

RØDE Microphones, LLC & Freedman Electronics, LLC
v.
Zaxcom, Inc.

IPR2025-00230 & IPR2025-00232

U.S. Patent Nos. 7,711,443 & 10,276,207

Demonstrative Exhibits
Oral Argument-March 16, 2026

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Roadmap

Prior Art & Claimed Inventions

Petitioners' Unpatentability Theories

Petitioners' Cited References Fail to Disclose Key Limitations

Secondary Considerations

Winningstad is Not Prior Art

Strub Is Not Enabling Art

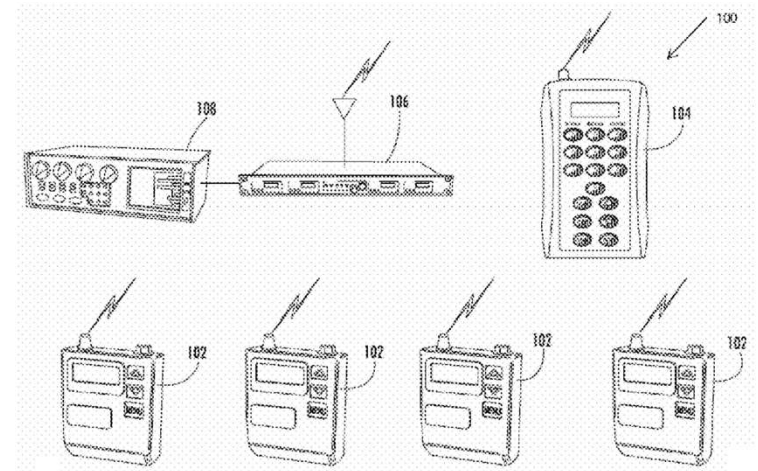
DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Prior Art & Claimed Inventions

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

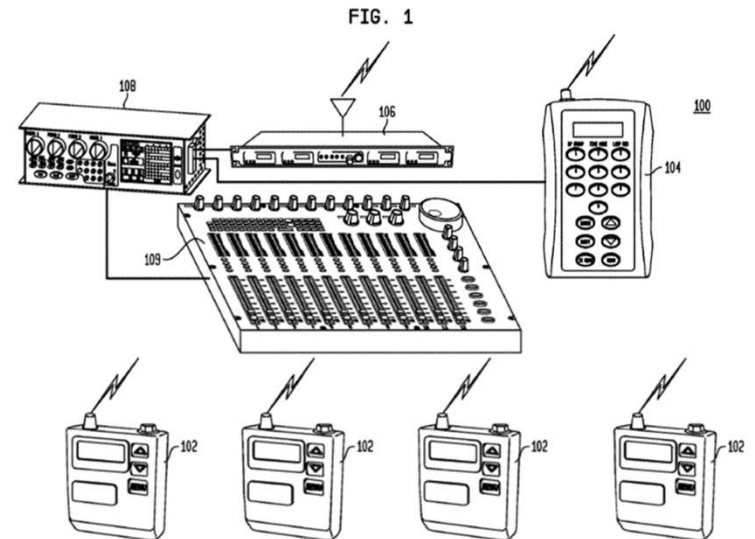
'443 Patent: Overview Of Claimed Invention

- Wireless recording system including wearable local audio devices 102, remote control unit 104, remote receiver 106, and remote recorder 108.
- Each local audio device 102 is worn by a performer and records its local audio while transmitting it to remote receiver 106/recorder 108.
- The recorder 108 combines the audio and saves it as a multi-track data file.
- Patent Abstracts state that “**In some aspects of the present invention**, each performer is equipped with a local audio device capable of locally recording the **respective** performer's audio while also transmitting it to a master recorder... **In other aspects of the present invention**, a master recorder is not required since all locally recorded audio may be combined or otherwise processed post-recording.” IPR230, Ex-1001, Abstract.



'207 Patent: Overview Of Claimed Invention

- Same components as the '443 Patent with the addition of mixer 109 including a “plurality of audio input ports...for local adjustment of the gain...of audio received.” IPR232, Ex-1001 at 30:7-15.
- Since the multi-track recording system receives the audio of each performer on a dedicated channel, the **mixer 109 can modify the characteristics of each audio stream relative to other audio streams** (e.g., one performer’s audio may be made louder than another’s audio in the recorded audio track).
- This is the **essence of multi-track recording - only possible when independent audio is individually captured.**
- Ambient or group audio recordings provide no ability to independently edit individual audio sources. There is no benefit in adjusting the qualities of one group audio recording vs another group audio recording. It is all the same audio.



Zaxcom's Patents Address Prior Art Multitrack Recording System Deficiencies

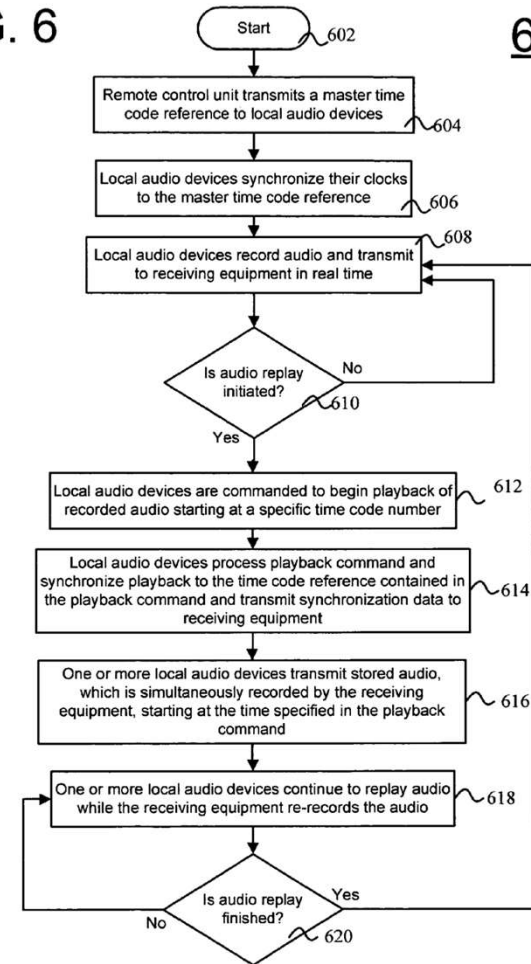
- Prior art systems include a multi-track audio recorder and an associated audio receiver that receive audio wirelessly from one or more wireless transmitters with **no ability to locally record each individual audio file**. IPR230, Ex-1001 at 1:38-40; 2:1-3; IPR232, Ex-1001 at 2:1-3.
- The inventors recognized that the prior art systems had problems with “the occurrence of wireless transmission errors such as dropouts.” *Id.* at 1:48-49; 2:11-12. In this case, **audio would not reach the remote receiver/recorder in its correct form and would not be a part of the resultant multi-track audio file.**

Repair of Remotely Recorded Audio

- The patented system creates stamped local audio data, which includes timestamps to reference the local audio data to the master timecodes.
- The remotely recorded audio also includes highly accurate timestamp references to the master timecodes. IPR230, Ex-1001 at 1:32-47; IPR232, Ex-1001 at 4:3-15.
- When a wireless transmission error occurs, segments of remote audio data can be repaired with the backup local audio data retrieved from the corresponding local audio device 102.

FIG. 6

600



Petitioners' Unpatentability Theories

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Unpatentability Theories

- IPR2025-230
 - Claims 1-3, 7, 8, 15, 17, 19, 20, and 23-27 are alleged to be obvious over Strub in view of Woo, Nagai, and Gleissner
 - Claims 4 and 9 are alleged to be obvious over Strub in view of Woo, Nagai, Gleissner, and Winningstad
 - Claim 22 is alleged to be obvious over Strub in view of Woo, Nagai, Gleissner, and Dwyer
- IPR2025-232
 - Claims 17-19, 21-23, 33, 34, 59, 60, and 66 are alleged to be obvious over Strub in view of Woo, Nagai, and Gleissner

Petitioners' Cited References Fail to Disclose Key Limitations of the Patent Claims

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Strub/Woo Fail to Teach “Locally Generated Audio” Or “Audio Data”

- PO Definitions: **Locally generated audio**: “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.” IPR230, POR at 9-10; IPR232, POR at 11. **Audio data** means “mono or stereo audio files created from independent, isolated locally generated audio, such files suitable for creation of a multi-track audio file.” IPR230, POR at 9-10; IPR232, POR at 11.
- PO Definitions supported by:
 - Patent Titles: Virtual Wireless Multitrack Recording System
 - Patent Abstracts: “[S]ystems and methods for wirelessly recording **multi-track audio files** ... each performer is equipped with a local audio device capable of locally recording the respective **performer's audio**.”
 - Zaxcom’s systems “accurately combine multiple **independent tracks of audio, wherein each independent track of audio is received from one of the performer's local audio device 102**.” IPR230, Ex-1001 at 10:28-34; IPR232, Ex-1001 at 12:22-25
- Claim 15 of the ‘443 Patent requires “local audio data” to be an independent track of audio. Otherwise, claim 15 would be meaningless, as it requires “said local audio data is combined electronically to create a single multi-track data file.” This further supports PO’s definition.
- The Board cannot construe claims in a manner that renders dependent claims meaningless. *See Meta Platforms, Inc., v. VL Collective IP LLC*, IPR2023-00924, Paper 54 at 14 (PTAB Dec. 5, 2024).

