

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HYUNDAI MOTOR AMERICA,
Petitioner,

v.

STRATOSAUDIO, INC.,
Patent Owner.

IPR2021-01267
Patent 8,166,081 B2

Before JUSTIN T. ARBES, HYUN J. JUNG, and KEVIN C. TROCK,
Administrative Patent Judges.

TROCK, *Administrative Patent Judge.*

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

I. INTRODUCTION

We have authority to hear this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision issues pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, we determine that Petitioner, Hyundai Motor America, has shown by a preponderance of the evidence that claims 9–11, 15, and 23 (the “challenged claims”) of U.S. Patent No. 8,166,081 B2 (Ex. 1001, “the ’081 Patent”) are unpatentable. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2019).

A. Procedural History

The Petition (Paper 2, “Pet.”) requested *inter partes* review of the challenged claims of the ’081 Patent. Patent Owner, StratosAudio, Inc., filed a Preliminary Response. Paper 8. Based upon the record at that time, we instituted *inter partes* review on all challenged claims on the grounds presented in the Petition. Paper 9 (“Institution Decision” or “Dec.”).

After institution, Patent Owner filed a Response (Paper 17, “PO Resp.”), Petitioner filed a Reply (Paper 20, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 25, “PO Sur-reply”).

With our authorization, Patent Owner filed a Supplemental Brief (Paper 31, “PO Supp. Br.”) and Petitioner filed a Responsive Supplemental Brief (Paper 33, “Pet. Supp. Br.”) to address certain claim interpretation issues.

On October 24, 2022, an oral hearing was held. A transcript of the hearing is made part of the record. *See* Paper 38.

B. Related Matters

The parties identify the following as related matters: *StratosAudio Inc. v. Hyundai Motor America*, No. 6:20-cv-01125-ADA (W.D. Tex.); *StratosAudio, Inc. v. Volkswagen Group of America, Inc.*, No. 6:20-cv-1131

(W.D. Tex.); *StratosAudio, Inc. v. Mazda Motor of America, Inc.*, No. 6:20-cv-01126 (W.D. Tex.); *StratosAudio, Inc. v. Subaru of America, Inc.*, No. 6:20-cv-01128 (W.D. Tex.); and *StratosAudio, Inc. v. Volvo Cars of North America, LLC*, No. 6:20-cv-01129 (W.D. Tex.). Pet. 2–3; Paper 5, 1.

The parties also indicate that the '081 Patent is the subject of an *inter partes* proceeding, *Volkswagen Group of America, Inc. v. StratosAudio, Inc.*, IPR2021-00721 (PTAB Apr. 16, 2021) (“the '721 IPR”). Pet. 3; Paper 5, 1.

C. The '081 Patent

The '081 Patent relates to media advertising and associating an advertising media signal with another media signal. Ex. 1001, 1:18–20. The '081 Patent explains that it is generally desirable to associate products with specific characteristics, and such associations may increase the chance that a potential customer will decide to purchase a product when the product is associated with a favorable characteristic. *Id.* at 1:22–30. In view of this, the '081 Patent states that an advertisement may be more effective if it is associated with an image of a celebrity or another media element that exhibits favorable characteristics. *Id.* at 1:30–34.

The '081 Patent describes a media enhancement system that is configured to associate a secondary media signal (e.g., an advertisement) to a primary media signal (e.g., a radio broadcast). *Id.* at 3:8–12. The '081 Patent explains that the secondary media signal may be based on the content of the primary media, user characteristics (e.g., demographic and/or geographic information), and/or third party preferences (e.g., the goals of advertisers). *Id.* at 3:17–21.

The '081 Patent discloses one example in which a radio station transmits a song in a first media signal that is received by a user enabled-device (e.g., a cellular phone with a radio). *Id.* at 3:27–30. A media

association system analyzes the song to determine what media elements can be associated with the song, and the media association system provides a second media signal (e.g., an advertisement) to the user enabled-device. *Id.* at 3:30–36. While the user enabled-device is playing the song, the user enabled-device displays the media content in the second media signal (e.g., a still or moving picture of the advertised product). *Id.* at 3:37–40. The '081 Patent discloses another embodiment in which a user enabled-device is playing a song from a first media signal, media content from a second media signal (e.g., a still or moving picture with selectable audio of an advertised product) is displayed by the user enabled-device, and the audio track for the first media signal is paused upon selection of the second media signal audio. *Id.* at 3:41–47.

Figure 1A of the '081 Patent is reproduced below.

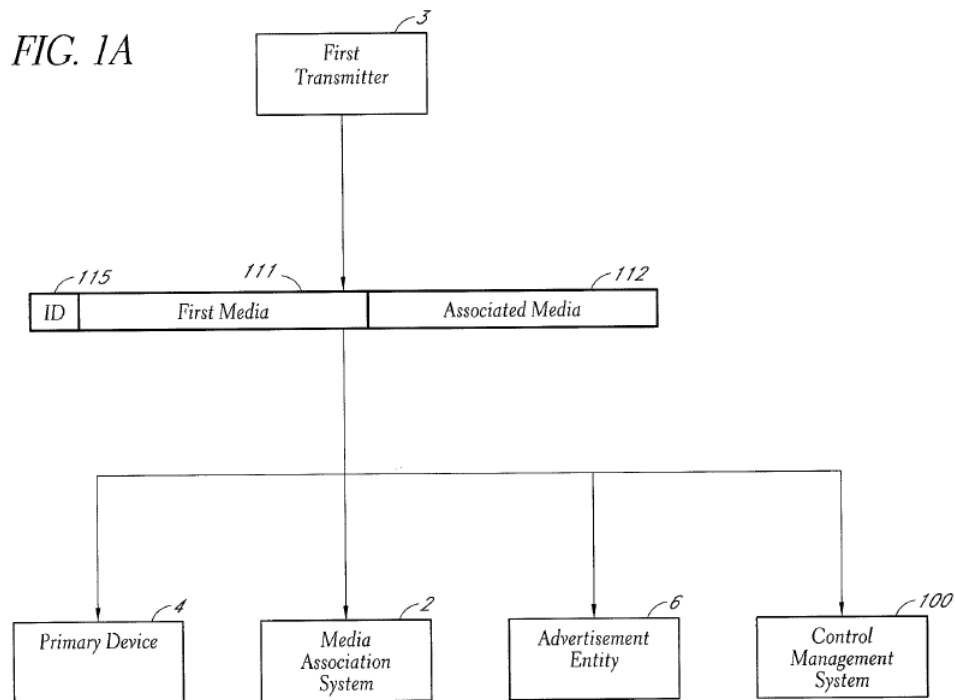
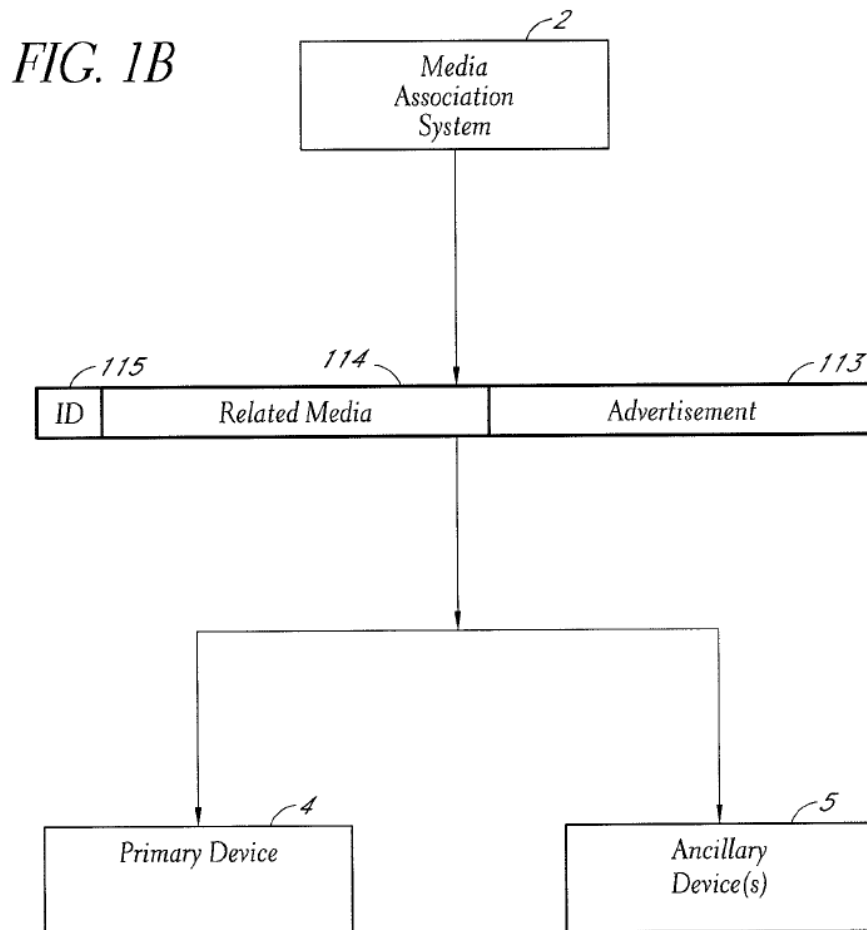


Figure 1A, above, is a block diagram that depicts signals and identifiers correlated and transmitted between elements of a media

enhancement system. *Id.* at 2:41–43. The system can include first transmitter 3, control management system 100, media association system 2, primary device 4, and advertisement entity 6. *Id.* at 8:11–16. First transmitter 3 can be broadcast content from a radio station, from over the internet, through a cable line, or satellite, and/or through other communication methods. *Id.* at 8:17–24. For instance, first transmitter 3 can send first media signal 111 that is received by primary device 4. *Id.* at 8:41–43.

Figure 1B of the '081 Patent is reproduced below.



