recording multi-track audio files without the data corruption or loss of data that typically occurs with wireless data transmission.” 230 IPR, Ex. 1001, code (57). Figure 1 of the '443 patent is reproduced below.

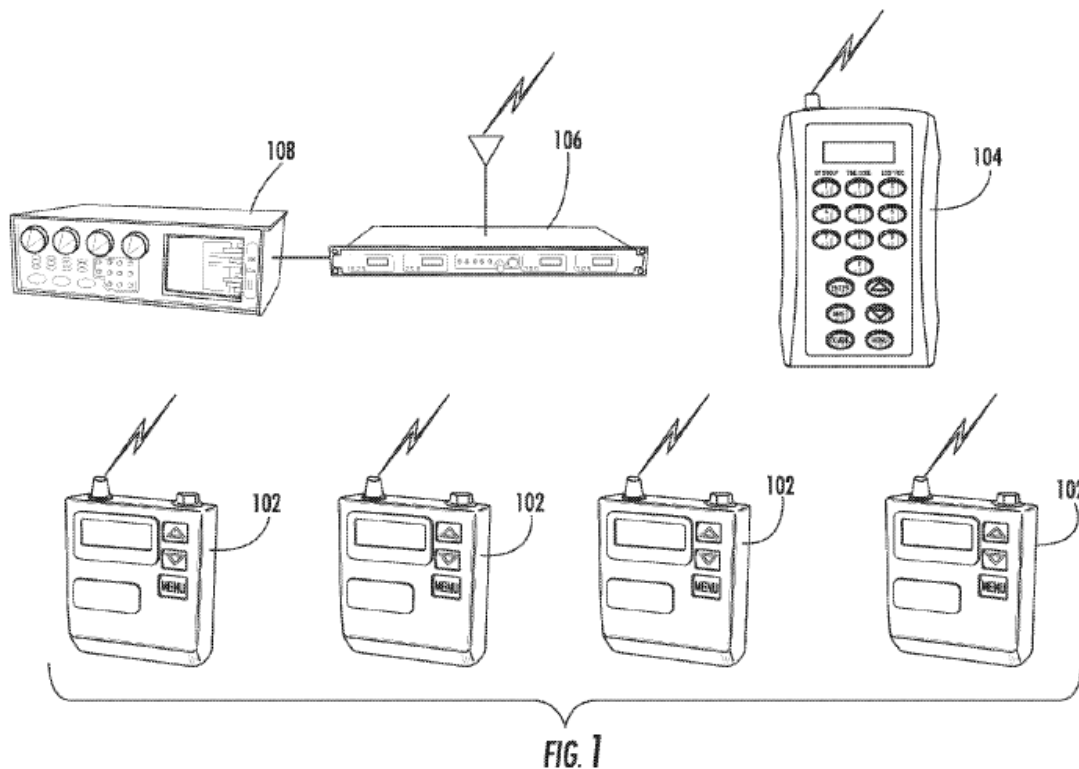


Figure 1 depicts recording system 100, which “wirelessly records audio events, such as performances, movie takes, etc. having one or more

performers.” *Id.* at 3:30–32. “Recording system 100 includes local audio devices 102, remote control unit (‘RCU’) 104, receiver 106, and recorder 108.” *Id.* at 3:56–58. Local audio devices 102 record live audio and store the audio in memory using timestamps that are synchronized with the timestamps of recorder 108. *Id.* at 4:20–25. Local audio devices 102 may transmit both live and replayed audio to receiver 106 to be recorded by audio recorder 108. *Id.* at 4:1–3. “RCU 104 includes an RF transmitter capable of transmitting one or more of a time reference signal, digital commands, and audio to one or more other components of recording system 100.” *Id.* at 3:58–61. The RCU may remotely control local audio devices 102, receiver 106, and recorder 108 for “initiating audio playback of all local audio devices 102 starting at the same time reference, as well as recording thereof by receiver 106 and recorder 108.” *Id.* at 3:62–67.

2. Overview of the '207 Patent

The '207 patent discloses “systems and methods for recording and processing audio having one or more tracks received from one or more wireless devices operating in either an asynchronous or synchronous mode.” 232 IPR, Ex. 1001, 1:47–51.

Figure 1 of the '207 patent is reproduced below.

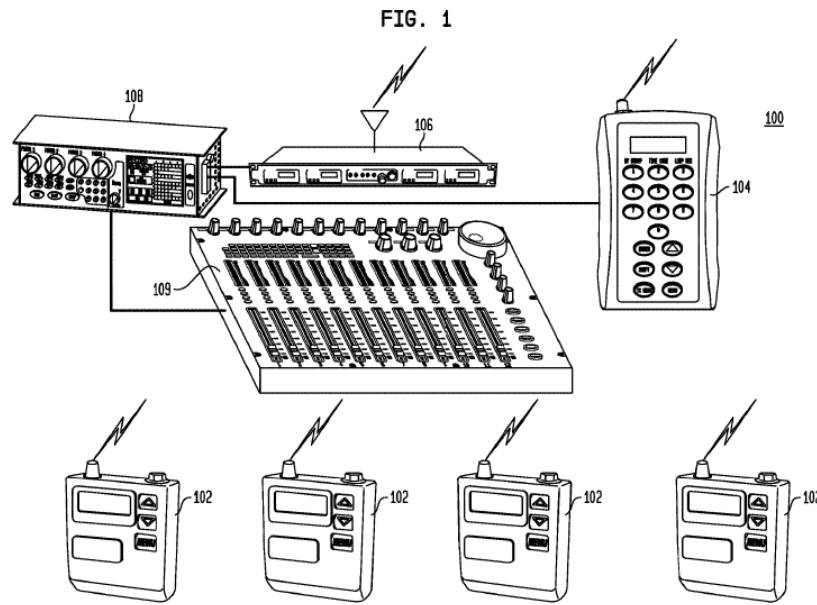


Figure 1 depicts recording system 100, which “wirelessly records audio events, such as performances, movie takes, etc. having one or more performers.” *Id.* at 4:1–3. “[R]ecording system 100 includes local audio devices 102, remote control unit (‘RCU’) 104, receiver 106, and recorder 108.” *Id.* at 4:27–30. Local audio devices 102 record live audio and store the audio in memory using timestamps that are synchronized with the timestamps of recorder 108. *Id.* at 4:52–5:10. Local audio devices 102 may transmit both live and replayed audio to receiver 106 to be recorded by audio recorder 108. *Id.* at 4:40–42. “RCU 104 includes an RF transmitter capable of transmitting one or more of a time reference signal, digital commands, and audio to one or more other components of recording system 100.” *Id.* at 4:30–33. RCU 104 may remotely control local audio devices 102, receiver 106, and recorder 108 for “initiating audio playback of all local audio devices 102 starting at the same time reference, as well as recording thereof by receiver 106 and recorder 108.” *Id.* at 4:33–39.

C. Illustrative Claims

Of the challenged claims in these proceedings, claim 1 of the '443 patent is independent, as are claims 17 and 59 of the '207 patent.

Claims 2–4, 7–9, 15, 17, 19, 20, and 22–27 of the '443 patent depend from claim 1. Claims 18, 19, 21–23, 33, and 34 of the '207 patent depend from claim 17, and claims 60 and 66 depend from claim 59.

Claim 1 of the '443 patent recites the following (with letter designations used in the 230 Petition to refer to the various limitations):

1. [Pre] A system for recording locally generated audio comprising:

[A] at least one master timecode generator for generating a plurality of master timecodes; and

[B] at least one local audio device wearable by a creator of said locally generated audio including:

[C] at least one local audio device receiver for wirelessly receiving said master timecodes;

[D] at least one audio input port for receiving locally generated audio from an audio input device;

[E] at least one memory;

[F] at least one control unit in communication with said local audio device receiver, said audio input device, and said memory for creating local audio data from said locally generated audio and storing said local audio data in said memory; and

[G] at least one local audio device wireless transmitter for wirelessly transmitting said local audio data in real time, said at least one local audio device wireless transmitter in communication with said at least one control unit;

[H] wherein said local audio data includes stamped local audio data and unstamped local audio data;

[I] wherein said stamped local audio data includes at least one timestamp to reference at least a portion of said local audio data to at least one of said master timecodes; and

[J] wherein said unstamped local audio data does not include a reference to said master timecodes.

Claim 17 of the '207 patent is likewise reproduced below:

17. [Pre] At least one audio device wearable by a user for storing locally generated audio and transmitting the locally generated audio to a remote device, the remote device including at least one of a receiver, a recorder, a mixer, and combination thereof, the at least one audio device comprising:

[A] a wireless transmitter,

[B] an audio input port configured to couple to an audio input device to receive the locally generated audio;

[C] a memory;

[D] a local timecode generator operable to generate a local timecode;

[E] a control unit coupled to the wireless transmitter, the audio input port, the memory, and the local timecode generator,

[F] the control unit operable to: (i) receive a master timecode from a master timecode generator and jam synchronize the local timecode generator to the master timecode generator using the master timecode, [G] (ii) transmit the locally generated audio to the remote device via the wireless transmitter; and [H] (iii) store the locally generated audio in the memory as audio data; and [I] (iv) stamp at least a portion of the audio data with the local timecode.

D. Asserted Grounds and Testimony of Record

Both proceedings involve the following prior art references:

a) *Strub*: U.S. Patent No. 6,825,875 B1, issued Nov. 30, 2004, filed as Exhibit 1003 in both proceedings;

b) *Woo*: U.S. Patent No. 5,479,351, issued Dec. 26, 1995, filed as Exhibit 1004 in both proceedings;

c) *Nagai*: U.S. Patent Application Publication No. 2002/0159179 A1, published Oct. 31, 2002, filed as Exhibit 1005 in both proceedings;

d) *Gleissner*: U.S. Patent Application Publication No. 2004/0028241 A1, published Feb. 12, 2004, filed as Exhibit 1006 in both proceedings.

In the 230 IPR, Petitioner relies on these additional references:

e) *Winningstad*: U.S. Patent No. 7,483,485 B2, issued Jan. 27, 2009, filed as Exhibit 1008 in the 230 IPR; and

f) *Dwyer*: U.S. Patent No. 6,571,211 B1, issued May 27, 2003, filed as Exhibit 1009 in the 230 IPR.

Petitioner asserts the following grounds of unpatentability:

Reference(s)	Basis	Claim(s) Challenged in the 230 IPR
Strub, Woo, Nagai, Gleissner	§ 103	1–3, 7, 8, 15, 17, 19, 20, 23–27
Strub, Woo, Nagai, Gleissner, Winningstad	§ 103	4, 9
Strub, Woo, Nagai, Gleissner, Dwyer	§ 103	22
Reference(s)	Basis	Claim(s) Challenged in the 232 IPR
Strub, Woo, Nagai, Gleissner	§ 103	17–19, 21–23, 33, 34, 59, 60, 66

As for testimony, Petitioner relies on a Declaration of Dr. Chris Kyriakakis, filed as Exhibit 1002 in the 230 IPR and Exhibit 1002 in the 232 IPR. A Reply Declaration of Dr. Kyriakakis is filed in the record as Exhibit 1073 in the 230 IPR and Exhibit 1073 in the 232 IPR. The August 13, 2025, deposition of Dr. Kyriakakis is transcribed and filed in the record as Exhibit 2119 in the 230 IPR and Exhibit 2030 in the 232 IPR.

Patent Owner relies on a Declaration of James DeFilippis, filed as Exhibit 2140 in the 230 IPR and Exhibit 2058 in the 232 IPR. 230 IPR, Ex. 2140; 232 IPR, Ex. 2058. The deposition of Mr. DeFilippis is filed in the 230 IPR as Exhibit 1076, and in the 232 IPR as Exhibit 1076.

Other declarations and deposition transcripts of various fact witnesses are discussed in the analysis below.

E. Level of Ordinary Skill in the Art

Based on the argument and evidence presented in the Petition and Patent Owner's preliminary response, we determined, as stated in our Decision on Institution, that "a person of ordinary skill in the art would have had a Bachelor's degree in electrical engineering and two or more years of experience working with audio and wireless communications systems." 230 Dec. on Inst. 16; 232 Dec. on Inst. 22–23. Patent Owner reiterates its position that a person of ordinary skill the art would have had "a bachelor's degree in electrical engineering or a related subject and two to five years' experience *working with multi-track audio and wireless communications systems in the professional performance industry.*" 230 IPR, PO Resp. 6–7 (emphasis added) (identical passage in 232 PO Resp. 8). Thus, the dispute centers on whether the level or ordinary skill includes specific work experience with multi-track audio in the professional performance industry. We do not agree that this specific work experience is necessary to the level of ordinary skill in the instant proceedings.

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere*, 383 U.S. 1, 17–18 (1966). "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 construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). In determining the level of ordinary skill, we may consider various factors including “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC*, 57 F.3d 1573, 1579, (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

Patent Owner’s proposed specificity of work with multi-track audio in a professional performance industry is not supported by the record. First, Patent Owner submits conclusory declaration testimony of James DeFilippis—repeating verbatim, and without any supported reasoning, Patent Owner’s proposed level of ordinary skill. Ex. 2140 ¶ 15. As such, the testimony is not persuasive.

Second, Patent Owner’s additional declaration testimony of Jack Norflus is not commensurate with the *In re GPAC* factors. The testimony states that “it is highly important that a person obtain direct experience working with a seasoned and qualified technician to learn the practical skills and nuances needed to produce professional-grade multi-track recordings utilizing wireless communications systems.” Ex. 2021 ¶ 11. According to Mr. Norflus, “[w]ithout real-world, hands-on experience, a person would be lacking key components of understanding and technique related to recording audio, particularly in a professional setting.” *Id.* Thus, the testimony focuses on a “professional” grade or setting that is not evidenced by either

the prior art or the patents-at-issue. No challenged claim has been shown to require a specific “professional” environment in which to utilize the claimed wireless audio system. The patents-at-issue generally describe the field of work, as stated in the “Background of the Invention” section:

“[e]mbodiments of the present invention generally relate to systems and methods for recording and processing audio received from one or more wireless devices” and describing previous systems to “record performance audio” and account for “wireless transmission errors.” *See, e.g.*, 230 IPR, Ex. 1001, 1:16–63; 232 IPR, Ex. 1001, 1:43–2:38.

We recognize that the patents-at-issue describe the problems of “many systems and methods [that] have been created to record performance audio.” 230 IPR, Ex. 1001, 1:22–23; 232 IPR, Ex. 1001, 1:52–53. The description of these problems, however, focuses on the wiring of microphones to a multi-track recorder and a solution for recording such audio wirelessly by providing redundant receivers to “provide[] a better opportunity to avoid missed audio transmissions.” 230 IPR, Ex. 1001, 1:25–51; 232 IPR, Ex. 1001, 1:55–2:17. This problem is not specific to any type of performance or “professional setting.” Although the patents describe further audio recording problems during a performance—audio created during a performance (e.g., a live performance) may be lost “due to the inability of the receiver to receive a clean audio signal”⁹—such problems are also present in the prior art without the context of a live performance. For instance, Strub describes the problem of losing the recording of an

⁹ 230 IPR, Ex. 1001, 1:55–63; 232 IPR, Ex. 1001, 2:25–27.

interesting activity in which there are multiple participants by controlling the recording of the audio. Ex. 1003, 36:58–37:40.

Furthermore, we note that the Board has previously determined the level of ordinary skill in the art in the Lectrosonics IPRs and that our determination here is consistent with those prior proceedings. *See, e.g.*, Ex. 1018, 11–12 (adopting the same definition for purposes of the ’814 patent). On the full record before us, we determine that our determination of the level of ordinary skill in the art should be consistent with the Lectrosonics IPRs, which is further consistent with the patents-at-issue and the prior art. Patent Owner’s evidence to the contrary, as discussed above, is not persuasive.

Accordingly, we conclude that a person of ordinary skill in the art would have had a Bachelor’s degree in electrical engineering and two or more years of experience working with audio and wireless communications systems.

IV. CLAIM CONSTRUCTION

We interpret each challenged claim

using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b). “In determining the meaning of [a] disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006). Claim terms are given their

plain and ordinary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). “There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

Patent Owner proposes interpretations for various terms, which we address below.

A. “wearable”

In the Lectrosonics IPRs, the Board, applying the broadest reasonable interpretation (BRI) standard, interpreted “wearable” to mean “suitable and in a condition to be worn.” See Ex. 1014, 10–12; Ex. 1017, 10–12; Ex. 1018, 7–9; *Zaxcom*, 2022 WL 499848, at *1 (“[W]e agree with the Board that the broadest reasonable construction of ‘wearable,’ found in both independent claims, is ‘suitable and in a condition to be worn,’ consistent with its dictionary definition.”). In our Decisions on Institution, we determined that based on the arguments presented and the record before us, “wearable” means “suitable and in a condition to be worn.” 230 Dec. on Inst. 18–19.¹⁰ In the underlying litigation, the District Court also has construed the term “wearable” to mean “suitable and in a condition to be worn.” Ex. 1037, 7.

¹⁰ Because the Decisions on Institution include the same preliminary claim constructions for terms overlapping the 230 IPR and 232 IPR, we cite hereinafter only to the 230 IPR Decision on Institution unless the term was treated differently in the 232 IPR.

Patent Owner urges that “wearable” does not mean “merely portable.”¹¹ 230 PO Resp. 11–12. According to Patent Owner, a Notice of Allowance in the ’443 patent prosecution history indicates a distinction between a device that is wearable by a creator of locally generated audio and a “portable audio recorder.” 230 PO Resp. 11; Ex. 2017. We are not persuaded by Patent Owner’s argument.

The Notice of Allowance in the ’443 patent file history generally refers to various prior art features, not just whether the device is a “portable audio recorder”:

The following is an examiner’s statement of reasons for allowance: the closest *prior art of record (Nagra-V) teaches a portable audio recorder including various data input and output options including wired audio and timecode ports*. The prior art of record, when viewed alone or in combination, fails to teach or suggest “wirelessly transmitting said local audio data in real time ... wherein said local audio data includes stamped local audio data and unstamped local audio data” wherein the device is “wearable by a creator of said locally generated audio” in combination with the rest of the limitations of independent claim 2.

Ex. 2017, 2 (emphasis added). The mention of portability does not warrant a conclusion that a portable audio recorder cannot also be a device “wearable by a creator of said locally generated audio,” as recited in claim 1 of the

¹¹ Patent Owner argues that the full phrase “local audio device wearable by a creator of said locally generated audio” should be interpreted to mean “a local audio device suitable to be worn by the performer who creates the audio that is recorded by that performer’s local audio device.” 230 PO Resp. 11. We see no basis to substitute “performer” for the words used in the claims (“creator” in the ’443 patent and “user” in the ’207 patent), and conclude that the parties’ dispute can be resolved by interpreting the term “wearable.”

'443 patent. A device that is wearable by a creator of locally generated audio is also portable. Thus, the meaning of “wearable” cannot exclude “portability.” However, we agree with Patent Owner that a device that is portable, but not suitable to be worn by a creator of said locally generated audio, would not be “wearable” in the context of the claim.¹² This distinction, however, is captured by the construction we have applied at institution which follows a plain and ordinary meaning of the word “wearable.” See 230 IPR, Ex 1001, 1:41–42 (discussing “body packs that are worn by each performer”), 8:59–62 (discussing local audio input device 312 “which may be worn by the performer”).

Based on the foregoing, we determine that the plain and ordinary meaning of the term “wearable” is “suitable and in a condition to be worn.”

B. “locally generated audio” and “local audio data”

In our Decisions on Institution, we determined that no express interpretation of “locally generated audio” was necessary to determine whether to institute an *inter partes* review. 230 Dec. on Inst. 19–20; 232 Dec. on Inst. 26–27. We did not address the term “local audio data.”

Patent Owner argues that “locally generated audio” in claim 1 of the '443 patent means “separate, isolated audio created by the wearer of the local audio device receiving the locally generated audio, such audio suitable for use as an independent track of audio.” 230 PO Resp. 9; 230 Sur-Reply 7

¹² Patent Owner compares the “portable audio recorder” of Nagra-V (the prior art mentioned in the Notice of Allowance discussed above) with Strub’s unit. 230 PO Resp. 11–12; 232 PO Resp. 14. Our analysis of whether Strub teaches a “wearable” unit is discussed with respect to our application of the construed claim to the evidence presented by Petitioner. See *infra* Section VI.B.7(c) and VI.C.4(b).

(arguing that the specification refers to “locally generated audio” and “independent track of audio” interchangeably). According to Patent Owner, “each performer must create a separate, individual, isolated audio track that can be used to create a multitrack recording.” 230 PO Resp. 10. Patent Owner seeks a construction that captures an alleged “essence of the ’443 [patent] Specification”—recording an audio track per performer. *Id.* Mr. DeFilippis supports Patent Owner’s contention by testifying that “creation of a multi-track file can only happen when independent, isolated, separate tracks of each of the performer’s voices exist.” 230 IPR, Ex. 2140 ¶ 135.¹³

Petitioner counters that there is no support in the file history or the patent specification requiring “separate, isolated audio.” 230 Reply 2. According to Petitioner, none of the passages of the specification cited by Patent Owner preclude capturing at the local audio device audio that is in addition to the creator or require an “independent” track of audio. *Id.* We agree with Petitioner.

The term “locally generated audio” in the context of the surrounding claim language does not limit that audio to encompassing audio from only the recited “creator.” Limitation 1[B] of claim 1 of the ’443 patent simply recites a “local audio device wearable by a creator of said locally generated audio.” Although the locally generated audio must be created by this “creator,” the claim language does not restrict the “local audio device” from capturing audio generated by other creators nearby or other ambient sounds.

¹³ Identical testimony in the 232 IPR. 232 IPR, Ex. 2058 ¶ 135. Citations hereinafter to the testimony of witnesses will be to declarations filed in the 230 IPR unless the testimony is included only in the declarations filed in the 232 IPR.

Claim 1 of the '443 patent does not mention tracks of audio attributable to only the creator or the concept of “multi-track” audio.

The language of claims 17 and 59 of the '207 patent parallels claim 1 in these respects. The preambles of claims 17 and 59 recite the “audio device wearable by a user for storing locally generated audio.” There is neither mention of “multi-track” audio in the claim, nor is the audio device limited to capturing a single source of sound, such as a single performer. Accordingly, we are not persuaded that the '443 and '207 patent claims support the limited scope that Patent Owner urges for the term “locally generated audio.” None of Patent Owner’s citations to the specification define or require that the “locally generated audio” correspond to audio generated only by a single performer. *See, e.g.*, 230 IPR, Ex. 1001, 8:59–62 (stating that the local audio input device “may be worn by the performer and connects to local audio device 102 at local audio input device port 314”).

Patent Owner’s argument that the specification “teaches a single creator/performer per local audio device” is well-taken, but the teachings do not indicate the intent to exclude other sounds from being captured at the local audio device (or indicate how the device would prevent the capture of other sounds, such that the audio would be “isolated” as Patent Owner contends). *See* 230 Sur-Reply 10 (citing 230 IPR, Ex. 1001, 4:28–32, 10:29–34, and *Insituform Techs., Inc. v. Cat Contr., Inc.*, 99 F.3d 1098, 1105 (Fed. Cir. 1996) (“[C]laim 1 refers to ‘a cup’ and ‘the cup’ repeatedly, suggesting that only one cup is involved [N]either the specification nor the drawings disclose the use of more than one cup.”)). For instance, the specification describes that the “independent track of audio is received from one of the performer’s local audio device 102.” 230 IPR, Ex. 1001,

10:33–34. Thus, in this description the audio track corresponds to the audio captured by a particular audio device—which was worn by the performer—but does not limit that captured audio to only sounds made by the performer.