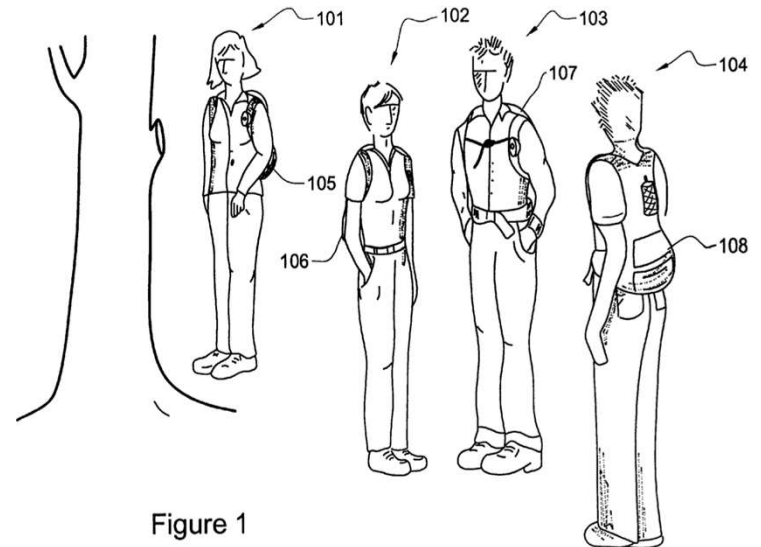
Strub/Woo Fail to Teach

“Locally Generated Audio” Or “Audio Data”

- The Federal Agencies Digital Guidelines Initiative supports PO’s definition and defines “multitrack recording” as consisting “of multiple, separate streams of sound ... [where] individual instruments or voices will be recorded on separate tracks.” IPR230/232, Ex-2014.
- Messrs. DeFillipis and Norflus: “[C]reation of a multi-track file can only happen when independent, isolated, separate tracks of each of the performer’s voices exist.” IPR230, Ex-2140, ¶ 135; Ex-2021, ¶ 14-16; IPR232, Ex-2058, ¶ 214; Ex-2021, ¶¶ 14-16.
- Dr. Kyriakakis: The goal of multitrack recording is “to isolate as much as possible” and “to capture each individual instrument or performer separately” IPR230, Ex-2119, 52:10-12, 19-21; IPR232, Ex-2030, 52:10-12, 19-21.
- Dr. Kyriakakis: Tracks created by an “ambient mic” that picks up all “reflected sound in a hall,” and a “scratch track” that is “recorded by the camera ... trying to pick up everything there for reference” is “not used in production unless there was some disaster.” *Id.* at 54:2–55:2. “A multi-track recording based on those [ambient and scratch] microphones ... **wouldn’t have been very good** ... The intent was not to just record for the sake of recording but to have useful content.” *Id.* at 56:21-57:5.

Strub/Woo Fail to Teach “Locally Generated Audio” Or “Audio Data”

- Strub & Woo teach audio that is “received” or “heard” by a recorder.
- The fact that a recorder’s voice could potentially be a part of the other audio being heard or “reflected” at the recorder does not change this analysis because it still does not create independent, isolated tracks of audio (e.g., for the recorder’s voice) as required for multi-track recording.
- Petitioners argue that “Even if the audio must be isolated audio of the wearer ... participants 101-104 (FIG. 1) can be far enough apart from one another to only record their own voices.” This is refuted by Strub: “recorders may be sufficiently far removed from each other that their recording units acquire ... audio content that is so different that the audio content cannot be blended in a meaningful way.” IPR230/IPR232, Ex-1003, 92:30-37.
- Strub teaches away from such an embodiment. It teaches “social recording,” i.e., recording in which multiple participants in an event are recording the event. Ex-1003, Abstract.



Strub/Woo Fail To Teach Multi-Track Data File Creation as Required by Claim 15 ('443)

- PO defines a “**multi-track data file**” as “a data file consisting of multiple, separate streams of sound with individual instruments or voices recorded on separate tracks” (IPR230, POR at 12) which is consistent with the Federal Agencies Digital Guidelines Initiative definition presented earlier.
- PO’s definition is supported by Claim 15 which requires: “at least one local audio device wearable by a creator of said locally generated audio ... creating local audio data from said locally generated audio ... said local audio data is combined electronically to create a single multi-track data file.” IPR230, Ex-1001, 21:56-57, 21:65-66, 23:33-35.
- Petitioners have no Strub reference for creation of this file, stating “POSA would have understood Strub’s reference to an ‘audio mixer’ displaying multiple tracks as meaning either a special-purpose mixing device or a computer running conventional audio post-processing software, either of which would necessarily include the conventional, standard functionality of saving the displayed multi-track audio as a single file, and furthermore, would have considered such standard functionality to be obvious.” ‘443 Petition, Paper 1 at 65-66.

Woo Fails To Teach Multi-Track Data File Creation as Required by Claim 15 ('443)

- Petitioners claim Woo teaches this limitation: “A POSA would have understood Woo’s description of generating a “time-synchronized composite recording” ... to mean that the local audio data is combined electronically to create the time-synchronized composite recording, and that the composite recording is a single multi-track data file, and furthermore would have considered it obvious to save Woo’s multi-track, composite recording as a single file.” ‘443 Petition, Paper 1 at 66-67.
- Mr. DeFilippis: Further, Woo does not teach **multi-track data file creation** because it pertains to video recording, not audio recording, and “it does not teach the capture of multiple, individual, separate, isolated sources of *audio* needed to create such a multi-track recording.” IPR230, Ex-2140, ¶190.
- Mr. DeFilippis: “Video has no applicability to multi-track audio files, which relate solely to audio.” IPR230, Ex-2140, ¶ 191.
- Mr. DeFilippis: “Videos cannot be combined in the same sense as audio as one can only watch one video at a time, whereas one can hear all audio sources simultaneously.” IPR230, Ex-2140, ¶190.

Strub Fails to
Teach: “Local
Audio Device
Wearable By...”

“A Creator of Said
Locally Generated
Audio” (‘443)

“A User For Storing
Locally Generated
Audio” (‘207)

- PO defines these terms as: “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.”
- In the prior Lectrosonics IPRs, the Board found “wearable” to mean only “suitable and in a condition to be worn.” IPR230/IPR232, Ex-1062 at 10.
- That Board used the Broadest Reasonable Interpretation (“BRI”) standard. Here, we use Phillips which requires claim interpretation consistent with the specification – not broadest interpretation. IPR230/IPR232, Ex-2013, Federal Register, Vol. 83, No. 197 (Oct. 11, 2018).
- Patents clearly describe “local audio device” as being worn by the performer who creates the audio captured by the local audio device. IPR230 & IPR232, Abstract.

Strub Does Not Teach The Claimed Wearable Local Audio Device

- Petitioners rely on Fig. 1 of Strub to show wearability.
- Strub does not teach that units 105-108 shown therein (and having the size therein) include a transmitter as required by the Challenged Claims.
- Even if Strub teaches a version of recording units 105-108 with a TX, it does not teach that such embodiment fits in the backpack shown in Fig. 1.
- The Institution Decisions focus on the goals of Strub: “Petitioner identifies teachings in Strub indicating that it would be desirable to include many of these components in a single apparatus that is easily worn. *Id.* at 33 (citing Ex. 1003, col. 4, ll. 21-31 (describing ‘a small, lightweight, wearable recording unit’), col. 66, ll. 33-51 (disclosing goals of making the recording unit ‘small,’ ‘comfortable to wear,’ and ‘as lightweight as possible’).” IPR230, Paper 14; IPR232, Paper 14 at 40.
- However, a reference must enable what it teaches, not merely describe a desired result. See *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d 1318, 1326 (Fed. Cir. 2005) (internal citations omitted) (“A patent claim ‘cannot be anticipated by a prior art reference if the allegedly anticipatory disclosures cited as prior art are not enabled.’”)
- Strub does not teach *how* to achieve these goals.

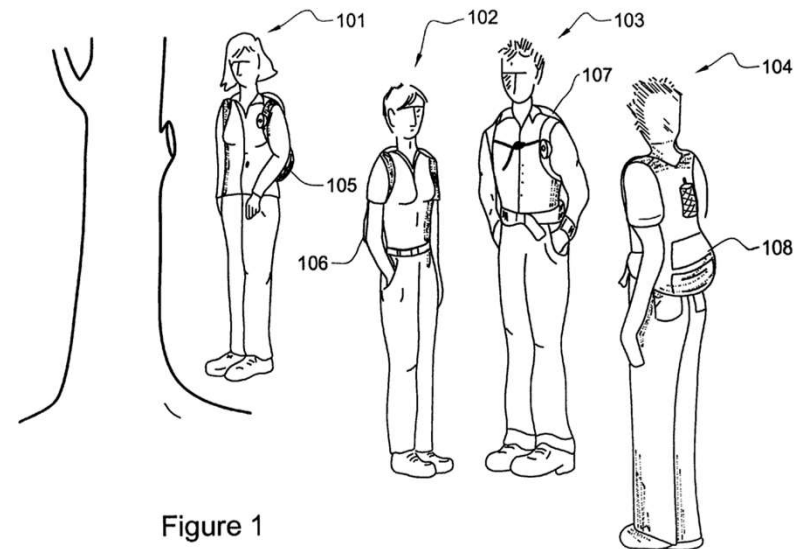


Figure 1

IPR230, POR at 11 & 16-19, Paper 14 at 40-41; IPR232, POR at 13 & 19-23, Paper 14 at 40-42

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Strub's Device Is Portable, Not Wearable

- The prosecution history of the '443 Patent excludes devices that are merely portable such as the Nagra-V portable audio recorder cited by the Examiner. The Nagra-V dimensions are 11.4" x 8.6" x 4.5," it weighs approximately 7.6 to 9 pounds, and it is sold with a soft carrying case." IPR230, IPR232, Ex-2017, p. 2.
- Strub's Fig. 1 device is comparable in size to, or larger than, the Nagra V.
- Strub also discloses a unit over 2.5 times the weight of the Nagra V. "Most of the components of the recording unit are enclosed within a backpack 601 ... a recording unit as shown in Fig. 6 ... weighs about 24 pounds." IPR230, IPR232, Ex-1003, 67:30-33, 45-47.
- The fact that the Nagra V could be carried in a backpack (or a soft carrying case) did not render it wearable, and the same reasoning applies to Strub's units.
- The prosecution history precludes Strub's units from satisfying the "wearable" limitation.