According to the '081 Patent, Figure 1B, above, is a block diagram illustrating that media association system 2 can send or transmit secondary or related media signal 114, using information regarding the media content

of first media signal 111, to primary device 4 and/or ancillary device 5 through an Internet connection. *Id.* at 9:34–37, 9:39–48. Advertisement entity 6 can send advertisement signal 113 to media association system 2 so advertisement signal 113 is provided to primary device 4 upon the latter receiving a specific song from first transmitter 3 via first media signal 111. *Id.* at 10:24–29.

The '081 Patent explains that unique identifier 115 can be provided for each media signal (i.e., first media signal 111 and advertisement media signal 113) to facilitate the assignment and/or sending of advertisement media signal 113 with first media signal 111. *Id.* at 12:66–13:3. According to the '081 Patent, unique identifier 115 can be stored in a database and/or other location, such as control management system 100, along with other relevant information. *Id.* at 13:13–15. The '081 Patent discloses that unique identifier 115 can be used by media association system 2, advertisement entity 6, first transmitter 3, and/or primary device 4 and/or control management system 100 to track and/or record the results of any signal and to determine whether the signal should be provided to primary device 4 and/or the user. *Id.* at 13:16–22.

Figure 3 of the '081 Patent is reproduced below.

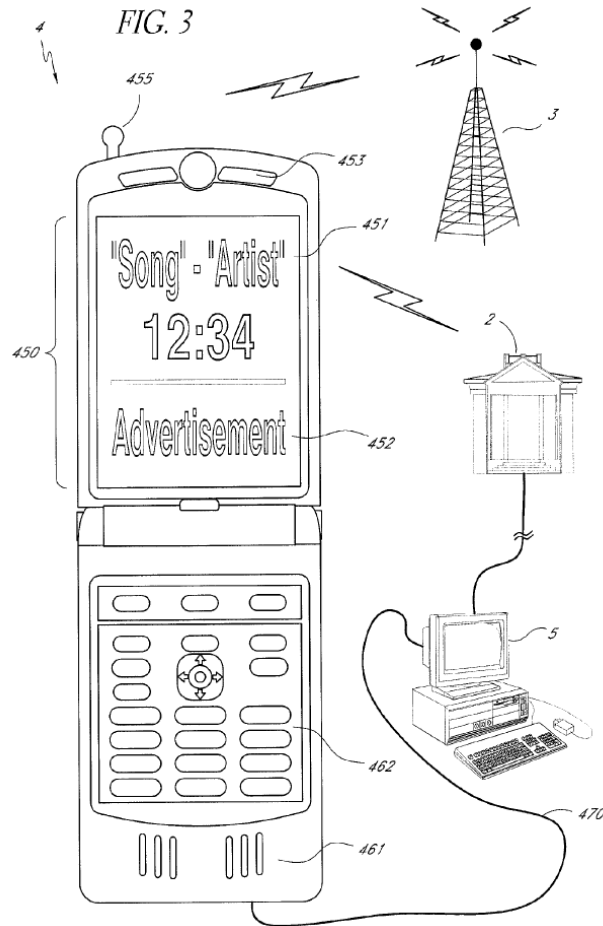


Figure 3, shown above, is an illustration that depicts primary device 4, such as a radio-enabled cellular phone, with display panel 450 that is connected to media association system 2. *Id.* at 2:50–51, 18:55–57, 19:11–13, 19:17. Primary device 4 receives first media signal 111 (not shown in Fig. 3) via receiver 455 and/or wire data connection 470. *Id.* at 18:57–59. First media signal 111 includes, for example, a radio program that primary device 4 can play to a user via speaker 453. *Id.* at 18:61–63. Display panel 450 can show information relating to the radio program being played. *Id.* at 19:13–15. For instance, upper portion 451 of the display panel can include textual information corresponding to the radio's music. *Id.* at 19:17–22. The information about the radio's music may be obtained from a Radio Broadcast Data System (RBDS) and/or Radio Data System (RDS) signal

accompanying first media signal 111 when the latter is in the form of a radio signal. *Id.* at 24:63–65. Lower panel 452 displays advertisement media signal 113 (not shown in Fig. 3), which may comprise any form of media content. *Id.* at 12:40–42, 19:45–46.

Primary device 4 can also send signals to transmitter 3, media association system 2, control management system 100, and/or advertisement entity 6. *Id.* at 15:9–12. For example, the signals from primary device 4 can be responses to interactive media signals. *Id.* at 15:12–14. Primary device 4 can transmit user behavior, can report location, direction of motion, and/or speed, and can detect other information about a user and/or the user’s location and/or environment. *Id.* at 15:17–27. The ’081 Patent explains that this information can be used by media association system 2 to determine what media and/or advertisements to send to primary device 4 to obtain a user’s reaction and/or what media and/or advertisements are likely to elicit a positive reaction at a given time and/or when the user is in a given state or environment. *Id.* at 15:27–34.

D. Challenged Claims

Petitioner challenges claims 9–11, 15, and 23. Claim 9 is the only independent claim challenged, and is set out below:

- 9[pre] A system for combining multiple media comprising:
 - 9[a] a first receiver module configured to receive at least a first media content and data enabling the identification of a specific instance of the first media content from a first broadcast medium;
 - 9[b] a second receiver module configured to receive at least a second media ~~signal~~ content and uniquely identifying data specific to at least the second media

content, the second media content received discretely from the first media content;

- 9[c] an output system configured to present concurrently the first media content and the second media content on an output of the first receiver module or the second receiver module;
- 9[d] an input module configured to receive at least a response input responsive to the second media content; and
- 9[e] a transmitting module configured to transmit a response message having at least the uniquely identifying data specific to the second media content to a computer server.

Ex. 1001, 35:22–41 (bracketed labelling designated by Petitioner; *see* Pet. 23–30) (claim corrected as indicated in the Certificate of Correction; *see* Ex. 1001, p. 35).

E. Evidence

Petitioner relies upon the following evidence:

- (1) U.S. Patent No. 5,303,393, issued April 12, 1994 (“Noreen”) (Ex. 1005);
 - (2) U.S. Patent No. 6,628,928 B1, issued September 30, 2003 (“Crosby”) (Ex. 1006);
 - (3) World Intellectual Property Organization Publication No. WO 02/067447 A2, published August 29, 2002 (“Ellis-2002”) (Ex. 1007);
 - (4) U.S. Patent Application Publication No. 2005/0227611 A1, published October 13, 2005 (“Ellis-2005”) (Ex. 1008); and
 - (5) Declarations of Kevin C. Almeroth, Ph.D. (Exs. 1002, 1026).
- Patent Owner relies on the Declaration of Todd K. Moon, Ph.D. (Ex. 2016).

F. Prior Art and Asserted Grounds

Petitioner asserts the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
9, 15, 23	103(a)	Noreen
9, 15, 23	103(a)	Noreen, Crosby
10, 11	103(a)	Noreen, Crosby, Ellis-2002
9–11, 15, 23	103(a)	Ellis-2005
9–11, 15, 23	103(a)	Ellis-2005, Crosby

Pet. 4.

II. ANALYSIS

A. Level of Ordinary Skill in the Art

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner contends that “[o]ne of ordinary skill in the art would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience in the communications or Internet-related industries, or the equivalent, with additional education substituting for experience and vice versa.” Pet. 9–10 (citing Ex. 1002 ¶¶ 34, 40–42). Patent Owner “does not object to the level of skill proposed by Petitioner.” PO Resp. 14.

Petitioner’s description of the level of ordinary skill is generally consistent with the subject matter of the ’081 Patent. In another proceeding involving the ’081 patent, IPR2021-00721, we determined the level of ordinary skill was a bachelor’s degree in computer science or electrical

engineering or a related field, and approximately three years of experience working in the communications or Internet-related industries, or other equivalent industry experience in the field. This description of the level of ordinary skill is similar to Petitioner's description.

For consistency, we determine that a person of ordinary skill in the art is a person with a bachelor's degree in computer science or electrical engineering or a related field, and approximately three years of experience working in the communications or Internet-related industries, or other equivalent industry experience in the field. A person with a master's degree in one of these fields with less industry experience would also qualify as a person of ordinary skill in the art.

B. Claim Construction

Pursuant to 37 C.F.R. § 42.100(b), we apply the claim construction standard as set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under *Phillips*, claim terms are generally given their ordinary and customary meaning as would be understood by one with ordinary skill in the art in the context of the specification, the prosecution history, other claims, and even extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Phillips*, 415 F.3d at 1312–17. Usually, the specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* at 1315.

Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (in the context of an *inter partes* review, applying *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

In the Petition, Petitioner states that it “does not believe that any term requires explicit construction to resolve the issues presented in this Petition.” Pet. 11 (citing Ex. 1002 ¶¶ 31–33). In its Response, Patent Owner states that “[f]or the purposes of this proceeding, Patent Owner agrees” with Petitioner that no terms require explicit construction in order “[t]o resolve the particular grounds presented in [the] Petition.” PO Resp. 14 (citing Ex. 2016 ¶ 43).

Patent Owner, however, subsequently requested, and with our approval, filed a Supplemental Brief changing its previously stated position on claim construction. In its Supplemental Brief, Patent Owner now argues that “Patent Owner asserted the ’081 patent against Subaru of America Inc. (‘Subaru’) in a district court litigation,”¹ and in “the briefing [in that case] raised the same claim construction dispute that is also at issue in this proceeding regarding the proper construction of the term ‘an output system configured to present concurrently the first media content and the second media content on an output of the first receiver module or the second receiver module’ in claim element 9[c] of the ’081 patent.” PO Supp. Br. 2. Patent Owner states that “Subaru argued that the word ‘or’ in the portion of the limitation reciting ‘an output of the first receiver module or the second receiver module’ should be changed to ‘and/or.’” *Id.* at 2–3 (citing Ex. 2018, 8).

