

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

IPR2024-00430
Patent 8,284,690 B2

Before PATRICK R. SCANLON, JON M. JURGOVAN, and
FREDERICK C. LANEY, *Administrative Patent Judges*.

JURGOVAN, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

Comcast Cable Communications, LLC (“Petitioner”) filed a Petition requesting *inter partes* review (“IPR”) of claims 1–24 of U.S. Patent No. 8,284,690 B2 (Ex. 1001, “the ’690 patent”). Paper 2 (“Petition” or “Pet.”). Entropic Communications, LLC (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 7 (“Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in a petition and the preliminary response “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the Petition and Preliminary Response, and accompanying exhibits and evidence, we determine Petitioner has established a reasonable likelihood that it would prevail with respect to at least one challenged claim in the *inter partes* review. Therefore, we grant institution of an *inter partes* review as to all of the challenged claims of the ’690 patent on all challenges in the Petition.

B. *Real Parties in Interest*

Petitioner identifies itself, Comcast Corporation, Comcast Cable Communications, LLC, and Comcast Cable Communications Management, LLC as real parties-in-interest. Pet. vii (Petitioner’s Mandatory Notices).

Patent Owner identifies itself as the real party-in-interest. Paper 3, 1 (Patent Owner’s Mandatory Notices).

C. *Related Matters*

Petitioner and Patent Owner (“the parties”) identify the following as matters related to this proceeding:

Entropic Communications, LLC v. Cox Communications, Inc. et al., 2-23-cv-01049 (C.D. Cal.) (“the Cox case”);

Entropic Communications, LLC v. Comcast Corporation et al., 2-23-cv-01050 (C.D. Cal.); and

Entropic Communications, LLC v. Charter Communications, Inc., 2-22-cv-00125 (E.D. Tex.) (“the Charter case”).

Pet. vii–viii; Paper 3, 1.

Patent Owner identifies the following as patents related to this proceeding: U.S. Patent No. 9,825,826; U.S. Patent No. 8,223,775; U.S. Patent No. 8,792,008; U.S. Patent No. 9,210,362; U.S. Patent No. 9,866,438; U.S. Patent No. 10,135,682; U.S. Patent No. 11,381,866; U.S. Patent No. 11,399,206; and U.S. Patent No. 11,785,275. Paper 4, 1–2.

Patent Owner also identifies several *inter partes* reviews sought by Petitioner against Patent Owner’s patents: U.S. Patent No. 8,223,775 (IPR2024-00446); U.S. Patent No. 7,295,518 (IPR2024-00431); U.S. Patent No. 9,210,362 (IPR2024-00432, IPR2024-00433, and IPR2024-00434); U.S. Patent No. 11,381,866 (IPR2024-00435, IPR2024-00436, and IPR2024-00437); U.S. Patent No. 11,399,206 (IPR2024-00438, IPR2024-00439, and IPR2024-00440); U.S. Patent No. 8,792,008 (IPR2024-00441); U.S. Patent No. 9,825,826 (IPR2024-00442); U.S. Patent No. 10,135,682 (IPR2024-00444 and IPR2024-00445); and U.S. Patent No. 7,889,759 (IPR2024-00452). Paper 3, 2.

D. The ’690 Patent

The ’690 patent is titled “Receiver Determined Probe.” Ex. 1001, code (54). The ’690 patent generally relates to channel assessment probes used in communication networks. *Id.* at 1:12–15. Nodes on a network “are

programmed to generate a probe transmission in response to a request from nodes that will be receiving the probe.” *Id.* at 1:67–2:3. The receiving node generates a probe request specifying parameters for generation and transmission of the probe. *Id.* at 2:3–9. The parameters may include the modulation profile for the probe, the payload content for the probe, the transmit power of the probe, the power scaling factor for the payload of the probe, and others. *Id.* at 2:10–19.

Figure 4 of the ’690 patent is reproduced below.