As to the “local audio data” term, Patent Owner argues that “audio data” means “mono or stereo audio files created from independent, isolated locally generated audio files, such files suitable for creation of a multi-track audio file.” 230 PO Resp. 9–10 (citing Ex. 2140 ¶¶ 131, 134). This argument is unsupported by the claim language or specification. The claim does not require the creation of audio files, much less a “multi-track audio file.” The specification describes storing audio files in memory without the specificity that Patent Owner urges we adopt. *See* 230 IPR, Ex. 1001, 13:1–14. Accordingly, we are not persuaded by Patent Owner’s proposed construction of “local audio data.” Rather, we understand “audio data” to have a plain and ordinary meaning, such as the one given to the term by the District Court in the underlying litigation. 230 IPR, Ex. 1037, 10. We adopt the District Court’s construction of “audio data” to mean “data comprising audio signals in digital form.” *Id.* This finds support in the specification as the audio is described as being converted into digital audio and stored in a file. *See* 230 IPR, Ex. 1001, 13:1–14. Our conclusion is consistent with the plain and ordinary meaning of the term as that would be understood by a person of ordinary skill in the art, and we see no reason to deviate from the conclusions of the District Court on this point.

The meaning of “audio data” is “data comprising audio signals in digital form.” The term “locally generated audio” needs to be construed insofar as it is not limited to audio from only a single performer.

C. “*master timecode*” and “*master timecode generator*”

In our Decisions on Institution, we preliminarily construed these terms as follows: “master timecode generator” means “a producer of a master time reference signal that controls at least one other timecode generator” and “master timecode” means “a time reference signal used to synchronize at least one device.” 230 Dec. on Inst. 20–22; 232 Dec. on Inst. 27–29.

Patent Owner argues that “master timecode generator” should be interpreted to mean “a producer of a master time reference signal that controls at least one other timecode generator” and that “master timecode” should be interpreted to mean “a time reference signal used to synchronize at least one device.” 230 PO Resp. 12–13. Patent Owner’s proposed interpretation of “master timecode generator” is very similar to the one previously adopted by the Board. In two of the Lectrosonics IPRs, the Board, applying the BRI standard, interpreted “master timecode generator” to mean “a producer of a plurality of master timecodes controlling other time code generators.” *See* Ex. 1017, 12–14; Ex. 1018, 9–10. The Board noted that the specifications of the patents at issue in those proceedings “clearly provide[] support for the plain and ordinary meaning of master timecode generator—controlling other time code generators.” *Id.*

In the instant proceedings, Petitioner argues that the plain and ordinary meaning of “master timecode generator” is “a generator of master timecodes.” 230 Reply 8 (citing 230 IPR, Ex. 1001, 1–2, 9:45–48). Petitioner points out that the “master timecode generator need **not** control another timecode generator” because this would exclude the “asynchronous” embodiment where master timecodes only are used to timestamp audio. *Id.*

The issue for us to determine is whether it is proper to construe the term “master timecode generator” in these proceedings to include the notion of “control of other timecode generators.” On the full record before us, we agree that it is improper to import into the meaning of the “master timecode” claim terms the notion of “control of other timecode generators.”

We begin with the claims. Limitation [A] of claim 1 of the ’443 patent recites “at least one master timecode generator for generating a plurality of master timecodes.” Further limitation 1[F] recites “at least one control unit . . . for creating local audio data” and limitation 1[H] recites that the “local audio data includes stamped local audio data and unstamped audio data.” According to a plain reading of limitation 1[I] of the claim, the stamped local audio data includes timestamps corresponding to the master timecodes. Thus, it is the control unit recited in claim 1 of the ’443 patent that creates local audio data that include timestamps using the master timecodes. *See* Limitation [F] of claim 1 (’443 patent). The master timecode generator only generates the plurality of master timecodes—there are no other timecode generators required by claim 1 of the ’443 patent. *See* Limitation [A] of claim 1 (’443 patent). Thus, in the system of that claim, the master timecodes are the only timecodes for stamping audio and no other timecode generator is recited or needed to timestamp the audio. This claimed system of the ’443 patent comports with the asynchronous operation of the recording system described in the specification:

Alternatively, during asynchronous operation of recording system 100, the received data may include master timecodes from the master timecode generator that may be used to timestamp individual audio samples and/or files such that the audio received at multiple local audio devices 102 may be

synchronized post-recording using one of the methods discussed below with respect to FIGS. 9 and 10 or an equivalent thereof.

230 IPR, Ex. 1001, 9:45–52. In short, the “master timecode generator” in the asynchronous operation does not control any other timecode generator.

In contrast, the ’207 patent claims recite that the local timecode generator is jam synchronized “to the master timecode generator using the master timecode.” *See* Limitations 17[F] and 59[E] of the ’207 patent. In these claims, it is reasonable to conclude that the “master timecode generator” produces a signal that “controls” another timecode generator, as argued by Patent Owner, but that is a function of the claim language used, not the term “master timecode generator” by itself.

Accordingly, we do not limit the “master timecode” terms at issue to encompass “control” especially because the claim language surrounding these terms provides the context for how the timecodes generated by the “master timecode generator” are used to timestamp the audio that may be used later for synchronization. In other words, the “master timecode generator” itself does not “control” another timecode generator even in the synchronous embodiments captured by the claims of the ’207 patent, because it is the control unit that jam synchronizes to ensure that the timecodes of the local timecode generator correspond to the master timecodes. Indeed, we agree with the District Court’s claim construction of “master timecode generator” as simply being “a producer of master timecodes,” a construction that has been proposed by Petitioner in this proceeding. 230 Reply 8 (citing 230 IPR, Ex. 1001, 2:1–2, 9:45–48, and Ex. 1002 ¶ 26); Ex. 1037, 6. We agree that the construction follows the plain and ordinary meaning in the context of the specification.

We recognize that in the Lectrosonics IPRs mentioned above, the Board found that the scope of the “master timecode” terms included the notion of control of another timecode generator. *See* Ex. 1017, 12–14; Ex. 1018, 9–10. We depart from those prior decisions because we recognize the claims in those proceedings encompassed both the master timecode generator and the local timecode generator, such that it was proper to conclude the operation of the claimed systems involved the synchronous mode in which the master timecodes control the timestamps applied by the local timecode generator. Here, however, claim 1 of the ’443 patent covers locally generating audio without the use of the “local timecode generator,” and therefore, the notion of controlling another timecode generator is not permissible. *See Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1328 (Fed. Cir. 2002) (quoting *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998)) (claims should not be limited “to preferred embodiments or specific examples in the specification”). For claims 17 and 59 of the ’207 patent, the notion of control may be captured by surrounding claim language encompassing “jam synchronization,” which is addressed below.

Patent Owner argues that the notion of control is present in all embodiments, whether operating in synchronous or asynchronous modes. *See* 230 Sur-Reply 13. According to Patent Owner, “[a]lthough this ability may be disabled in asynchronous mode, the synchronous technology must always be available.” *Id.* (citing *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361 (Fed. Cir. 2003) (construing claim limitations as requiring “play” because the specification consistently showed and required play in every embodiment)). We do not agree with Patent Owner because enabling or

disabling these two distinct modes of operation is not a feature that is commensurate with claim scope. *See* 230 IPR, Ex. 1001, 9:36–52 (describing alternative modes of operation, each with distinct processes shown in separate embodiments, such as those shown in Figures 4A/4B and 5, for synchronous operation, versus Figures 9 and 10, for asynchronous operation). Indeed, none of the claims of the ’443 patent have been shown to require or include synchronous mode operation (whether as an optionally enabled feature or as a configuration option). Accordingly, our construction of the claim term better captures the distinction we have drawn in this proceeding that for the functionality recited in claim 1 of the ’443 patent, the claim does not require that the “master timecode generator” “control” another timecode generator.

Based on the foregoing, we agree substantially with the District Court’s construction of “master timecode” and revise it slightly as “code(s) for synchronizing audio samples,” because the master timecodes are used to synchronize the audio samples. *See* Ex. 1037, 7. We determine that “master timecode generator” plainly means “a generator of master timecodes.”

D. “jam synchronize”

Patent Owner asserts that in the underlying district court litigation, “both Parties agree that ‘jam synchronize’ means ‘[a]ligning the internal clock of one device, program[,] or application with the internal clock of another device, program[,] or application.’” 232 PO Resp. 15–16 (citing Ex. 2006, 8); *see also* Ex. 1037, 5 (noting parties’ agreement in the district court litigation). In our Decisions on Institution, we stated that we agreed that the construction is supported by the ’207 patent specification and

adopted the construction based on the current record. 232 Dec. on Inst. 30. Neither party has asked for a modification of that construction.

We determine that “jam synchronize” means “aligning the internal clock of one device, program, or application with the internal clock of another device, program, or application.”

E. Additional terms

The parties dispute the scope of the terms “multi-track data file” and “body pack,” recited in dependent claims of the ’443 patent. 230 PO Resp. 12–14; 230 Reply 11, 15–16. We need not decide the dispute and provide a construction for these terms because our determination focuses on the challenged independent claims of the ’443 and ’207 patents in view of the evidence of obviousness weighed against the evidence of objective indicia of non-obviousness. Because that is a dispositive determination, we need not resolve the claim construction disputes concerning the dependent claims.

V. COLLATERAL ESTOPPEL

Before delving into the merits of Petitioner’s unpatentability challenge, we address Petitioner’s overarching argument that Patent Owner is collaterally estopped from disputing (1) the presence in the cited references of certain limitations, and (2) the obviousness of combining Strub, Woo, Nagai, and Gleissner, because the issues are identical to those decided in the Lectrosonics IPRs; the issues were actually litigated in the Lectrosonics IPRs; resolution of the issues was essential to the Lectrosonics IPRs; and Patent Owner had a full and fair opportunity to litigate the issues in the Lectrosonics IPRs. 230 Pet. 9–14 (citing *Google LLC v. Hammond*

Dev. Int'l, Inc., 54 F.4th 1377, 1381 (Fed. Cir. 2022)).¹⁴ Petitioner also argues that Patent Owner is collaterally estopped from relying on “the same or substantially similar objective indicia of [non]obviousness” from the Lectrosonics IPRs in this proceeding for similar reasons. 230 Pet. 14–15.

Patent Owner argues that collateral estoppel does not apply because the Board applied the BRI standard to the claims challenged in the Lectrosonics IPRs, so no claim interpretation was ever rendered under the *Phillips* standard and “issues regarding obviousness[,], which rely [on such claim constructions], have also not been litigated.” 230 PO Resp. 7–8 (citing *SkyHawke Techs., LLC v. Deca Int'l Corp.*, 828 F.3d 1373, 1376 (Fed. Cir. 2016)). Patent Owner argues that “[w]here a first IPR is decided under the BRI standard, and a second IPR concerning the same patent is to be decided under the *Phillips* standard, ‘collateral estoppel . . . is not appropriate.’” *Id.* (citing *Ebates Performance Mktg., Inc. v. Int'l Bus. Machines Corp.*, IPR2022-00646, Paper 56 at 10 (PTAB Oct. 11, 2023)).

We agree with Patent Owner. Although the Lectrosonics IPRs involved patents from the same family as the '443 and '207 patents, which recite many similar claim limitations, the Lectrosonics IPRs were all decided using the BRI standard, not the *Phillips* standard. Thus, no claim interpretation has been made using the standard that will be applied in this case, and the asserted prior art has not been applied to claims interpreted according to the standard in this case. Accordingly, we are not persuaded that collateral estoppel applies to any of the disputed issues in this

¹⁴ This issue has been briefed in the 232 IPR in a substantially similar manner, thus we cite only to the papers filed in the 230 IPR. *See, e.g.*, 232 Pet. 8–13; 232 PO Resp. 8–10.

proceeding. *See DDR Holdings, LLC v. Priceline.com LLC*, 122 F.4th 911, 918–919 (Fed. Cir. 2024) (“‘Because the Board applies the broadest reasonable construction of the claims while the district courts apply a different standard of claim construction as explored in *Phillips*,’ a party is not collaterally estopped in district court proceedings by the Board’s constructions during IPR.”); *SkyHawke*, 828 F.3d at 1376.

VI. OBVIOUSNESS ANALYSIS

We turn to the evaluation of obviousness of claim 1 of the ’443 patent and claims 17 and 59 of the ’207 patent. Although these sets of claims have some differences in scope, the majority of the disputes in these proceedings have significant overlap. Accordingly, we address the parties’ arguments and evidence first with respect to the ’443 patent in the 230 IPR, and then reference the arguments and evidence that are similar for the ’207 patent when discussing the 232 IPR.

For the three independent claims discussed below, Petitioner asserts obviousness over the combination of Strub, Woo, Nagai, and Gleissner. 230 Pet. 27–59; 232 Pet. 24–57. “A determination of whether a patent claim is invalid as obvious under § 103 requires consideration of all four *Graham*^[15] factors, and it is error to reach a conclusion of obviousness until all those factors are considered.” *Apple Inc. v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016). In these proceedings, Patent Owner has raised secondary indicia of non-obviousness for consideration, and, therefore, in evaluating the challenge of obviousness by Petitioner, we reserve our determination of the ultimate conclusion of obviousness until

¹⁵ *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

after we evaluate the non-obviousness arguments and evidence raised in these proceedings.

Before turning to an evaluation of the asserted prior art and the arguments by Petitioner regarding the independent claims, we briefly summarize the four prior art references involved.

A. Summary of the Prior Art

1. Strub and Strub's Enablement

Strub, titled “Hybrid Recording Unit Including Portable Video Recorder and Auxiliary Device,” is directed to “recording of [an] event by multiple participants (i.e., from multiple points of view), often simultaneously.” Ex. 1003, 1:25–31. Strub discloses a “hybrid recording unit” that is “constructed by adding to a portable video recorder (e.g., camcorder, portable dockable videotape recorder (VTR)) one or more devices (an ‘auxiliary device’) that provide additional functionality to the portable video recorder.” *Id.* at 5:23–29. “The auxiliary device can advantageously provide, for example, one or more of the following capabilities: marking, position sensing, physiological monitoring and/or biometric identification.” *Id.* at 5:29–32. The hybrid recording unit is adapted to obtain a visual recording of the event as well as an audio recording of the event. *Id.* at 8:44–52. Multiple hybrid recording units may record a single event and one recording unit may transmit its recording to another recording unit. *Id.* at 37:18–40, 38:8–10.

Figure 1 of Strub is reproduced below.

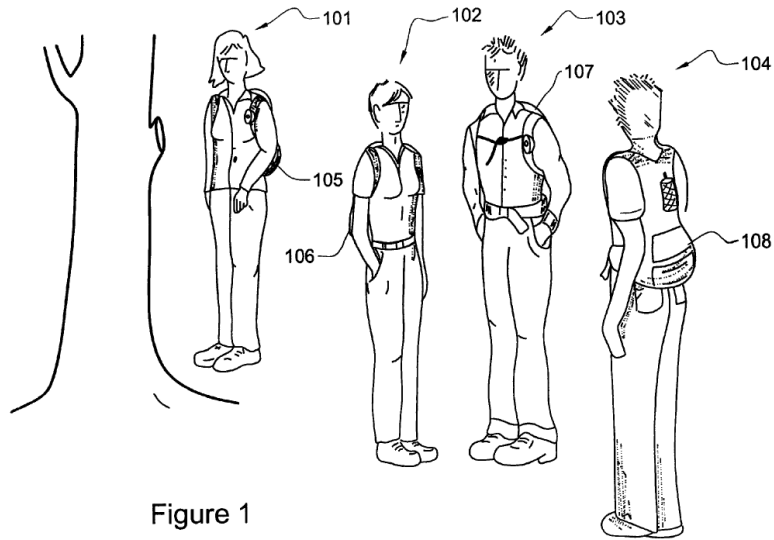


Figure 1

Figure 1 depicts four participants 101–104, equipped with respective recording units 105–108, who “are participating in, or observing, an event.”
Ex. 1003, 8:7–13.

Figure 3 of Strub is reproduced below.

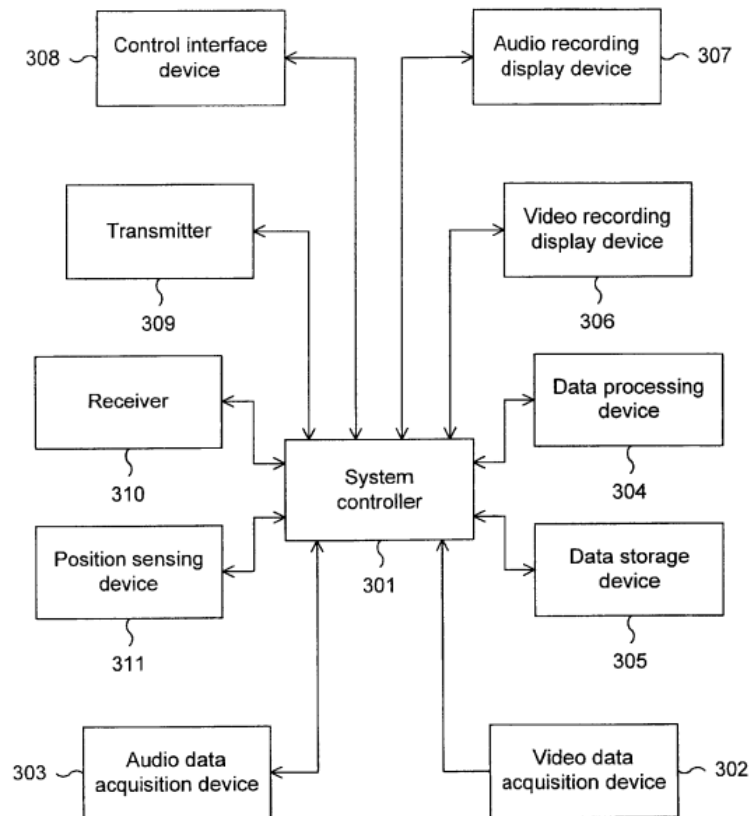


Figure 3 depicts the components of recording unit 300, including system controller 301, audio data acquisition device 303, data storage device 305, and transmitter 309. Ex. 1003, 11:57–12:52. “[T]ransmitter 309 transmits signals . . . representing recording data acquired by the recording unit 300, so that such recording data can be used by other recording units (e.g., . . . to enable processing of recording data obtained by the recording unit 300).” *Id.* at 12:31–39. Strub also describes a global positioning system (GPS) receiver in the recording unit

to receive a signal representing the current time that can be used as a clock to generate time-stamps for the recording data. Depending upon the speed of the processing device(s) of the recording unit, the GPS time signal can be updated about once a second. The GPS time signals are extremely accurate; thus, since all of the recording units are receiving this time signal, the time-stamps of all recording units are adequately synchronized.

Though the recording unit must not be constantly blocked from GPS satellites in order for the recording unit to receive such time signals, the recording unit need only be exposed to a GPS satellite for about a minute to enable the time signals to begin. Further, after that point, clock drift occurs slowly, even if the recording unit is blocked from the GPS satellites for a period of time. Additionally, a recording unit according to the invention typically also includes an internal clock, as described above, that, while not as accurate as the GPS time signals, can also be used to accurately time-stamp data.

Id. at 63:41–60.

a) Patent Owner’s Non-Enablement Argument

Patent Owner argues that “Strub teaches a fantastical, futuristic device (for April 2000) with virtually unlimited features, many of which were not technologically able to be done on Strub’s filing date, and some of which

still do not exist today.” 230 PO Resp. 34.¹⁶ According to Patent Owner, even for the technically feasible items, Strub fails to teach a person of ordinary skill in the art how to make the invention without undue experimentation. *Id.* Even if a person of ordinary skill in the art could figure out how to design the feasible aspects of Strub, it would not be “wearable.” *Id.* (citing Ex. 2140 ¶ 290). Patent Owner then proceeds with its arguments that Strub is not-enabled and asserts that the test for whether the amount of experimentation is unduly extensive is determined by the *Wands* factors. *Id.* at 35 (citing *In re Wands*, 858 F.2d 731 (Fed. Cir. 1998)).

In an obviousness determination, “there is no absolute requirement for a relied-upon reference to be self-enabling in the § 103 context, so long as the overall evidence of what was known at the time of invention establishes that a skilled artisan could have made and used the claimed invention.” *Raytheon Techs. Corp. v. General Electric Co.*, 993 F.3d 1374, 1376–77 (Fed. Cir. 2021). These proceedings do not rely on obviousness over Strub alone; they involve a combination of teachings found in four prior art references, one of which is Strub. Even if Strub were not enabled for certain features, it still qualifies as a prior art reference under § 103, but only for what is disclosed in it. *Symbol Techs., Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1578 (Fed. Cir. 1991). Indeed, we can consider Strub’s teachings relied on by Petitioner in our obviousness analysis, without regard to whether Strub is enabling. *In re Antor Media Corp.*, 689 F.3d 1282, 1292 (Fed. Cir. 2012) (stating that a prior art reference “can still qualify as prior art in determining

¹⁶ Identical arguments on this issue are presented in the 232 IPR. *See* 232 PO Resp. 29–54. We, however, cite only to the 230 IPR in our discussion, for expediency.

obviousness under 35 U.S.C. § 103, independent of enablement” and proceeding to “review the obviousness rejection . . . without regard to whether [the reference] is enabling”); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1357 (Fed. Cir. 2003) (remanding to reconsider obviousness over a prior art reference argued to be not enabled, but to do so “without reference to whether [the reference] is enabled, as enablement of the prior art is not a requirement to prove invalidity under § 103”). We are mindful that in some situations our reviewing court has required some enablement analysis. *See Raytheon*, 993 F.3d at 1382; *See Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 297 (Fed. Cir. 1985) (“The test of whether a particular compound described in the prior art may have been relied upon to show that the claimed subject matter at issue would have been obvious is whether the prior art provided an enabling disclosure with respect to the disclosed prior art compound.”). Therefore, in our analysis of Strub as a § 103 reference, we focus only on whether the portions that are relied upon as teaching a limitation are enabled.

Before we turn to that analysis, we address another dispute concerning the timeframe by which Strub’s relevant disclosures must be enabled. Patent Owner’s arguments and evidence focus on April 2000 as the date of enablement; Strub’s filing date is April 21, 2000. 230 PO Resp. 34; Ex. 2140 ¶ 290; Ex. 1003, code (21). Petitioner counters that Patent Owner must prove non-enablement as of one year before the effective filing date of the patents-at-issue. 230 Reply 24. We agree with Petitioner.

The ’443 patent was filed on July 14, 2005, making the enablement date July 14, 2004. *See Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1379 (Fed. Cir. 2001) (evaluating whether the disclosure in

the anticipatory reference “would have been enabling to one of skill in the art more than one year prior to [the effective filing date of the patent]” See 230 IPR, Ex. 1076, 18:13–19:16 (Mr. DeFilippis stating that he used 2000 and technology was announced in 2000 that was not enabled until 2004, but he “tried to keep it to” the 2000 timeframe).

b) Relevant Disclosures of Strub

Patent Owner argues each of the *Wands* factors without identifying whether the disclosures alleged to be non-enabling are relied upon for teaching a claim limitation. 230 PO Resp. 34–56 (addressing the factors of *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1998)). We have reviewed Patent Owner’s arguments and evidence and are not persuaded that Strub is not enabled such that it cannot be considered in the obviousness analysis. We address below three categories of disclosures relevant to our inquiry.