In its Responsive Supplemental Brief, Petitioner argues that “the Board should disregard Patent Owner’s Supplemental Brief (Paper 31) and new Exhibits 2018-2021” as “inadmissible and irrelevant,” because

¹ See *StratosAudio, Inc. v. Subaru of America, Inc.*, 6:20-cv-01128-ADA (W.D. Texas).

“[w]hatever Subaru said in its motion to strike (Ex. 2018), filed in a district court action not involving Petitioner, is inadmissible hearsay and useless as evidence of claim construction.” Pet. Supp. Br. 1.

For purposes of this Final Written Decision, we do not find it necessary to expressly construe any claim terms. We agree with the parties’ original positions on claim construction, as expressed in the Petition and Patent Owner Response, that no terms require express construction in order to resolve the patentability of the challenged claims in this proceeding. *See* Pet. 11; PO Resp. 14. Because it is not necessary to expressly construe any claim terms in order to resolve the patentability of the challenged claims, the issues raised by the parties in their supplemental briefing are moot.²

C. Patentability Challenges

As indicated above, Petitioner presents five grounds challenging the patentability of particular claims of the ’081 Patent under 35 U.S.C.

§ 103(a). Petitioner challenges (Ground 1) claims 9, 15, and 23 as obvious over Noreen; (Ground 2) claims 9, 15, and 23 as obvious over Noreen and Crosby; (Ground 3) claims 10 and 11 as obvious over Noreen, Crosby, and Ellis-2002; (Ground 4) claims 9–11, 15, and 23 as obvious over Ellis-2005; and (Ground 5) claims 9–11, 15, and 23 as obvious over Ellis-2005 and Crosby. Pet. 4

1. Principles of Law on Obviousness

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

² The parties’ supplemental briefing pertains to limitation 9[c], which is undisputed with respect to the asserted ground based on Ellis-2005 and Crosby addressed herein. *See infra* Section II.D.1.iv.

invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

The Supreme Court has made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. Reaching this conclusion, however, requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention. *Id.*

2. Relevant Prior Art

i. Crosby (Ex. 1006)

Crosby is a U.S. Patent that issued on September 30, 2003, more than one year before the earliest priority date of the ’081 Patent. Ex. 1001, codes (22), (60); Ex. 1006, code (45). Petitioner asserts that Crosby is prior art under pre-AIA 35 U.S.C. § 102(b). Pet. 13.

Crosby relates to an interactive radio system. Ex. 1006, code (57). For example, “[w]hile listening to a radio broadcast” on a user’s mobile unit, the user “selects program segments of interest,” e.g., advertisements, “by pressing an interactive radio control button” so that the user may later review those selected program segments of interest. *Id.* at code (57), 3:59–63. In particular, when the user selects program segments of interest, those selections, i.e., “commands,” are forwarded to an interactive radio network operations center by the user’s mobile unit. *Id.* at 6:4–9.

In addition to transmitting user commands responding to program segments of interest, if the radio “broadcast itself includes information encoded therein identifying the program segments,” then “the mobile unit . . . generates a program attribute signal which specifically identifies the content of the [selected] program segment” to send to the network operations center. *Id.* at 4:51–58; *see id.* at 8:53–46. For example, broadcast

digital radio signals are preferably encoded with signals identifying the broadcaster and the specific program segment being transmitted. If so . . . the network operations center directly accesses the program segment and vendor information databases based upon the program segment identified by the digital radio signals to retrieve information associated with the program segment selected by the [user].

Id. at 11:44–54.

In the alternative case that the radio broadcast does *not* include information which specifically identifies the selected program segments, then the network operations center identifies the selected program segment in an alternative manner. *Id.* at 8:48–43, 11:37–43. In particular, when the user selects program segments of interest, the mobile unit transmits, to the network operations center,

a broadcast attribute signal identifying a carrier frequency of the radio broadcast and the date and time the broadcast was received; a location attribute signal identifying the geographical location of the mobile unit in GPS coordinates at the date and time the broadcast was received; and a subscriber identifier signal providing a subscriber ID or a mobile unit ID.

Id. at 7:27–37, 9:42–46. “In response to the signals, the network operations center determines the identity of the broadcaster based upon the carrier frequency of the broadcast and the geographical location of the mobile unit” using a broadcaster identification database. *Id.* at 7:37–41, 9:48–53. Next, the network operations center can “determine[] the specific program segment selected by the subscriber based upon the identity of the broadcaster and the date and time of the broadcast” using a program segment identifier database. *Id.* at 7:41–44, 9:46–61. The program segment identifier database includes “a program segment ID, the date and time of broadcast of the program segment, and the broadcaster ID for the broadcaster of the segment.” *Id.* at 9:15–19, Fig. 5.

ii. Ellis-2005 (Ex. 1008)

Ellis-2005 is a U.S. Patent Application Publication dated October 13, 2005, more than one year before the earliest priority date of the '081 Patent. Ex. 1001, codes (22), (60); Ex. 1008, code (45). Petitioner asserts that Ellis-2005 is prior art under pre-AIA 35 U.S.C. § 102(b). Pet. 16.

Ellis-2005 relates to an interactive music application system which has two tuners, tunes to media channels, and obtains respective in-band data. Ex. 1008 ¶¶ 2, 7. For example, “a user is tuned to a first music channel, the music application may obtain music information from that channel using [a first] tuner that is tuned to that channel.” *Id.* ¶ 8. Specifically, “music channel[s] may include an in-band data stream that contains the music

information” such as “track information, title information, artist information, graphics, web links, ordering information or other information related to the music programming carried on the music channel.” *Id.* Furthermore, if the “user indicates a desire to view music information for a channel other than the one to which the first tuner is tuned, the music application directs a second tuner to tune to the other music channel and obtains the in-band music information from that channel.” *Id.* That is, the “interactive music application may provide a user with an opportunity to listen to music programming on one music channel while viewing in-band music information for the music programming of another music channel.” *Id.*

¶¶ 56, 94. A system that receives, outputs, and provides such interaction with video, audio, and data is shown in the schematic block diagram of Figure 4, reproduced below. *Id.* ¶¶ 14, 53.

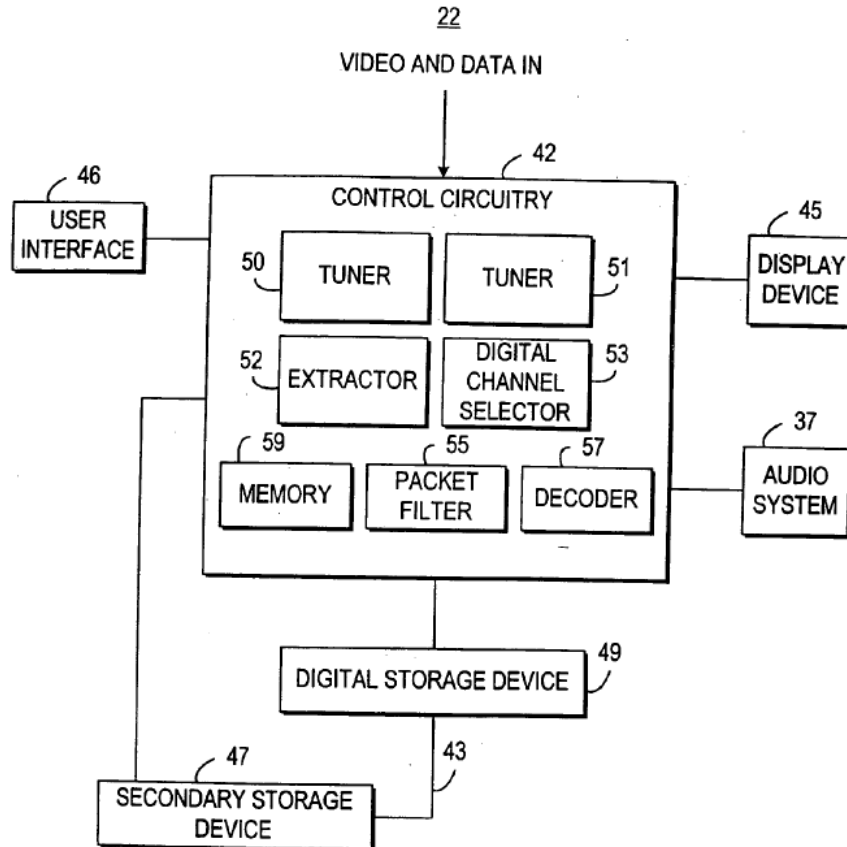


FIG. 4

As shown in Figure 4, above, user music equipment 22 receives video, audio, and data at input 26. *Id.* ¶ 53. First tuner 50 accesses a music channel selected by the user. *Id.* ¶ 56. While listening to the music channel accessed by tuner 50, the user may browse for information on songs that are playing on other channels using second tuner 51. *Id.* ¶¶ 58–59. For example, “[a]s a user browses through music program listings, the music application instructs tuner 51 to tune to the browsed music channel so that music information on the music program that is being played on the browsed channel may be extracted for display . . . while tuner 50 remains tuned to the channel that the user is listening to.” *Id.* ¶ 59.

Further, the digital channels received by the user music equipment include tracks; “[t]racks may include, for example, video tracks, audio tracks, and data or other suitable tracks.” *Id.* ¶ 41. Tracks are transmitted in packets which “contain packet identifiers (‘PIDs’) identifying the track that each packet belongs to.” *Id.* Additionally, a “PID map that indicates which PIDs correspond to which digital channels may also be transmitted in-band.” *Id.* For example, in the case of a browsed music channel received via tuner 51, the PIDs for the browsed music channel are received by the user music equipment. *Id.* ¶¶ 60, 70.