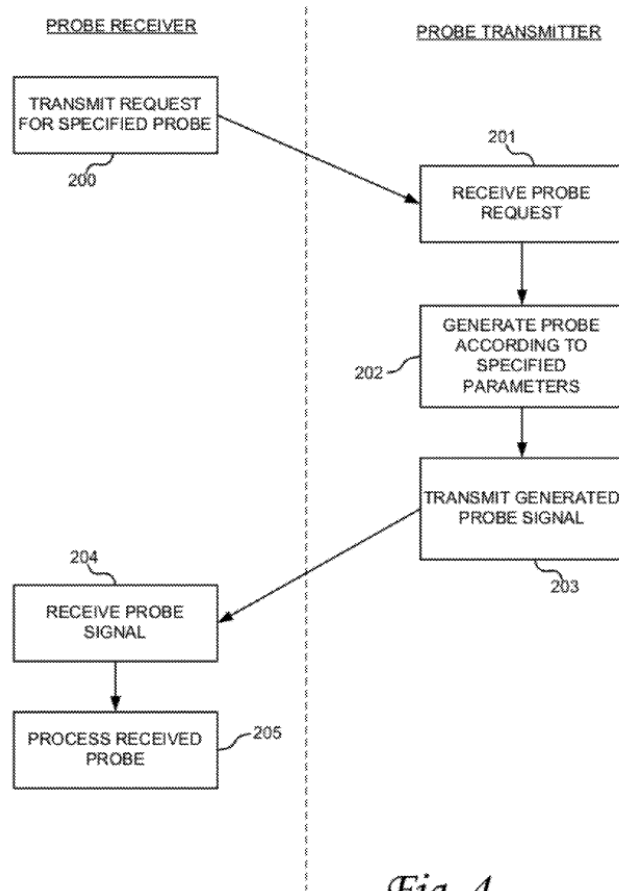


Fig. 4

Figure 4 shows “a method of operation according to an embodiment of the disclosed method and apparatus.” *Id.* at 6:17–18. In block 200, a node transmits a probe request specifying probe parameters for a node that will

transmit the probe having a form dictated by the specified parameters. *Id.* at 6:18–22. In block 201, a probe transmitter node receives the probe request, and in block 202, uses the specified parameters to generate a probe with a form compliant with the specified parameters. *Id.* at 6:33–40. In block 203, the probe transmitter node transmits the generated probe to the probe requester node. *Id.* at 6:40–42. In block 204, the requesting node receives the probe generated according to its probe request, and in block 205, the received probe is processed. *Id.* at 6:57–59. The received probe may be used in channel analysis to determine a bitloading table, FEC,¹ and other communications parameters for OFDM² or OFDMA³ signal for future transmission from the probe transmitter node. *Id.* at 6:60–63.

E. Challenged Claims

Claims 1, 9, and 17 are independent. Claims 1 and 9 are method claims, and claim 17 is a system claim. Claims 2–8 depend from claim 1, claims 10–16 depend from claim 9, and claims 18–24 depend from claim 17.

Claim 1 is set forth below with Petitioner’s limitation identifiers indicated in brackets.

[1PRE] A method comprising:

[1A] receiving in a first node, a probe request specifying a first plurality of parameters associated with the generation and transmission of a probe, wherein the first plurality of parameters at least specify content payload of the probe and a second node;

[1B] determining a second plurality of parameters associated

¹ Forward Error Correction. Pet. 10.

² Orthogonal Frequency Division Multiplexing. Ex. 1001 at 4:39–40.

³ Orthogonal Frequency Division Multiple Access. Ex. 1001 at 2:22–24.

with generation and transmission of the probe;

[1C] generating the probe in accordance with the first plurality of parameters and the second plurality of parameters, wherein the probe has a form dictated by the first plurality of parameters; and

[1D] transmitting the probe from the first node to the second node.

Ex. 1001, 13:45–58.

Claim 9 is set forth below with Petitioner's limitation identifiers indicated in brackets.

[9PRE] A method comprising:

[9A] a first node transmitting a probe request to a second node, the probe request specifying a first plurality of probe parameters for a physical layer probe, the first plurality of probe parameters comprising a form for the probe including a modulation profile for the probe;

[9B] the first node receiving the probe from the second node, wherein the probe is generated in accordance with the first plurality of parameters and in accordance with a second plurality of parameters determined by the second node.

Ex. 1001, 14:18–28.

Claim 17 is set forth below with Petitioner's limitation identifiers indicated in brackets.

[17PRE] A system, comprising:

[17A] a first node on a communications network, the first node comprising a first processor and a first computer executable program code embodied on a first a computer readable medium, the first computer executable program code configured to transmit a probe request to a second node, on the communications network, the probe request specifying a first plurality of probe parameters for a physical layer probe, wherein the first plurality of probe parameters comprising at least a payload content for the probe and a modulation profile

for the probe; and

[17B] the second node on the communications network, the second node comprising a second processor and a second computer executable program code embodied on a second computer readable medium, the second executable program code configured to:

[17C] receive the probe request;

[17D] determine a second plurality of parameters associated with generation and transmission of the probe;

[17E] generate the probe in accordance with the first plurality of parameters and the second plurality of parameters, wherein the probe has a form dictated by the first plurality of parameters; and

[17F] transmit the probe to the first node.

Ex. 1001, 14:59–15:15.

F. Evidence of Record

Petitioner relies upon the following prior art references:⁴

⁴ Petitioner alleges that all of the prior art references were filed, issued, or published before the '690 patent's earliest alleged priority date of December 15, 2008. Pet. 3–4. Petitioner contends that all of these prior art references are prior art under 35 U.S.C. §§ 102(a), (b), and (e) (pre-Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011)). *Id.* Patent Owner does not refute these assertions at this time.