(1) Whether Strub Recording Units are Wearable

Several of Patent Owner’s arguments focus on whether a person of ordinary skill in the art would make the Strub system to be wearable. See, e.g., 230 PO Resp. 39–40 (arguing size of batteries would counsel against wearability), 49–50 (arguing that amount of disks or sizes of storage device would affect wearability). Mr. DeFilippis testifies that “if a [person of ordinary skill in the art (POSA)] were to figure out how to design the feasible aspects of Strub’s system, it would certainly not fit in a backpack and would not otherwise be ‘wearable’ as required by the challenged claims.” Ex. 2140 ¶ 290. He also opines that a “POSA in 2000 would have had to conduct years of undue experimentation to fill the gaps due to Strub’s lack of disclosure.” *Id.* ¶ 291; see also *id.* ¶ 294 (focusing on batteries not

being capable of powering a purportedly wearable device). The testimony is unpersuasive as to enablement.

The Petition points out that Strub expressly describes recording units as “wearable” and depicts various people conversing at an event, each with their own recording unit being worn. 230 Pet. 38–39 (citing Ex. 1003, 4:21–31, 8:10–29, 8:50–53, 11:32–50, 12:13–21, 25:35–49, 14:15:11, 16:66–17:24, 38:65–39:11, 66:33–51, 67:54–68:10, 72:9–12). In particular, the Petition relies on disclosure of “wearing the recording unit” (Ex. 1003, 72:12–13) which is depicted in Figure 8B as being carried on the back of the person who is recording. This is just one of a number of embodiments showing the various ways in which the recording system can be made “small, lightweight, [and] wearable.” *Id.* at code (57).

Further, the testimony and arguments do not take into account the many disclosures of “wearability” and the guidance on “packaging” (*id.* at 66:26–67:29). The testimony focuses on the size of batteries and other components and ways to optimally design a recording unit to work efficiently. *See* Ex. 2140 ¶¶ 291, 294, 306 (describing lack of wearability and lack of operability as a portable device because device not designed for battery power or portability and requires airflow for cooling). But the claims do not require any particular size of the unit, any power requirements, and any operational parameters that align with the design obstacles Mr. DeFilippis focused his testimony on. Additionally, this testimony is provided with the viewpoint of technology commercially available in the year 2000, not the proper timeframe. On balance, we find the testimony of Mr. DeFilippis not credible on the issue of enablement.

(2) Strub's Data Storage Devices

We now turn to a related argument by Patent Owner that Strub's disclosures regarding storage devices do not result in a unit that fits in a backpack. 230 PO Resp. 48–50. The Petition relies on Strub's data storage device 305 as teaching the claimed memory, and Strub describes embodiments of the data storage device as EEPROMs, hard disks, removable media, or solid-state flash memory. 230 Pet. 46. Patent Owner argues that the memory devices of Strub (such as EEPROMs and flash drives) would have limited capacity and the amount of these units needed to record more than a few minutes of video data would not fit in a backpack. 230 PO Resp. 48–50. According to Patent Owner, even the hard drive that Strub discloses would not work because it was not designed for portability and is not suitable for wearability. *Id.* at 50 (citing Ex. 2140 ¶ 306). Again, these arguments are not persuasive.

The Petition does not map the video data capabilities of Strub to the claims. Therefore, Strub's disclosures for capacity for video data handling and video processing are not relevant to the inquiry of obviousness. We also note that even if Strub is capable of storing a few minutes of the audio (or even video for that matter), whether that amount of time is viewed as not ideal is not an issue of non-enablement. Proof of efficacy is not required for a prior art to be enabling. *See Impax Labs. Inc. v. Aventis Pharm. Inc.*, 468 F.3d 1366, 1383 (Fed. Cir. 2006) (citing *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d 1318, 1326 (Fed. Cir. 2005)). Further, as with the argument on “wearability,” the testimony of Mr. DeFilippis focuses on the 2000 date timeframe which is not the relevant timeframe for enablement in this proceeding. *See* Ex. 2140 ¶ 305.

(3) Strub's Data Processing and System Controller

The Petition maps the claimed “control unit” to Strub’s system controller 301 together with data processing device 304. 230 Pet. 47. Patent Owner argues that an embodiment of data processing device 304—the Recon-11—“requires a lot of engineering that a POSA would not be able to complete.” 230 PO Resp. 50 (citing Ex. 2140 ¶ 308). Mr. DeFilippis opines that Recon-11 is not compatible (due to power bus configuration) with one alleged embodiment of system controller 301 (a Motorola device with model number 68HC11G). Ex. 2140 ¶ 308. Other compatibility issues are noted, such as coaxial video input plug and data transfer capability. *Id.* ¶¶ 308, 310. Further, Mr. DeFilippis states that an embodiment of the video recording display device 306 (a Casio VM-150 device) also has a video input incompatible with the 68HC11G device, where all the incompatibilities contradict the system illustration in Figure 3 of Strub. *Id.* ¶ 311. These arguments and testimony are not persuasive.

The fact that video connectors and formats are different in various off-the shelf devices does not render Strub not-enabled. There is no evidence that such formats and connectors render the audio capabilities described in Strub and relied upon by Petitioner not enabled. Therefore, alleging that the 68HC11G is incompatible with video processing of any form is not persuasive. Nor is it persuasive to argue incompatibility with a video display like the Casio VM-150 device—the claims-at-issue are not limited to any particular display functionality. Finally, power-bus incompatibilities alone are not indicative of non-enablement. There must be “undue experimentation” for non-enablement and merely noting an incompatibility is insufficient to show that level of experimentation.

In summary, Strub’s descriptions of its device as wearable, and of its data storage devices and the data processing system with a control unit, have not been shown to be not enabled. We do not credit Mr. DeFilippis’s testimony on this issue. Instead, we credit the testimony of Dr. Kyriakakis that, even as of 2000, a timeframe acknowledged to be wrong for this analysis, solid state memory was well-known to store audio data in amounts that had utility. Ex. 1073 ¶ 154. Further, we credit the testimony that the microcontroller Strub discloses, the Motorola 68HC11, is suitable for sampling audio, as the sampling rate for a regular landline voice line is 8-bit 8kHz sampling, well within the operational parameters of the 68HC11 device. *Id.* ¶ 156. Notably, Dr. Kyriakakis opines, and we agree, that analog-to-digital sampling was known to be performed by dedicated analog-to-digital converters (ADCs) at that time period, and that other microcontrollers available in that timeframe had sufficient power processing and interfaces to connect with transceiver, memory, and audio inputs. *Id.*

c) Additional Arguments of Non-Enablement

There are several additional arguments that Patent Owner raises not relevant to the portions of Strub on which the Petition relies. We address them here summarily for completeness.

For the first *Wands* factor, Patent Owner argues that Strub lacks a circuit-level diagram, requiring undue experimentation to fill the gaps because many aspects would have to be figured out. 230 PO Resp. 38 (listing having to figure out wireless protocol, housing/enclosure design, antenna placement, PC board design, RF shielding, analog-to-digital converters, receiving multiple channels of data, and thermal management). Patent Owner also points out that Dr. Kyriakakis testified as to the “critical

invention design” that Strub leaves out and that Strub does solve transmission losses or signal interference. *Id.* at 38–39. In the end, batteries and size constraints were not within the ordinary experimentation of a POSA according to Patent Owner. *Id.* at 40 (citing Ex. 2140 ¶ 294.). We do not agree with Patent Owner.

As Petitioner notes, Dr. Kyriakakis’s testimony has been taken out of the proper analysis context and he has unequivocally testified that no “experimentation would be required.” 230 Reply 25–26; Ex. 1073 ¶ 159. Countering the testimony of Mr. DeFilippis, Dr. Kyriakakis testifies that the technology to implement the device with the features included in the challenged claims was all well-known and some even disclosed specifically in Strub. 230 Reply 25. Furthermore, even if there are details of Strub that have been left to the design engineer to implement, like a wireless transmission protocol, the lack of those details has not been shown to require any unreasonable amount of experimentation.

As for the remaining *Wands* factors, Patent Owner focuses on many details of Strub that are not relied on and are not relevant to our analysis. The amount of battery power allegedly not capable of supporting video, for example, is not relevant to the technology these proceedings involve. *See* 230 PO Resp. 40–49; 230 Reply 24. Furthermore, the more relevant arguments Patent Owner presents, rather than showing undue experimentation, focus on whether the Strub device would be wearable or suitable for being worn. *See, e.g.*, 230 PO Resp. 50–51. These are arguments that are connected with whether Strub teaches wearability of the claimed local audio device—not whether Strub has enabled wearability.

Finally, Patent Owner's arguments that each field involved in the Strub patent is "known to be unpredictable" is belied by other evidence of record and the fact that Strub is not the only reference disclosing streaming of audio, recording, GPS satellite reception, and RF transmission. *See* 230 PO Resp. 53–54. We credit the detailed explanatory testimony of Dr. Kyriakakis that the technology involved in the challenged claims and the extent with which Strub describes it would not have required undue experimentation. Ex. 1073 ¶¶ 153–164. In particular, we note that the claims are not directed to RF channel coordination or interference mitigation, and Strub need not describe that which is known. Dr. Kyriakakis testifies that RF transceivers with capabilities to mitigate interference and channel coordination were well-known, even by the year 2000. *Id.* ¶ 155. We further note that many of the details with which Patent Owner faults Strub are also not described in the patents-at-issue. *See Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1471 (Fed. Cir. 1997) (finding it appropriate to consider the level of detail used in the challenged patent when evaluating whether a prior art reference was enabling).

Patent Owner cites various legal authority urging a finding of non-enablement. 230 PO Resp. 43–44. However, these cases are inapplicable insofar as they address enablement under 35 U.S.C. § 112. But urging that the sufficiency of each prior art teaching must be tested under the strict standard requiring an enabling disclosure is to shift the emphasis from obviousness in light of the prior art, taken as a whole, to the sufficiency of each prior art teaching separately considered. *Minn. Mining & Mfg. Co. v. Blume*, 684 F.2d 1166, 1173 n.10 (6th Cir. 1982). Our reviewing court has made clear that "[t]he standard for what constitutes proper enablement of a

prior art reference for purposes of anticipation under section 102 . . . differs from the enablement standard under section 112.” *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d 1318, 1325 (Fed. Cir. 2005). We further find unpersuasive Patent Owner’s argument, relying on *In re Morsa*,¹⁷ that prior art references relied upon for purposes of § 103 “must enable a POSA to make and use the subject matter that the reference itself discloses.” 230 PO Sur-Reply 22–23. *Morsa* dealt with enablement of an anticipatory reference, which is not the case here. The proposition expounded by Patent Owner is incomplete—it is not the entire subject matter disclosed in the reference that must be enabling to be relied on in the § 103 context, i.e., self-enabling; rather the analysis focuses on whether the portions relied on have an enabling disclosure. *Raytheon*, 993 F.3d 1381–82.

In connection with the third *Wands* factor, Patent Owner argues the lack of working examples in Strub. 230 PO Resp. 44–53. We have addressed already some of these specifics as they relate to the limitations of the claims-at-issue. It bears repeating here that evidence of working examples is not consistent with Federal Circuit jurisprudence on enablement of prior art used for purposes of obviousness. A prior art publication need not have actually been made or performed to satisfy enablement. *Novo Nordisk Pharm., Inc. v. Bio-Tech. Gen. Corp.*, 424 F.3d 1347, 1355 (Fed. Cir. 2005); *In re Donohue*, 766 F.2d 531, 533 (Fed. Cir. 1985).

Finally, we address the argument that Strub describes technology in fields known to be unpredictable: A/V streaming, A/V recording, GPS satellite reception, and RF transmission. 230 PO Resp. 53–56. Mr. DeFilippis opines that these technologies were evolving, independently,

¹⁷ 714 F.3d 104 (Fed. Cir. 2013).

and integrating them into a single, battery powered unit would have been far beyond the state of the art. Ex. 2140 ¶ 312. We are not persuaded by Mr. DeFilippis’s testimony on this point and give it no weight. Instead, we credit the testimony of Dr. Kyriakakis that these technologies are not complex or unpredictable, that any of the design choices to make Strub’s unit would not require undue experimentation, and that by July 2004, the adequate date for finding enablement, memory cards, microcontrollers, and RF technology were all known to be commercially available and suitable for the purposes that Strub describes. Ex. 1002 ¶¶ 157–164.

Based on the foregoing, we are not persuaded that Strub is non-enabled for purposes of the instant proceedings.

2. *Woo*

Woo is directed to a “time-keeping system for synchronizing sound and picture recordings from a plurality of independent recording devices at a shared performance.” Ex. 1004, 4:62–66. The time-keeping system includes a master clock comprising GPS navigation satellite receiver 122 and digital signal processor 124. *Id.* at 8:60–65, Fig. 5. Master clock output 128 is a SMPTE (Society of Motion Picture and Television Engineers)-formatted timecode that is preferably compatible with commercially available equipment that has master clock input ports. *Id.* at 5:42–53, 9:1–4, Fig. 5.

Figure 1 of Woo is reproduced below.

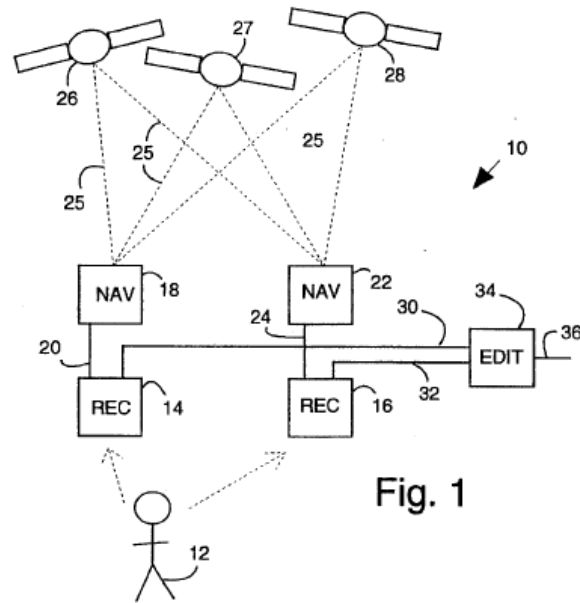


Figure 1 depicts time-keeping system 10 for “synchronizing sound and picture recordings from a plurality of independent recording devices at a shared performance.” Ex. 1004, 4:62–66. “[R]ecorder 14 captures the performance from its vantage point while another recorder 16 independently captures the same performance from its own vantage point.” *Id.* at 5:3–5. “[N]avigation satellite receivers 18 and 22 receive a plurality of microwave radio transmissions 25 from a constellation of orbiting satellites” 26–28 and provide “highly-accurate date and time information” to recorders 14 and 16 over connections 20 and 24. *Id.* at 5:5–8, 5:21–30. “The recorders 14 and 16 each transmit their respective recordings over a pair of connections 30 and 32 to an editing station 34,” where “[e]ach recording delivered to the editing station 34 has been date and time tagged, using date and time information received by the recorders 14 and 16.” *Id.* at 5:37–46.

Figure 5 of Woo is reproduced below.

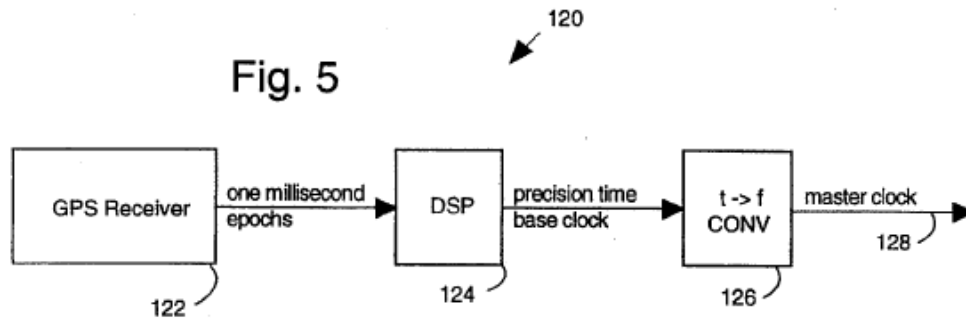


Figure 5 depicts master clock 120 comprising “GPS navigation satellite receiver 122 and . . . digital signal processor 124 for accumulating and averaging code epochs which occur each millisecond in time and having a precision time-base output,” and time-period-to-frequency converter 126 with “precision clock output 128 for synchronizing film and video equipment.” Ex. 1004, 8:60–9:1. “[C]lock output 128 is conventionally formatted and distributed, and is preferably compatible with present-day commercially-available equipment that have master clock input ports.” *Id.* at 9:1–4.

3. Nagai

Nagai is directed to a “data recording and reproducing apparatus” for recording and reproducing voice data. Ex. 1005 ¶¶ 2–5. Nagai’s apparatus includes an audio input, a headphone jack for audio output, a memory card to store audio data, and a USB port for transferring audio data to another device. *Id.* ¶¶ 106, 125, 126, 139, 140, 145, Figs. 1, 2A, 2B.

4. Gleissner

Gleissner is directed to an audio data recorder that includes a microphone unit and a recording appliance (audio data recorder) connected to one another via a plug connection. Ex. 1006 ¶ 10. The plug connection between the microphone unit and recording appliance provides both an electrical connection and a rigid mechanical connection. *Id.* The recording

appliance may further be connected to headphones to allow a user to simultaneously hear the input into the microphone. *Id.* ¶ 33.

B. Independent Claim 1 of the '443 Patent

We begin our obviousness analysis with an evaluation of claim 1 of the '443 patent. Petitioner argues that the combination of Strub, Woo, Nagai, and Gleissner collectively teaches all of the limitations of claim 1. 230 Pet. 32–59. We reserve the determination of whether Petitioner has shown obviousness of claim 1 by a preponderance of the evidence until after we have reviewed and weighed all the evidence concerning obviousness and the secondary indicia of non-obviousness. *Transocean Offshore Deepwater Drilling Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (“[E]vidence rising out of the so-called ‘secondary considerations’ must always when present be considered en route to a determination of obviousness.” (internal citations omitted)).

1. Preamble

The preamble of claim 1 recites “[a] system for recording locally generated audio.”¹⁸ Petitioner contends that Strub teaches a plurality of users that wear recording units 105–108, 200, and 300. 230 Pet. 33–34 (citing Ex. 1003, Fig. 1). Petitioner contends that each recording unit stores locally generated audio and transmits the audio to a remote device, which

¹⁸ We determine that the preamble is limiting at least because the body of the claim refers to the preamble for antecedent basis for the term “locally generated audio.” *See Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (“When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention.”). Even if it were not, though, limitation 1[F] recites “locally generated audio.”

also records it. *Id.* at 34; Ex. 1003, 8:10–39, 8:50–53, 11:32–50, 12:31–39, Figs. 1–3.

Petitioner contends that Woo also teaches the preamble, teaching a system—that includes recorder 14/16, GPS receiver 18/22, and time code generator 43—which records locally generated audio and transmits that audio to editing station 34. 230 Pet. 35–37; Ex. 1004, 5:3–5, 5:37–49, 8:32–44, 9:40–43, Figs. 1, 3, 4. Except for the arguments directed to the “locally generated audio,” which we address separately below, Patent Owner does not dispute the preamble limitations. 230 PO Resp. 15–16.

On the full record, we are persuaded that Strub and Woo, independently, teach the preamble limitation.

2. Limitation 1[D]: Audio Input Port

Petitioner argues Strub, Nagai, and Gleissner teach [D] “at least one audio input port for receiving locally generated audio from an audio input device” (i.e., Strub’s audio data acquisition device, or microphone, that is connected to system controller 301; Nagai’s “mike” jack for coupling an external microphone to an audio recorder; and Gleissner’s XLR plug connector for coupling a microphone to an audio recorder). 230 Pet. 41–45; Ex. 1003, 21:65–22:2, 22:64–23:31, 25:25–49, 60:3–5; Ex. 1005, Fig. 2A, ¶¶ 100, 109, 139; Ex. 1006, Fig 1, ¶¶ 13, 23, 32. Petitioner proffers motivation from Gleissner itself, for using a standard microphone connector with a recording unit: “This has the advantage that the recording unit can be coupled together with practically any desired microphones, because an XLR connector is generally formed as the preferred embodiment in the case of microphones.” 230 Pet. 44; Ex. 1006 ¶ 13.

Petitioner further argues that Woo alone or in combination with Nagai and Gleissner teach limitation [D] because Woo teaches using recorder 14 to “record the live performance of a performer 12, e.g., a singer or actor.” 230 Pet. 44 (citing Ex. 1004, 5:1–5). Petitioner argues that Woo necessarily would have had an audio input port to couple a microphone in order to receive the sound from the performer. *Id.* (citing Ex. 1002 ¶ 133). As additional evidence, Petitioner argues that a “POSA would have been motivated to include Nagai’s microphone jack or Gleissner’s microphone plug connection in Strub’s and/or Woo’s local audio device because there were many alternative types and brands of microphones that were commercially available . . . and the operator would choose one according to the particular application.” *Id.* at 44–45 (citing Ex. 1002 ¶ 134). Additionally, Petitioner argues, and we agree, that “a POSA would have understood the advantages of using Nagai’s or Gleissner’s standard microphone jacks and plugs to allow different kinds of microphones to be easily swapped in and out of Strub’s and Woo’s audio recording systems according to the application, and thus would have considered the combination obvious.” 230 Pet. 45; Ex. 1002 ¶ 134.

Except for the arguments directed to the “locally generated audio,” which we address separately below, Patent Owner does not dispute this limitation. 230 PO Resp. 15–16. On the full record, we are persuaded that Strub, in combination with Nagai and Gleissner, teaches the audio input port limitation. We are persuaded that Woo also in combination with Nagai and Gleissner teaches the audio input port limitation.

3. Limitations 1[E] and 1[F]: Memory and Control Unit

Petitioner argues that Strub teaches [E] “at least one memory” (i.e., Strub’s data storage device 305). 230 Pet. 45–46; Ex. 1003, Fig. 3. In addition, Strub discloses a hard disk, removable media, or solid state or flash memory. Ex. 1003, 27:36–51, 33:20–35:50, 76:6–34, Fig. 3.

Petitioner further argues that Strub and Woo teach [F] “at least one control unit in communication with said local audio device receiver, said audio input device, and said memory for creating local audio data from said locally generated audio and storing said local audio data in said memory” (i.e., Strub’s system controller 301 and/or data processing device 304 which communicates with the GPS-based position sensing device 311 (the local audio device receiver), the audio input port (the connection to data acquisition device 303) and the memory (data storage device 305); and Woo’s recording devices that store sound and picture recordings). 230 Pet. 47–49; Ex. 1003, Fig. 3, 12:4–13, 13:36–14:13; Ex. 1004, 4:62–64, 5:1–5, 5:37–45.

Petitioner further argues, and we agree, that it would have been obvious for Strub’s control unit 301 to be coupled to an audio input port such as Nagai’s “mike jack” or Gleissner’s XLR plug connector as described with reference to limitation 1[D] above. 230 Pet. 48–50; Ex. 1002 ¶ 148.

Except for the arguments directed to the “locally generated audio” and “local audio data,” which we address separately below, Patent Owner does not dispute the memory and control unit limitations 1[E] and 1[F]. 230 PO Resp. 15–16. On the full record, we are persuaded that Strub teaches the 1[E] and 1[F] limitations and that Woo also teaches these limitations.

4. Limitation 1[G]: Wireless Transmitter

Petitioner argues that Strub and Woo teach [G] “at least one local audio device wireless transmitter for wirelessly transmitting said local audio data in real time, said at least one local audio device wireless transmitter in communication with said at least one control unit” (i.e., Strub’s wireless transmitter 309 for wirelessly transmitting audio to other mobile recording units; and Woo’s local audio device that transmits locally generated audio by “radio link” to editing station 34). 230 Pet. 49–55; Ex. 1003, 12:31–39, 35:51–36:29; Ex. 1004, 5:37–49, Fig. 1.