Additionally, Ellis-2005 describes a feature which “provide[s] the user with an opportunity to purchase music merchandise (e.g., an album, record, CD, concert tickets, etc.) . . . associated with a music program.” *Id.* ¶¶ 87, 98. “For example, the user may listen to one music program while ordering a CD for a music program on another music channel.” *Id.* ¶ 87. “Merchandise that is associated with a music program may be identified, for example, by identifiers, graphics, or other information included in an in-band data stream on a music channel” and the “user may indicate a desire to purchase merchandise by, for example, pressing a ‘BUY’ key on remote control.” *Id.* Accordingly, the user music equipment generates a merchandise request. *Id.* Further, the “merchandise request includes information necessary for ordering the merchandise based on the type of ordering scheme used. The request may include, for example, a merchandise identifier, a user identifier or account number, or other suitable information.” *Id.* ¶ 88.

D. Obviousness over Ellis-2005 and Crosby

Petitioner asserts that all the challenged claims (9–11, 15, and 23) would have been obvious under 35 U.S.C. § 103(a) over the combination of

Ellis-2005 and Crosby. *See* Pet. 40–57. We begin our analysis with independent claim 9.

1. Independent Claim 9

i. 9[pre] A system for combining multiple media

Petitioner asserts that Ellis-2005 teaches the preamble of claim 9, “to the extent it is limiting.” Pet. 40 (citing Ex. 1002 ¶¶ 126–127). Petitioner argues that “Ellis-2005 discloses a system, distribution equipment 21, that combines multiple media, such as music channels for presenting audio, such as music (first media) and information, such as text and graphics (second media), by using in-band sideband signals or out-of-band digital signals, for transmission to the user.” Pet. 40 (citing Ex. 1008 ¶¶ 26, 31, Figs. 2a, 2b). Petitioner explains that “[a]t user equipment 22, different tuners receive the multiple media and present it to the user[,] [f]or example, when a user is tuned to a first tuner, listening to music, and ‘indicates a desire to view music information’ for another channel, the music application ‘directs a second tuner’ to tune to obtain ‘the in-band music information from that channel’ and display it to the user.” Pet. 41 (citing Ex. 1008 ¶ 8). Petitioner’s arguments are supported by the testimony of Dr. Almeroth. *See* Ex. 1002 ¶¶ 126–127.

Patent Owner does not contest Petitioner’s evidence and arguments with respect to claim 9’s preamble. *See* PO Resp 48–52.

We agree with Petitioner that Ellis-2005 meets the subject matter of the preamble because it describes a system for combining multiple media where music programs are distributed over a number of channels to users along with information on the music programs provided through in-band

data streams on the channels.³ *See, e.g.*, Ex. 1008, code (57), ¶¶ 7–9; Ex. 1002 ¶¶ 126–127 (citing Ex. 1008 ¶¶ 8, 26, 31, Figs. 2a, 2b).

- ii. *9[a] a first receiver module configured to receive at least a first media content and data enabling the identification of a specific instance of the first media content from a first broadcast medium*

Petitioner asserts that Ellis-2005 teaches this limitation, where Ellis-2005 describes “user equipment 22 having ‘a first receiver module,’ tuner 50, which receives ‘a first media content’ including television video, audio, and data identifying the television content (e.g., program guide information).” Pet. 41 (citing Ex. 1008 ¶ 42, Fig. 1). For the recited “data enabling the identification of a specific instance” of the content, Petitioner argues that Ellis-2005’s “tuner receives packet identifiers (‘PIDs’) with each track, which enable the system to distinguish between different tracks.” Pet. 42 (citing Ex. 1008 ¶ 41). Petitioner argues that “PID maps may also be transmitted in-band to enable the identification of a specific instance of a media content, such as an audio track, by indicating ‘which PIDs correspond to which digital channels.’” Pet. 42–43 (citing Ex. 1002 ¶ 129).

Petitioner also asserts that the identification of specific instances of media content “would have been obvious in further view of Crosby” because

Crosby’s system allows subscribers to ‘select various advertisements, musical selections or the like while listening to the radio’ and ‘review information pertaining to the various program segments that have been selected’ at a later time on the Internet, by way of unique program segment identifiers, which include ‘a program segment ID, the date and time of broadcast

³ We need not determine whether the preamble of claim 9 is limiting because Petitioner has shown that Ellis-2005 teaches the subject matter described in the preamble. *See Nidec*, 868 F.3d at 1017.

of the program segment, and the broadcaster ID for the broadcaster of the segment.’

Pet. 43 (citing Ex. 1006, 3:59–4:19, 9:14–19).

Petitioner argues that a person of ordinary skill in the art “would have been motivated to combine the relevant teachings of Ellis-2005 and Crosby, and would have a reasonable expectation of success in doing so, because both relate to interactive radio systems for receiving multimedia at a mobile or television user and allowing the user to make selections.” Pet. 40 (citing Ex. 1006, code (57); Ex. 1008, code (57); Ex. 1002 ¶¶ 120–125).

Petitioner also argues that a person of ordinary skill in the art “would have been motivated to incorporate Crosby’s teaching of a program segment ID and other information necessary to identify a program segment, and time and date of broadcast of the program segment, as advantageous to Ellis-2005’s teaching and suggestion to use ‘identifiers, graphics, or other information included in an in-band data stream on a music channel.’” Pet. 43 (citing Ex. 1008 ¶ 87).

Petitioner further argues that “Ellis-2005 and Crosby would have ensured identification of the exact instance of the program segment and ensured accurate fulfillment of the user’s selection.” Pet. 43–44 (citing Ex. 1002 ¶ 131). Petitioner argues a person of ordinary skill in the art “would have had a reasonable expectation of success in using Crosby’s identification of each instance because Ellis-2005 was already at least providing program identification information (if not identification of a specific instance) and would only have required the addition of a time and date stamp to implement Crosby’s unique identification system of each program instance.” *Id.* at 44.

Patent Owner argues that “Ellis-2005 uses the PIDs corresponding to the given signal streams to identify the locations in a channel where data for each signal stream is located.” PO Resp. 44 (citing Ex. 2016 ¶ 104). Patent Owner argues that “PIDs and PID maps do not identify an instance or occurrence of the media content, only how the media content is transmitted in Ellis-2005’s system.” *Id.* Patent Owner argues that “in Ellis-2005 knowing PID information does not allow for distinguishing between two or more instances of the same media content, particularly when, for example, the same song may travel on the same audio track at various times of the day, each time the song is played.” PO Resp. 45 (citing Ex. 2016 ¶ 105); PO Sur-reply 16–18.

With respect to Petitioner’s asserted combination of Ellis-2005 and Crosby, Patent Owner argues that “neither Crosby nor Ellis-2005 are concerned with identifying a specific instance of media content.” PO Resp. 49 (citing Ex. 2016 ¶ 113). Patent Owner argues that “[i]n Crosby’s alternative embodiment, ‘program segment identification information’ and information ‘identifying the broadcaster’ is encoded in the broadcast signal” and “the system need not determine the program segment or date and time of broadcast and functions without the need of this information.” PO Resp. 50 (citing Ex. 1006, 8:53–56, 11:44–58). “Thus,” Patent Owner argues, “Crosby does not teach or suggest including date and time of broadcast in the encoded broadcast signal.” PO Resp. 50 (citing Ex. 1006, 11:37–63; Ex. 2016 ¶ 115).

Patent Owner also argues that a person of ordinary skill in the art “would not have been motivated to include Crosby’s date and time of broadcast in Ellis-2005 because the embodiment in Crosby most similar to Ellis-2005 operates without such information.” PO Resp. 51 (citing

Ex. 2016 ¶ 117); PO Sur-reply 20–24. Patent Owner further argues that “neither Crosby nor Ellis-2005 specify a need to identify a specific instance of the media content.” PO Resp 51 (citing Ex. 2016 ¶ 118).

Petitioner responds by arguing that “there is nothing in Element 9[a], the specification, or the prosecution history relating to distinguishing two or more instances of the same content. Element 9[a] instead requires data that ***enables the identification*** of a specific instance of the first media content.” Pet. Reply 21 (citing Ex. 1026 ¶¶ 46–47). Petitioner argues that “Ellis-2005’s PIDs and PID maps meet this limitation because they identify where the data is within the stream and distinguish between different tracks.” *Id.* (citing Ex. 1026 ¶ 48; Ex. 1029, 77:17–78:7).

We agree with Petitioner that Ellis-2005’s PIDs and PID maps meet the relevant portions of limitation 9[a] because they identify where the data is within the stream and distinguish between different tracks. Limitation 9[a] requires “*data enabling the identification of a specific instance of the first media content.*” We have not been directed to anything in the record that would require restricting the claim term “identification” to distinguishing between two or more instances of the same media content, as Patent Owner argues, as opposed to identifying a specific instance of media content by either where the data for that media content is within the stream or by distinguishing between different music “tracks” in the stream. *See* Ex. 1008 ¶ 41 (“Each digital channel may include, for example, a number of *tracks*. *Tracks* may include, for example, video tracks, audio tracks, and data or other suitable tracks. . . . The packets also contain packet identifiers (‘PIDs’) *identifying the track* that each packet belongs to.” (emphasis added)), 46 (“Audio and video tracks may be played for the user by user music equipment 22. . . . Data tracks may be used by the music application

for obtaining in-band digital data displayed for users in music application display screens.”).

Patent Owner’s expert, Dr. Moon, agrees that the claim language does not recite that the system has to “discretely identify” each instance of the first media content. *See* Ex. 1029, 16:3–7. Indeed, Dr. Moon agrees that according to the Specification of the ’081 patent, a unique identifier can be used “to determine the location, the user device, the time of transmittal, the program and/or media content in the first media signal, the available options for response to the user of the device, and/or other identifying characteristic information.” Ex. 2016 ¶ 33 (citing Ex. 1001, 11:38–46).