Name	Reference	Date	Exhibit No.
IEEE-802.16 ("WiMAX")	802.16 IEEE Standard for local and metropolitan area networks; Part 16: Air Interface for Fixed and Broadband Wireless Access Systems	Published Dec. 5, 2004	1013
Won	US 2008/0198826 A1	Filed Feb. 21, 2008; Published Aug. 21, 2008	1008
Waxman	US 2007/0223402 A1	Filed Mar. 21, 2006; Published Sep. 27, 2007	1007
Giesberts	US 2005/0124340 A1	Filed Sep. 24, 2004; Published Jun. 9, 2005	1009
Zuckerman	US 2007/0121573 A1	Issued May 31, 2007	1016
DOCSIS-2.0	Data-Over-Cable Service Interface Specifications DOCSIS 2.0 Radio Frequency Interface Specification	Published Jun. 15, 2006	1010

ISO8802-2	ANSI/IEEE 802.2, 1998 Edition, IEEE Standard for Information Technology–Telecommunications and information exchange between systems–Local and metropolitan area networks–Specific requirements Part 2: Logical Link Control ISO/IEC 8802-2:1998	Published Jun. 15, 2006	1011
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Petitioner also supports its challenges with a declaration from James Bertonis. Ex. 1002. Patent Owner does not rely on any declarant to support its contentions at this time.

G. The Asserted Challenges to Patentability

Petitioner asserts the following challenges to patentability:

Ground	Challenged Claims	35 U.S.C. § ⁵	Reference(s)
A	1–7, 9–10, 14–15	102	IEEE-802.16
B	3–5, 11–13, 16–24	103(a)	IEEE-802.16
C	8, 16, 24	103(a)	IEEE-802.16, Won
D	1–11, 14–19, 22–24	102	Waxman

⁵ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. §§ 102 and 103, effective March 16, 2013. Because the application from which the '690 patent issued was effectively filed before this date, the pre-AIA versions of §§ 102 and 103 apply.

Ground	Challenged Claims	35 U.S.C. § ⁵	Reference(s)
E	1–11, 14–19, 22–24	103(a)	Waxman
F	3–5, 12–13, 20–21	103(a)	Waxman, Giesberts
G	5, 10–11, 18–19	103(a)	Waxman, Zuckerman
H	5	103(a)	Waxman, Giesberts, Zuckerman
I	7–8, 15–16, 23–24	103(a)	Waxman, Won
J	1–2, 6–7, 9, 14–15	102	DOCSIS-2.0
K	1–2, 6–7, 9, 14–15	103(a)	DOCSIS-2.0, ISO8802-2
L	8, 10–11, 16–19, 22–24	103(a)	DOCSIS-2.0, Zuckerman
M	8, 10–11, 16–19, 22–24	103(a)	DOCSIS-2.0, ISO8802-2, Zuckerman

Pet. 4.

II. ANALYSIS AND DISCUSSION

In this section, we discuss Petitioner’s challenges to claims 1–24 of the ’690 patent and Patent Owner’s arguments against Petitioner’s contentions. For the reasons that follow, we determine that Petitioner has presented a reasonable likelihood that at least one claim of the ’690 patent is unpatentable.

A. Legal Standards for Anticipation and Obviousness

To establish anticipation under 35 U.S.C. § 102, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). “However, a reference can anticipate a claim even if it ‘d[oes] not expressly spell out’ all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would ‘at once envisage’ the claimed arrangement or combination.” *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1341 (Fed. Cir. 2016) (citing *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d at 1381 (quoting *In re Petering*, 49 CCPA 993, 301 F.2d 676, 681 (1962))).

A patent claim is unpatentable as obvious under 35 U.S.C. § 103(a) if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the claimed invention 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 ordinary skill in the art; and (4) where present, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner contends as follows:

A POSITA⁶ would have had a bachelor's degree in electrical engineering, computer engineering, or a similar discipline, and three to four years of experience working in signal processing and/or communication systems/networks. Additional education may substitute for experience, and significant work experience may substitute for formal education.

Pet. 6 (citing Ex. 1002 ¶¶ 115–120).

Patent Owner does not dispute Petitioner's proposed level of skill in the art, which is consistent with the prior art references asserted by Petitioner. *Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) (stating that the applied prior art may reflect an appropriate level of skill). For this stage of the proceeding, we agree with and will use Petitioner's proposed level for this Decision.