Strub further teaches transmission of the recorded audio in real time. Ex. 1003 1:26–35 (recording simultaneously), 4:56–58 (recordings shared between recording units during the event), 10:25–49 (sharing the recording during the event), 35:61–65, 38:8 (“Recording data can be transmitted as acquired.”). Woo also teaches transmitting the audio in real time by teaching that the combining and generating of audio may be done in real time with the performance. Ex. 1004, 8:51–54, 10:7–10.

Except for the arguments directed to the “locally generated audio” and “audio data,” which we address separately below, Patent Owner does not dispute the wireless transmitter limitation 1[G]. 230 PO Resp. 15–16. On the full record, we are persuaded that Strub and Woo, individually, teach the wireless transmitter limitation.

5. Limitations 1[H], 1[I], and 1[J]

Claim 1 recites three wherein clauses, limitations [H], [I], and [J], relating to the “local audio data.” With respect to these clauses, Petitioner first argues that Strub and Woo teach [H] “wherein said local audio data includes stamped local audio data and unstamped local audio data” (i.e.,

Strub's time stamps and time codes added to the recording data; and Woo's time codes generated by commercially available time code generator 43, which are used to stamp at least a portion of the local audio data). 230 Pet. 56–57; Ex. 1003, 13:50–58, 63:56–60, 6:65–7:24, 29:42–62, 77:24–28, 78:7–40, 84:20–25; Ex. 1004, 7:59–60, 8:11–21, 8:25–44, Figs. 3, 4.

As for unstamped local audio data, Petitioner particularly points out that Strub references embodiments of time stamping only at the time at which the recording was obtained. 230 Pet. 57; Ex. 1003, 13:54–56. Petitioner argues, and we agree, that such a teaching would have been understood by a person of ordinary skill in the art to refer to the time that the entire recording was completed—either the first or final audio sample of the captured recording. 230 Pet. 57; Ex. 1002 ¶ 163. In that manner, Petitioner concludes, the time stamp applies only to the first or last audio sample, leaving other samples unstamped. *See* Ex. 1002 ¶¶ 163–164.

Further, Petitioner argues that Strub and Woo teach [I] “wherein said stamped local audio data includes at least one timestamp to reference at least a portion of said local audio data to at least one of said master timecodes” (i.e., Strub's GPS time stamps that are applied to audio data; and Woo's time codes that are received from a satellite receiver). 230 Pet. 58; Ex. 1003 63:12–49 (using GPS time signal to generate time stamps); Ex. 1004, 8:25–36 (satellite information used to tag first recording with date and time codes), 4:13–19, 4:45–48, 5:5–13, 7:26–35, 7:49–53, 9:33–39, 10:44–60, Figs. 2–4; Ex. 1002 ¶ 175.

Finally, Petitioner argues that Strub teaches [J] “wherein said unstamped local audio data does not include a reference to said master timecodes” (i.e., Strub's audio samples other than the first or final sample

for an obtained recording, which have not been stamped). 230 Pet. 58–59; Ex. 1003, 13:52–58 (local clock used to time stamp the recording data), 63:56–60 (referring to internal clock of recording unit for time stamping).

Except for the arguments directed to the “audio data” and “master timecodes,” which we address separately below, Patent Owner does not dispute these limitations 1[H], 1[I], and 1[J]. 230 PO Resp. 15–16, 19–21. Because Petitioner only relies on Strub as teaching or suggesting “unstamped local audio data” and the record is silent as to a combination of teachings in this respect with Woo, we determine that Strub alone teaches the local audio data limitations recited in limitations 1[H], 1[I], and 1[J].

6. Conclusions as to Undisputed Limitations

We have reviewed the Petition, the cited evidence identified above, and the testimony of Dr. Kyriakakis cited in support. *See* 230 Pet. 32–59; Ex. 1002 ¶¶ 105–114, 116–123, 128–138, 146–156, 160–165, 168–178. We determine that the preponderance of the evidence shows the asserted prior art teaches or suggests the limitations that are undisputed. *Cf. LG Elecs., Inc. v. Conversant Wireless Licensing S.A.R.L.*, 759 F. App’x 917, 925 (Fed. Cir. 2019) (nonprecedential) (“The Board is not required to address undisputed matters or arguments about limitations with which it was never presented.” (internal quotation omitted)).

We address below the disputed limitations, the reasons to combine the references, and Patent Owner’s arguments challenging these.

7. Disputed Limitations

Patent Owner disputes whether the cited references teach a system for recording “locally generated audio,” a “master timecode generator” as Patent Owner construes the term, and a local audio device “wearable” by a creator

of locally generated audio, but does not otherwise dispute the above limitations of claim 1. 230 PO Resp. 15–21.

a) “Locally Generated Audio”: Limitation 1[Pre] and 1[F]

The preamble of claim 1 recites a system for recording “locally generated audio.” In limitation [F], claim 1 further recites “at least one control unit . . . for creating local audio data from said locally generated audio and storing said local audio data in said memory.” Petitioner identifies as “locally generated audio” the audio that is captured by Strub’s recording units 105–108, 200, and 300. 230 Pet. 33–34. Petitioner more specifically identifies Strub’s system controller 301 as acquiring locally generated audio via audio data acquisition device 303 and storing the audio as local audio data in data storage device 305. *Id.* at 48–49; Ex. 1003, 8:10–39, 8:50–53, 12:4–21.

Petitioner also identifies as “locally generated audio” the audio that is captured by Woo’s local audio device comprising recorder 14/16, GPS receiver 18/22, and time code generator 43. *Id.* at 35–36. Petitioner argues Woo’s system stores locally generated audio in memory as local audio data. *Id.* at 49; Ex. 1004 4:62–64, 5:1–5, 5:37–49.

Patent Owner argues that Strub and Woo teach the opposite of “locally generated audio” because their audio is “received” or “heard” by a recorder, not “separated or isolated to form independent tracks.” 230 PO Resp. 15. This is in contrast, according to Patent Owner, to the ’443 patent in which the “audio is solely generated, or created, by the recorder.” *Id.* (citing Ex. 1003, 22:16–33; Ex. 1004, 5:3–5). Even if the recorder’s voice could be part of the audio being heard, Patent Owner argues that neither reference teaches the claim limitation, because “independent, isolated tracks

of audio (e.g., for the recorder’s voice)” are not created as required for multi-track recording. *Id.* Indeed, Patent Owner takes issue for the most part with Strub and Woo’s recordings not being “multi-track” recordings or not resulting in “multi-track” recordings. *Id.* at 15–16.

We are not persuaded by Patent Owner’s arguments because as determined with respect to the construction of the term “locally generated audio,” the claim does not require “multi-track” audio or “multi-track” recording. *See supra* Section IV.B. Further, to the extent Patent Owner’s arguments distinguish Strub and Woo with respect to whether the recorded audio includes sounds not originating from a single performer, the argument is not consistent with the scope of the claim. As we state in our claim construction section, the “locally generated audio” is not limited to audio from a single source that is a performer. *Id.*

Patent Owner further argues that Strub teaches away from capturing “isolated audio of the wearer.” 230 Sur-Reply 9. According to Patent Owner, because Strub’s recorder captures what is “heard” by the recorder, the audio content negates combinability of individual tracks and is not suitable for “multi-track” recording. *Id.* (citing Ex. 1003, 22:16–33; Ex. 1004, 5:3–5; Ex. 2140 ¶ 157; Ex. 2021 ¶ 15). This argument is not persuasive for various reasons. First, it relies on an understanding of the claim as requiring the locally generated audio to contain a specific type of audio, one that is limited to sounds made by one individual and contain no other sounds. Yet the claims do not make this distinction and cannot be distinguished from the audio recorded by either Strub or Woo. Second, Strub’s recordings are shared with other participants of the event such that those other participants may hear the audio of others (Ex. 1003, 8:50–52,

8:7–20, 12:4–16, 21:65–22:2), but that does not negate that each recorder is generating its own locally generated audio. Also, the fact that the audio recordings corresponding to the participants may be merged or combined at some point does not teach away, but rather supports Petitioner’s contention that each recording unit generates a track of audio even under Patent Owner’s proposed interpretation of the claim. For instance, Strub records the singing of “Happy Birthday” when a cake is brought out at an event, which means that the recording unit of that participant is recording the audio of the participant singing (Ex. 1003, 52:18–26). Such a recording, we are persuaded, would create a track of audio of that recorder’s singing. In addition, Petitioner points out that Strub teaches various uses of its recording unit for use in solitary events—meaning that only the participant, the recorder, will be captured. 230 Reply 3–4 (citing Ex. 1003, 67:59–61 (identifying snow skiing), 65:15–22, 26:32–39, 47:35–48 (identifying bicycling), 70:52–71:3 (identifying water skiing)). Thus, the device wearer or the performer in the event is generating sounds that are captured, individually, by the recording unit, thereby creating its own track of audio. *See* Ex. 1073 ¶¶ 49–53.

To be sure, our understanding of Strub is that each recording unit stores the audio generated by the recorder or participant in the event. Ex. 1003, 8:13–18, 87:22–24. However, we note that Strub teaches embodiments in which the recording unit receives simultaneous recordings from other recording units with a very generic description of how each recording unit utilizes the received recording data from other units:

transmitter 309 transmits signals (“recording data signals”) representing recording data acquired by the recording unit 300, so that such recording data can be used by other recording units

(e.g., to generate a display of the visual and/or audio recording being obtained by the recording unit 300, or to enable processing of recording data obtained by the recording unit 300 for use in affecting the manner in which another recording unit records, processes or stores recording data).

Ex. 1003, 12:31–39. This passage, on which Petitioner relies for limitations 1[pre] and 1[F], supports the functionality described in other passages of Strub, in which each recording unit stores the recording data received from other recording units, whereby the audio of multiple recorders are stored in a recording unit. Ex. 1003, 36:58–37:15; *see also id.* at 35:61–65 (passage relied upon in the Petition to support limitation 1[G] for the wireless transmitter). Limitation 1[F] requires “storing said local audio data,” yet Strub stores multiple recording unit’s recordings in each device at the same time it is generating and storing its own audio data. Thus, we understand that there may be concerns as to whether Strub stores the audio generated by the recorder separately from the audio that it receives from other recording units. *See, e.g.,* 87:26–29 (referring to blending the audio recordings obtained by two recording units and displayed as a single audio recording). This is not explained in the Petition. To the extent Patent Owner’s arguments raise the potential that Strub does not store the local audio data created from the locally generated audio because of this operation, we recognize the potential distinction over the claimed subject matter. However, we remain persuaded that Petitioner has not pointed to any blended audio operation of Strub as teaching the “locally generated audio.” The fact that Strub broadcasts the recording data for the purposes of display and/or storing, still supports Petitioner’s assertions regarding Strub’s resulting local audio data being stored as required by the claims as delineated in the Petition and summarized above.

Based on the foregoing, we find that Petitioner has sufficiently shown that Strub and Woo each teaches “locally generated audio” and storing “local audio data,” as recited in the preamble and/or limitation 1[F] of claim 1 of the ’443 patent.

*b) “Master Timecode Generator” and “Master Timecode”:
Limitations 1[A] and 1[C]*

Petitioner argues that Strub and Woo teach [A] “at least one master timecode generator for generating a plurality of master timecodes” (i.e., Strub’s GPS satellite that transmits GPS time information or SMPTE timecode source that transmits SMPTE time code input; and Woo’s GPS satellites that generate and transmit time clock information). 230 Pet. 37–38; Ex. 1003, 62:26–63:50 (time stamps received from GPS or satellite receiver), 75:25–57 (describing various external communication ports of portable video recorders and an SMPTE time code input that can be used to enable synchronization with an external device); Ex. 1004, 4:13–19 (describing GPS receiver with output for communicating time codes in SMPTE format), 4:45–48, 5:5–10, 5:21–29, Figs. 2–4.

In particular, Petitioner argues that “Strub discloses receiving a master timecode—e.g., GPS time information—from a master timecode generator—e.g., a GPS satellite or SMPTE timecode source.” 230 Pet. 38 (citing Ex. 1003, 62:26–63:50, 75:25–57). Petitioner further contends that “Woo also discloses master timecode generators—GPS satellites 26–28—for generating a plurality of master timecodes.” *Id.* (citing, e.g., Ex. 1004, 5:5–10, 21–29, 7:26–47, 8:60–9: 4, Figs. 2–4; Ex. 1002 ¶ 153). Petitioner provides reasons why a person of ordinary skill in the art would have been motivated to modify Strub’s system to incorporate Woo’s synchronization methods. *Id.* at 27–28 (relying on Woo providing express motivations to use

its synchronization methods in a wireless, multi-recorder system such as Strub's and citing Ex. 1004, 4:3–44; Ex. 1002 ¶ 107).

Patent Owner, relying on the testimony of Mr. DeFilippis, argues generally that the prior art only shows GPS time signals or internal clock being used for time data, “but neither reference discloses a master timecode generator that is a ‘producer of a master time reference signal that controls at least one other timecode generator.’” 230 PO Resp. 19 (citing Ex. 2140 ¶ 177). We discuss each of Petitioner's theories of unpatentability with regard to this limitation.

(i) Discussion of Strub

Petitioner contends that Strub provides GPS signals to directly timestamp the recorded data for synchronization and therefore the GPS satellites are master time code generators generating master timecodes. 230 Pet. 38; Ex. 1003, 13:50–58, 62:26–63:60, 79:54–80:9; Ex. 1073 ¶¶ 68, 70–71. Patent Owner argues a fundamental distinction regarding the “master timecode generator” alleged by Petitioner as being GPS satellites, external components, that are “not patented.” 230 Sur-Reply 13–14 (citing *SiRF Tech., Inc. v. ITC*, 601 F.3d 1319, 1323 (Fed. Cir. 2010)). Patent Owner raises this argument for the first time in a sur-reply, when it was on notice that the Petition alleges GPS satellites are the devices generating the master timecodes. *See* 37 C.F.R. § 42.23 (“[A] sur-reply may only respond to arguments raised in the corresponding reply.”). It is too late to be considered as Petitioner did not have an opportunity to meaningfully respond. *See* Tr. 63:8–16 (Petitioner responding that the new argument is untimely and has been waived). Nevertheless, the *SiRF* case is inapposite as it dealt specifically with a GPS system and the court simply noted what

portion of the GPS system the claims were directed to—not whether a GPS satellite “cannot be patented” or be a generator of master timecodes in the claims here.

Additionally, we are not persuaded by Patent Owner’s argument that a dependent claim warrants viewing the claimed system in the ’443 patent as requiring an “integral” “master timecode generator.” 230 Sur-Reply 13. Claim 1 of the ’443 patent just requires that the master timecode generator be part of the claimed “system.” Claim 27, which depends indirectly from claim 1, recites “wherein said master timecode generator is integral to said remote control unit.” 230 IPR, Ex. 1001, 24:36–37. Independent claim 1 is presumed to have a broader scope than claim 27, but if an embodiment that meets claim 27 does not meet the broader claim 1, there is an inconsistency in claim scope. *See Baxalta Inc. v. Genentech, Inc.*, 972 F.3d 1341, 1346 (Fed. Cir. 2020) (“The district court’s construction [of the independent claim] which excludes these explicitly claimed embodiments [in the dependent claims] is inconsistent with the plain language of the claims.”). This is merely a presumption, and our construction of the term “master timecode generator” does not limit the scope to an external component, such that the scope of the term would be inconsistent with the scope of dependent claim 27 of the ’443 patent. We note that the ’443 patent specification does not describe any components external to its control unit, in the magnitude of a GPS satellite, as “master timecode generators.” However, we are not persuaded that a GPS satellite cannot be considered to be within the same “system” as the other mapped components in Strub and Woo, as Patent Owner contends.

Patent Owner argues that although Strub discloses GPS time signal timestamps, Strub does not include clocks to be synchronized with a master timecode or a secondary clock to the GPS timestamp. 230 PO Resp. 19 (citing Ex. 2140 ¶ 178). Patent Owner relies on a passage that states “the recording units may not include clocks for enabling time-stamping of the recordings.” *Id.* (citing Ex. 1003, 80:7–9). We are not persuaded by these arguments because they take Strub out of context and rely on an interpretation of “master timecode” that we did not adopt. *See supra* Section IV.C. For instance, the sentence from Strub is from a passage identifying the need to provide synchronization, recognizing that the recording unit of the “invention typically includes a clock that is used to time-stamp recording data as the recording data is acquired.” Ex. 1003, 79:63–65. This is contrasted, in the passage cited by Patent Owner, with recording units that are “different,” meaning units not according to the invention and therefore not adequately synchronized. *Id.* at 79:66–80:9. Furthermore, we have determined that “master timecode” means “code(s) for synchronizing audio samples” and that “master timecode generator” plainly means “a generator of master timecodes.” Neither of these terms require control of other time code generators.

Petitioner alternatively relies on Strub’s disclosure of an SMPTE input as teaching the “master timecode generator” of limitation 1[A]. 230 Pet. 38 (mapping the GPS satellite or SMPTE timecode source to the “master timecode generator”); Tr. 23:4–12 (stating that the Petition relies on the GPS satellites as master timecode generators for both Strub and Woo, with Strub also providing an SMPTE timecode source). Strub expressly teaches that SMPTE time code input in devices allows for synchronization

with an external device and that an internal clock is an alternative to GPS time signals, to accurately time-stamp data. Ex. 1003, 75:25–57, 63:56–60 (both excerpts cited in the Petition at page 38). The only argument presented by Patent Owner in opposition of these alternatives to GPS signals focuses on the “control of another timecode generator” aspect of the claim construction dispute—which we have not adopted.

Furthermore, Petitioner proposes a combination of Strub and Woo, with Strub receiving master timecodes from an external device, as stated above, and motivated by the teachings of Woo. Ex. 1002 ¶ 107. For instance, Dr. Kyriakakis testifies, and we agree, that Woo provides a motivation for using its synchronization methods in a wireless, multi-recorder system such as Strub’s and that Strub’s unit, including a conventional SMPTE timecode input, would receive conventional SMPTE-formatted master timecodes from Woo’s master clock. *Id.* This would involve “nothing more than combining familiar elements according to known methods to improve Strub’s system and yields predictable results.” *Id.* (citing Ex. 1004, 4:3–44). Thus, Petitioner has shown by a preponderance of the evidence that Strub alone via the use of GPS satellites and SMPTE input and also the combination of Strub and Woo satisfy the “master timecode generator” limitation 1[A].¹⁹

(ii) Discussion of Woo

We now turn to Petitioner’s reliance on Woo in more detail and Patent Owner’s arguments in opposition.

¹⁹ This is not the end of the inquiry, for claim 1 of the ’443 patent has an additional limitation concerning the “master timecodes” that we address further below with regard to limitation 1[C].

With regard to Woo, Patent Owner argues that there is no second timecode generator or any generator controlled by the master clock. 230 PO Resp. 20 (citing Ex. 1004, 9:1–4). Relying on Mr. DeFilippis’s testimony, Patent Owner asserts that the mere disclosure of a master clock and master clock input ports are insufficient to meet the claim because it lacks disclosure of the “control” or the ability to synchronize at least one device. *Id.*; Ex. 2140 ¶ 182. Again, this argument relies on an interpretation of “mastertimecode” or “master timecode generator” that we did not adopt.

Additionally, Patent Owner argues that Woo’s GPS receiver’s time output is not capable of acting as a master time reference signal because it must be combined with a pulse to communicate time codes in SMPTE format. *Id.* (citing Ex. 1004, 4:16–20, 8:13–18); Ex. 2140 ¶ 183. In contrast, Patent Owner argues, the ’443 patent teaches “timecodes having sufficient data to synchronize audio segments to the exact audio sample.” *Id.* at 20–21 (citing various passages of the ’443 patent).

We are persuaded by Patent Owner’s argument. We stated in our claim construction analysis of “master timecode generator” that in the system of claim 1 of the ’443 patent, the master timecodes are the only timecodes for stamping audio and no other timecode generator is recited or needed to timestamp the audio. *See supra* Section IV.C. The Petition relies on Woo’s GPS satellite as the “master timecode generator” and then, one of its string cites to Woo highlights Woo’s disclosure of “a GPS navigation receiver with a data output port for communicating time codes in SMPTE format.” 230 Pet. 38 (citing Ex. 1003 ¶ 4:13–19). Woo teaches providing master timecodes in SMPTE format for the purpose of synchronizing recorded data from independent sound, film, and video recorders. *See*

Ex. 1004, 3:20–24, 4:13–15; 230 Pet. 52–53; 230 Reply 10. As shown in Figure 5, “master” clock 120—comprising GPS navigation satellite receiver 122, and digital signal processor 124—generates an output which is a “precision time-base output.” Ex. 1004, 8:60–65. The time-period-to-frequency converter 126 is connected to the precision time-base output and has a precision clock output for synchronizing film and video equipment. *Id.* at 8:65–9:1. That master clock output is conventionally formatted and distributed to be compatible with the commercially-available equipment that has a master clock input port. *Id.* at 9:1–4. Thus, in Woo, it is the output of the master clock that is used to timestamp and thus synchronize audio, not the GPS signals.

Woo further describes the “slave” or “jam-sync” process, which “allows a time code generator to *follow* the time code off another source.” *Id.* at 3:38–41 (emphasis added), 7:29–38 (“A commercially-available time code generator⁴³ . . . generates time code[s] . . . and will jam to both the output connection 38 and normal SMPTE/EBU time code.”). But the Petition does not explain how this “jam-sync” embodiment meets the requirements of claim 1 of the ’443 patent and therefore we do not discuss it further.²⁰

Further in support of Petitioner’s position that Woo’s SMPTE output is sufficient to meet the claim, we credit somewhat the testimony of Dr. Kyriakakis that explains how signals used for synchronization are derived. Ex. 1073 ¶¶ 77–78. Dr. Kyriakakis explains the two streams of timing

²⁰ In the 232 IPR, limitation 17[F] more particularly recites that the control unit “jam synchronize[s]” the local timecode generator to the master timecode generator using the master timecode. Thus, we discuss jam synchronization with respect to that limitation, *infra*.

information at the recording device—the first comprising standard GPS time decoded from GPS signals, and the second comprising a signal of one pulse per second. *Id.* The GPS signal repeats every millisecond, forming a GPS code epoch, and Woo counts these epochs to generate a highly accurate pulse. *Id.* Thus, both streams of timing are derived from GPS date-time information; however, only the output of the master clock is used for very accurate timecode generation. *Id.*

Thus Dr. Kyriakakis’s explanation of Woo’s receiver highlights a deficiency in Petitioner’s mapping to Woo that affects the strength of its position. Petitioner asserts Woo’s *GPS satellites* are an alternative to Strub for the “master timecode generator” limitation. 230 Pet. 38 (equating Woo GPS satellites 26–28 to the “master timecode generators”); Tr. 23:4–12. However, as stated, Dr. Kyriakakis’s testimony makes clear that in Woo’s description of its master clock, the GPS signals themselves are not codes used for synchronization. Rather, it is the codes that are produced by Woo’s master clock that provide a timecode in a format that is SMPTE compatible, which is what is used for synchronization of audio samples. Ex. 1002 ¶ 107; Ex. 1004, 4:3–44; Ex. 1073 ¶¶ 77–78 (testifying that it is the output of the GPS receiver that achieves synchronization).²¹

²¹ We note that in the Lectrosonics IPRs the master time code generator was determined to be taught by Woo’s *master clock* comprising a GPS navigation satellite receiver and a digital signal processor and outputting an SMPTE format signal. Ex. 1017, 28; Ex. 1018, 24–25 (additionally determining that it would have been obvious to modify Strub to include the SMPTE timecode input from Woo’s master clock). None of the Lectrosonics IPRs relied on a GPS satellite of the prior art as a “master timecode generator” or the GPS signals themselves as “master timecodes.” Therefore, our determination here is consistent with the Board’s prior determinations concerning related patents.