Patent Owner’s other arguments are also unavailing because “[u]nder the correct [obviousness] analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007). A reason to combine teachings from the prior art “may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved.” *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1355 (Fed. Cir. 1999) (citing *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998)). And, as Petitioner correctly points out, a person of ordinary skill in the art “would have considered Crosby for all that it teaches,” including all of its teachings regarding program segment ID, date, and time. Pet. Reply 22 (citing *In re Mouttet*, 686 F.3d 1322, 1331 (Fed. Cir. 2012)).

Here, Petitioner argues that a person of ordinary skill in the art would have been motivated to incorporate Crosby’s teaching of a program segment ID and other information necessary to identify a program segment, as well as

time and date of broadcast of the program segment, because it would be advantageous to Ellis-2005's teaching and suggestion to use identifiers and other information included in an in-band data stream on a music channel. Pet. 43 (citing Ex. 1008 ¶ 87). Petitioner argues that Ellis-2005 was already at least providing program identification information (even if that information is not considered identification of a specific instance of media content) and allowing selection from such information by the user to make a purchase, and would only have required the addition of a time and date stamp to implement Crosby's unique identification system of each program instance. Pet. 44.

Dr. Almeroth testifies, and we agree, that a person of ordinary skill in the art

would have been motivated to combine the teachings of Ellis-2005 and Cro[sb]y at least because Ellis-2005 expressly envisions transmitting in-band, PIDs "identifying the track that each packet belongs to" as well as other "identifiers" needed to make purchases including, e.g., merchandise identifiers and user identifiers, . . . and would have understood that unique program segment identifiers that are associated with specific instances of media content, as exemplified by Crosby, could be used to identify both track and vendor information for a given media content.

Ex. 1002 ¶ 123 (citing Ex. 1006, 9:26–29, 10:7–35; Ex. 1008 ¶¶ 41, 87–88).

Dr. Almeroth testifies that this combination of Ellis-2005 and Crosby "would have ensured identification of the exact instance of the program segment and ensured accurate fulfillment of the user's selection." Ex. 1002 ¶ 131. We credit the testimony of Dr. Almeroth, which is consistent with the disclosures of Ellis-2005 and Crosby.

Based on the complete record and for the reasons discussed herein, we find that Petitioner has demonstrated that the combination of Ellis-2005 and

Crosby meets the recited “*first receiver module configured to receive at least a first media content and data enabling the identification of a specific instance of the first media content from a first broadcast medium*” of limitation 9[a].

We also find that Petitioner has demonstrated that one of ordinary skill in the art at the time of the invention would have had sufficient reason to combine the teachings of Ellis-2005 and Crosby in the manner proffered by Petitioner because such a combination would have ensured identification of the exact instance of the program segment and ensured accurate fulfillment of the user’s selection.

We further find that one of ordinary skill in the art would have had a reasonable expectation of success in using Crosby’s identification of each instance because Ellis-2005 was already providing program identification information and the proposed combination would only have required the addition of a time and date stamp to implement Crosby’s identification system of each program instance.

- iii. *9[b] a second receiver module configured to receive at least a second media content and uniquely identifying data specific to at least the second media content, the second media content received discretely from the first media content*

Petitioner asserts that “Ellis-2005 discloses ‘a second receiver module’ to receive ‘a second media content.’” Pet. 44. According to Petitioner, “Ellis states that ‘[w]hen a user indicates a desire to view music information’ for another channel than the one the first tuner is tuned to, ‘the music application directs a second tuner,’ tuner 51, ‘to tune to the other music channel and obtains the in-band music information from that channel’ such as text and graphics.” *Id.* (citing Ex. 1008 ¶ 8). Petitioner argues that “[t]uner 51 receiving, e.g., music information and graphics, is a second receiver module receiving a second media content.” Pet. 45.

Petitioner asserts that “Ellis-2005 also teaches or suggests ‘uniquely identifying data specific to the second media content,’ in the form of an ‘identifier’ and/or ‘ordering information’ that may be displayed to the user.” *Id.* (citing Ex. 1008 ¶¶ 60 (tuner 51 receives PIDs for the browsed channel, i.e., second media content), 80 (“the music application may display the music program’s . . . identifier”), 8 (“music information” includes, e.g., “ordering information”)). “For example,” Petitioner argues, “the user may be listening to one music program and choose to order ‘a CD for a music program on another music channel.’” *Id.* (citing Ex. 1008 ¶ 87). “In this scenario,” Petitioner explains, “a ‘merchandise request’ including ‘information necessary for ordering the merchandise’ may be generated by the system including, e.g., *‘a merchandise identifier, a user identifier or account number.’*” Pet. 45 (citing Ex. 1008 ¶ 88) (emphasis added by Petitioner). According to Petitioner, a person of ordinary skill in the art

“would have considered such identifiers to uniquely identify data specific to the second media content.” Pet. 45 (citing Ex. 1002 ¶¶ 133–134).

Petitioner further asserts that “Ellis-2005 discloses that ‘the second media content [is] received discretely from the first media content.’” Pet. 45. Petitioner argues that examples of this “in the ’081 Patent include second content data that is time or frequency multiplexed with the first content.” Pet. 45 (citing Ex. 1001, claims 18, 19). “Similarly,” Petitioner points out, “Ellis-2005 explains that ‘each music channel [i.e., first media content] may carry an in-band data stream of the music information [i.e., second media content] for all music channels.’” Pet. 45–46 (citing Ex. 1008 ¶¶ 31, 43; Ex. 1002 ¶ 135).

Petitioner also argues that receiving “uniquely identifying data” would have been obvious in further view of Crosby, because “Crosby’s system allows subscribers to ‘select various advertisements, musical selections or the like while listening to the radio’ and ‘review information pertaining to the various program segments that have been selected’ at a later time on the Internet, by way of unique program segment identifiers, which include ‘a program segment ID, the date and time of broadcast of the program segment, and the broadcaster ID for the broadcaster of the segment.’” Pet. 46 (citing Ex. 1006, 3:59–4:19, 9:14–19).

Petitioner argues that a person of ordinary skill in the art “would have been motivated to incorporate Crosby’s teaching of a program segment ID and other information necessary to identify a program segment, and time and date of broadcast of the program segment, as advantageous to Ellis-2005’s teaching and suggestion to use ‘identifiers, graphics, or other information included in an in-band data stream on a music channel.’” Pet. 46–47 (citing Ex. 1008 ¶ 87). Petitioner argues that “Ellis-2005 and Crosby would have

ensured identification of the exact instance of the program segment and ensured accurate fulfillment of the user's selection," and a person of ordinary skill in the art "would have had a reasonable expectation of success in using Crosby's identification of each instance because Ellis-2005 was already at least providing program identification information (if not identification of a specific instance) and would only have required the addition of a time and date stamp to implement Crosby's unique identification system of each program instance." Pet. 47 (citing Ex. 1002 ¶ 137).

Petitioner's arguments are supported by Dr. Almeroth's testimony. See Ex. 1002 ¶¶ 132–137.

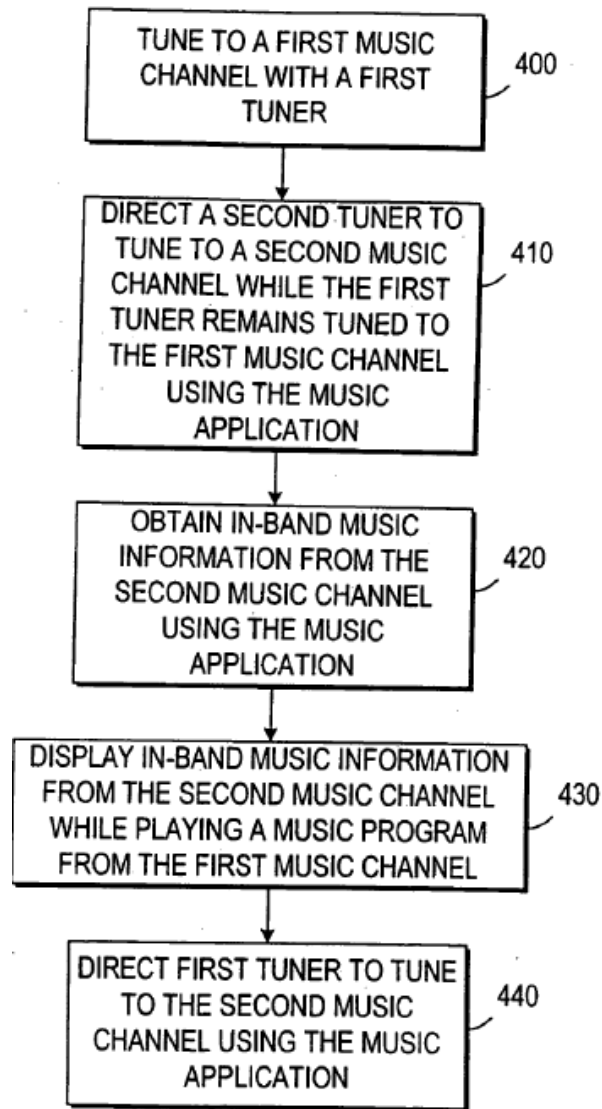
Patent Owner does not respond to Petitioner's arguments and evidence concerning this limitation. See PO Resp. 43–52.

Based on the complete record and for the reasons discussed herein, we find that Petitioner has demonstrated that the combination of Ellis-2005's tuner 51 and Crosby's unique program segment identifiers meets the recited *"second receiver module configured to receive at least a second media content and uniquely identifying data specific to at least the second media content, the second media content received discretely from the first media content"* of limitation 9[b].

We also find that Petitioner has demonstrated that one of ordinary skill in the art at the time of the invention would have had sufficient reason to combine the teachings of Ellis-2005 and Crosby in the manner proffered by Petitioner and would have had a reasonable expectation of success in doing so.