Strub/Woo Fail To Teach “Master Timecode Generator”

- Master Timecode Generator cannot be GPS Satellites. IPR230, Paper 1 at 38; IPR232, Paper 1 at 51-52.
- Claim 27 of the ‘443 Patent requires the master timecode generator to be “integral to the remote control unit.” A GPS master timecode generator cannot satisfy this limitation.
- The Board cannot construe claims in a manner that renders dependent claims meaningless. See *Meta Platforms, Inc., v. VL Collective IP LLC*, IPR2023-00924, Paper 54 at 14 (PTAB Dec. 5, 2024) (denying a construction that would have rendered a dependent claim meaningless).
- The CAFC has recognized that **GPS and its time signals are not claimed system components, but external infrastructure**. The “GPS system itself is not patented” and claims are instead directed to devices that receive and process GPS signals, not to GPS as a system component (*SiRF Tech., Inc. v. ITC*, 601 F.3d 1319, 1323 (Fed. Cir. 2010)).
- Master timecode generator also cannot be Strub’s SMPTE time code input because it merely allows a device to use that input rather than its internal clock – there is no master time reference signal that **controls** at least one other timecode generator. IPR230, Ex-2140, ¶ 180; IPR232, Ex-2058 ¶ 258.

References Do Not Teach Claim 17 ('443)

- Claim 17. A system according to claim 1, wherein said at least one control unit is a digital signal processor.
- Strub teaches that the system controller 301 is a microcontroller, not a DSP. IPR230, Ex-1003, 14:7-13. Strub's only mention of a DSP: "A beam forming method can be performed by the system controller [or] **alternatively** ... one or more digital signal processors." IPR230, Ex-1003, at 31:51-59.
- Petitioners erroneously claim the DSP is taught as the Strub beam forming "DSP" and the Woo GPS-DSP 52. Neither Strub nor Woo teaches these DSPs performing the other functions of the "local control unit" as required by Claim 1: "local 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 memory." and "transmitter in communication with said at least one control unit." Ex-1001, 21:63-22:5.

References Do Not Teach Claim 19: Local Audio Device is a Bodypack ('443)

- PO: “Body pack” is “a small box housing a transmitter capable of being worn on a belt or in a pocket.” IPR230, Ex-2140, ¶¶ 151-53. Specification support:
 - FIG. 3B shows a small box. See *In re Wolfensperger*, 302 F.2d 950 (CCPA 1962) (Drawings alone can support a claim limitation).
 - The Specification: “[D]igital, wireless audio transceivers ... may be manufactured in the form of body-packs, such as those typically worn by news announcers, performers, and the like.” IPR230, Ex-1001, 7:49, 7:50-52, 10:52-53.
 - IPR230, Ex-2020, pg. 5 from Bosch Security Systems – Wireless Microphone Basics: Bodypack is a transmitter you can wear on a belt clip or in your pocket.”
- Any construction in which the bodypack is too large to be worn on a belt or put in a pocket is inconsistent with the patent specifications.
- Backpacks are not “typically worn by news announcers, performers, and the like.”
- “[C]onstruction ‘cannot be divorced from the specification and the record evidence.’” See *Alarm.com Inc., v. Vivint, Inc.*, IPR2015-01967, Paper 12 at 11 (PTAB Mar. 30, 2016).

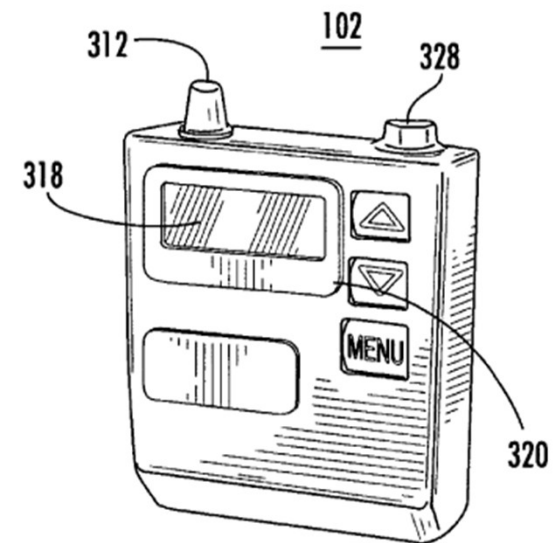
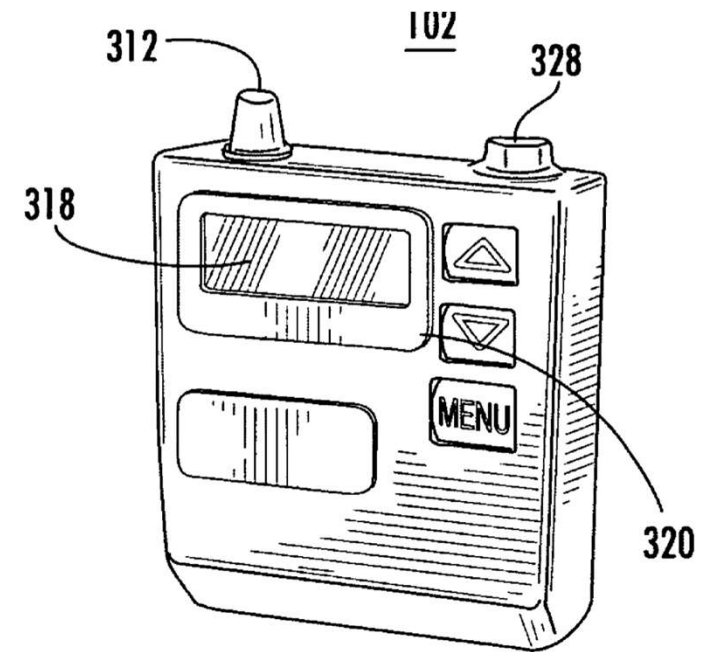


FIG. 3B

References Do Not Teach Claim 19

Local Audio Device is a Bodypack ('443)

- Strub does not teach a unit worn on the recorder's body – it is held by a recorder unless adapted to make it wearable. “[I]t is highly desirable that the recording unit be adapted to be mounted on (e.g., attached on, or worn by), rather than held by, the recorder.” IPR230, Ex-1003 at 11:11-13.
- Strub requires apparatus (e.g., a “backpack,” a “waist strap,” a “harness,”) to make a unit wearable (IPR230, Ex-1003, 16:53, 71:10, 69:3) because the unit is not inherently wearable.
- Petitioners claim “Strub discloses a body pack since it states that its recording units are wearable.” Paper 43 at 19. Applying the same meaning to bodypack and wearable would render Claim 19 meaningless as it depends from Claim 1, which requires wearable.
- The bodypack definition must narrow the wearability definition.
- See *Meta Platforms, Inc., v. VL Collective IP LLC*, IPR2023-00924, Paper 54 at 14 (PTAB Dec. 5, 2024) (denying a claim construction that would have rendered a dependent claim meaningless).



Patentability is Supported by Secondary Considerations of Non-Obviousness

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Secondary Considerations

Industry Praise: Academy Award

- Mr. DeFilippis: “[T]he Patent inventors received the Academy Award for the wireless recording products that embody the claimed invention of the ‘443 Patent.” IPR230, Ex-2140; IPR232, Ex-2058, ¶284.
- The face of the award states “The Zaxcom system has advanced the state of wireless microphone technology by creating a ... system ...which includes **local recording capability within the belt pack.**” IPR230, Exs-2113, 2114; IPR232, Exs-2044, 2045.
- Mr. DeFilippis: “The **belt pack** is Zaxcom’s local audio device, and the award was provided directly for **its ability to locally record while simultaneously transmitting the audio.**” IPR230, Ex-2140, IPR232, Ex-2058, ¶ 284.

IPR230, POR AT 56-65; IPR232, POR AT 54-65
DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



Secondary Considerations

Industry Praise: Emmy Award

- Inventors received an Emmy award from the Academy of Television Arts and Sciences for the claimed products. IPR230, Exs-2110-2112; IPR232, Exs-2041-2043.
- The Emmy program clarifies the reasons for the award:
 - “[d]igital recording of microphone signal in the wireless transmitter to provide **backup recording** of the original microphone signal”;
 - “[d]istribution to each digital wireless body pack of a common time code signal”; and
 - “[w]ireless digital remote control of the wireless microphone transmitter...” IPR230, Ex-2128; IPR232, Ex-2038.
- In the Emmy press release, Zaxcom’s “innovative products” were praised as “the first digital wireless transmission system ... that **married wireless transmission with a recording device located within the actor’s body pack.**” IPR230, Ex-2129; IPR232, Ex-2039.

IPR230, POR AT 56-65; IPR232, POR AT 54-65
DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



Sound Devices A10-TX-BU Digital Bodypack Transmitter



Record and transmit seamlessly with one device

The A10-TX transmitter doubles as a recorder and can simultaneously record while transmitting! Files are timecode-stamped and recorded to a microSD card of your choice, which makes for tons of recording space at your disposal. Audio files save in a proprietary .mic format that easily converts to 24-bit/48kHz broadcast WAV files with the addition of free SD-Utility software for Mac or PC. With timecode tools and simultaneous recording, this device lets you knock out a bevy of tasks while handing off post-production crews tidy, well-organized raw material that keeps them happy, healthy, and making killer content.