Despite this deficiency, we are persuaded that Woo teaches an embodiment in which the GPS satellite date and time code information is used for synchronizing audio (*see supra* limitation 1[I] with respect to “stamped local audio data . . . to reference . . . at least one of said master timecodes”). Petitioner points to one embodiment of Woo in which “[a] navigation satellite receiver 18 provides highly-accurate date and time information to the recorder 14 over a connection 20.” Ex. 1004, 5:5–10; 230 Pet. 38. For that same embodiment Woo explains that “[e]ach recording delivered to the editing station 34 has been date and time tagged, using data and time information received by the recorders 14 and 16 over connections 20 and 24.” Ex. 1003, 5:42–45. Petitioner did not cite specifically this passage as evidence that the time codes provided by the satellites in Woo are used for timestamps and therefore synchronize audio samples. *See, e.g.*, 230 Pet. 39, 48, 58. However, despite this oversight, we are persuaded there is sufficient evidence in the Petition showing that Woo teaches the “master timecode generator” as required by limitation 1[A].

(iii) Limitation 1[A] Conclusions

Based on the full record before us, we find that Petitioner has shown that Strub’s GPS satellites and Woo’s GPS satellites each are “master timecode generators” under limitation 1[A]. We also determine that Petitioner has shown that the combination of teachings from Strub and Woo also meets limitation 1[A].

(iv) Discussion of Limitation 1[C]

This is not the end of our inquiry, because claim 1 recites “at least one local audio device receiver for wirelessly receiving said master timecodes,” in limitation 1[C]. Petitioner argues that Strub teaches 1[C] because Strub

has a GPS receiver that receives wirelessly the GPS time information from a GPS satellite. 230 Pet. 40 (citing Ex. 1003, 62:26–63:50, Fig. 3). Petitioner argues that Woo also teaches 1[C] because Woo’s local audio device also has a GPS receiver to receive via microwave radio transmissions the signals from the GPS satellites. *Id.* (citing Ex. 1004, code (57), 4:13–19, 4:45–48, 5:5–10, 5:21–29, 5:54–67, 7:18–25, 7:48–8:59, 8:60–9:19, 9:33–39, 9:45–55, 10:15–64, Figs. 2–4, 5).

On the full record before us, we determine that the Strub/Woo combination has not been shown to meet this limitation. 230 Pet. 28, 39–40. Petitioner does not address for this limitation how the Strub/Woo combination would receive *wirelessly* “master timecodes” when Woo’s master clock is the device generating the date and time sentence output to Strub for synchronization of Strub’s audio samples. *Id.* at 40 (focusing only on Woo’s GPS satellite theory). Also, on the full record before us, we determine that the Petition’s assertions regarding Strub receiving SMPTE timecodes from an external source (*id.* at 38) have not been shown to meet limitation 1[C] of receiving those timecodes wirelessly. *See id.* at 39–40 (focusing only on GPS receiver of Strub). In any event, based on our determination above that the output of Woo’s master clock (not the GPS signals) are the codes used for synchronizing the audio, even in a combination of Woo with Strub, the same operation applies and would be deficient for the same reasons explained above.

With regard to whether the GPS receivers of either Strub or Woo receive wirelessly GPS signals as master timecodes, we have already stated a weakness of Petitioner’s contentions regarding Woo, but determined an embodiment of Woo satisfies the “master timecode” limitation 1[A].

As for Strub, Petitioner points to “current time that can be used as a clock to generate time-stamps” from a GPS or satellite services. 230 Pet. 40 (citing Ex. 1003, 62:26–63:50). None of the disclosures of Strub that Petitioner relies on show that the internal clock being used to time-stamp data receives any timecodes wirelessly. *See* Ex. 1002 ¶ 152. Thus, the only embodiment of Strub left to consider is whether the position sensing device 311, which would be a GPS receiver, would receive the master timecodes wirelessly. *See id.*; 230 Pet. 40; 230 Reply 8–9 (arguing that Strub’s GPS satellites produce GPS signals either to directly timestamp audio data or to synchronize recording units to perform the time-stamp).

Patent Owner acknowledges that Strub “discloses GPS time signal timestamps.” 230 PO Resp. 19. On the full record before us, we agree because Strub expressly discloses that “a GPS receiver can also be used to receive a signal representing the current time that can be used as a clock to generate time-stamps for the recording data.” Ex. 1003, 63:41–43. Given this disclosure and Patent Owner’s admission, we determine that Petitioner has shown that Strub teaches receiving wirelessly at the GPS receiver “master timecodes” in the form of a signal that represents current time, which is used to synchronize audio samples as required by limitations 1[A] and 1[C].

With regard to Woo, for the reasons stated already, we are also persuaded that the GPS signals are received wirelessly by Woo’s satellite receiver and used to generate codes for synchronizing audio samples as required by limitation 1[A] and 1[C].

c) “Wearable” Local Audio Device: Limitation 1[B]

Petitioner argues that Strub teaches [B] “at least one audio device wearable by a creator of said locally generated audio” (i.e., recording units 105–108, 200, and 300 worn by people conversing at an event as depicted in Figure 1). 230 Pet. 38–39. Further, Petitioner argues that Strub and Woo teach [C] “at least one local audio device receiver for wirelessly receiving said master timecodes” (i.e., Strub’s position sensing device 311 that receives GPS time information from a GPS satellite; and Woo’s GPS receiver that receives microwave radio transmissions from one or more of GPS satellites 26–28). 230 Pet. 39–40.

Petitioner argues that Strub’s recording units, shown in Figures 1 and 3, for example, are “wearable” by a user, as recited in the limitation [B] of claim 1. Pet. 38–39. We determined that “wearable” means “suitable and in a condition to be worn.” *See supra* Section IV.A.

Patent Owner argues that Petitioner has not established that Strub teaches a “local audio device wearable by a creator of said locally generated audio.” 230 PO Resp. 16–19. In particular, Patent Owner argues that Strub teaches different variations of recording units, some of which have only basic recording capabilities and others with transmitter/receiver capabilities. *Id.* at 16. Patent Owner argues that Strub’s units 105–108 and recording unit 200 are basic units, without the ability to transmit or receive data. *Id.* (citing Ex. 1003, 8:13–29, Fig. 2). Patent Owner argues that Strub describes recording unit 300 as including a transmitter and receiver. *Id.* (citing Ex. 1003, Fig. 3). With this background explanation, Patent Owner alleges that Petitioner’s assertions are wrong—Strub does not disclose that units 105–108 and 300 are worn by a plurality of creators as shown in

Figure 1—because Figure 1 does not depict units 200 and 300, and Strub fails to teach that units 105–108 shown in Figure 1 have a receiver and transmitter. *Id.* Patent Owner argues that even if units 105–108 included a receiver and transmitter, Strub does not teach and does not enable those units to be wearable and fit in the backpack of Figure 1. *Id.* Accordingly, the issue of wearability hinges on whether the disclosures of Strub sufficiently teach or suggest that the recording units on which Petitioner relies are wearable.

(i) The Backpack Embodiment

There is no dispute that Strub describes embodiments of a “wearable recording unit”—stating expressly that “advantageous aspects of the invention can be provided by a small, lightweight, wearable recording unit.” Ex. 1003, 4:28–30. Yet, Patent Owner argues that Strub’s recording unit is too heavy to be wearable. 230 PO Resp. 17 (citing Ex. 1003, 67:30–33, 45–47). This argument centers on the disclosure of a unit “according to the invention” that is enclosed in a backpack as shown below in Figure 6 below.

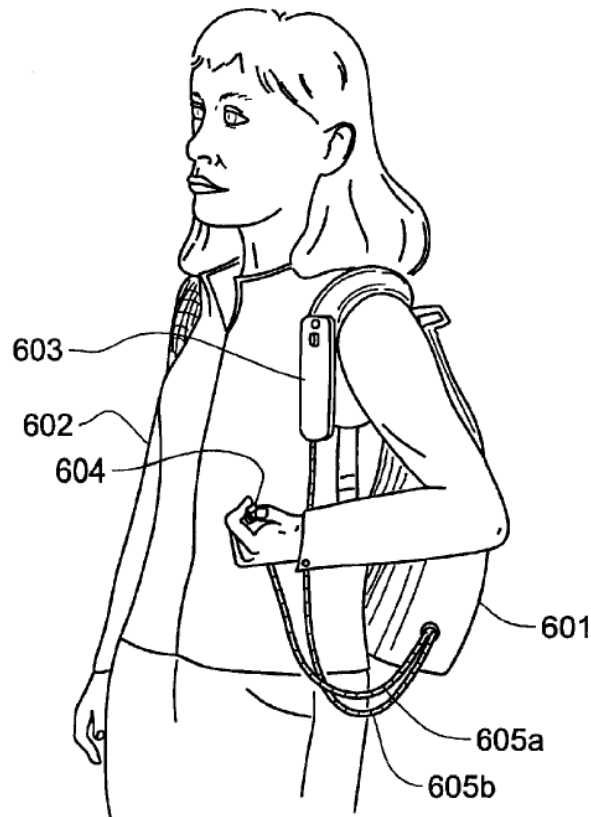


Figure 6

Figure 6 depicts backpack 601 “worn by a recorder 602,” having visual data acquisition device 603 mounted at about the “recorder’s chest level.” Ex. 1003, 67:30–33. A control interface device 604 can be carried by the recorder and is sized that when not in use, the recorder can carry it in a pocket of the recorder’s clothing. *Id.* at 67:35–38. The components inside the backpack are not described, but Strub refers to it as a recording unit, which can be implemented “using off-the-shelf components and packaging materials so that the recording unit weighs about 24 pounds.” *Id.* at 67:45–47. Strub does not end there. Strub states that when particularly designing the components of the recording unit, it may be lighter and smaller and weigh as much as a conventional camcorder and be of comparable size.

Id. at 67:48–53. Thus, Strub teaches two relevant features of the recording unit: (1) it can fit in a backpack if using off-the-shelf components; and (2) it can be lighter and smaller than 24 pounds if made with particularly designed components.

As to the backpack size and weight, Patent Owner argues that it is too heavy to be wearable—indeed, it has to be carried in a backpack. 230 PO Resp. 17; Ex. 2140 ¶ 166. Portability and wearability are not the same thing, Patent Owner argues, and we agree. But Strub plainly describes the backpack as being “worn” by the recorder. Ex. 1003, 67:30–33. That is the same plain and ordinary meaning we have given the term “wearable.” *Supra* Section IV.A. We also appreciate that Strub is not limited in its disclosure to a 24-pound load as it describes expressly making the size and weight smaller and lighter with particularly designed components for the recording unit. *Id.* at 67:48–53. Thus, although we acknowledge Patent Owner’s argument that Strub’s backpack does not teach the same range or ease of “wearability” as that described in the patents-at-issue (such as a bodypack, 230 IPR, Ex. 1001, 10:52–53, Fig. 3B), we are not persuaded that the distinction is sufficient to deem Strub’s backpack device as being not suitable to be worn. On this point, we determine that Strub at least suggests the suitability to be worn.

(ii) Petitioner’s Showings in Strub

We are persuaded by Petitioner’s argument that the backpack, when worn, means the recording unit is also worn, thereby suggesting that the recording unit is “wearable.” 230 Reply 19. We are also persuaded that a recording unit 300 of Strub would be an assembly of components that includes a transmitter and receiver, and comprise the units of Figures 1 and

6. *Id.*; Ex. 1003, 8:7–15, 67:30–31, 67:56–59, 68:3–8, 70:52–54, 73:18–20; Ex. 1073 ¶¶ 101, 54–56.

Patent Owner argues that we should not rely on Petitioner’s Reply for arguments concerning the backpack of Figure 6 as impermissible switching of obviousness theories. 230 Sur-Reply 4. We are not persuaded by this argument. The Petition expressly relies on recording unit 300, which Petitioner addresses in the Reply, and which also responds to Patent Owner’s arguments specifically raised in the Patent Owner Response about unwearability of the backpack shown in Figure 6. 230 Pet. 38–39; 230 Reply 5–7; 230 PO Resp. 17. So, a discussion of these in the Reply is not improper. We note that the backpack embodiment shown in Figure 6 is not the only disclosure of “wearability” that Petitioner relies on. In portions of Strub Petitioner relies on (230 Pet. 38–39), Strub advises that size and weight would address *wearability* for the visual data acquisition device (Ex. 1003, 14:59–15:11). Strub also teaches attaching the device “to a *wearable* apparatus” that can be worn at different locations and or orientations (*id.* at 17:1–5), thereby suggesting that the device is “wearable.” Strub further teaches that the “*audio communication device can be made wearable*” (*id.* at 39:1–2), making the recording units “small,” “as compact as possible,” and “more *comfortable to wear*” (*id.* at 66:33–49), and tailoring the recording unit to vigorous activities with “increased emphasis on the *wearability characteristics of the recording unit*” (*id.* at 67:64–67). All of these disclosures were cited in the Petition and at least suggest “wearability” of the recording unit/acquisition device when designed with the purpose Strub ascribes to these devices. *See* 230 Pet. 39. Accordingly, we cannot say that Petitioner has deviated from its initial contentions in the Petition or that it

has failed to prove by a preponderance of the evidence that Strub, at least, suggests a wearable local audio device.

Patent Owner presents additional arguments concerning whether Strub’s wearability is insufficient because it is not worn by a performer. 230 Sur-Reply 11. Patent Owner also presents argument supported with testimony of Mr. DeFilippis that the embodiments of Strub would impair the visual aspects of a performance and be too heavy to be worn by performers. 230 PO Resp. 18 (citing Ex. 2140 ¶¶ 22–25). These arguments are unpersuasive because they are not commensurate with claim scope. We have construed the claim to not require a “performer” in determining the meaning of “locally generated audio”—and therefore, arguments focusing on aspects of a performer wearing the device are not persuasive. *See supra* Section IV.B.

We determine that Petitioner has shown that Strub suggests “at least one local audio device wearable by a creator of said locally generated audio” as required by limitation 1[B].

d) Reasons to Combine²²

Petitioner argues that it would have been obvious to modify Strub’s recording unit to use “conventional SMPTE-formatted timecodes from Woo’s master clock,” which “would involve nothing more than combining familiar elements according to known methods to improve Strub’s system and yield predictable results.” 230 Pet. 28 (citing Ex. 1002 ¶ 107).

Petitioner points out various similarities between the Strub and Woo systems

²² Although we have determined above that Petitioner failed to show that the combination of Strub and Woo meets the 1[C] limitation, we nevertheless address the arguments raised regarding a motivation to combine the references, for completeness.

and asserts that Woo “provides express motivations to use its synchronization methods in a wireless, multi-recorder system such as Strub’s.” *Id.* at 27–28. In particular, Petitioner contends that “Woo’s master clock (1) provides accurate synchronization across recorders, (2) can generate coordinated timecodes at independent sites, (3) is simple to connect to the recorders, and (4) provides standardized, SMPTE-compatible timecodes.” *Id.* at 28 (citing Ex. 1004, 4:3–44).

Petitioner further argues that the ’443 patent “sought to solve the problem of matching the timing between multiple recordings produced by one or more wireless devices” by “generating master timecodes with a master timecode generator, providing those timecodes to a local recording device, and using the timing information in those timecodes to time-stamp the locally recorded audio data.” Pet. 30 (citing, e.g., Ex. 1001, 4:3–26, 4:52–5:10). Petitioner asserts that “Strub and Woo recognized and solved that same problem in the same way,” pointing to the references’ disclosures regarding synchronization using GPS time signals. *Id.* (citing, e.g., Ex 1003, 62:26–63:60; Ex. 1004, code (57), 4:13–19, 5:5–10, 7:26–50).

Patent Owner’s arguments in response are largely premised on an alleged failure of Strub and Woo²³ to teach certain claim limitations. *See* 230 PO Resp. 27–28. Patent Owner disputes that a person of ordinary skill in the art would have combined the teachings of Strub and Woo to solve the

²³ Patent Owner also argues an ordinarily skilled artisan would not have been motivated to combine Winningstad with Strub and Woo. 230 PO Resp. 26–28. Winningstad is relied upon for dependent claims 4 and 9 of the ’443 patent (and not at all for the ’207 patent). Because we do not reach a conclusion as to the dependent claims, we also do not determine whether an ordinarily skilled artisan would have been motivated to combine Winningstad with Strub and Woo.

“dropout problem” because the references do not teach “multi-track recording,” as they do not capture individual, isolated sources of audio as required for multi-track recording. *Id.* at 26–27. We disagree with Patent Owner because we have determined that the “locally generated audio” does not require separate, isolated audio or the notion of “multi-track” recording. *See supra* Section IV.B.

Patent Owner further argues that an ordinarily skilled artisan would not have combined Strub and Woo because the approaches followed by the two references “substantially differ from each other and the claimed invention.” 230 PO Resp. 26–28 (quoting Ex. 2058 ¶ 267). According to Patent Owner, Strub discloses a GPS time signal that “produce[s] time stamps” but “do[es] not control another timecode generator or produce a time reference signal used to synchronize at least one device,” and Woo discloses a master clock with a GPS navigation satellite receiver and digital signal processor. *Id.* at 27. Again, we disagree with Patent Owner because the arguments focus on a requirement of “control” (of another timecode generator) that the claim does not require. *See supra* Section IV.C (“master timecode” and “master timecode generator” claim construction).

Further we have determined for claim 1 of the ’443 patent that only the showing of Strub’s GPS time signal used for timestamps has been shown to meet limitation 1[C], and, therefore, we do not rely on a combination of Strub and Woo for that limitation. In any event, Petitioner’s assertions concerning the combination of Strub and Woo focused on using Woo’s master clock as Strub’s SMPTE source input and, therefore, the use of GPS signals is limited in that combination to providing a time source for Woo’s master clock. 230 Pet. 28 (“modifying Strub’s recording unit to use

conventional SMPTE-formatted timecodes from Woo’s master clock would involve merely combining familiar elements according to known methods to improve Strub’s system and yield predictable results”); Ex. 1002 ¶ 107. As such, we do not see any incompatibility arising out of how Strub and Woo use GPS signals in a different way as Patent Owner argues.²⁴

Finally, Patent Owner argues that “Strub already discloses a solution to post-production editing (i.e., participants share their locally recorded audio after a recorded event),” so “applying another solution in Strub’s post-production would have been unnecessary.” 230 PO Resp. 27 (quoting Ex. 2140 ¶ 201) (citing Ex. 1003, 80:52–58). We disagree. Petitioner provides a motivation for a person of ordinary skill in the art to use Woo’s master clock signaling with Strub, because Woo’s system produces “accurate synchronization across recorders,” generates “coordinated timecodes at independent sites,” is “simple to connect,” and provides timecodes in a format compatible with commercially available equipment, with supporting testimony from Dr. Kyriakakis. *See* 230 Pet. 28; Ex. 1002 ¶ 107; *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004) (“‘[T]he question is whether there is something in the prior art as a whole to suggest the *desirability*, and thus the obviousness, of making the combination,’ not whether there is something in the prior art as a whole to suggest that the

²⁴ To the extent Petitioner attempts to revise its obviousness contention to allege a combination of Woo’s jam-sync technique with Strub’s internal clock as meeting the “master timecode generator” limitation, we agree with Patent Owner that such a theory was not presented in the Petition of the 230 IPR, and we do not consider it. *Compare* 230 Pet. 28, 30, *with* 230 Reply 11 (citing testimony from Dr. Kyriakakis (Ex. 1073 ¶ 75) opining that it would have been obvious to jam-sync the clocks in Strub’s recording units, as disclosed in Woo).

combination is the *most desirable* combination available.”). Petitioner also explains how Strub and Woo address the same problem of synchronization of audio from multiple recording devices, again with supporting testimony. *See* 230 Pet. 30; Ex. 1002 ¶ 111; *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023) (“That [two references] address the same problem and that [one reference’s teaching] was a known way to address that problem is precisely the reason that there [is] a motivation to combine under *KSR*.”). Petitioner therefore shows by a preponderance of the evidence that modifying Strub’s recording unit to use conventional SMPTE-formatted timecodes from Woo would have been obvious as it would have involved merely combining familiar elements according to known methods to improve Strub’s system and yield predictable results. 230 Pet. 28; Ex. 1002 ¶ 107.

As to the further combination with Nagai and Gleissner, Petitioner argues that a person of ordinary skill in the art would have been motivated to use Nagai and Gleissner’s well-known standard connectors in Strub’s local audio device “because of their popularity, especially since Strub recommends specific brands of commercially available microphone—*e.g.*, a Sanken CSS-5—which were configured to be plugged into an input port.” 230 Pet. 28–29 (citing Ex. 1003, 25:35–49). We agree.

8. Conclusion Regarding Claim 1 of the ’443 Patent

On the full record, we determine that Petitioner has shown that Strub teaches limitations 1[Pre] through 1[J], in combination with the relevant teachings of Nagai and Gleissner, as discussed with respect to each limitation. We determined, however, that Petitioner has not shown that the combination of Woo and Strub teaches limitation 1[C] because the evidence

and arguments presented in the Petition do not show how the proffered combination of Woo and Strub receives wirelessly “master timecodes” that are used to stamp the local audio data when the “master timecodes” are mapped to the timecodes in the GPS signals of Woo (but Strub alone accounts for this claim 1 limitation, as explained above).

We now turn to evaluate Petitioner’s obviousness theories presented in the 232 IPR for the ’207 patent.

C. Independent Claims 17 and 59 of the ’207 Patent

As already stated, there is significant overlap between independent claims 17 and 59 of the ’207 patent and independent claim 1 of the ’443 patent discussed above. For expediency, we refer back to the arguments and evidence presented for claim 1, and only highlight or discuss differences argued by the parties. With that in mind, we evaluate whether Petitioner has shown that the limitations of claims 17 and 59 are taught by the asserted prior art. We reserve the determination of whether Petitioner has shown obviousness of claims 17 and 59 by a preponderance of the evidence until after we have reviewed and weighed all the evidence concerning obviousness and the secondary indicia of non-obviousness. *Transocean*, 699 F.3d at 1349 (“[E]vidence rising out of the so-called ‘secondary considerations’ must always when present be considered en route to a determination of obviousness.”).

1. Preamble of Claim 17

The preamble of claim 17 recites “[a]t least one audio device wearable by a user for storing locally generated audio and transmitting the locally generated audio to a remote device, the remote device including at least one

of a receiver, a recorder, a mixer, and combination thereof.”²⁵ Petitioner argues that Strub teaches an “audio device” (i.e., any “one of recording units 105–108, 200, and 300” shown in Figures 1–3) that stores and transmits audio to a “remote device” (i.e., “a different one of recording units 105–108, 200, and 300”) with a “receiver” (i.e., receiver 310 shown in Figure 3). 232 Pet. 30–34. Petitioner further contends that the preamble also is taught by Woo, identifying an alleged “audio device” (i.e., “an arrangement comprising recorder 14, GPS receiver 18, and time code generator 43, or an arrangement comprising recorder 16, GPS receiver 22, and time code generator 43”) and “remote device” (i.e., editing station 34) in Woo. *Id.* at 34–37. Some of these arguments and evidence track the arguments and evidence discussed above with respect to claim 1 of the ’443 patent for limitation 1[B].

Except for the arguments directed to the “locally generated audio” and “wearable” limitation, which we address separately, Patent Owner does not dispute the preamble limitations. 232 PO Resp. 18–23. On the full record, we are persuaded that Strub teaches the preamble limitation. Woo is not relied upon for the teaching of “wearability” (discussed further below) and no combination of references has been proffered for the preamble.