- iv. 9[c] an output system configured to present concurrently the first media content and the second media content on an output of the first receiver module or the second receiver module*

Petitioner asserts that Ellis-2005 teaches this limitation. Pet. 47 (citing Ex. 1002 ¶ 138). Petitioner argues that “Ellis-2005 discloses first and second receiver modules, i.e., tuners 50 and 51, which receive a first media content (such as music audio) and a second media content (such as text and graphics relating to music on another channel), respectively.” Pet. 47. Petitioner points out that Ellis-2005’s Figure 10 “provides a ‘flowchart of illustrative steps’ on how a user can ‘listen to a music program carried on one channel while viewing in-band music information for a music program carried on another channel.’” Pet. 47–48 (citing Ex. 1001, Fig. 10; Ex. 1008 ¶ 93). Ellis-2005’s Figure 10 is set out below.



Ellis-2005's Figure 10, above, is a flowchart of illustrative steps involved in providing a user with an opportunity to listen to a music program carried on one channel while viewing in-band music information for a music program carried on another. Ex. 1008 ¶ 21. Petitioner explains that in Figure 10, "Step 430 states that the system 'display[s] in-band music information from the second music channel while playing a music program from the first music channel.'" Pet. 48 (citing Ex. 1008, Fig. 10). "Thus," Petitioner argues, Ellis-2005's system (which includes both a visual display

and speakers for playing audio, as shown in Figures 3 and 4) is an output that “concurrently present[s] audio [from] the first tuner and text or graphics [from] the second tuner.” *Id.*; see Ex. 1008 ¶¶ 8, 42–56 (describing the system of Figures 3 and 4). As Petitioner correctly explains, the user in Ellis-2005, tuned to the first tuner, listens to music and views information about that music on the display, then indicates a desire to view music information for a different channel, causing the second tuner to receive the desired music information, which is displayed to the user visually while the user is listening to the original music. See Pet. 16–17, 41–42 (citing Ex. 1008 ¶ 8), 44–45 (same).

Petitioner’s arguments are supported by Dr. Almeroth’s testimony. See Ex. 1002 ¶ 138.

Patent Owner does not respond to Petitioner’s arguments and evidence concerning this limitation. See PO Resp. 43–52.

Based on the complete record and for the reasons discussed herein, we find that Petitioner has demonstrated that Ellis-2005’s interactive music distribution system as described in Figure 10, Step 430, wherein the system displays in-band music information from a second music channel while playing a music program from a first music channel, meets the recited “*output system configured to present concurrently the first media content and the second media content on an output of the first receiver module or the second receiver module*” of limitation 9[c].

- v. 9[d] *an input module configured to receive at least a response input responsive to the second media content*

Petitioner asserts that Ellis-2005 teaches this limitation. Pet. 49 (citing Ex. 1002 ¶ 139). Petitioner argues that “Ellis-2005 discloses that the user may provide input via a remote control 40, responsive to the second

media content, by pressing a purchase button to buy the content.” Pet. 49 (citing Ex. 1008 ¶ 87) (“The user may indicate a desire to purchase merchandise by, for example, pressing a ‘BUY’ key on remote control 40 when tuned to a music channel, when browsing through music program listings, after highlighting a music program listing in a music program listings screen, or when in any other suitable music application display screen.”).

Petitioner’s arguments are supported by Dr. Almeroth’s testimony. See Ex. 1002 ¶ 139.

Patent Owner does not respond to Petitioner’s arguments and evidence concerning this limitation. See PO Resp. 43–52.

Based on the complete record and for the reasons discussed herein, we find that Petitioner has demonstrated that Ellis-2005’s description of a user providing input via remote control 40, which is responsive to a second media content, by pressing a purchase button to buy content, meets the recited “*an input module configured to receive at least a response input responsive to the second media content*” of limitation 9[d].

- vi. *9[e] a transmitting module configured to transmit a response message having at least the uniquely identifying data specific to the second media content to a computer*

Petitioner asserts that Ellis-2005 alone or in view of Crosby teaches this limitation. Pet. 49 (citing Ex. 1002 ¶ 140). “For example,” Petitioner explains, “Ellis-2005 discloses that the music application may ‘provide the user with an opportunity to purchase music merchandise . . . associated with a music program.’” Pet. 50 (citing Ex. 1008 ¶ 87). “Further,” Petitioner notes, “Ellis-2005 discloses that ‘identifiers’ and ‘ordering information’ are transmitted to merchandising facility 10 when a purchase request is made by

the user specific to the second media content.” Pet. 50 (citing Ex. 1008 ¶¶ 8, 87–88).

According to Petitioner, “Ellis-2005 also discloses that a ‘merchandise request’ includes necessary information for making a purchase including, e.g., ‘a merchandise identifier, a user identifier or account number’ and ‘may be sent from the music application implemented on interactive music application equipment 17 to merchandising facility 10 over communications path 9 (FIG. 1).” Pet. 50 (citing Ex. 1008 ¶ 88). Petitioner argues that a person of ordinary skill in the art “would have understood these identifiers to uniquely identify data specific to the second media content as explained above with respect to Element 9[b].” Pet. 50 (citing Ex. 1002 ¶ 141).

Petitioner also asserts that “such unique identification would have been obvious in further view of Crosby.” Pet. 50. Petitioner argues that “Crosby provides for unique program segment identifiers, which include ‘a program segment ID, the date and time of broadcast of the program segment, and the broadcaster ID for the broadcaster of the segment.’” Pet. 50 (citing Ex. 1006, 9:14–19). Petitioner argues that a person of ordinary skill in the art “would have been motivated to incorporate Crosby’s teaching of a program segment ID and other information necessary to identify a program segment, and time and date of broadcast of the program segment, as advantageous to Ellis-2005’s teaching and suggestion to use ‘identifiers, graphics, or other information included in an in-band data stream on a music channel.’” Pet. 51 (citing Ex. 1008 ¶ 87).

The combination of Ellis-2005 and Crosby, Petitioner argues, “would have ensured identification of the exact instance of the program segment and ensured accurate fulfillment of the user’s selection. A [person of ordinary

skill in the art] would have had a reasonable expectation of success in using Crosby's identification of each instance because Ellis-2005 was already at least providing program identification information (if not identification of a specific instance) and would only have required the addition of a time and date stamp to implement Crosby's unique identification system of each program instance." Pet. 51 (citing Ex. 1002 ¶¶ 142–143).

Petitioner's arguments are supported by Dr. Almeroth's testimony. See Ex. 1002 ¶¶ 140–143.

Patent Owner does not respond to Petitioner's arguments and evidence concerning this limitation. See PO Resp. 43–52.

Based on the complete record and for the reasons discussed herein, we find that Petitioner has demonstrated that the combination of Ellis-2005's merchandise request that includes necessary information for making a purchase including information sent from the music application implemented on interactive music application equipment 17 to merchandising facility 10 over communications path 9 and Crosby's unique program segment identifiers meets the recited "*a transmitting module configured to transmit a response message having at least the uniquely identifying data specific to the second media content to a computer*" of limitation 9[e].

We also find that Petitioner has demonstrated that one of ordinary skill in the art at the time of the invention would have had sufficient reason to combine the teachings of Ellis-2005 and Crosby in the manner proffered by Petitioner and would have had a reasonable expectation of success in doing so.

vii. Conclusion on Independent Claim 9

Based upon consideration of the entire record, we are persuaded by Petitioner's arguments and evidence, notwithstanding Patent Owner's arguments and evidence, and determine that Petitioner has demonstrated by a preponderance of the evidence that independent claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Ellis-2005 and Crosby.

2. Dependent Claims

Petitioner argues that the combination of Ellis-2005 and Crosby teaches the recited limitations of dependent claims 10, 11, 15, and 23. *See* Pet. 52–57.

i. Dependent Claim 10

Dependent claim 10 recites the limitation, “[t]he system of claim 9 further comprising an output selection module configured to limit the output of the first and second media content based on a criterion.” Petitioner asserts that Ellis-2005 teaches this limitation. Pet. 52–53.

Petitioner explains that “Ellis-2005 discloses that the two tuners, tuner 50 and tuner 51, can be adjusted to switch to different channels based on the ‘favorites’ (i.e., criterion) chosen by the user.” *Id.* at 53. “For example,” Petitioner points out, “Ellis-2005 states that ‘[t]he music application may also provide a user with the opportunity to set and navigate through favorite music channels.’” *Id.* (citing Ex. 1008 ¶ 77). According to Petitioner, “[t]he user may also set a music channel as a favorite by, for example, pressing a ‘FAV’ key on remote control 40 when the user has tuned to the channel,” “highlighted a music program listing displayed in a music program listings screen,” or “from a favorites set-up screen.” *Id.* Petitioner explains that “[o]nce in favorites mode, ‘the music application may obtain only information for favorite music channels and may limit BROWSE display

225 (FIG. 5b) and music program listings screen 180 (FIG. 7a) to displaying music program listings for favorite music channels if desired.” *Id.* (citing Ex. 1008 ¶¶ 78, 97). “Thus,” Petitioner concludes, “Ellis-2005 discloses ‘an output selection module’ that ‘limit[s] the output of the first and second media content based on a criterion.’”

Petitioner’s arguments are supported by Dr. Almeroth’s testimony. *See* Ex. 1002 ¶¶ 144–145.

Patent Owner does not respond specifically to Petitioner’s arguments and evidence concerning this limitation other than to state that “[d]ependent claims 10, 11, and 23 are not obvious in view of Ellis-2005 for the same reasons as claim 9” and that “Ellis-2005 in view of Crosby does not teach or suggest the challenged claims.” PO Resp. 48 (citing Ex. 2016 ¶¶ 111–112).