Copying by Competitors/Nexus

- Both competitors Lectrosonics and RODE introduced products copying the Zaxcom patents, prompting patent infringement lawsuits against both, i.e., *Zaxcom, Inc. v. Lectrosonics, Inc.*, No. 1:17-cv-03408 (E.D.N.Y. June 6, 2017); and *Zaxcom, Inc. v. RODE Microphones, LLC, et al.*, No. 1:23-cv-01245-JFM (D. Del.).
- Lectrosonics's products were discontinued immediately after the FWDs in the Lectrosonics IPRs.
- Lectrosonics reintroduced an infringing product for non-U.S. markets in August 2025. IPR230, Ex-2142; IPR232, Ex-2033.
- Another competitor, Sound Devices, sells an A10 Transmitter that also limits its customer use to avoid infringement of the Zaxcom patents while touting Zaxcom's features. "The A10-TX transmitter **doubles as a recorder and can simultaneously record while transmitting!**" IPR230, Ex-2143, p. 2; IPR232, Ex-2034, p.2, Sept. 8, 2025.

Lectrosonics Announces Firmware Updates For Select Transmitters To Record & Transmit Simultaneously For Markets Outside Of The United States

News & Announcements, Press Releases / August 26, 2025



RED WING, NM (August 26, 2025) — Lectrosonics is pleased to announce a set of firmware updates available for users outside the United States to allow for simultaneous recording and transmitting in certain transmitter models. From August 26 forward, all units of D8SM, D8SMD, DPR-A, SMWB, and SMDWB for non-U.S. markets will come with the new firmware.

Users outside the US or Canada already owning these models with /X, /ED1, /ED6, and /ED9 market identifiers, and also the DPR/EB-L, can download updated firmware for installation in the field. Precise instructions for performing the upgrade will be available from the Lectrosonics web site by visiting <http://www.lectrosonics.com/recs>.

Users outside the US or Canada desiring the update and with transmitter model numbers not including ED1, ED6, or X should email service.repair@lectrosonics.com or call 565-892-4501 or 800-821-1123 for more details.

Users with existing units in Canada desiring the update will be required to send their units to the Lectrosonics Canada office in Toronto.

US users with these transmitter models are not eligible for the feature upgrade at this time.

"Our customers worldwide have long asked for the ability to transmit and record simultaneously," states Karl Winkler, Lectrosonics' EVP of product design and distribution. "We're pleased to now offer that feature for our international customers."

Long Felt Need/Industry Praise/ Nexus

- Petitioner's expert recognized long felt need: his number one role in preventing dropouts was "crossing fingers." IPR230, Ex-2119; IPR232, Ex-2030, 85:12-17.
- Lectrosonics August 26, 2025 press release states: "Our customers worldwide have **long asked for the ability to transmit and record simultaneously.**" IPR230, Ex-2142; IPR232, Ex-2033.
- Mr. DeFilippis: "The Zaxcom technology that satisfied a long-felt need and received industry praise and recognition include the features that are recited in the issued claims of the ['443/'207] Patent." IPR230, Ex-2140; IPR232, Ex-2058, ¶ 287.
- Mr. Wexler: "I have been in many situations where ... there have been RF dropouts ... prior to **the ability to locally record audio while simultaneously transmitting the audio to the remote receiver/recorder**, the audio would be lost forever in these situations" (IPR230, Ex-2126; IPR232, Ex-2037, ¶ 6).

IPR230, POR AT 56-65; IPR232, POR AT 54-65

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Secondary Considerations

Nexus

- Mr. DeFilippis was on the 2016 Engineering Awards Committee that awarded the Emmy to Mr. Sanders. “The products for which the inventors received the Emmy award, ...the Academy Award..., and other industry praise **include the TRX900AA, TRX900LA, and TRX900LAS ...**” IPR230, Ex-2140; IPR232, Ex-2058, ¶ 289.
- Mr. DeFilippis: “There is a strong nexus between the objective indicia of non-obviousness and the issued claims of the ‘443 Patent and the ‘207 Patent” IPR230, Ex-2140; IPR232, Ex-2058, ¶ 287.
- Mr. DeFilippis: The Academy Award has a nexus to the novel backup recording feature of the ‘443 Patent and the ‘207 Patent, as directly referenced on the face of the award. IPR230, Ex-2140; IPR232, Ex-2058, ¶ 284.
- The Lectrosonics IPR Board stated the “proposed combination of the teachings of the references [which are essentially the same as those present in this case] presents **a weak case of obviousness**, whereas the **objective indicia of nonobviousness weighs heavily in favor of nonobviousness.**” IPR230 & IPR232, Ex-1017 at 72.

Winningstad Is Not Prior Art

(‘443 Only)

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Zaxcom Swears Behind Winningstad ('443)

- The inventors formed a definite and permanent idea of the complete and operable invention of the challenged claims prior to the April 20, 2005 filing date of Winningstad as per the test set forth in *Bosies v. Benedict*, 27 F.3d 539, 543, 30 USPQ2d 1862, 1865 (Fed. Cir. 1994).
- Conception does not require an element-by-element recitation of claim language but proof that the inventors had a “definite and permanent idea of the complete and operative invention,” as shown by contemporaneous documents and corroborating evidence. *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994) (internal citations omitted). See also *Hyatt v. Boone*, 146 F.3d 1348 (Fed. Cir. 1998).
- Inventors conceived of the inventions prior to its April 4, 2005, engagement of the Law Offices of Rita Chipperson (“LORC”) to draft a patent application. IPR230, Ex-2133, 2029 at ¶ 2-4, 2030 at ¶ 4, 2133.
- Exs-2134 and 2135 were provided to LORC on or before April 8, 2005 (Ex-2031). The Chart on pg. 30 of the POR demonstrates conception of the claim elements with reference to these exhibits. IPR230, Paper 23 at 30-31; see also IPR230, Ex-2134.

Zaxcom Swears Behind Winningstad ('443)

- Zaxcom created prototypes of the TRX900 and IFB 900 prior to the start date of the NAB conference (April 17-21, 2005). Exs-2109A-C are videos of Glenn Sanders operating them at NAB Conference and explaining their functionality.
- In Ex-2109B, remote control and backup recording/transmission are described at 0:07 and 0:30 seconds, respectively.
- In the '307 Lectrosonics IPR, Zaxcom successfully swore behind the Lee reference's earliest effective date of May 31, 2005. IPR230, Ex-1014, p. 27.
- Petitioners have asserted no basis for unpatentability of claims 4 and 9 of the '443 Patent that does not rely on Winningstad.

Strub Is Not Enabling Prior Art

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Prior Art Must Be Enabling to Support Obviousness

- 35 U.S.C. § 112(a): specification must “enable any person skilled in the art to which it pertains ... to make and use the [claimed invention]” without undue experimentation.
- “A patent may be enabling even though some experimentation is necessary; the amount of experimentation, however, must not be **unduly extensive**.” *U.S. v. Telectronics, Inc.*, 857 F.2d 778, 785 (Fed. Cir. 1988).
- Enablement is determined by the Wands factors:
 - (1) the quantity of experimentation necessary;
 - (2) the amount of direction or guidance presented;
 - (3) the presence or absence of working examples;
 - (4) the nature of the invention;
 - (5) the state of the prior art;
 - (6) the relative skill of those in the art;
 - (7) the predictability or unpredictability of the art; and
 - (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1998).

Strub is Non- Enabling

- Strub provides a non-working example in the form of a high-level functional diagram and some suggested parts.
- Mr. DeFilippis: This “taught ‘starting point’ is a non-working embodiment that greatly elevates the experimentation required by a POSA.” IPR230, Ex-2140 ¶ 291; IPR232, Ex-2058, ¶ 291.
- “[W]hen there is no disclosure of any specific starting material or of any of the conditions under which a process can be carried out, undue experimentation is required; there is a failure to meet the enablement requirement that cannot be rectified by asserting that **all the disclosure related to the process is within the skill of the art.**” See *Genentech Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366 (Fed. Cir. 1997).
- Strub states untaught aspects of the invention are “within the skill in the art,” or variations thereof, no less than **40 times!** Paper 23 at 37 (IPR230) and 32 (IPR232).

Strub is Non- Enabling

- The suggested parts are not readily combinable and some are not feasible for use in a portable, battery powered device, particularly one used for activities “such as hiking, snow skiing, or ping pong.” IPR230/232, Ex-1003, 67:59-61.
- Mr. DeFilippis: Even if a POSA could figure out how to design the feasible aspects of Strub’s system, it would certainly not fit in a backpack or be “wearable.” IPR230, Ex-2140; IPR232, Ex-2058, ¶ 290.
- A reference must enable what it teaches, not merely describe a desired result. See *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d 1318, 1326 (Fed. Cir. 2005) (“A patent claim ‘cannot be anticipated by a prior art reference if the allegedly anticipatory disclosures cited as prior art are not enabled.’”)

IPR230, POR AT 34, 37; IPR232, POR AT 29, 32-33

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Strub is Non- Enabling

- A POSA “is a hypothetical *person* who is presumed to have known the relevant art at the relevant time.” MPEP § 2141 (emphasis added). See also *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *GPAC*, 57 F.3d 1573.
- Petitioners also defined a POSA as “a person.” IPR230/IPR232, Paper 1 at 3.
- Petitioners’ own expert admits it would take more than a person, i.e., a “team of engineers” to create a Strub product. IPR230, Ex-2119 & IPR232, Ex-2030, 138:21-139:7.

Wands

Factors 1 & 6

(1) quantity of experimentation necessary

(6) relative skill of those in the art

- Strub includes only 2 drawings of its 59 pages to teach its invention (IPR230/IPR232, Ex-1003, Figs. 2 and 3).
- Fig. 2 is inapplicable as there is no transmitter.
- Dr. Kyriakakis: “Figure 3 is not showing equipment. It's showing functional blocks, each of which requires numerous pieces of equipment... This is not a circuit-level diagram.” IPR230, Ex-2119 & IPR232, Ex-2030, 183:19-184:13.
- Mr. DeFilippis: In 2000, years of undue experimentation would be required to fill the gaps in Strub's disclosure (IPR230, Ex-2140/IPR232, Ex-2058, ¶ 291):
 - Wireless protocol (e.g., RF or IEEE);
 - Housing/enclosure design;
 - Antenna placement;
 - PC board design;
 - RF shielding;
 - Analog-to-digital converters;
 - Receiving multiple channels of data, (e.g., whether to cascade equipment); and
 - Thermal management.