²⁵ On the record before us, we determine that the preamble is limiting at least because the body of the claim refers to the preamble for antecedent basis for the terms “locally generated audio” and “remote device.” *See Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (“When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention.”). Even if it were not, though, limitations 17[B], 17[G], and 17[H] recite the “locally generated audio” and “remote device.”

2. *Limitations 17[A], 17[B], 17[C], 17[D], and 17[E]*

Claim 17 recites five components of the “audio device.” Petitioner argues that Strub teaches a [A] “wireless transmitter” (i.e., wireless transmitter 309); [B] “audio input port configured to couple to an audio input device to receive the locally generated audio” (i.e., system controller 301’s “connection to audio input device 303 (e.g., microphone)”); [C] “memory” (i.e., data storage device 305); [D] “local timecode generator operable to generate a local timecode” (i.e., an “internal clock” that generates “a signal indicating the time”); and [E] “control unit coupled to the wireless transmitter, the audio input port, the memory, and the local timecode generator” (i.e., “system controller 301 and/or data processing device 304”). 232 Pet. 37–51. Petitioner asserts that, “[t]o the extent [Patent Owner] contends that Strub does not disclose” limitation 17[B], Nagai and Gleissner teach the recited “audio input port,” identifying the “‘mike jack’ 2 or 64” in Nagai and the “XLR plug connector” in Gleissner. *Id.* at 43–45. The arguments and evidence presented for these limitations track the arguments and evidence presented for claim 1, limitations 1[G] (wireless transmitter), 1[E] (memory), 1[D] (audio input port), and 1[F] (control unit).

However, claim 17 requires an additional timecode generator as compared to claim 1 of the ’443 patent. Claim 17 recites a “local timecode generator operable to generate a local timecode” (limitation 17[D]) and requires a control unit coupled to the local timecode generator (limitation 17[E]). For these limitations specifically, Petitioner relies on Strub’s disclosure of the internal clock, which generates a signal indicating the time, which signal is used to timestamp the recording data. 232 Pet. 48 (citing Ex. 1003 13:52–56, 63:56–60, 79:54–80:9, Fig. 3). Petitioner further asserts

that Strub's system controller and/or data processing device 304 ("control unit") is coupled to the device's internal clock, GPS based position sensing device 311, and/or SMPTE timecode input circuit. 232 Pet. 49 (citing Ex. 1003, Fig. 3, 12:4–13, 13:36–14:13).

Petitioner also points to Woo disclosing "local time code generator43," which generates SMPTE timecodes. *Id.* at 48–49 (citing Ex. 1004 7:28–37, 8:8–8, 8:21–22, Fig. 3; Ex. 1002 ¶ 145). However, Petitioner does not contend that Woo teaches the coupling of its local time code generator43 to the control unit as it relies on Strub alone for this aspect of the mapping. 232 Pet. 49–50.

Except for the arguments directed to the "locally generated audio" and "wearable" limitation, which we address separately, Patent Owner presents no additional arguments regarding these limitations. 232 PO Resp. 18–23. On the full record, we are persuaded that Strub alone teaches limitations 17[A], 17[B], 17[C], 17[D], and 17[E], while Woo teaches all but the 17[E] limitation.

3. *Limitation 17[I]: Stamp Audio Data With Local Timecode*

The final undisputed limitation 17[I] recites that the control unit is operable to "stamp at least a portion of the audio data with the local timecode." Petitioner argues that Strub describes system controller 301 as having "a clock that is used to time-stamp the recording data obtained by the recording unit," where the time-stamp can be used "to enable post-event synchronization of the display of recordings obtained by different recording units." 232 Pet. 55–56 (quoting Ex. 1003, 13:50–58). Similarly, Petitioner contends that Woo describes recorders 14 and 16 transmitting recordings that were "date and time tagged, using date and time information received by the recorders 14 and 16" from navigation satellite receivers 18 and 22. *Id.* at

56–57 (quoting Ex. 1004, 5:37–45). Patent Owner presents no additional arguments regarding this limitation. 232 PO Resp. 18–23. On the full record, we are persuaded that Strub and Woo, individually, teach the 17[I] limitation.

4. Disputed Limitations

a) “Locally Generated Audio”

Claim 17 recites “locally generated audio” in several limitations: the preamble, 17[B] (audio input port), 17[G] (transmit the locally generated audio), and 17[H] (store the locally generated audio). Patent Owner presents for claim 17 of the ’207 patent the same arguments and evidence concerning the “locally generated audio” limitations we discussed above with respect to claim 1 of the ’443 patent. For instance, Patent Owner argues that the audio is not “separated or isolated,” in contrast with audio created solely by the recorder. 232 PO Resp. 18. The arguments focus on the scope of the term “locally generated audio” requiring independent, isolated tracks of audio, the notion of “multi-track recording,” and similar notions of requiring a single source of audio. *Id.* As stated *supra* Section VI.B.7(a), we find these arguments unpersuasive because they rely on a proposed claim construction that we did not adopt.

Based on the foregoing, we find that Petitioner has shown that Strub and Woo each teaches “locally generated audio” and storing/transmitting “local audio data,” as recited in the preamble and limitations 17[B], 17[G], and 17[H].

b) “Wearable”

The term “wearable” is recited only in the preamble of claim 17. Patent Owner also presents the same arguments discussed above with

respect to claim 1 of the '443 patent. 232 PO Resp. 19–23. For the same reasons discussed in Section VI.B.7(c), we find Patent Owner's "wearable" arguments unpersuasive. We determine that Petitioner has shown that Strub suggests "[a]t least one local audio device wearable by a user for storing locally generated audio" as required by the preamble of claim 17.

c) "Master Timecode" and "Jam Synchronize"

Limitation 17[F] requires that the control unit is operable to "receive a master timecode from a master timecode generator and jam synchronize the local timecode generator to the master timecode generator using the master timecode." Petitioner relies on both Strub and Woo each disclosing the master timecode generator and each disclosing jam synchronization. 232 Pet. 51–53. We also read the Petition to assert a combination of Strub and Woo as discussed below. *Id.* at 25. We discuss each of these theories in turn.

(i) Discussion of Strub

Petitioner relies on Strub receiving master timecodes in the form of GPS time information. 232 Pet. 51. According to Petitioner, and consistent with the theory presented for claim 1 of the '443 patent, Petitioner asserts that the "master timecode generator" in Strub is taught by the GPS satellites that generate the GPS time information. *Id.* (citing Ex. 1003, 62:53–54, 63:50–60, 79:63–80:7). Petitioner asserts as an alternative that the SMPTE timecode source is also a "master timecode generator." *Id.* (citing Ex. 1003, 75:25–57). As for jam synchronization, Petitioner argues that "a POSA would have understood that Strub's use of a GPS signal or SMPTE timecode input to synchronize the internal clock comprises [sic] facilitates jam

synchronizing the internal time clock to a master timecode generator.” *Id.* at 52.

Patent Owner counters that although “Strub discloses that the GPS time signals time stamp the units, those units do not include clocks to be synchronized with a master timecode, nor does Strub teach synchronization of any form of secondary clocks to the GPS time stamp.” 232 PO Resp. 23. Patent Owner also takes issue with the alternative theory of Strub’s SMPTE timecode source as the “master timecode generator” because the use of that alternative source to timestamp the audio means that it will substitute the internal clock, not that it synchronizes the internal clock to that SMPTE timecode. 232 PO Resp. 23–24 (citing Ex. 1003 75:25–57, Ex. 2058 ¶ 258); *see also id.* at 26 (arguing that Petitioner makes no showing that Strub teaches the ability to “jam synchronize”).

Some of Patent Owner’s arguments focus on whether the “master timecode generator” term requires “control” of another timecode generator—a position we rejected and did not apply to claim 1 of the ’443 patent as discussed above. *See supra* Section VI.B.7(b). Claim 17, however, requires that the control unit “jam synchronize” the “local timecode generator” to the “master timecode generator using the master timecode.” This requirement is not met by the SMPTE time source alternative as a “master timecode generator” advanced by Petitioner. We are persuaded by Mr. DeFilippis’s testimony that use of the SMPTE time code input “merely allow[s] the recorder to use the SMPTE time code as its time code source, rather than using its own internal clock.” Ex. 2058 ¶ 258. As such, the use of the SMPTE time code input in Strub does not align the

internal clock with the SMPTE time codes, as required by the term “jam synchronize.” *Id.*

With regard to Strub’s use of the GPS signals as master timecodes and the internal clock as the local timecode generator, we are not persuaded that Petitioner has met its burden. Patent Owner argues that Strub’s recording units do not include clocks for enabling time-stamping of the recordings—but admits that “the GPS time signals time stamp the units.” 232 PO Resp. 23 (citing Ex. 2058 ¶ 255). We agree, as stated above with regard to claim 1 of the ’443 patent, that Strub teaches applying timestamps in recorded audio for synchronization using the received GPS signals.

Ex. 1003, 63:46–49; *see supra* Section VI.B.7(b)(i).

That is not the end of the inquiry, however, because Petitioner must point to evidence that the GPS signals are somehow used to align Strub’s internal clock to “jam synchronize” the clock to the GPS signals as required by the claim. Petitioner cites a portion of Strub that describes synchronization as follows,

As described above, a recording unit according to the invention typically includes a clock that is used to time-stamp recording data as the recording data is acquired. However, the clocks of different recording units may not be adequately synchronized to enable use of the time-stamps associated with the recordings obtained from different recording units to synchronize those recordings. (If recording units according to the invention each include a GPS receiver, such mis-synchronization will only exist to an appreciable degree if one or more recording units are shielded from a GPS transmitter system for an extended period of time, e.g., several hours.) Or, the recording units may not include clocks for enabling time-stamping of the recordings.

Ex. 1003, 79:63–80:9; *see* 232 Pet. 51–52. This passage contrasts recording units “according to the invention” and “different recording units.” For the

units that function “according to the invention,” Strub describes using the internal clock to time-stamp data as it is acquired. Additionally, Strub describes including a GPS receiver to minimize the mis-synchronization that can occur when relying only on the internal clock. This passage however does not state what Petitioner alleges, that Strub’s recording units will use the internal clock to time stamp the audio data, while at the same time using the GPS signals to align the internal clocks to the same timecode. *See* 232 Reply 8–9 (arguing that Strub’s GPS signals either directly timestamp audio data or synchronize the clocks of recording units to perform time stamping). Rather, Strub proposes using one option or the other. Either the recording units use the internal clock (thereby incurring the possibility that some units do not synchronize at all) or the recording units use the GPS signal to time stamp (minimizing the clock mis-synchronization possibility while recognizing that GPS signals may also incur synchronization issues due to shielding).

For instance, Strub describes the recording units receiving the GPS time signal, and because all the recording units are receiving the same signal all the units are adequately synchronized. Ex. 1003, 63:41–49. Thus, Strub discloses using the master timecode in the form of GPS signals to stamp the recorded audio. However, Strub’s discussion of the internal clock is an alternative to the GPS signals: “Additionally, a recording unit according to the invention typically also includes an internal clock, as described above, that, while not as accurate as the GPS time signals, can also be used to accurately time-stamp data.” *Id.* at 63:56–60. None of the cited passages of Strub identified by Petitioner show the alignment required by the “jam synchronize” term of claim 17. Again, here we note that the construction of

“jam synchronize” agreed to by the parties and that we have adopted is: aligning the internal clock of one device, program, or application with the internal clock of another device, program, or application. *See supra* Section IV.D. Strub is silent and we cannot discern that the internal clock of Strub is aligned with the internal clock of the GPS satellite. Therefore, we agree with Patent Owner, that Petitioner has not sufficiently shown that Strub’s GPS satellites are a “master timecode generator” whose “master timecodes” are used by the control unit to align the “local timecode generator.”

(ii) Discussion of Woo

Petitioner asserts as an alternative to Strub that Woo teaches limitation 17[F]. 232 Pet. 52. For instance, Petitioner states that “Woo discloses receiving a master timecode from a master timecode generator—*e.g.*, one or more GPS satellites 26–28—and jam synchronizing the local timecode generator 43 to the satellite(s) using the master timecode.” *Id.* (citing Ex. 1004, 3:37–45, 4:13–19, 4:45–48, 5:5–10, 5:21–29, 5:54–67, 7:18–25, 7:26–47, 7:48–8:59, 8:60–9:4, 9:5–19, 9:33–39, 9:45–55, 10:15–64, Figs. 2–4; Ex. 1002 ¶ 153). We are persuaded that Petitioner has shown by a preponderance of the evidence that Woo teaches limitation 17[F]. The passages cited show that Woo’s GPS satellite signal is used by Woo’s master clock to jam synchronize a commercially available time code generator 43. For instance, Woo’s description of its Figure 3 explains that a commercially available time code generator may be used in conjunction with the navigation satellite receivers to assume the task of generating a compatible time code source for direct connection to a time code camera, for example. Ex. 1004, 7:28–35. The time code generated by this device “will

jam to both the output connection 38 and normal SMPTE/EBU time code.” *Id.* at 7:35–38. Woo further states that this “time code generator also can be used as a master clock.” *Id.* at 7:49–50. In particular, Woo’s time code generator “is preferably able to set time code from the navigation satellite information deciphered by the navigation satellite receivers 18 and 22.” *Id.* at 7:50–52.

Patent Owner’s arguments challenging Woo’s disclosures do not address the teachings of Woo regarding the time code generator 43 as stated above. 232 PO Resp. 24–26. Furthermore, challenging Woo as not disclosing a time reference signal used to synchronize at least one device is contrary to the teachings of Woo, which expressly discloses setting a timecode from the information received from the satellite and that the output of time code generator 43 jams to the output connection 38 and normal SMPTE time code. Ex. 1004, 7:28–52. Patent Owner does not address these disclosures which plainly reveal synchronization of timecodes from the satellite and the output of the time code generator.

Further argument that Woo needs to use a highly accurate pulse because the output of the GPS receiver is insufficient to achieve synchronization is unpersuasive. We do not agree because it contradicts the express statement in Woo that the time codes generated are accurate. *See, e.g.*, Ex. 1004, 1:16–19 (“methods for generating highly-accurate clock times from a global positioning system navigation receiver”), 4:6–8, 4:13–19.

Based on the foregoing, we determine that Petitioner has shown that Woo teaches the “master timecode generator” and “jam synchronize” limitations recited in claim 17.

5. *Reasons to Combine*

Because we have determined that Woo, but not Strub, has been shown to teach limitation 17[F], we now determine whether Petitioner has shown by a preponderance of the evidence that a person of ordinary skill in the art would have been motivated to combine the teachings of Woo's time code generator synchronized to the GPS signal time information with Strub.

Petitioner argues that it would have been obvious to modify Strub's recording unit to include "a conventional SMPTE timecode input port for receiving conventional SMPTE-formatted master timecodes from Woo's master clock," which "would involve nothing more than combining familiar elements according to known methods to improve Strub's system and yield predictable results." 232 Pet. 25, 28–29 (citing Ex. 1002 ¶¶ 107, 112).

Petitioner points out various similarities between the Strub and Woo systems and asserts that Woo "provides express motivations to use its synchronization methods in a wireless, multi-recorder system such as Strub's." *Id.* at 24–25. In particular, Petitioner contends that

Woo's master clock (1) provides accurate synchronization across recorders recording a performance, (2) can generate coordinated timecodes at independent sites proximate to recorders, (3) is simple to connect to the recorders, and (4) provides timecode output in a format that is compatible with a standard (SMPTE) used by commercially available equipment.

Id. at 25 (citing Ex. 1004, 4:3–44).

Petitioner further argues that the '207 patent "sought to solve the problem of matching the timing between multiple recordings produced by one or more wireless devices" by "generating master timecodes with a master timecode generator, providing those timecodes to a local recording device, and using the timing information in those timecodes to time-stamp the locally recorded audio data." 232 Pet. 27 (citing, e.g., Ex. 1001, 4:3–26,

4:52–5:10). Petitioner asserts that “Strub and Woo recognized and solved that same problem in the same way,” pointing to the references’ disclosures regarding synchronization using GPS time signals. *Id.* at 27–28 (citing, e.g., Ex. 1003, 62:26–63:60; Ex. 1004, code (57), 4:13–19, 5:5–10, 7:26–50).

Patent Owner’s arguments in response are largely premised on an alleged failure of Strub and Woo to teach certain claim limitations. *See* 232 PO Resp. 27–29. Patent Owner disputes that a person of ordinary skill in the art would have combined the teachings of Strub and Woo to solve the “dropout problem” because the references do not teach “multi-track recording,” as they “capture single tracks of [mixed] audio that mixes the audio of all performers/sources.” *Id.* at 27. We disagree with Patent Owner because we have determined that the “locally generated audio” does not require separate, isolated audio or the notion of “multi-track” recording. *See supra* Section IV.B.

Patent Owner further argues that an ordinarily skilled artisan would not have combined Strub and Woo because the approaches followed by the two references “substantially differ from each other and the claimed invention.” 230 PO Resp. 27–28 (quoting Ex. 2058 ¶ 267). According to Patent Owner, Strub discloses “a GPS time signal that produces time stamps but does not control another timecode generator and does not produce a time reference signal used to synchronize at least one device,” and Woo discloses a master clock with a GPS navigation satellite receiver and digital signal processor. *Id.* at 28. We disagree with Patent Owner insofar as the argument attempts to discredit the combinability based on differences that are not material to the claim. For instance, arguing that the timecodes of the ’207 patent synchronize “the various independent, isolated, separate audio

tracks generated for the multi-track recording” is not commensurate with the scope of the claim. *See* PO Resp. 28; *supra* Sections IV.B–C. (“locally generated audio” and “master timecode generator” claim construction sections).

Nor is it persuasive that the “master timecodes” must be continuous (unlike GPS signals) and that a non-continuous timecode is not a working embodiment. 232 PO Resp. 25–26; 232 Sur-Reply 15. The claim does not require a “continuous” transmission or reception of “master timecodes.” Furthermore, posing an alleged inaccuracy of GPS signals when signals are blocked is not a showing of non-disclosure in *Woo*. *See Hewlett–Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003); *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) (prior art that sometimes meets the claim is sufficient to show obviousness).

Further, Petitioner’s assertions concerning the combination of Strub and Woo focused on using Woo’s master clock as Strub’s SMPTE source input and, therefore, the use of GPS signals is limited in that combination to providing a time source for Woo’s master clock. 230 Pet. 28 (“modifying Strub’s recording unit to [use] conventional SMPTE-formatted timecodes from Woo’s master clock would involve nothing more than combining familiar elements according to known methods to improve Strub’s system and yield predictable results”); Ex. 1002 ¶ 107. As such, we do not see any incompatibility arising out of how Strub and Woo use GPS signals in a different way as Patent Owner argues.²⁶ Nor do we agree with Patent

²⁶ Patent Owner argues that Petitioner’s assertions in the Reply regarding using GPS to “jam-sync” a local timecode generator applying Woo to Strub are new arguments. 232 Sur-Reply 2.

Owner's argument that in the combination of Strub and Woo, the control unit of Strub would not receive GPS master timecodes. 232 Sur-Reply 14–15.²⁷ As stated, the GPS master timecodes would be received by Woo's master clock, which includes a GPS receiver, which would be implemented in Strub, much like Strub already discloses its system controller receiving GPS time signals because it is coupled to a positioning sensing device. Ex. 1003, Fig. 3; 232 Pet. 52–53.

Patent Owner also argues that Woo teaches away from the combination of using its local timecode generator as asserted by Petitioner, because this generator would drive the camera as a whole via a wire, and Woo does not teach that generator 43 would replace the recording unit's internal clock. 232 Sur-Reply 14. Thus, Patent Owner argues, it is irrelevant whether Woo's generator 43 would jam-sync to the GPS receiver output because the “control unit” must be coupled to the “local timecode generator.” *Id.* This argument and those focusing on specific implementations of Woo's recording unit are not persuasive because they attack Woo individually, and not as a combination of teachings with Strub. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (non-obviousness cannot be established by attacking the references individually where the rejection is based upon the teachings of a combination of references).

Finally, Patent Owner argues that “Strub already discloses a solution to post-production editing (i.e., participants share their locally recorded audio after a recorded event),” so “applying another solution in Strub's

²⁷ This argument should have been presented in the Patent Owner Response as it is directed to the challenge presented in the Petition and not on anything that was raised in Petitioner's Reply. Nevertheless, we address it here for completeness.

post-production would have been unnecessary.” 232 PO Resp. 29 (quoting 232 IPR, Ex. 2058 ¶ 201) (citing Ex. 1003, 80:52–58). We disagree. Petitioner provides a motivation for a person of ordinary skill in the art to use Woo’s master clock signaling with Strub, because Woo’s system produces “accurate synchronization across recorders,” generates “coordinated timecodes at independent sites,” is “simple to connect,” and provides timecodes in a format compatible with commercially available equipment, with supporting testimony from Dr. Kyriakakis. *See* 232 Pet. 25; Ex. 1002 ¶ 107; *Fulton*, 391 F.3d at 1200 (“[T]he question is whether there is something in the prior art as a whole to suggest the *desirability*, and thus the obviousness, of making the combination,’ not whether there is something in the prior art as a whole to suggest that the combination is the *most desirable* combination available.”). Petitioner also explains how Strub and Woo address the same problem of synchronization of audio from multiple recording devices, again with supporting testimony. *See* 232 Pet. 27–28; Ex. 1002 ¶ 111; *Intel*, 61 F.4th at 1380 (“That [two references] address the same problem and that [one reference’s teaching] was a known way to address that problem is precisely the reason that there [is] a motivation to combine under *KSR*.”). Petitioner therefore shows by a preponderance of the evidence that modifying Strub’s recording unit to use conventional SMPTE-formatted timecodes from Woo would have been obvious as it would have involved merely combining familiar elements according to known methods to improve Strub’s system and yield predictable results. 232 Pet. 25; Ex. 1002 ¶ 107.

As to the further combination with Nagai and Gleissner, Petitioner argues that a person of ordinary skill in the art would have been motivated to

use Nagai and Gleissner’s well-known standard connectors in Strub’s local audio device “because of their popularity, especially since Strub recommends specific brands of commercially available microphone—*e.g.*, a Sanken CSS-5—which were configured to be plugged into an input port.” 232 Pet. 28–29 (citing Ex. 1003, 25:35–49). We agree.

On the full record before us, we determine that Petitioner has shown a reasonable motivation to combine the teachings of Woo and Strub with respect to the time code generator of Woo and jam-synchronization technique and further has shown a reasonable motivation to combine the teachings of Nagai and Gleissner regarding the well-known standard audio connectors.

6. Conclusion as to Claims 17 and 59 of the ’207 Patent

On the full record, we determine that Petitioner has shown that Strub teaches limitations 17[Pre] through 17[E], and 17[G] through 17[I], in combination with the relevant teachings of Nagai and Gleissner, as discussed with respect to each limitation, and further in combination with Woo for limitation 17[F]. We determined, however, that Petitioner has not shown that Strub alone teaches limitation 17[F] because the evidence and arguments presented in the Petition do not show jam-synchronization as the claims require.

Petitioner maps each limitation of claim 59 to one or more limitations of claim 17 as shown in the Petition. 232 Pet. 70–71. Patent Owner does not argue claim 59 separately and we discern no material difference between these independent claims. Therefore, the arguments and evidence presented above by both parties as well as our determinations regarding those arguments apply equally to claim 59.