Based on the complete record, we find that Petitioner has demonstrated that Ellis-2005’s “Favorites” music channel feature teaches the subject matter recited in dependent claim 10 because this feature limits the output of the first and second media content based on the criterion of a user’s selection of particular “favorite” music channels.

ii. Dependent Claim 11

Dependent claim 11 recites the limitation, “[t]he system of claim 9 further comprising a computer storage device configured to store at least one of the first and second media content.” Petitioner asserts that Ellis-2005 teaches this limitation. Pet. 53–54.

Petitioner explains that “Ellis-2005 . . . discloses that ‘[s]et-top box 28 may also have digital channel selector 53, packet filter 55, and decoder 57 (or any suitable combination of such components) for obtaining the tracks of a particular digital channel from the signals that have been tuned to by tuners 50 and 51.’” Pet. 53 (citing Ex. 1008 ¶ 44). “Moreover,” Petitioner

explains, “[s]et-top box 28 may also have memory 59 for storing the PID map and for temporarily storing in-band information obtained by the music application using a second tuner.” *Id.* According to Petitioner, “[d]igital channel selector 53 may obtain the PID map from the in-band data stream, store it in memory 59, and may determine which PIDs correspond to which digital channels.” *Id.* Petitioner explains that “Ellis-2005 also discloses that ‘[t]he functions of control circuitry 42’ which contains memory 59 ‘may be provided using the set-top box arrangement of FIG. 3’ or ‘integrated into an advanced television receiver such as a high-definition television (HDTV) receiver, personal computer television (PC/TV), digital or analog radio receiver, or any other such suitable component or combination of components.’” Pet. 54 (citing Ex. 1008 ¶ 53). “Thus,” Petitioner concludes, “Ellis-2005 discloses ‘a computer storage device configured to store at least one of the first and second media content.’” Pet. 54.

Petitioner’s arguments are supported by Dr. Almeroth’s testimony. *See* Ex. 1002 ¶¶ 146–147.

Patent Owner does not respond specifically to Petitioner’s arguments and evidence concerning this limitation other than to state that “[d]ependent claims 10, 11, and 23 are not obvious in view of Ellis-2005 for the same reasons as claim 9” and that “Ellis-2005 in view of Crosby does not teach or suggest the challenged claims.” PO Resp. 48 (citing Ex. 2016 ¶¶ 111–112).

Based on the complete record, we find that Petitioner has demonstrated that Ellis-2005’s set-top box 28 with channel selector 53 and memory 59 meets the subject matter recited in dependent claim 11 because it can store PID maps and in-band information obtained from the data stream by the music application using a second tuner.

iii. *Dependent Claim 15*

Dependent claim 15 recites the limitation, “[t]he system of claim 9, wherein, in response to receiving the response message, the computer server is configured to correlate the response message to the second media content with the specific instance of the first media content.” Petitioner asserts that Ellis-2005 teaches this limitation. Pet. 54–55.

Petitioner explains that “Ellis-2005 discloses that the music application may ‘provide the user with an opportunity to purchase music merchandise . . . associated with a music program.’” *Id.* at 54 (citing Ex. 1008 ¶ 87). “Further,” Petitioner explains, “Ellis-2005 discloses that ‘identifiers’ and ‘ordering information’ are transmitted to merchandising facility 10 when a purchase request is made by the user specific to the second media content.” Pet. 55 (citing Ex. 1008 ¶¶ 8, 87–88). According to Petitioner, “Ellis-2005 also discloses that a ‘merchandise request’ includes necessary information for making a purchase including, e.g., ‘a merchandise identifier, a user identifier or account number’ and ‘may be sent from the music application implemented on interactive music application equipment 17 to merchandising facility 10 over communications path 9 (FIG. 1).” Pet. 55 (citing Ex. 1008 ¶ 88).

“Additionally,” Petitioner points out, “Ellis-2005 states that ‘[t]he user may, for example, purchase merchandise that is related to the music program that the user is listening to.’” Pet. 55 (citing Ex. 1008 ¶ 87). “In this situation,” Petitioner argues, a person of ordinary skill in the art “would have understood the response message for the second media content (i.e., merchandise request relating to the viewed music information) to be correlated with the specific instance of the first media content (i.e., the music program that the user is listening to).” Pet. 55 (citing Ex 1002 ¶ 149).

Petitioner's arguments are supported by Dr. Almeroth's testimony. *See* Ex. 1002 ¶¶ 148–149.

Patent Owner argues that none of the teachings described by Petitioner “relate to correlating the response message to the second media content with the specific instance of the first media content.” PO Resp. 47–48. Patent Owner argues that that in Ellis-2005, “[t]he merchandise identifier by its very definition identifies the music the user wishes to purchase and does not ‘enable identification of a specific instance of the first media content’ since, for example, multiple broadcasts of the same song will have the same identifier.” PO Resp. 46 (citing Ex. 2016 ¶ 108). Patent Owner also argues that Ellis-2005 “nowhere describes that information relating to the specific instance of the music being listened to from the first channel (i.e., Petitioner's purported data enabling identification of a specific instance of the first media content) is sent to the merchandise facility such that any correlation could occur.” PO Resp. 47 (citing Ex. 2016 ¶ 109). According to Patent Owner, “Petitioner offers no explanation as to why a [person of ordinary skill in the art] would have understood such a correlation based on Ellis-2005.” PO Resp. 46 (citing Ex. 2016 ¶ 107).

Petitioner responds by arguing that Patent Owner fails to properly consider all of what Ellis-2005 teaches with respect to claim 15. For example, Petitioner argues that with respect to claim limitation 9[a],⁴ “Ellis-2005 discloses PIDs that are received by the tuners with each track, which enable the system to distinguish between different tracks, and PID maps that

⁴ Claim 15 depends from independent claim 9, and therefore incorporates all of claim 9's limitations. 35 U.S.C. § 112 (“A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.”).

are transmitted in-band to enable the identification of a specific instance of a media content by indicating ‘which PIDs correspond to which digital channels.’” Pet. Reply 25. Petitioner also argues that with respect to limitation 9[e], “Ellis-2005 discloses that ‘identifiers’ and ‘ordering information’ are transmitted to merchandising facility 10 when a purchase request is made by the user which uniquely identify data specific to the second media content.” Pet. Reply (citing Ex. 1008 ¶¶ 8, 87–88).

Petitioner further argues that

Ellis-2005 discloses that set-top box 28 may include “digital channel selector 53, packet filter 55, and decoder 57 . . . for obtaining the tracks of a particular digital channel from the signals that have been tuned to by tuners 50 and 51.” [Ex. 1008 ¶ 44]. Moreover, set-top box 28 may comprise memory 59 “for storing the PID map” such that “[d]igital channel selector 53 may obtain the PID map from the in-band data stream, store it in memory 59, and may determine which PIDs correspond to which digital channels.” *Id.*; *see also id.* ¶¶ 84–85. “If desired, the PID map may be preprogrammed into memory 59 of the music application.” *Id.* ¶ 44. As depicted in Ellis-2005’s Figures 1, 2a, and 3, . . . memory 59 within user music equipment 22 is a component of interactive music application equipment 17 that communicates over communication path 9 with the merchandise facility 10.

Pet. Reply 25–26 (citing Ex. 1008 ¶¶ 11–13; Ex. 1026 ¶¶ 56–57).

Petitioner argues, therefore, that a person of ordinary skill in the art

would have understood that Ellis-2005’s system is configured to correlate the PIDs and/or PID map information identifying a specific instance of the first media content that the user is listening to via tuner 50, stored or preprogrammed into memory 59, with a merchandise purchase request relating to content on another channel that the user is viewing simultaneously (second media content) via tuner 51. A [person of ordinary skill in the art] would have understood that this capability may be desirable, e.g., if a user finds merchandise that it wishes to purchase while

browsing channels on tuner 51 but wants to remember the song that it was listening to on tuner 50 at the time it made the purchase request.

Pet. Reply 26 (citing Ex. 1026 ¶ 58).

In its Sur-reply, Patent Owner argues that Petitioner's reliance on the stored memory aspect of Ellis-2005 "is entirely new" and "should not be considered." PO Sur-reply 20. Patent Owner also argues that

the mere storage of PIDs and PID maps in memory 59 and that memory 59 is part of the interactive music application equipment, does not demonstrate that the PIDs and PID maps are communicated to the merchandising facility, let alone used at the merchandising facility to correlate the purchased content of the first tuner with the specific instance of the content on the other tuner.

Id. at 19.

We disagree with Patent Owner that Petitioner's reliance on Ellis-2005's storage of PIDs and PID maps in memory is "entirely new" and "should not be considered." In its Response, Patent Owner asserts that "Petitioner has not shown that [Ellis-2005's] merchandising facility or any other computer system is configured to correlate the response message for purchasing from the second media content with the specific instance of the first media content." PO Resp. 47 (citing Ex. 2016 ¶ 109). Petitioner's explanation in its Reply describing the memory configuration and operation of Ellis-2005's system is a direct response to Patent Owner's assertion that Ellis-2005's system is not properly "configured" to correlate the response message in a manner that satisfies claim 15. Petitioner does this by first asserting that Patent Owner is not properly considering Ellis-2005 for all that it teaches with respect to claim 15.

Petitioner explains that with respect to limitation 9[a], “Ellis-2005 discloses PIDs that are received by the tuners with each track, which enable the system to distinguish between different tracks, and PID maps that are transmitted in-band to enable the identification of a specific instance of a media content by indicating ‘which PIDs correspond to which digital channels.’” Pet. Reply 25. With respect to limitation 9[e], Petitioner explains that “Ellis-2005 discloses that ‘identifiers’ and ‘ordering information’ are transmitted to merchandising facility 10 when a purchase request is made by the user which uniquely identify data specific to the second media content.” *Id.* (citing Ex. 1008 ¶¶ 8, 87–88). These arguments describe how Ellis-2005 teaches the “response message” to the second media content and the identified “specific instance of the first media content,” which then appear again in claim 15.