Wands Factors 1 & 6

- Petitioners' expert concedes that Strub leaves all the critical invention design to a POSA:
 - Building Strub would require “pick[ing] the appropriate receiver/transmitter and wireless protocol to support the number of streams that they wanted to support” (IPR230, Ex-2119 & IPR232, Ex-2030, 161:13-16), and Strub does not “specify if they’re analog or digital” (IPR230, Ex-2119 & IPR232, Ex-2030, 164:18);
 - “[S]ome transmitters [would send] to the channels available in one receiver and others to another, and *then somehow [multiplex] the signals* to send to the rest of the system” (IPR230, Ex-2119 & IPR232, Ex-2030, 167:1-5);
 - With respect to MPEG compression, “it would really depend on a POSA designing a system like this to pick the correct chip ... not just the example” (IPR230, Ex-2119 & IPR232, Ex-2030, 179:18-21), and “[i]t depends on how well the compression algorithm and the multiplexing were programmed” (IPR230, Ex-2119 & IPR232, Ex-2030, 180:1-4); and
 - “[T]ransmission losses or signal interference” are “recognized it looks like, but *there’s no discussion of mitigation.*” Ex-2030, 183:1-5.

Wands Factors 1 & 6

- When asked about whether each transmitter/receiver would require its own PC board, Petitioners' expert stated: "Not necessarily. They could be built on the same PC board and isolated from interference. That *becomes an electronic engineering problem*, PC board design." (IPR230, Ex-2119/IPR232, Ex-2030 185:17-20).
- Mr. DeFilippis: "[O]nce a POSA figures out all these items, the POSA is left to figure out how to compress the resulting system into a purportedly 'wearable' device that includes a portable power supply capable of supplying power to over eleven different devices with varying power inputs. Such size and battery abilities were not within the ordinary experimentation of a POSA as they were beyond the state of the art in April 2000 for devices having less features." IPR230, Ex-2140/IPR232, Ex-2058, ¶ 294.
- Strub's disclosure not only requires undue experimentation, but undue experimentation across multiple disciplines.

Wands Factor 2

Amount of Direction or Guidance Presented

- Mr. DeFilippis: In April 2000, “the portable power of the Strub device would have been its limiting factor” (IPR230, Ex-2140/IPR232, Ex-2058 ¶ 296), yet Strub barely addresses it.
- Strub merely states: “[A] portable power supply (e.g., a battery) must be ... capable of storing sufficient energy to enable operation of the recording unit, without recharging or replacing the power supply... to enable operation of the recording unit for at least several hours (e.g., 2-5 hours).” IPR230/IPR232, Ex-1003, 12:59-13:35.
- This is a goal, not a solution, to a significant engineering issue in April 2000.
- Mr. DeFilippis: “Strub provides no instruction on the power system design, heat dissipation or air flow of each component, many of which were designed to be powered by a stationary computer, not batteries. The complete lack of guidance about how to modify chassis mounted, mains powered devices to work in a backpack environment with batteries would leave a POSA incapable of building Strub without extraordinary experimentation.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 296.
- Beyond that, this magical power supply must be capable of fitting in a backpack while powering over eleven incompatible electrical components.

Wands Factor 2

Amount of Direction or Guidance Presented

- Strub teaches MPEG compression to enable digital video transmission. Ex-1003, 28:30-31.
- Mr. DeFilippis: In 2000, no consumer, battery-powered MPEG encoder existed. Compact, battery-operated systems were not available until approximately 2002. IPR230, Ex-2145, Ex-2140, ¶297; IPR232, Ex-2060, Ex-2058, ¶ 297.
- Strub specifies that visual data could be shared between units via RF, in either analog or digital form, with each unit transmitting one video signal while receiving up to 4 video signals over multiple RF channels. Ex-1003, 37:53-56.
- Mr. DeFilippis: “In the U.S., each television channel is 6 MHz wide, and only 80 MHz of unlicensed spectrum was available in the 2.4 GHz band, which is used by others Strub does not guide a POSA on the ‘sharing’ of this spectrum nor how its device locates ‘clear’ channels. Without a mechanism to detect available spectrum, each recorder would require an RF spectrum analyzer to locate channels, and both transmitters and receivers would need to be frequency agile. Strub discloses no method of setting frequencies or coordinating among the units, nor does it address the guard bands required to minimize interference.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 298.

Wands Factor 3

Presence/Absence of Working Examples

- Petitioner relies on Fig. 3, which is not a working example but a “functional diagram” as per Petitioners’ expert. IPR230, Ex-2119/IPR232, Ex-2030 at 139-140.
- Strub teaches 68HC11 microcontroller as the heart of its system: “system controller 301 controls the operation of, and mediates interaction among, the other components of the recording unit 300.” IPR230/232, Ex-1003 at 12:10-13.
- Mr. DeFilippis: “This is technically infeasible” as the microcontroller does not have specifications to achieve this. It cannot even process a single real-time, live video feed IPR230, Ex-2140/IPR232, Ex-2058, ¶301. At best, it could display simple text and characters.

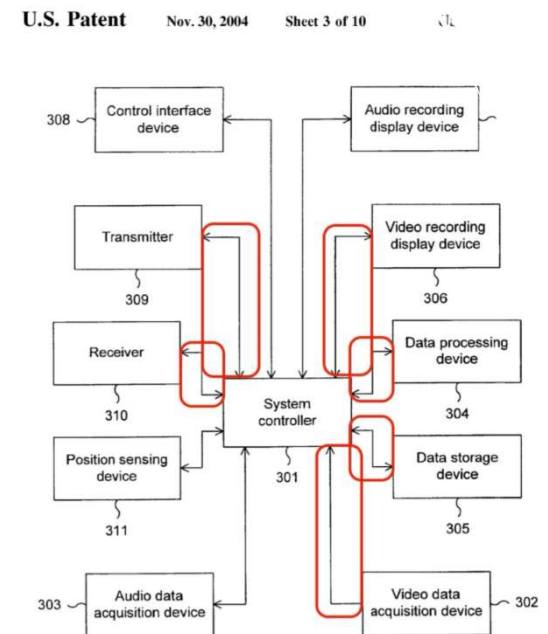


Figure 3

Wands Factor 3

Presence/Absence of Working Examples

- Mr DeFilippis: Device 302 taught to be a Super Circuits PC-17YC CCTV video camera (IPR230/232, Ex-1003 at 28:64-29:4), which is incompatible with controller 301.
- Mr DeFilippis: This camera uses NTSC transmission, which only works for fixed installations in which antennas can be pointed in the best orientation to receive a coherent picture, which is not possible in a moving device.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 303.
- Mr DeFilippis: Data storage device 305 taught as flash drives. “EEPROM is smaller than [FDM], and the largest FDM available in April of 2000 was 16MB, meaning that 384 – 576 flash drives would be required to implement 6-9 GB of data storage.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 305.
- Mr DeFilippis: Alternative data storage device 305: Barracuda hard disk (IPR230/232, Ex-1003 at 34:48-54) is for a desktop computer and has no shock tolerance for use during movement or in a backpack. IPR230, Ex-2140/IPR232, Ex-2058, ¶ 306.

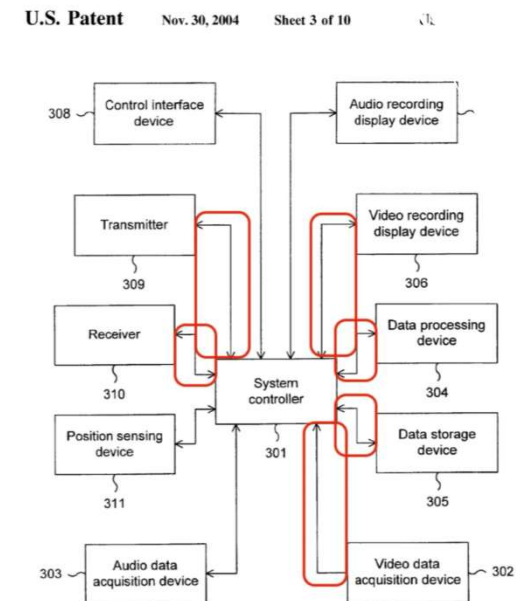


Figure 3

Wands Factor 3

Presence/Absence of Working Examples

- Mr. DeFilippis: Data processing device 304 is taught to be a Recon-11 (IPR230/232, Ex-1003 at 29:44-46), which is coaxial and not compatible with the microcontroller. IPR230, Ex-2014; IPR232, Ex-2058, ¶ 308.
- Mr. DeFilippis: “Strub’s further assertion that ‘recording data ... can first be processed (e.g., compressed) in the data processing device 304, then stored in the data storage device 305’ (Ex-1003, 12:16-21) is inaccurate as the 68HC11G has no ability to read the data and transfer it to data storage device 305...” IPR230, Ex-2014; IPR232, Ex-2058, ¶ 310.
- Mr. DeFilippis: “Strub teaches a Casio VM-150 as an acceptable video recording display device 306 (IPR230/IPR232, Ex-1003, 45:15), yet it accepts an RGB interface input, which is incompatible for direct connection to the 68HC11G, and contradicts the diagram of FIG. 3” (IPR230, Ex-2014; IPR232, Ex-2058, ¶ 311).
- Strub recognizes that the “LCD display is relatively small ... though it requires a relatively large amount of power,” (IPR230/IPR232, Ex-1003, 45:16-18) yet fails to disclose any corresponding power supply design.