*D. Secondary Indicia of Non-Obviousness*²⁸

We next consider objective indicia of non-obviousness (also known as secondary considerations). “The objective indicia of non-obviousness play an important role as a guard against the statutorily proscribed hindsight reasoning in the obviousness analysis.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016). Objective indicia “may often be the most probative and cogent evidence in the record” and “must be considered in every case” where present. *Id.* (emphasis omitted); *see also Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 36 (1966) (“[Objective indicia] may also serve to guard against slipping into use of hindsight, and to resist the temptation to read into the prior art the teachings of the invention in issue.” (internal quotation marks and citation omitted)). Indeed, notwithstanding what the teachings of the prior art would have suggested to one of ordinary skill in the art at the time of the invention, the totality of the evidence submitted, including objective evidence of non-obviousness, may lead to a conclusion that the challenged claims would not have been obvious to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984).

“In order to accord substantial weight to secondary considerations in an obviousness analysis, the evidence of secondary considerations must have a nexus to the claims, *i.e.*, there must be a legally and factually sufficient connection between the evidence and the patented invention.” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (internal quotation

²⁸ Patent Owner argues secondary indicia of non-obviousness in both IPRs with identical evidence supporting its arguments. Accordingly, we cite only the papers and evidence with respect to the 230 IPR when the arguments and evidence are co-extensive, for ease of reference.

marks omitted). “The patentee bears the burden of showing that a nexus exists.” *Id.* A patent owner is entitled to a rebuttable presumption of nexus “when the patentee shows that the asserted objective evidence is tied to a specific product and that product ‘embodies the claimed features, and is coextensive with them.’” *Id.* (citation omitted). Objective evidence of non-obviousness in any given case may be entitled to more or less weight depending on its nature and its relationship with the merits of the invention. *See Merck & Cie v. Gnosis S.P.A.*, 808 F.3d 829, 837 (Fed. Cir. 2015) (“To the extent that the patentee demonstrates the required nexus, his objective evidence of nonobviousness will be accorded more or less weight.”)

Alternatively, the patent owner may prove nexus “by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’” *Fox Factory*, 944 F.3d at 1373–74 (internal quotation marks omitted).

Patent Owner argues that evidence of industry praise, copying by competitors, long-felt need, and failure of others show that the challenged independent claims would not have been obvious. 230 PO Resp. 56–65; 230 PO Sur-Reply 25–26. Petitioner argues that Patent Owner fails to establish nexus, and Petitioner disagrees that the evidence indicates non-obviousness. *See* 230 Pet. Reply 26–27.

For the reasons explained below,²⁹ we find that the evidence of industry praise substantially indicates non-obviousness and that the evidence

²⁹ We recognize that in the Lectrosonics IPRs the Board determined that Patent Owner had not met its burden of showing sufficient nexus to some claims but not others. Ex. 1014, 23–25, 51–63; Ex. 1017, 31–35, 60–72; Ex. 1018, 28–32, 50–62. Generally, the Board determined that the evidence

of long-felt need somewhat indicates non-obviousness; however, we accord no weight to the arguments and evidence regarding failure of others and copying.

1. Industry Praise: Academy and Emmy Awards

Patent Owner argues that it “revolutionized [the] industry with the first wearable local audio devices that locally recorded audio while simultaneously transmitting it to a remote receiver/recorder (i.e., ‘backup recording’).” 230 PO Resp. 57. According to Patent Owner, the backup recording allowed a user to repair the remotely recorded audio without a retake. *Id.* Patent Owner identifies the preambles of the challenged claims, and limitations 1[F]/1[G], 17[G]/17[H], and 59[F]/59[G] as encompassing the backup recording elements. *Id.* In other words, the products embodying the features of locally generated audio being transmitted to the wireless transmitter for further transmission to the remote device and storing the local data provided the “backup recording” solution to the problems in the industry. 230 PO Resp. 57; 232 PO Resp. 56. The industry acknowledged these products with at least two significant awards.

First, the inventors of the patents-at-issue received a Technical Achievement Award from the Academy of Motion Picture Arts and Sciences (“Academy Award”) for the wireless recording products that embody the

submitted was directed to the feature of “fixing dropouts,” which was not shown to be tied to the original claims (but was shown to be tied to the amended claims). *See, e.g.,* Ex. 2014, 24, 52–61; *Zaxcom*, 2022 WL 499843, at *2 (“dropout repair”); *Zaxcom*, 2022 WL 499848, at *2 (“dropout repair capability”). The instant proceedings involve different claims of different patents, and the parties provide substantially different arguments concerning nexus and how the evidence of non-obviousness is tied to Patent Owner’s products embodying the claims.

claimed invention. 230 PO Resp. 57; 232 PO Resp. 57; Ex. 2140 ¶ 284. The products that received the award include Zaxcom’s TRX900AA, TRX900LA, and TRX900LAS. 230 PO Resp. 58–60; 232 PO Resp. 58–60; Ex. 2140 ¶ 289; Exs. 2113–2114. Patent Owner provides a mapping of the claim limitations to the features of these devices, which we refer to as the “TRX units” or “TRX devices.” 230 PO Resp. 58–60; 232 PO Resp. 58–60; Ex. 2140 ¶ 289. Each mapping is supported by testimony from Mr. DeFilippis. 230 IPR, Ex. 2140 ¶¶ 286, 289; 232 IPR, Ex. 2058 ¶¶ 286, 289. The Academy Award itself refers to Zaxcom’s system as including “local recording capability within the belt pack and a wireless control scheme providing real-time transmitter control and time-code distribution.” Ex. 2113–2114 (Academy Award to Glenn Sanders and Howard Stark, presented February 11, 2017). This description maps to the features of the claims of a wearable local audio device (the “belt pack” referred to in the Award) that records locally generated audio and which also receives wirelessly master timecodes (the “time-code distribution” referred to in the Award). The Award also notes the feature of wirelessly transmitting the recorded audio that is required by the claims (*see, e.g.*, limitation 1[G] (’443 patent), requiring wireless transmission in real time, and limitation 17[G] (’207 patent) requiring transmission via the wireless transmitter). The Academy Award thus has a clear nexus to the features of the claim that accomplish the “backup recording” elements and the salient features of the TRX units. Thus, we are persuaded that Patent Owner has shown a clear nexus between the TRX units, the Academy Award, and the claims: claim 1 of the ’443 and claims 17 and 59 of the ’207 patents. *Fox Factory*, 944 F.3d at 1373.

The second award we discuss here is the Outstanding Achievement in Engineering Development award from the Academy of Television Arts and Sciences Primetime Emmy Award (the “Emmy Award”). *See* Exs. 2110–2112. Mr. Sanders received the Emmy Award for the TRX units. Ex. 2140 ¶ 285. Patent Owner has proffered various documents and the testimony of Mr. DeFilippis, who has personal knowledge of the Emmy Award as he is a member of the Engineering Awards Committee of the 68th Emmy Awards. *Id.* ¶ 286 (referring to a press release announcing the honorees of the 68th Engineering Emmy Awards (Ex. 2129, “Press Release”), the Program of the 68th Engineering Emmy Awards (Ex. 2128, the “Official Program”) and the Emmy Awards Official Entry Form for Outstanding Achievement in Engineering Development (Ex. 2130). The Emmy Awards Official Entry Form explicitly refers to the ’443 patent. 230 IPR, Ex. 2130, 2. The ’207 patent is a continuation of the ’443 patent, and was not yet issued at the time of entry for the award.³⁰ The Press Release states that Zaxcom’s “innovative products include the first digital wireless transmission system for microphones and a production tool that *married transmission with a recording device located within the actor’s body pack.*” Ex. 2129, 3 (emphasis added). This statement summarizes the features of a wearable local audio device that records locally generated audio and wirelessly transmits that audio as a “backup recording” feature. It is clear from the documents supporting the Emmy Award that the industry

³⁰ The ’207 patent was filed on August 1, 2016, and the Entry Form of record had a deadline of May 31, 2016. 232 IPR, Ex. 2140, 1–2. Therefore, we find this is good reason why the application that issued as the ’207 patent was not included in the form. We find persuasive that its indirect parent is listed in the form.

praised Zaxcom’s TRX units embodying specifically the salient features of the ’443 and ’207 patents; and, therefore, we find there is sufficient nexus between the Emmy Award, the TRX units, and the claims.

Petitioner does not dispute that the Academy Award and the Emmy Award address specifically the TRX units. 230 Reply 26–27; 232 Reply 18–20. It is also undisputed that evidence of record maps the limitations of the independent challenged claims to the features of the TRX units. If “the asserted objective evidence is tied to a specific product and that product embodies the claimed features, and is co-extensive with them,” then the objective evidence is entitled to a rebuttable presumption of nexus. *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018) (internal quotations omitted).

Petitioner nevertheless argues that the Academy Award and Emmy Award fail to show nexus because they rely on unclaimed features. 230 Reply 27. But this argument does not rebut the nexus that has been shown. The TRX units have been shown to have a nexus to the claims, as they are tied to the evidence of industry praise and they are the invention disclosed and claimed in the patents-at-issue. *See Polaris*, 882 F.3d at 1072. It is the TRX units that were praised by the industry. Petitioner has not rebutted the presumption, such as by showing that the patented invention is only a small component of the praised TRX units. *See Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1333 (Fed. Cir. 2019) (“[W]hen . . . the patented invention is only a small component of the product tied to the objective evidence, there is no presumption of nexus.”).

Consequently, we are persuaded that Patent Owner has shown that its TRX units are entitled to a presumption of nexus. We now evaluate the

probative value of the evidence of industry praise of the TRX units, particularly the Academy Award and the Emmy Award.

We determine that the evidence of the Academy Award should be accorded substantial weight. The Academy Award specifically states that the Zaxcom system

advanced the state of wireless microphone technology by creating a fully digital modulation system with a rich feature set, which includes local recording capability with in the belt pack and a wireless control scheme providing real-time transmitter control and time-code distribution.

Exs. 2113–2114 (emphasis added). As discussed above, these features strongly track the features of the claims. We are persuaded, therefore, that the Academy Award recognizes that Patent Owner’s products that embody the claims provided a significant contribution to the industry by combining the features that are claimed to provide “backup recording,” namely, a local audio device wearable by a creator of locally generated audio, creating local audio data and storing it in memory, transmitting that audio data wirelessly, and stamping the audio data with timecodes. These features make it possible for the TRX units to record and store audio at the “belt pack” mentioned in the Academy Award, while also wirelessly transmitting the data that includes timecodes that are used to synchronize the audio. Accordingly, we accord substantial weight to this evidence.

Additionally, we view the Emmy Award as having strong probative value. The Emmy Award entry form, as stated, specifically notes the ’443 patent as covering the invention to be recognized by the award, and states that a copy of the patent was to be provided to the Television Academy for consideration. Ex. 2130, 2. The Press Release announcing the Emmy Award describes the products as “innovative products” that “include the first

digital wireless transmission system for microphones and a production tool that *married wireless transmission with a recording device located within the actor's body pack.*" Ex. 2129, 3 (emphasis added). Again, the Press Release summarizes the features of the claims that accomplish the "backup recording." For instance, the innovation identified in the Press Release is the *combination* of recording the locally generated audio in a device that is wearable and also transmitting the stored audio wirelessly to a remote device. The Press Release does not specifically mention timecode distribution or control as the Academy Award does. However, the Official Program from the Engineering Emmys mentions "includ[ing] time code stamps to facilitate synchronization of the recorded audio with video as well as the conversion to Broadcast Wave Format (B WAV)." Ex. 2128, 11.

Petitioner argues that the Emmy Award mentions other features that are unclaimed, "such as file format, file protection, audio return signal, latency, compression, remote control, number of channels, distortion levels, etc. 230 Reply 27 (citing Ex. 2128, 11; Ex. 2129, 3, Ex. 2130, 3; Ex. 1073 ¶¶ 140–142). Although we agree that the Official Program (Ex. 2128, 11) lists some features that are not recited in the independent claims, that does not negate that the Official Program, like the Press Release, specifically lists the fundamental requirements for the "backup recording" features that are the combination of claim elements described above. Indeed, the Official Program, like the Academy Award and Emmy Award materials, highlights the important "backup recording" combination, stating that "Zaxcom invented a production tool that *married wireless transmission with a recording device located within the actor's body pack.*" Ex. 2128, 11 (emphasis added). We do not see the additional features listed in the

Official Program as standing separate or overshadowing in any respect the very reason the TRX units became winners: “the first digital wireless transmission system for microphones and a production tool that married wireless transmission with a recording device located within the actor’s body pack.” Ex. 2129, 3.

It is the combination of the microphone recording and local storage of that captured audio as audio data coupled with synchronization timestamps and wireless transmission of the audio data that makes the “backup recording” invention noteworthy. That there may be low latency add-ons or improvements in file format or compression merely builds on the technical foundation laid by Patent Owner’s products, being the first to be recognized in the industry for the innovation that is claimed in the ’443 and ’207 patents. *See WBIP*, 829 F.3d at 1329 (stating that “a patent challenger may respond by presenting evidence that shows the proffered objective evidence was due to extraneous factors other than the patented invention” (internal citations and quotations omitted)). Once Patent Owner established a nexus to the challenged independent claims, Petitioner had a burden to *disprove* that the claimed features praised by the Academy Award and the Emmy Award contributed to the success of the invention. *See Echolochem, Inc. v. Southern California Edison Co.*, 227 F.3d 1361, 1378 (Fed. Cir. 2000) (citing *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 716 (Fed. Cir. 1991) (“To overturn a patent, the challenger must clearly prove those facts which support patent invalidity.”)). Petitioner cannot do so on this record as the Academy Award and the Emmy Award both praise claimed features of a wearable local audio device for storing the locally generated audio, which is

also transmitted wirelessly and which includes timestamps for synchronization (i.e., “backup recording”).

Consequently, we find that the evidence of industry praise in the form of the Academy Award and the Emmy Award collectively have substantial probative value as indicia of non-obviousness.

2. *Long-Felt Need*

Patent Owner further proffers the testimony of two witnesses as further evidence of industry praise and also of a long-felt need. 230 PO Resp. 60–63. In particular, Mr. William Sarokin and Mr. Jeffrey Wexler offer testimony supporting Patent Owner’s assertions that there was a long-felt need for a “wireless, wearable, transmitting and recording device that could reliably capture backup recordings.” 230 PO Resp. 60 (citing Ex. 2126, “Wexler Declaration”; Ex. 2127, “Sarokin Declaration”). Specifically, Mr. Wexler expresses the need for “the ability to locally record audio while simultaneously transmitting the audio to the remote receiver/recorder.” Wexler Declaration ¶ 6. Further Mr. Sarokin, according to Patent Owner, testifies that the claimed “backup recording” features satisfied the long-felt need. 230 PO Resp. 61–62; Sarokin Declaration ¶ 6.

Evidence that an invention satisfied a long-felt, but unmet need that existed on the patent’s filing date is a secondary consideration of non-obviousness. *See Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1332–33 (Fed. Cir. 2009). We have reviewed the Wexler and Sarokin Declarations and find them somewhat persuasive as evidence of long-felt, but unmet need. Although the Wexler Declaration does not specify any time period within which a need was present, Mr. Wexler explains that in his first 10 years as a sound mixer, wireless microphones were not regularly used

and there were problems with frequency allocation. Wexler Declaration ¶¶ 4–5. Mr. Wexler details his experience with the Zaxcom transmitters and how they provided a needed backup recording solution. *Id.* ¶ 6. According to Mr. Wexler, the transmitter would record the audio captured from the microphone in the “talent’s bodypack along with transmitting the audio signal to the remote receiver.” *Id.* “If there is failure of the primary recording, the track recorded by the transmitter is a perfect backup recording.” *Id.* This testimony fairly shows Mr. Wexler’s experience with Zaxcom’s TRX devices and how prior to their solution of backup recording, out-of-wireless-range audio would be lost forever. *Id.*

The testimony of Mr. Sarokin is similarly persuasive. Mr. Sarokin testifies that he first started using other Zaxcom products in 1999 and “[s]hortly thereafter” became aware of digital radio microphones and how that technology was “impossible.” Sarokin Declaration ¶ 4. And “about a year later,” Mr. Sarokin used Zaxcom’s first-generation digital radio microphone on set and Mr. Sanders (one of the named inventors) “was already speaking of the next generation units that would be fully remote controllable and have internal recording capability with SMPTE time code as a sync reference to tie it together with all the other radio microphones and the main remote mixer/recorder.” *Id.* ¶ 5. The passage of time between recognizing the need for the combination of elements for “backup recording” and the solution is very short—at most a year from the perspective of Mr. Sarokin. *See also* 230 Reply 26 (arguing that Mr. Sarokin did not give any thought to such a system until Mr. Sanders demonstrated it to him). However, Mr. Sarokin’s testimony shows that by 2005, he was using twelve of Zaxcom’s TRX devices that could receive and

transmit audio and receive timecodes. Sarokin Declaration ¶ 6. According to Mr. Sarokin, “Zaxcom combined this incredible capability with a built in digital recorder for backup recording, making [the TRX 900] digital transmitters full synchronous recording systems.” *Id.* Like Mr. Wexler’s testimony, Mr. Sarokin’s testimony shows that Zaxcom’s TRX devices provided a backup recording solution using timecode signals and the simultaneous transmission and locally recording of audio which is the heart of the claimed features.

Petitioner argues that the testimony of Messrs. Wexler and Sarokin fail to identify any pre-existing long-felt need for the claim system because neither gave any thought of the invention until using Zaxcom’s product. 230 Reply 26. On the other hand, Patent Owner argues that there is sufficient showing of long-felt need, and we agree based on the above-summarized testimony. 230 Sur-Reply 25. We are persuaded the testimony of Messrs. Wexler and Sarokin is sufficient to show, albeit not strongly, long-felt but unresolved need. First, the testimony of Messrs. Wexler and Sarokin directly address the TRX devices that have a nexus to the claims. Second, even though the time span for the felt need has not been shown specifically, we infer from the testimony that there was some appreciable length of time during which Mr. Wexler and Mr. Sarokin noted the limitations of then-current wireless microphone technology that could sometimes experience out-of-range loss of audio. *See id.* (citing Sarokin Declaration ¶ 5 (opining that the Zaxcom backup recording solution “was a revolutionary concept,” as “[n]o other manufacturers had anything remotely similar”); Ex. 2142 (2025 Lectrosonics press release stating that its “customers worldwide have long asked for the ability to transmit and record simultaneously”)). Thus,

we give the evidence some weight, though it is not very strong. Finally, we credit the testimony as summarized above as showing that Zaxcom's TRX devices solved the need for a wireless, wearable device with backup recording capability, by enabling the wireless transmission and local recording of the audio, while receiving timestamps. Accordingly, we find that the probative value of long-felt but unmet need moderately weighs in favor of non-obviousness.

3. Other Industry Praise

Now we evaluate whether the testimony of Mr. Sarokin and Mr. Wexler constitute persuasive evidence of industry praise. Patent Owner argues that Mr. Wexler and Mr. Sarokin are professional business associates of Mr. Sanders and their industry praise is entitled to full weight. 230 Sur-Reply 26. We disagree with Patent Owner's assertions. The testimony must first have sufficient probative value on the issue of industry praise. That industry praise requires a nexus to the claimed combination of elements. *See Geo. M. Martin Co. v. Alliance Mach. Sys. Int'l LLC*, 618 F.3d 1294, 1305 (Fed. Cir. 2010). As evidence of that praise, Patent Owner proffers the testimony of Mr. Sarokin:

I can't emphasize enough the revolution these locally recording radios brought on. If the actors in a scene went in and out of radio range, the SD card on the transmitter would continue to record the audio. The built in receiver and time code generator within the transmitter would encode the audio so it could be easily re-mixed, even in the field, sometimes even after each take.

Ex. 2127 ¶ 6. Patent Owner also proffers the testimony of Mr. Wexler:

With Zaxcom's brilliant invention . . . I could always deliver a track to postproduction even . . . where there were failures of the RF transmission . . . I would never want to be without this

function because it has allowed me to deliver audio to post in a manner which no other product provided.

Ex. 2126 ¶ 7. We find this testimony on industry praise somewhat persuasive. Together, this evidence paints the picture that the combination of local recording and storing in memory in combination with timecode generation within the transmitter and wireless transmission for remote recording provided assurances for post production that were seen as “revolutionary” and “brilliant” by Mr. Wexler and Mr. Sarokin, two industry participants. However, we also recognize Petitioner’s counter that there is a personal relationship between these witnesses and Mr. Sanders, and that the testimony has been solicited for purposes of these proceedings. 230 Reply 27 (citing Ex. 1074, 25:10–26; Ex. 1075, 17:10–18:15). The fact that there is a professional friendship between these witnesses does not discredit entirely the statements of these witnesses’ experience and knowledge, given under oath. Indeed, Mr. Wexler and Mr. Sarokin appear to be very experienced in the field of sound mixing and have deep familiarity with not just Zaxcom’s products, but those of its competitors. *See* Ex. 2126 ¶¶ 2–3; Ex. 2127 ¶¶ 2–5. Nevertheless, we balance the potential bias with the fact that these gentlemen are contemporaries in the field relevant to the patents-at-issue. *See Vulcan Eng’g Co., Inc. v. Fata Aluminum, Inc.*, 278 F.3d 1366, 1373 (Fed. Cir. 2002) (“Appreciation by contemporaries skilled in the field of the invention is a useful indicator of whether the invention would have been obvious to such persons at the time it was made.”).

To summarize, we find that the testimony of Mr. Wexler and Mr. Sarokin as evidence of industry praise has some probative value in favor of non-obviousness.

4. Failure of Others

Patent Owner argues that “[o]thers tried and failed to achieve what Messrs. Sanders and Stark accomplished with the ’443 [p]atent’s invention.” 230 PO Resp. 62; *see also* 232 PO Resp. 62 (same argument). According to Patent Owner, the testimony of Mr. Sarokin and Mr. Wexler, reproduced below, evidences the failure of others:

I first put the digital radios to use on Brown Sugar in November 2001 when everyone was saying digital radio microphones (“mics”) were impossible. Zaxcom would have no competition for almost 8 years. It was 2009 before SONY engineers were able to figure out the algorithms pioneered by Zaxcom. By the time Sony came out with their first digital radio Zaxcom was already on their 3rd generation (Ex. 2127 ¶ 5).

NO ONE ELSE has remote control capability of more than a few feet, if at all. NO ONE else has recording capability, NO ONE else has systems integration. NO ONE else has reduced bandwidth digital radios, and NO ONE else has micro sized digital radios period (Ex 2127 ¶ 7).

[U]sing the digital recording wireless transmitter . . . I could always deliver a track to post production even . . . where there were failures of the RF transmission. Zaxcom was the first and only company to provide this; nothing else even came close (Ex-2126 ¶ 7).

We are not persuaded that this testimony shows failure by others. At best the testimony shows that Zaxcom had a head start in the industry with “no competition for almost 8 years” and that there was no other provider of the products that had a combination of features (claimed and unclaimed, such as reduced bandwidth and micro-sized radios and remote control). This is not evidence that others tried and failed, where Patent Owner’s inventors succeeded. Accordingly, we find this testimony has no probative value on the issue of failure-of-others.

5. Copying

“Copying may indeed be another form of flattering praise for inventive features.” *Crocs, Inc. v. Int’l Trade Comm’n*, 598 F.3d 1294, 1311 (Fed. Cir. 2010). Patent Owner argues that Petitioner RØDE and Lectrosonics have “introduced products emulating the ’443 [p]atent’s core aspects, prompting patent infringement lawsuits against both.” 230 PO Resp. 63. Patent Owner further presents conclusory allegations concerning Lectrosonics’s firmware updates and another competitor that is alleged to infringe merely because of products with a transmitter that also records simultaneously. *Id.* (citing Ex. 2142, 2143). We are not persuaded by these arguments and the evidence presented.