Petitioner also explains that a person of ordinary skill in the art “would have understood that Ellis-2005’s system is configured to correlate the PIDs and/or PID map information . . . with a merchandise purchase request relating to content on another channel that the user is viewing simultaneously (second media content).” Pet. Reply 26. Petitioner explains that “set-top box 28 may comprise memory 59 ‘for storing the PID map’ such that ‘[d]igital channel selector 53 may obtain the PID map from the in-band data stream, store it in memory 59, and may determine which PIDs correspond to which digital channels.’” *Id.* at 25 (citing Ex. 1008 ¶¶ 84–85).

Each of these descriptions of Ellis-2005’s system were previously provided and relied upon in the Petition to show how Ellis-2005 in combination with Crosby renders the challenged claims obvious. *See, e.g.*, Pet. 42–44 (describing PIDs and PID maps in Ellis-2005, and program segment IDs and other information in Crosby, with respect to limitation

9[a]); Pet. 50 (describing “identifiers” and “ordering information” with respect to limitation 9[e]); Pet. 54–55 (describing with respect to claim 15 how the use of “identifiers” and “ordering information” are used for a “merchandise request” sent from music application equipment 17 to merchandising facility 10 over communications path 9 so that “[t]he user may . . . purchase merchandise that is related to the music program that the user is listening to”); Pet 53–54 (explaining with respect to claim 11 how “[s]et-top box 28 may also have memory 59 for storing the PID map and for temporarily storing in-band information obtained by the music application using a second tuner” and “[d]igital channel selector 53 may obtain the PID map from the in-band data stream, store it in memory 59, and may determine which PIDs correspond to which digital channels”); *see also* Ex. 1002 ¶¶ 129–131, 141, 146–149.

Moreover, Petitioner’s reply arguments are not the type of arguments that would warrant non-consideration, as Patent Owner requests. The Reply does not exceed the scope of the Petition, Petitioner is not attempting to introduce impermissible new matter, and the Reply does not raise a new theory of unpatentability. Indeed, the Federal Circuit has regularly held that “the petitioner in an *inter partes* review proceeding may introduce new evidence after the petition stage if the evidence is a legitimate reply to evidence introduced by the patent owner.” *Anacor Pharms., Inc. v. Iancu*, 889 F.3d 1372, 1380–81 (Fed. Cir. 2018); *see also Apple Inc. v. Andrea Electronics*, 949 F.3d 697, 706–707 (Fed. Cir. 2020) (finding the Board abused its discretion for ignoring the petitioner’s responsive arguments to issues raised in the patent owner’s response, which did not “cite any new evidence or ‘unidentified portions’ of the [asserted prior art] reference”); *Chamberlain Group, Inc. v. One World Techs., Inc.*, 944 F.3d 919, 924–25

(Fed. Cir. 2019) (“Parties are not barred from elaborating on their arguments on issues previously raised.”).

As explained above, we are persuaded by Petitioner’s arguments that the PIDs and PID maps stored in memory in Ellis-2005 constitute “data enabling the identification of a specific instance of the first media content,” and also that the combination of Ellis-2005 and Crosby (i.e., incorporating into Ellis-2005 the use of program segment IDs or other information necessary to identify program segments as taught by Crosby) teaches the limitation. *See supra* Section II.D.1.ii. With respect to the additional limitation of dependent claim 15, based on the complete record, we find that Petitioner has demonstrated that Ellis-2005’s “merchandise request” (i.e., the response message for the second media content), which includes the necessary information for making a purchase including, e.g., “a merchandise identifier, a user identifier or account number,” that is sent from the music application implemented on interactive music application equipment 17 to merchandising facility 10 over communications path 9, meets the subject matter recited in the claim because this feature allows the user to purchase merchandise that is related to the music program that the user is listening to at the time the purchase is made (i.e., correlated with the specific instance of the first media content). We credit the explanation provided by Dr. Almeroth, which is consistent with the disclosures of Ellis-2005 and Crosby. *See* Ex. 1002 ¶¶ 148–149; Ex. 1026 ¶¶ 55–58.

iv. Dependent Claim 23

Dependent claim 23 recites the limitation, “[t]he system of claim 9, wherein the response message includes data that enables identification of a responder.” Petitioner asserts that Ellis-2005 alone or in view of Crosby teaches this limitation. Pet. 55–56.

Petitioner explains that “Ellis-2005 . . . discloses that when a user presses the ‘buy’ button to purchase merchandise (e.g., music album or record), a response message is sent that includes a ‘user identifier.’” *Id.* at 56 (citing Ex. 1008 ¶ 88). Petitioner argues that a person of ordinary skill in the art “would have understood these identifiers to identify the responder.” Pet. 56 (citing Ex. 1002 ¶ 151).

Petitioner also argues that “Crosby also explicitly discloses that the ‘response message includes data that enables identification of a responder.’” Pet. 56. “For example,” Petitioner argues, “Crosby discloses ‘subscriber interface unit 214’ that ‘receives the subscriber ID for the subscriber of the mobile unit.’” Pet. 56 (citing Ex. 1006, 10:17–18). According to Petitioner, “[s]ubscriber interface unit 214 can access ‘subscriber database 205, which provides the subscriber name and password and the e-mail for the subscriber’ and ‘process[es] purchase transactions directly on behalf of the subscriber using the stored credit card number for the subscriber.’” Pet. 56 (citing Ex. 1006, 10:24–29). “Moreover,” Petitioner explains, “Crosby discloses that ‘the network operations center maintains an e-mail address associated with the subscriber ID and transmits e-mail messages containing information corresponding to program segments selected by the subscriber via the designated e-mail address,’ e.g., in response to ‘INFO’ or ‘ORDER’ commands.” Pet. 56 (citing Ex. 1006, 7:57–61).

Petitioner argues that a person of ordinary skill in the art “would have been motivated to incorporate Crosby’s teaching of additional information to accurately identify a responder/customer.” Pet. 57. According to Petitioner, “Ellis-2005 already motivated the need to identify a responder/customer since a [person of ordinary skill in the art] would have understood it would have been common sense that a responder/customer would need to be

accurately identified in order to successfully complete order fulfillment and billing.” *Id.* Petitioner argues that a person of ordinary skill in the art “would have had a reasonable expectation of success in using Crosby’s particular type of information in a transaction since Ellis-2005 already describes providing at least some, if not sufficient identifying information and the combination would have only required the addition of the type of information disclosed in Crosby.” *Id.* (citing Ex. 1002 ¶¶ 152–153).

Petitioner’s arguments are supported by Dr. Almeroth’s testimony. *See* Ex. 1002 ¶¶ 150–153.

Patent Owner does not respond specifically to Petitioner’s arguments and evidence concerning this limitation other than to state that “[d]ependent claims 10, 11, and 23 are not obvious in view of Ellis-2005 for the same reasons as claim 9” and that “Ellis-2005 in view of Crosby does not teach or suggest the challenged claims.” PO Resp. 48 (citing Ex. 2016 ¶¶ 111, 112).

Based on the complete record, we find that Petitioner has demonstrated that the combined teachings of Ellis-2005 and Crosby meet the subject matter recited in dependent claim 23 because the use of Crosby’s additional information to accurately identify a responder/customer (e.g. subscriber name, password, and e-mail) combined with Ellis-2005’s need to identify a responder/customer (i.e., “user identifier”) would allow accurate identification of the responder/customer to successfully complete order fulfillment and billing.

We also find that Petitioner has demonstrated that one of ordinary skill in the art at the time of the invention would have had sufficient reason to combine the teachings of Ellis-2005 and Crosby in the manner proffered by Petitioner and would have had a reasonable expectation of success in doing so.

v. *Conclusion on Dependent Claims*

Based upon consideration of the entire record, we are persuaded by Petitioner's arguments and evidence, notwithstanding Patent Owner's arguments and evidence, and determine that Petitioner has demonstrated by a preponderance of the evidence that dependent claims 10, 11, 15, and 23 are unpatentable under 35 U.S.C. § 103(a) as obvious over Ellis-2005 and Crosby.

E. Other Asserted Grounds

Petitioner also asserts that the challenged claims would have been obvious over Ellis-2005 alone, and over Noreen, Crosby, and Ellis-2002, in various combinations. *See* Pet. 4, 23–57. However, because Petitioner has shown that all of the challenged claims are unpatentable as discussed *supra*, we do not reach these other asserted grounds. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (“The Commission . . . is at perfect liberty to reach a ‘no violation’ determination on a single dispositive issue.”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (recognizing that “[t]he Board has the discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 9–11, 15, and 23 of U.S. Patent No. 8,166,081 B2 are unpatentable on the bases set forth in the following table.⁵

⁵ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this Final Decision, we draw Patent Owner's attention to the April 2019 *Notice*

Claims	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
9, 15, 23	103(a)	Noreen ⁶		
9, 15, 23	103(a)	Noreen, Crosby		
10, 11	103(a)	Noreen, Crosby, Ellis-2002		
9–11, 15, 23	103(a)	Ellis-2005		
9–11, 15, 23	103(a)	Ellis-2005, Crosby	9–11, 15, 23	
Overall Outcome			9–11, 15, 23	

Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See 37 C.F.R. § 42.8(a)(3), (b)(2).*

⁶ Because each of the challenged claims is held unpatentable on the ground combining Ellis-2005 and Crosby as a basis for unpatentability, we do not reach the other asserted grounds in the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 9–11, 15, and 23 of U.S. Patent No. 8,166,081 B2 are unpatentable; and

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

IPR2021-01267
Patent 8,166,081 B2

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