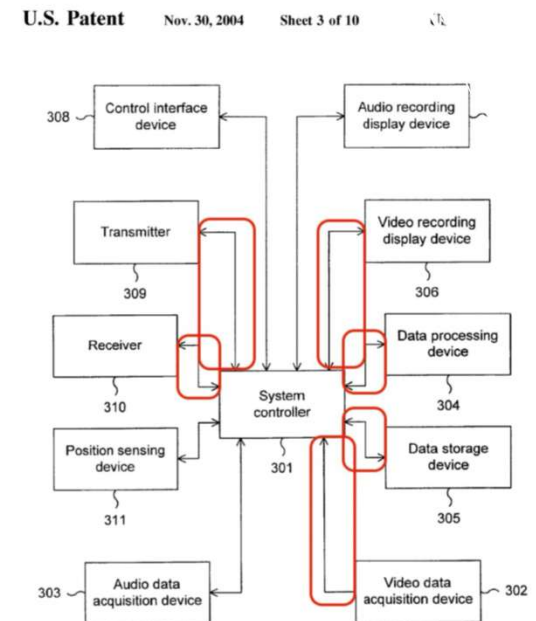


Figure 3

Wands Factors 4, 5, 7

Nature of the Invention, State of Prior Art, and Predictability/Unpredictability of the Art

- Mr. DeFilippis: “The Strub system is a multi-disciplinary system ... each field ... is known to be unpredictable, particularly when integrated into a single, portable, battery powered unit capable of fitting in a backpack. As of April 2000 ...[this] would have been far beyond the state of the art, particularly considering the power concerns...” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 312.
- Mr. DeFilippis: Strub lists a Sony DVR 900 that “can be used to construct a hybrid recording unit according to the invention” (IPR230/IPR232, Ex-1003, 75:51-53). “The DVR 900 was only capable of recording A/V data and displaying it on one screen, with none of the other Strub features.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 313.
- Mr. DeFilippis: “In 2000, there was no mainstream, portable, battery-powered device that combined A/V recording, wireless transmission of A/V data, and wireless reception of A/V data in a single, battery powered unit.” *Id.*
- Mr. DeFilippis: “The first battery powered streaming camcorder ... was not introduced until 2002, two years after Strub was filed. Although it could technically stream audiovisual data ... on battery power, such operations severely limited the battery time....” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 314.

Wands Factors 4, 5, 7

Nature of the Invention, State of Prior Art, and Predictability/Unpredictability of the Art

- Mr. DeFilippis: “In April 2000, even professional camcorders could not wirelessly transmit audiovisual data. These camcorders were *hardwired* to an external wireless transmitter...” See, e.g., [Ex-2047, p. 7.] Typical transmitters were roughly 200x150x40 mm (7.9x5.9x1.5 inches) and required dedicated battery packs and cables to connect to the camera.
- Mr. DeFilippis: Consumer camcorders also required hardwired links to external devices for streaming.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 315.
- Mr. DeFilippis: “[C]ompact, battery-powered camcorders with built-in audiovisual streaming (transmission) capability weren’t majorly released until 2010. Ex-2052, 2053.” IPR230, Ex-2140; IPR232, Ex-2058, ¶314.
- Mr. DeFilippis: “There was no reason for manufacturers such as JVC and Sony to delay implementation of these features.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 316. They were simply not technically feasible.

Wands Factors 4, 5, 7

Nature of the Invention, State of Prior Art, and Predictability/Unpredictability of the Art

- Mr. DeFilippis: “...Strub teaches picture in picture (“PIP”) display (IPR230/IPR232, Ex-1003, 44:55-58), yet the first battery-powered PIP camcorder device did not appear until after 2010. IPR230, Ex-2140/IPR232, Ex-2058, ¶ 318.
- Strub teaches that “power may be transmitted – preferably in a wireless manner – from a fixed power supply that is separate from the recorder...” Ex-1003, 12:60-65.
- Mr. DeFilippis: Wireless transmission of power for Strub’s units could not be done then and cannot be done today. See IPR230, Ex-2140/IPR232, Ex-2058, ¶ 319.
- The experimentation required for a POSA to create the Strub invention greatly exceeds a POSA’s capabilities and the state of the prior art as of Strub’s filing date.
- Routine experimentation should only refine a working disclosure - it cannot cure the absence of one.
- Strub is nothing more than a high-level wish list without the enabling teachings to implement them.

Burden to Show Enablement Shifted to the Petitioners

- “If this burden [to show lack of enablement] is met, **the party relying on validity is then obligated to come forward with evidence to the contrary.**” *Ralston Purina Co. v. Far-Mar-Co*, 772 F.2d 1570, 1573-74 (Fed. Cir. 1985) (internal citations omitted).
- In *Raytheon Techs. Corp. v. GE*, 993 F.3d 1374 (Fed. Cir. 2021), the Federal Circuit **reversed the Board because it incorrectly treated the cited reference as enabling despite Raytheon’s overwhelming amount of evidence to the contrary. After Raytheon demonstrated unpatentability, the Federal Circuit found that GE “failed to provide an evidence-based case for how the [claimed invention]...is enabled by Knip’s disclosure.”** *Id.* at 1382.
- Petitioners one paragraph response to PO’s 22-page non-enablement argument is not sufficient to show enablement. See IPR230, Paper 43 at 25; IPR232, Paper 42 at 17-18.
- This enablement issue was never argued or considered by the Board or the CAFC in the prior Lectrosonics IPRs.

Conclusion

- Petitioners' cited references fail to disclose key limitations of the Challenged Claims
- Secondary considerations establish patentability of the Challenged Claims
- Strub is not enabling prior art
- Winningstad is not prior art
- **Petitioners have failed to prove obviousness by a preponderance of the evidence**

Questions

Patent Owner welcomes the Board's questions.

BACKUP SLIDES

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Person of Ordinary Skill in the Art “POSA”

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Dr. Kyriakakis Is Not a POSA

- The Institution Decision holds that a POSA “would have had a Bachelor’s degree in electrical engineering and two or more years of experience working with audio and wireless communications systems” IPR230, Paper 14 at 16; IPR232, Paper 14 at 2.
- Dr. Kyriakakis:
 - College professor (IPR230, Ex-2119 & IPR232, Ex-2030 at 26)
 - No paid sound mixing/working experience (*Id.* at 47-49)
 - Use was primarily in the classroom/experimental (*Id.* at 45-49, 104)
 - Audio experience that doesn’t relate to sound mixing (*Id.* at 34)
 - During deposition, demonstrated a lack of knowledge in the relevant art (*Id.* at 86).
- He testified “radio frequency dropout” is “not a term that a POSA would use.” *Id.* at 86. Petitioners’ own subsidiary, Lectrosonics, uses this term: <https://lectrosonics.com/wire-lists10-1-tip-to-identify-types-and-9-ways-to-prevent-wireless-mic-rf-drop-outs/>.

Dr. Kyriakakis Is Not a POSA

- He relies on knowledge from years ago (*Id.* at 33-34).
- He doesn't consider Zaxcom's patents to be dropout-related and was unfamiliar with rulings in prior IPRs discussing Zaxcom's patents addressing the problems of dropouts. ("I wouldn't consider [the Zaxcom patents] to be dropout related." *Id.* at 77-78).
- He contradicts Strub in stating blending individual recordings is a "rudimentary editing operation." whereas Strub says: "recorders may be sufficiently far removed from each other that their recording units acquire ... audio content that is so different that the audio content cannot be blended in a meaningful way." IPR230 & IPR232, Ex-1003 at 92:30-37. (IPR230 & IPR232, Ex-1073, ¶81) (compare with IPR230 & IPR232, Ex-1003, 92:30-37).
- He contradicts Petitioners' POSA definition which is a "person" in stating that it would take a "team of engineers" to create a Strub product. IPR230, Ex-2119 at 138:21-139:7.

Procedural Defects in Petitioners' Case

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Petitioners' Reply Should Not Be Considered

- Reply is replete with new constructions, obviousness theories, motivation to combine rationales, expert testimony, and exhibits.
- “A reply ... that raises a new issue or belatedly presents evidence may not be considered. The Board is not required to attempt to sort proper from improper portions of the reply... Examples ... include new evidence necessary to make out a prima facie case for the ... unpatentability of an original claim, such as newly raised rationale to combine the prior art references...not expressed in the Petition. See *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369–70 (Fed. Cir. 2016) (holding that the Board did not err in refusing the reply brief as improper under 37 C.F.R. § 42.23(b) because petitioner relied on an entirely new [motivation-to-combine] rationale).” CTPG at 74 (emphasis added).
- Petitioners’ new motivation-to-combine rationales include: a “POSA would have been motivated to apply Woo’s GPS ‘jam-sync’ to a local timecode generator”; “GPS is free”; a “POSA would use Strub’s ... recording units as Woo’s recording units to increase flexibility, mobility, and convenience”; “a POSA would have been motivated to incorporate Winningstad’s external interface port into Strub’s remote control”; and Strub could have an “audio-only unit.” (IPR230, Paper 43; IPR232, Paper 42 at 20-21). None are in the Petition. Neither the 443 Petition nor POR mentions “jam sync,” external interface port incorporated into Strub’s remote control, or “audio only unit”; and “wearable” is not in Petitioners’ motivation-to-combine analysis.
- The Reply should be refused as improper. See *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356 (Fed. Cir. 2023) (affirming the Board’s decision to not review Petitioners’ new arguments that it could have presented in its petition); and i, IPR201300440, Paper 49 at 9 (PTAB Aug. 22, 2016) (refusing to give any weight to new arguments presented in the Petitioners’ Reply).