Although copying by a competitor is relevant to considerations of non-obviousness, copying requires more than a mere allegation of infringement. “[T]he copying inquiry involves a comparison of the competitor’s product with the allegedly copied patented product, rather than the patent’s claims, lest the separate infringement and copying inquiries [collapse] into a single analysis.” *Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 70 F.4th 1331, 1340–41 (Fed. Cir. 2023) (internal quotation marks omitted). Thus, copying must be supported by “actual evidence of copying efforts as opposed to mere allegations regarding similarities between the accused product and the patent.” *Id.* Here, Patent Owner has not provided any evidence of copying of a product in any detail. The record evidence—an announcement of Lectrosonics’s firmware updates and a webpage printout of a sales site for “Sound Devices A10-TX-BU Digital Bodypack Transmitter- B-band”—is coupled with conclusory evidence of infringement. *See* Exs. 2142, 2143. There is no comparison between the

TRX units and the alleged copying units—and there is zero evidence that there was actual copying of the TRX units. Accordingly, we find no nexus and accord no probative value to the evidence of alleged copying.

6. Conclusion as to Secondary Indicia of Non-Obviousness

We have addressed the arguments and evidence by Patent Owner and the arguments in opposition by Petitioner that secondary indicia show non-obviousness of claim 1 of the '443 patent and claims 17 and 59 of the '207 patent. Upon our evaluation of each of the aspects of non-obviousness raised by Patent Owner, we give substantial weight to the evidence concerning industry praise, especially the recognition given by the Academy Award and the Emmy Award, for which Patent Owner has made a strong showing of nexus. We find further that the testimonial evidence of Messrs. Wexler and Sarokin have moderate probative value on the issues of long-felt need and other industry praise; but find little to no probative value in the evidence supporting the arguments of failure of others and copying.

E. Ultimate Conclusion of Obviousness

We have thoroughly evaluated the evidence of record and determine that the balancing of the evidence shows that Patent Owner has persuasively shown non-obviousness with secondary indicia of industry praise through the Academy Award and Emmy Award (and to some lesser extent, the testimony of Mr. Wexler and Mr. Sarokin as explained above in Section VI.D.3). We have also determined that Patent Owner's evidence regarding long-felt need is moderately persuasive. Although we determined that Petitioner shows the prior art teaches or suggests the limitations of claim 1 of the '443 patent and claims 17 and 59 of the '207 patent, we find the evidence (pertaining to Petitioner's asserted four-reference combination) not

particularly compelling in comparison with the substantial probative value we accord to the evidence of industry praise and the moderately persuasive evidence of long-felt, but unmet need.

In particular, we determined that Petitioner's position regarding wireless transmission of master timecodes with regard to limitation 1[C] of the '443 patent was not shown in the combination of Strub and Woo (although Petitioner's arguments regarding Strub alone are persuasive).³¹ Under a preponderance of the evidence standard, although this may be sufficient to show obviousness if considered alone, we do not find the evidence to be strong enough to outweigh Patent Owner's evidence of non-obviousness due to industry praise and long-felt, but unmet need. Furthermore, with regard to the '207 patent, we found deficient Petitioner's evidence that Strub teaches or suggests jam synchronization as required by limitation 17[F] (although Petitioner's arguments regarding the combination of Strub and Woo are persuasive).³² Additionally, in our discussion of the

³¹ Petitioner's mapping of claim 1 of the '443 patent relies on Strub and Woo independently for various limitations, but only the mappings of Strub were shown consistently for all limitations (alone or in combination with Nagai or Gleissner) of claim 1 of the '443 patent. For instance, Petitioner relied only on Strub for the wearability of the local audio device (230 Pet. 39) and for the limitation requiring unstamped local audio in limitation 1[J] (*id.* at 58–59). Therefore, our determination that the merits are not particularly strong relies primarily on the evidence regarding Strub and in light of the evidence and arguments lodged in opposition (including the arguments regarding non-enablement of Strub).

³² Petitioner's mapping of claims 17 and 59 of the '207 patent relies on Strub and Woo independently for various limitations, but only the mappings of Strub were shown for all limitations except for the jam synchronization element of 17[F] and 59[E]. Petitioner did not rely on Woo for wearability or the coupling required in limitation 17[E] and 59[D]. Therefore, our determination that merits are not particularly strong relies primarily on the

wearability of the audio device required by all the claims, we have determined that Petitioner has shown that Strub only suggests wearability. *See supra* Sections VI.B.7(c) and VI.C.4(b). *See Volvo Penta of the Americas, LLC v. Brunswick Corp.*, 81 F.4th 1202, 1215 (Fed. Cir. 2023 (holding that the Board must provide explanation of the summation of factors in evaluating the objective indicia of non-obviousness in consideration of the totality of the evidence of obviousness, including the teachings of the combined references in relation to secondary considerations)).

Therefore, balancing Petitioner’s showing of obviousness (which alone is not a particularly strong case) with Patent Owner’s substantial showing of industry praise and a modest showing of long-felt, but unmet need, we determine that Petitioner has failed to prove by a preponderance of the evidence that claim 1 of the ’443 patent and claims 17 and 59 of the ’207 patent are unpatentable. Consequently, as all other challenged claims depend from those claims, we determine that Petitioner has not shown any of the challenged claims are unpatentable.

VII. MOTIONS TO EXCLUDE

Patent Owner filed motions to exclude in the 230 IPR and the 232 IPR. For instance, Patent Owner filed a Motion to Exclude alleging that certain exhibits should be excluded for being “incomplete,” and other exhibits were “irrelevant,” “inadmissible,” or “hearsay.” 230 IPR, Paper 64; 232 IPR, Paper 65. Petitioner filed a Motion to Exclude only in the 230 IPR,

evidence regarding Strub (in combination with Woo’s teachings of jam synchronization) and in light of the evidence and arguments lodged in opposition (including the arguments regarding non-enablement of Strub).

alleging that Exhibits 2131 and 2132 should be excluded as irrelevant to the issues for which they were presented: conception, diligence, or reduction to practice. 230 IPR, Paper 65.

A. Petitioner's Motion

Petitioner's Motion to Exclude is denied. First, we did not reach the issue of conception, diligence, or reduction to practice and therefore have not relied on any of the challenged exhibits in our determinations hereunder. Second, we agree with Patent Owner that Petitioner's challenge to Exhibits 2131 and 2132 addresses the sufficiency of the evidence to prove a particular point, rather than whether the evidence is admissible. Paper 66 (citing the Consolidated Trial Practice Guide, Section II, K, "Motions to Exclude," available at www.uspto.gov/patents/ptab/trial-practice-guide#step4).

B. Patent Owner's Motion

Patent Owner's Motion to Exclude in both proceedings is also denied. Patent Owner moves to exclude thirty-five exhibits under Federal Rules of Evidence ("FRE") 106, 401–403, 702–703, 705, 801–802, 901–902, and 1006. 230 IPR, Paper 64 (challenging Exhibits 1039–1073); 232 IPR, Paper 65 (challenging Exhibits 1039–1073). These motions filed in these proceeding are substantially identical, and therefore, for expediency, we address only the motion filed in the 230 IPR. Further, we address the challenged evidence to the extent Patent Owner's motion is cogent and supports its objections with reasoned explanation. We adopt in our analysis the reasoning provided by Petitioner in its Opposition to Patent Owner's Motion to Exclude, Paper 67, and highlight below additional analysis for emphasis.

1. Exhibits 1058–1060

Patent Owner challenges the admissibility of Petitioner’s Exhibits 1058–1060 under FRE 106, as incomplete, and under 401–403, as irrelevant, and under FRE 801–802, as hearsay. These are pages pertaining to the definitions of words “pack” and “bodypack,” which we have not construed.

FRE 106: Patent Owner’s reasons for the objection are that “these exhibits risk[] misleading the record regarding understanding of wireless microphone system components by a [person of ordinary skill in the art]” and that the “incompleteness of the exhibits also presents a misleading or distorted view of source.” 230 IPR, Paper 64, 1. We disagree with Patent Owner.

The Merriam-Webster’s Collegiate Dictionary presents evidence of words with disputed scope and the pages reproduced in the record pertaining to these words are complete. Ex. 1058; 230 IPR, Paper 67, 1–2. As for Exhibits 1059–1060, these are webpages setting forth a glossary definition of the word “bodypack,” again a term with scope disputed by the parties in the 230 IPR. Neither of these presents a danger of misleading the record or understanding of the terms by a person of ordinary skill in the art. Patent Owner’s inadmissibility arguments do not raise an incompleteness issue; but rather argue reasons why the documents should be given a certain weight given their probative value. The remedy under Rule 106 is to allow the record to include the portions that are allegedly needed to give contextual fairness. Patent Owner makes only a general allegation of such a need. Patent Owner’s objections under FRE 106 are therefore overruled.

FRE 401–403: Patent Owner also objects to Exhibits 1058–1060 as irrelevant under Federal Rules of Evidence 401–403. Patent Owner asserts that Petitioner has failed to establish that these documents reflect the understanding of a person of ordinary skill in the art, or that they are consumer-oriented documents, but not technical references or sources for understanding the meaning of claim terms. 230 IPR, Paper 64, 3–4. According to Patent Owner, these exhibits lack a “technical foundation” that establishes the technical meaning of a claim term. *Id.* We do not agree with Patent Owner as it conflates relevance with sufficiency of evidence to prove a contention on claim construction. Dictionary definitions are often useful when determining a claim term’s plain and ordinary meaning in the context of the specification, and as such are relevant when claim terms are disputed. *Phillips*, 415 F.3d at 1312. Furthermore, the evidence of record shows testimony as to whether the “Sweetwater” glossary entry for “body pack” would be relevant to the meaning of the term in the “world of wireless performance.” 230 IPR, Paper 67, 4 (citing Ex. 1073 ¶ 42). Patent Owner’s objections are overruled as to relevance.

FRE 801: Patent Owner contends that Exhibits 1059 and 1060 (as well as numerous other Exhibits) are hearsay because they are out-of-court statements authored by unidentified third parties and are offered for their truth. *Id.* at 11. We disagree that the exhibits include inadmissible hearsay as they are merely relied on by Petitioner’s expert in forming his opinions and many fall under hearsay exceptions. *See* 230 IPR, Paper 67, 7–8. The objection is therefore overruled.

2. *Exhibits 1039–1057, 1061, 1064, and 1067–1069*³³

Patent Owner objects to the admissibility of these exhibits as irrelevant under FRE 401 and 402. According to Patent Owner, Petitioner has not relied on these “to establish any specific claim limitation, supply any missing disclosure in the asserted prior art, or provide any evidentiary basis for a motivation to combine or reasonable expectation of success.” 230 IPR, Paper 64, 2, 5. Patent Owner challenges these exhibits as providing “generalized background propositions or generic technical concepts that do not materially advance any asserted ground of unpatentability.” *Id.* As such, Patent Owner argues, the evidence does not establish any fact, especially Exhibit 1053, which was submitted too late, when introducing new evidence is prohibited by Board rules. *Id.* at 2–3. Petitioner counters that background evidence is relevant to the obviousness analysis and is evidence of the knowledge of a person of ordinary skill in the art. Paper 67, 2. We agree with Petitioner and overrule Patent Owner’s objection which does not address the fact that not every exhibit or evidence presented in an *inter partes* proceeding is required to accomplish the purpose of “advancing a ground”—background knowledge of a person of ordinary skill in the art is also a proper use of evidence. *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337 (Fed. Cir. 2020). Furthermore, Patent Owner’s arguments are more accurately characterized as challenging the probative value that should be accorded to the evidence. The Board, as a non-jury tribunal, is

³³ Patent Owner also challenges many of these Exhibits as inadmissible hearsay. 230 IPR, Paper 64, 10–11. We disagree that the exhibits include inadmissible hearsay. 230 IPR, Paper 67, 7–8.

able to assign the appropriate weight to the evidence rather than resorting to exclusion.

As for Exhibit 1039, Patent Owner argues that Petitioner has not established that the evidence reflects the understanding of the term “jam sync” by a person of ordinary skill in the art. As such, Patent Owner argues that there is a risk of misleading the record and the Exhibit should be excluded as irrelevant. 230 IPR, Paper 64, 3. We disagree for the same reasons as stated above and further because neither party has relied on this Exhibit and we have not considered it. The parties agreed to a claim construction for “jam synchronize” as stated above in Section IV.D.

3. Exhibit 1062

Patent Owner argues that this Exhibit is a final written decision issued in a different IPR involving a different patent, and, therefore, it is not relevant to the current proceedings. 230 IPR, Paper 64, 4. We disagree. This Final Written Decision in a prior proceeding on a related patent is relevant to our review of the proceeding here especially under the current record where Petitioner asserts collateral estoppel. *See also* 37 C.F.R. § 42.8 (parties are required to give notice to the Board of related matters). The objection is therefore overruled.

4. Exhibit 1063

Patent Owner objects to this exhibit, which incidentally is a Zaxcom Press Release, as irrelevant under FRE 401/402 because it is not a technical disclosure, prior art reference, or reliable evidence of the understanding of a person of ordinary skill in the art. 230 IPR, Paper 64, 5. We are not persuaded because this is not an inadmissibility concern. Rather, Patent Owner takes issue with the probative value of this document on issues

unrelated to those for which the evidence was presented. Petitioner has relied on this document to support its arguments against secondary considerations, not as supporting a ground or a technical point. *See* 230 Reply 27.

Furthermore, Patent Owner objects to this exhibit as hearsay. 230 IPR, Paper 64, 11–12. Petitioner argues and we agree that, given this Exhibit is Zaxcom’s own document, it constitutes a statement by a party opponent, and therefore is not hearsay under FRE 801(d)(2). Accordingly, the objection to this exhibit as hearsay is overruled.

5. Exhibit 1065

Patent Owner argues that Exhibit 1065 has not been established to be a true and authentic publication by Texas Instruments and that Petitioner has not shown that it is self-authenticating under FRE 902. 230 IPR, Paper 64, 13. Patent Owner further argues that Petitioner has not established relevance. *Id.* at 5–6. The arguments are not persuasive. The document is a press release published in what appears to be phys.org website, which contains an archive to news articles from 2004 from our plain review of the document. There is no indication that the indicia provided is insufficient to identify the document as to what it is and what is the source. Regardless, the document does not need to be authenticated for it to be considered by an expert witness in rendering opinions under FRE 702. And as for relevance, Patent Owner’s argument is a bare assertion that fails to show the Exhibit should be excluded. The objections are overruled.

6. Exhibits 1070-1072, 1089, 1090, and 1091

Patent Owner argues that Petitioner has failed to establish public accessibility of Exhibits 1071/1090 and 1070/1089 on the website

“archive.org” in December 2025. 230 IPR, Paper 64, 13. Further, Patent Owner argues that Exhibits 1072/1091 have not been shown to be what they claim, under FRE 901, because there is no “origin, authorship, or publication of the underlying document, nor does [Petitioner’s supporting declaration] establish that the document is an authentic Conexant publication.” *Id.* at 13–14. Further, Patent Owner argues that Exhibits 1071 and 1072 have no relevance to any argument. *Id.* at 7. The arguments are unpersuasive. These documents contain sufficient indicia like logos, document number references, copyright notices, internal references to the source of the information presented, revision dates, etc. that provide assurances that the documents are what they purport to be. Patent Owner’s arguments attacking the source of the document as being found through websites is unavailing. These are ancient documents dated from 1993 through 2002 that are accessible from an archive that preserves their location within the Internet framework. There is no indication that their condition is suspicious as to their authenticity. Accordingly, we are not persuaded that they are not authentic under FRE 901. Finally, there is a strong public policy for making all information filed in a quasi-judicial administrative proceeding available to the public, especially in an *inter partes* review, which determines the patentability of a claim in an issued patent. It is within the Board’s discretion to assign the appropriate weight to be accorded to evidence. The objections are overruled.

7. *Exhibit 1073*

We conclude our discussion of Patent Owner’s Motion to Exclude with Patent Owner’s challenge of Exhibit 1073, which is the Reply Declaration of Dr. Kyriakakis, as irrelevant under FRE 401/402 and under

FRE 403, lacking foundation under FRE 702, 703, and 705, as hearsay under FRE 801/802, and improper summary under FRE 1006. 230 IPR, Paper 64, 7–9, 12, 14. We are not persuaded by Patent Owner’s arguments.

FRE 401–403: We find that the testimony of Dr. Kyriakakis in Exhibit 1073 is relevant to the issues presented in the proceeding. Patent Owner’s arguments go to the probative value of the testimony, rather than the reasonable relevance of the testimony. The objection is overruled.

FRE 702/703/705: Patent Owner argues that the testimony of Dr. Kyriakakis constitutes “inadmissible expert testimony lacking a reliable foundation, insufficient disclosure of the facts and data underlying the opinions, and proper methodology applied to the facts.” Paper 64, 9. Patent Owner also argues that the testimony is unreliable because it “does not adequately disclose the analysis, reasoning, or technical basis necessary to permit evaluation of the reliability of his opinions, as required by FRE 705.” Further Patent Owner challenges the testimony as confirming that Dr. Kyriakakis relied on undisclosed materials that are not part of the evidentiary record and cannot be properly tested because of the following statement in his declaration:

I may rely upon these materials and/or additional materials to rebut arguments raised by Zaxcom. Further, I may also consider additional documents and information in forming any necessary opinions including documents that may not yet have been provided to me.

Ex. 1073 ¶ 2. According to Patent Owner, Dr. Kyriakakis failed to disclose the complete factual basis and methodology underlying his opinions. Paper 64, 9. We are unpersuaded by Patent Owner’s arguments. These are bare, general allegations without the requisite proof showing that the testimony of Dr. Kyriakakis should be excluded. The statement in the

declaration quoted above does not state what Patent Owner says it does. This is a statement reserving the right to update the basis of the expert's understanding with documents that are provided after the testimony was prepared, such as often occurs when presented with unconsidered documents during a cross-examination. There is no basis here for excluding the declaration. Furthermore, the Board is capable of assessing a witness's testimony and the bases for that testimony, or lack thereof, when weighing all of the evidence in a proceeding. The objection is overruled.

FRE 801/802: Patent Owner summarily argues that there are statements in the reply declaration that are hearsay. Paper 64, 12. This is bare argument. Patent Owner fails to identify, specifically, the textual portions of the declaration that are allegedly being offered for the truth of the matter asserted. Patent Owner has the burden of proof to establish it is entitled to the relief requested, 37 C.F.R. § 42.20(c), and yet the argument presented here shifts to the Board the burden of sifting through the entire document to determine which portion Patent Owner specifically believes is impermissible hearsay. In any event, expert testimony may rely on hearsay under FRE 702 and Patent Owner had an opportunity to depose the expert and raise any credibility or weight of the evidence issues in the Response or Sur-reply. The objection is overruled.

FRE 1006: Patent Owner summarily argues that the declaration should be excluded as “improperly summariz[ing] and characteriz[ing] other expert declarations and technical materials without providing a proper evidentiary foundation or making the underlying materials properly admissible for summary purposes.” Paper 66, 14. The argument is unpersuasive as stated above with respect to the hearsay exception. Patent

Owner has a burden of proof and a general allegation of “improper” summaries is insufficient to even raise the issue, let alone prove it. The objection is overruled.

8. Incorporation by Reference

Patent Owner argues that Exhibits 1062, 1092, and 1073 (discussed above), should be excluded under 37 C.F.R. § 42.6(a)(3) because of incorporation by reference. Patent Owner does not point to any specific incorporation by reference that violates the Board rule, resorting rather to a general allegation and bare assertions that the exhibits are improper. Paper 64, 15. Patent Owner has not carried its burden of showing a plausible reason to exclude, or even to doubt, the exhibits complained of. The objection, to the extent it was preserved properly, is overruled.

9. Conclusion as to Patent Owner’s Motion to Exclude

We have highlighted some of the issues presented by Patent Owner in its Motion to Exclude (Paper 64), and deny the Motion. The objections to the evidence challenged in the Motion are overruled (expressly as stated above) and to the extent they are not addressed above, they are overruled and we adopt and rely on the reasons provided by Petitioner in its Opposition.

C. Exclusion of Dr. Kyriakakis’s Testimony

Patent Owner raises what appears to be a matter of a Motion to Exclude. Specifically, Patent Owner argues *in its Sur-Reply* that Dr. Kyriakakis is not a person of ordinary skill in the art. 230 Sur-Reply 6–7; *Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369 (Fed. Cir. 2022). Further, Patent Owner argues that Dr. Kyriakakis demonstrated lack of knowledge in the relevant art because he stated that

“radio frequency dropout” is “not a term that a POSA would use” even though Lectrosonics (a subsidiary of Petitioner) uses the term. *Id.* at 6. Patent Owner also points out several statements of Dr. Kyriakakis in an attempt to show his testimony is deficient. *Id.* at 6–7 (citing Ex. 2119, 40, 77–78; Ex. 1073 ¶ 81; Ex. 1003, 92:30–37). To the extent Patent Owner contends that Dr. Kyriakakis therefore is not qualified to testify under FRE 702, that contention needed to be preserved and included in a motion to exclude. *See* 37 C.F.R. § 42.64. To the extent Patent Owner contends that we should give less *weight* to the testimony because of the alleged deficiencies, we address the arguments here (even though presented in the Sur-Reply).

First, these arguments should have been presented in the Patent Owner Response. Patent Owner had notice of the level of ordinary skill in the art and Dr. Kyriakakis’s qualifications and experience since the filing of the Petition.

Second, we did not adopt the level of ordinary skill in the art that Patent Owner presented, which is the level of ordinary skill that Patent Owner belatedly appears to argue that Dr. Kyriakakis does not meet. *See supra* Section III.E. (determining the level to be evidenced by “a Bachelor’s degree in electrical engineering and two or more years of experience working with audio and wireless communications systems”). Petitioner argues that Dr. Kyriakakis meets that level of a person of ordinary skill in the art, and we agree. *See* 230 Reply 1 (citing Ex. 1073 ¶¶ 4–5).

Third, regarding the testimony that Patent Owner characterizes as evidence of lack of knowledge, it is within the discretion of the Board to weigh the evidence accordingly, and we have done so in our analysis above.

VIII. CONCLUSION

Having reviewed the argument and supporting evidence of record, and after a full and fair hearing, we determine that Petitioner has not demonstrated by a preponderance of the evidence that any of the challenged claims are unpatentable.

This Final Written Decision, therefore, addresses all challenged claims of the '443 and the '207 patents. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”).

The following is a summary of the outcome of this proceeding.

For the '443 Patent:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 7, 8, 15, 17, 19, 20, 23–27	103	Strub, Woo, Nagai, Gleissner		1–3, 7, 8, 15, 17, 19, 20, 23–27
4, 9	103	Strub, Woo, Nagai, Gleissner, Winningstad		4, 9
22	103	Strub, Woo, Nagai, Gleissner, Dwyer		22
Overall Outcome				1–4, 7–9, 15, 17, 19, 20, 22–27

For the '207 Patent:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
17–19, 21–23, 33, 34, 59, 60, 66	103	Strub, Woo, Nagai, Gleissner		17–19, 21–23, 33, 34, 59, 60, 66
Overall Outcome				17–19, 21–23, 33, 34, 59, 60, 66

IX. ORDER

In consideration of the foregoing, it is hereby

ORDERED that claims 1–4, 7–9, 15, 17, 19, 20, and 22–27 of the '443 patent have not been shown to be unpatentable;

ORDERED that claims 17–19, 21–23, 33, 34, 59, 60, and 66 of the '207 patent have not been shown to be unpatentable; and

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

IPR2025-00230 (Patent 7,711,443 B1)
IPR2025-00232 (Patent 10,276,207 B1)

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