Petitioners' Reply Should Not Be Considered

- Reply impermissibly switches from relying on Strub embodiments 105-108, 200, and 300 (IPR230, Paper 1 at 33) to the embodiments shown in Figs. 6, 7, & 8 (IPR232, Paper 43 at 6, 7, and 19).
- See *Kingston Tech. Co., Inc. v. Imation Corp.*, IPR2015-00066, Paper 19 at 26-27 (PTAB Mar. 24, 2016) (“**anticipation by Yen’s [the prior art] first embodiment is not properly part of this trial ... given the lack of adequate reference to the first embodiment of Yen in the Petition.**”); see also *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015) (“**A patent owner in [an IPR] is undoubtedly entitled to notice of and a fair opportunity to meet the grounds of rejection.**”).
- A Reply “may respond to ... new claim construction issues raised by the patent owner, but **cannot raise new claim construction issues that were not previously raised in its petition.**” CTPG at 45.
- Reply exceeds allowable word limit by incorporating by reference over 100 paras. of new expert argument supported by one-sentence conclusions in the Reply. See *Cisco Sys., Inc. v. C-Cation Techs., LLC*, IPR2014-00454, Paper 12 at 7-10 (PTAB Aug. 29, 2014) (informative) (**finding an incorporating of 17 pages of expert declaration improper**). See IPR230, Paper 58 at 5.
- All such arguments should be ignored.

Petitioners' Reply Should Not Be Considered

- Petitioners' new unpatentability theories should also be stricken as listed in the POR at pages NSADD:
 - “record[ing] resulting ‘local audio data’ in memory 305” (IPR230, Paper 43; IPR232, Paper 42 at 3);
 - teaching “isolated audio of the wearer” (*Id.* at 4);
 - “[‘443] specification does not preclude locally generated audio from including audio from performers other than the wearer” (*Id.* at 4-5);
 - snow skiing, bicycling, and water skiing are “solitary” activities (*Id.* at 45);
 - Strub’s “Overview of Recording Unit Apparatus and Operation” teaches wearability (*Id.* at 5);
 - Strub teaches “species” (*Id.* at 6);
 - Strub’s units could be made “lighter (or smaller)” by removing camera components (*Id.* at 6);
 - the claims do not require invisible use (*Id.* at 7);
 - master generator control of another generator excludes the “asynchronous” embodiment (*Id.* at 8);
 - Woo teaches master generator control of another generator via jam-syncing (*Id.* at 10);
 - claims do not require continuous timecodes or particular level of availability (*Id.* at 10);
 - new “multitrack recording system” definition (*Id.* at 12);
 - stereo is a two-track file (*Id.* at 12, POR references “stereo” in the definitions of “locally generated audio”/“local audio data” but Petitioners use stereo in its “multi-track data file” argument, relying on new patents not in the Petition);
 - bodypack claim construction with new Exs-1058-1060 (*Id.* at 19);
 - the backpack is “part of the recording unit” (*Id.* at 19); and
 - “recording unit 300 ... may comprise the recording units of FIGs. 1, 6, 8” (*Id.* at 19-20).

Legal Standard for Obviousness

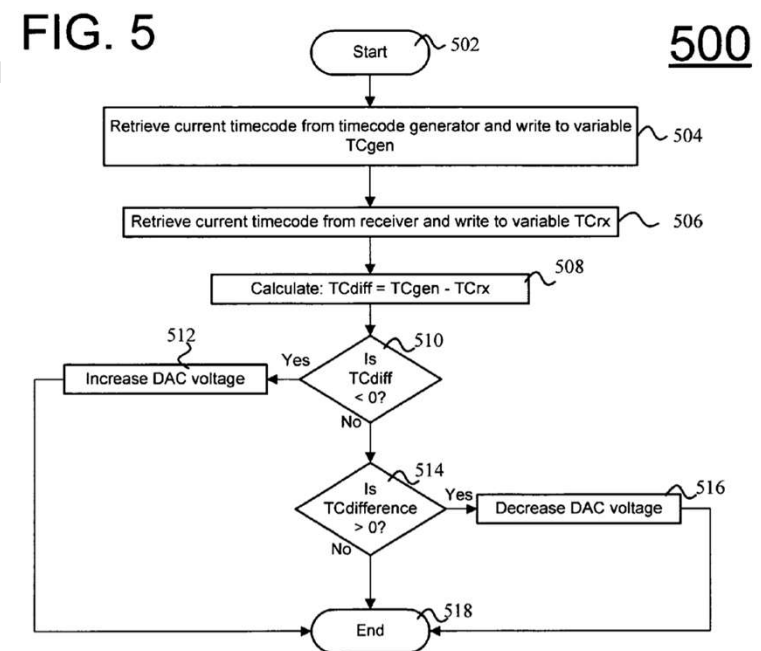
- Question of obviousness is resolved on underlying factual determinations including:
 - The scope and content of the prior art;
 - Any differences between the claimed subject matter and the prior art; and
 - The level of skill in the art.
 - *See Graham*, 383 U.S. at 16-18; *See also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007).
- Petitioners must demonstrate that a “skilled artisan would have been motivated to combine the teachings of the prior art references ... [and] would have had a reasonable expectation of success in doing so.” *OSRAM Sylvania, Inc. v. Am. Induction Techs., Inc.*, 701 F.3d 698, 706 (Fed. Cir. 2012).

Claim Construction Framework (Phillips Standard)

- Claims terms are given their ordinary and customary meaning as understood by a POSA at the time of the invention and in the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d, 1303, 1312-14 (Fed. Cir. 2005).
- “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).
- Claim terms must be “read in view of the specification,” which is the “single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315 (Fed. Cir. 2005).

“Master Timecode Generator” and “Master Timecodes”

- Institution Decision and PO Definition: “master timecode generator” is “a producer of a master time reference signal that controls at least one other timecode generator” and “master timecodes” is “a time reference signal used to synchronize at least one device.” IPR230, POR at 12-13; IPR232, POR at 14-15.
- Master Dictionary Definition: “[o]ne that has control over another or others.” IPR230 & IPR232; Ex-2019, p. 3.
- FIG. 5 of the ‘443 and ‘207 Patents shows that modifying the speed of a local timecode generator as necessary to maintain synchronization with a master timecode generator.
- Figure 6 describes: “a master unit ... transmits master timecodes to each local audio device, and ... each local audio device synchronizes ... its on board local timecode generator with the master timecodes received from the master unit, thereby synchronizing all local audio device timecode generators with the master timecode generator ...” IPR230, Ex-1001, 15:4-11; IPR232, Ex-1001, 17:9-16.



Strub/Woo Do Not Teach “Jam Synchronize” (‘207)

- The Parties agree that “jam synchronize the local timecode generator to the master timecode generator” means “align[] the internal clock of the local timecode generator with the internal clock of the master timecode generator.” IPR232, Paper 14 at 30.
- Petitioners claim this limitation is taught by Strub and Woo.
- Neither Strub nor Woo teaches a “master timecode generator” or a “master timecode,” therefore they can’t teach jam synchronize.
- Petitioners state “a POSA would have understood that Strub’s use of a GPS signal or SMPTE timecode input to synchronize the internal clock comprises facilitates [sic] jam synchronizing the internal time clock to a master timecode generator,” but provide no support or explanation for this assertion. Paper 1 at 52.

Strub/Woo Fail To Teach “Master Timecode Generator”

- PO Definition: “**master timecode generator**” is “a producer of a master time reference signal that controls at least one other timecode generator” and “**master timecodes**” definition is “a time reference signal used to synchronize at least one device.” IPR230, POR at 12-13; IPR232, POR at 14-15.
- Strub does not teach synchronization of any form of secondary clock to a master timestamp (e.g., a GPS timestamp). IPR230, Ex-2140, ¶ 178; IPR232, Ex-2058, ¶ 258.
- Strub’s discussion of a SMPTE time code input merely allows a device to use that input rather than its internal clock. There is no master time reference signal that **controls** at least one other timecode generator. IPR230, Ex-2140, ¶ 180; IPR232, Ex-2058 ¶ 258.
- Woo states that the GPS receiver’s time output is not capable of acting as master time reference signal because it must be combined with a pulse to “communicat[e] time codes in SMPTE format.” Ex-1004, 4:16-20, 8:13-18.

Petitions Fail to Show How Strub & Woo Are Combined

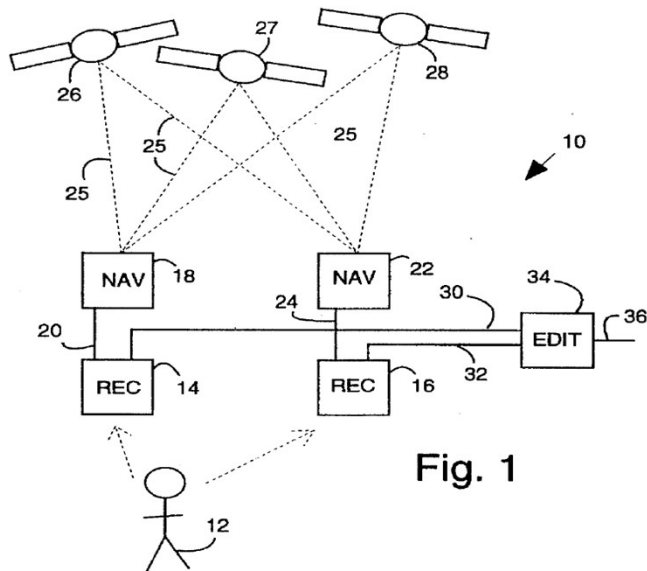


Fig. 1

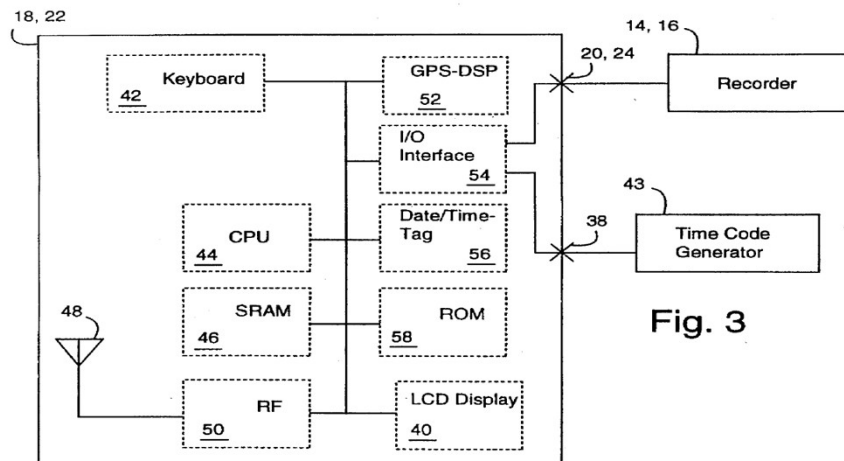


Fig. 3

- The '207 Petition references that the Lectrosonics IPRs found that Woo taught a master timecode generator that could be combined with Strub. IPR230, Paper 1 at 12/IPR232 Paper 1 at
- The Petition states “recording unit has local ‘internal clock’ to time-stamp data,” and Woo includes “local timecode generator 43.” (IPR230, Paper 1 at 59, 35).
- Woo teaches away from this combination stating: generator 43 is “preferably” a “master clock” (not a local timecode generator); generator 43 connects to the device receiving the GPS signal, i.e., receiver 18, 22...and drives a time code camera. IPR230, Ex-1004, 7:27-40, 49-50. Woo never teaches generator 43 would replace a recording unit’s internal clock. If combined with Strub, generator 43 would drive unit/camera 300 as a whole – it would not synchronize to a GPS master timecode generator.

IPR230, POR AT 26-27; IPR232, POR AT 27-28
DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Petitions Fail to Show Strub & Woo Combination

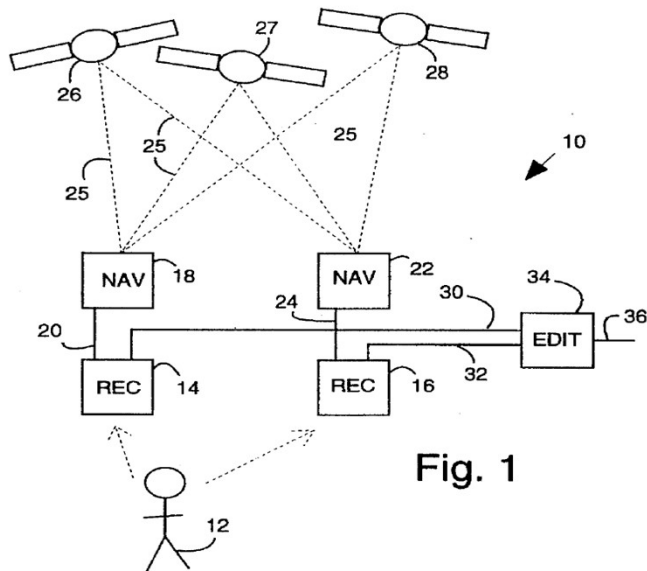


Fig. 1

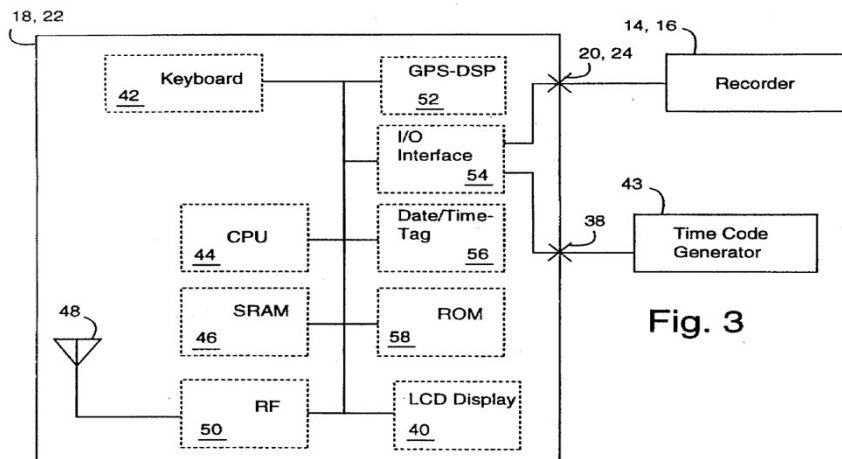


Fig. 3

IPR230, POR AT 26-27; IPR232, POR AT 27-28
 DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

- Even if “generator 43 ‘jams’/synchronizes to ... the GPS receiver output,” (IPR230, Paper 43 at 10), Claim 1’s limitation of a “local audio device receiver for wirelessly receiving master timecodes” is not met as unit 300 does not communicate with GPS satellite or receiver 18,22. IPR230, Ex-1001 at claim 1.
- No prima facie case of obviousness. The Petition never explains how these references would be integrated into a single operable system or why a POSA would do so. Listing elements across references is not enough. *KSR* requires articulated reasoning with a rational underpinning. This is fatal.
- Petitioners also fail to explain applicability of Woo’s video/camera technology to an audio-only system.

Woo Does Not Cure Strub's Deficiencies

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Woo Does Not Disclose Missing Limitations

- Woo suffers from the same deficiencies.
 - No mention of any secondary timecode generator in Woo, let alone any generator controlled by Woo's master clock. IPR230/IPR232, Ex-1004, 9:1-4.
- Woo states that the GPS receiver's time output is not capable of acting as master time reference signal because it must be combined with a pulse to "communicat[e] time codes in SMPTE format." *Id.* at 4:16-20, 8:13-18.
- "Woo has nothing to do with an audio multi track ... Videos cannot be combined in the same sense as audio as one can only watch one video at a time." IPR230, Ex-1004, ¶ 190.

Wands Factor 2

Amount of Direction or Guidance Presented

- Mr. DeFilippis: “In April 2000, designing devices with reasonable operating time on portable power was a major hurdle for all audiovisual electronics manufacturers because:
 - Battery chemistry lagged behind the high and continuous power draw of mechanical media, inefficient displays, and early digital signal processors.
 - The batteries in 2000 were largely NiMH and Li-ion with low energy densities of 100-300 Wh/kg, that were not capable of supporting spinning media, video processing chips, and audio and video capture and playback equipment for any reasonable period of time, the latter of which could require 5-15W of power.
 - [P]rocessors ... did not have efficient power management such as DVFS (Dynamic Voltage and Frequency Scaling).
 - Every feature ...added further power demand and cooling need, and decreased battery life. This cooling would require more than one fan to prevent overheating and would thus affect the sound into the microphone.
 - Strub fails to teach mitigation of the effects of vibration that would be caused by ... the operation of the cooling fans [and], the spinning heads of equipment including....mechanical storage drives.” IPR230, Ex-2140/IPR232, Ex-2058, ¶ 295.

Lack of Motivation to Combine Prior Art References

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

No Motivation to Combine the Cited References

- Petitioners fail to show motivation to combine the cited references to solve a *dropout problem* of a “multitrack recording system.” (IPR230 & IPR232, Ex-1001, Title).
- None of the References teach multi-track recording.
- None of the references teach capture of independent, separate, isolated audio sources as required for a multi-track system. To the contrary, the references capture only combined ambient or scratch audio.
- Mr. DeFilippis: “It is unclear how the teachings of Strub, Woo, and Winningstad could be combined ... because the references disclose methods that substantially differ from each other and the claimed invention.” IPR230, Ex-2140, ¶ 198; IPR232, Ex-2058, ¶ 267.

Combination of the Cited References Would Not Achieve the Challenged Claims

- The master timecode generator cannot be GPS.
- Claim 27 ('443 Patent) requires the master timecode generator to be integral to a remote control unit.
- GPS time signals of the cited references do not control another timecode generator or produce a time reference signal. IPR230 & IPR232, Ex-1003, 63:40-49; Ex-1004, 8:61-63; Ex-1008, 8:17-22.
- “Strub already discloses a solution to post-production editing (i.e., participants share their locally recorded audio after a recorded event).” Therefore, applying another solution in Strub’s post-production would have been unnecessary.” IPR230, Ex-2140, ¶ 201; Ex-1003, 80:52-58; IPR232, Ex-2058, ¶ 271, Ex-1003: 80:52-58.
- A POSA would not have looked at Winningstad to address dropout problems because Winningstad teaches away from postproduction editing. “To ensure that the time and date encoder 88 in the DD device 26 **is not tampered with**, an internal password may be required to be entered ... in order to modify the clock settings provided by data and time encoder 88.” IPR230 & IPR232, Ex-1008, 8:12-16.

Secondary Considerations

Satisfaction of a long-felt need
Copying by competitors
Industry praise

- Patentability of the claims is supported by secondary considerations of non-obviousness.
- Zaxcom revolutionized its industry with the first wearable local audio device that locally recorded audio while simultaneously transmitting it to a remote receiver/recorder (i.e., “backup recording”).
- The backup recording allowed a user to repair the remotely recorded audio without a retake.
- Without a backup recording, there would be no ability to repair the remote audio lost due to dropout.

Secondary Considerations

Long Felt Need
Industry Praise

- 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” (IPR230, Ex-2127; IPR232, Ex-2036, ¶ 6).
- Mr. Sarokin: “Not only could they transmit audio, they could also receive time code sync signals and remote control commands. Zaxcom combined this incredible capability with a **built in digital recorder...** This capability solved the major limitation of radio mics ... Prior to Zaxcom’s invention of **locally recording radios**, the field mixer would capture as much of the dialog as his equipment would allow and the rest would have to be dubbed in post production.” IPR230, Ex-2127; IPR232, Ex-2036, ¶ 6.