C. Claim Construction

We construe the challenged claims under the same standard used by a federal court in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). This standard is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) and its progeny, and includes “construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). “Any prior claim construction determination concerning a term of the claim in a civil action . . . that is timely made of record in the *inter partes* review proceeding will be considered.” *Id.*

Petitioner contends that it has given all terms their plain and ordinary meaning, but notes that in related proceedings, certain constructions were

⁶ Person of ordinary skill in the art.

adopted. Pet. 6 (citing Ex. 1005, 78–89; Ex. 1002 ¶¶ 121–127). Petitioner asserts that the prior art teaches the claim limitations under any reasonable construction. *Id.*

Patent Owner argues that the *Phillips* standard applies, and states that the ’690 patent’s terms were construed in the *Charter* case (2:22-cv-00125). Prelim. Rep. 9 (citing Ex. 1005, 78–89). Specifically, Patent Owner asserts that the district court in the *Charter* case construed the terms “probe” and “probe request” as follows:

Term	Construction
“probe”	“a signal transmitted to a network node that the network node can compare to a reference signal having a known form in order to determine characteristics of the channel on which the signal was transmitted”
“probe request”	“a request, sent by one network node to another network node, that specifies the form of a probe to be generated and transmitted”

Id. at 9 (citing Ex. 1005, 104–105). Patent Owner advises that the court also adopted the plain meaning for other terms of the ’690 patent. *Id.* at 10.

Patent Owner argues that Petitioner treats the term “probe” as a “nonce word” when it is “more than a nonce word.” *Id.* Patent Owner contends that the parties’ stipulation in the *Cox* case (2:23-cv-1049) that the plain and ordinary meaning applies does not undercut the constructions in the *Charter* case because the plain and ordinary meaning allegedly includes “the ability to compare to something like a ‘reference signal’ to determine

channel characteristics” which is “the fundamental purpose of a probe.” *Id.* Patent Owner then quotes various parts of the ’690 patent as supporting the district court’s construction in the *Charter* case. *Id.* at 11–12 (citing Ex. 1001, 1:48–57, 2:20–27, 6:59–7:11; Ex. 1005, 79–84).

Patent Owner further states that the ’690 patent mentions “channel assessment probes” used to “characterize the communication channel over which data is to be sent between nodes of the network.” *Id.* at 12 (citing Ex. 1001, 1:12–14, 1:41–43). Patent Owner asserts that the ’690 patent teaches that such probes can be used to diagnose problems on a network, replicate a problem, reach or discover distant or previously undetected nodes on the network, or to assist with network admission procedures. *Id.* (citing Ex. 1001, 1:54–57, 4:34–38). Patent Owner contends that the way the probes in these examples achieve these goals is “by being compared to something else known to the recipient.” *Id.* (citing Ex. 1001, 1:54–57). Patent Owner argues that the construction in the *Charter* case is the proper construction of the “plain and ordinary meaning” of these terms under the *Phillips* standard, and that “probes” of the prior art relied on by Petitioner “have none of these characteristics and provide none of these features.” *Id.* at 12–13.

Since the parties apply what they contend is the plain and ordinary meaning of the claim terms in their briefs, and have stipulated in the *Cox* case that the plain and ordinary meaning applies, and Patent Owner argues that the district court’s construction in the *Charter* case is the plain and ordinary meaning, there is no controversy concerning claim terms that we need to resolve in this Decision. Pet. 6; Prelim. Resp. 10; Ex. 1005, 104–105; Ex. 2001, 2. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368,

1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”)(quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). At this stage of the proceeding, therefore, we apply the plain and ordinary meaning to the claim terms consistent with their ordinary and customary meaning under 37 C.F.R. § 42.100(b).

We note, however, that Patent Owner seems to consider the court’s construction in the *Charter* case to require that the claimed “probe” must be of a type that can be compared with a reference signal. Prelim. Resp. 10. We question whether all of the different types of probes mentioned and claimed in the ’690 patent would require comparison with a reference signal. *See, e.g.*, Ex. 1001, 2:7–19. However, this is a matter best resolved, if necessary, on a full record at trial.

D. Ground A: Anticipation by IEEE-802.16 (“WiMAX”)

Petitioner contends that claims 1–7, 9–10, and 14–15 are anticipated by IEEE-802.16. Pet. 6–47. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 13–26. In this section, we address the disclosure of IEEE-802.16 and the parties’ contentions, and determine that Petitioner has not presented a reasonable likelihood to prevail in demonstrating that IEEE-802.16 anticipates these claims.

1. IEEE-802.16 (Ex. 1013)

IEEE-802.16 is a standard for the air interface for fixed broadband wireless access systems. Ex. 1013, cover. IEEE-802.16 discloses a ranging procedure that is used to acquire transmission parameters and maintain RF

link quality between a BS⁷ and an SS.⁸ Ex. 1013, 199, 202. The ranging procedure involves an SS transmitting a Ranging Request (RNG-REQ) to the BS which transmits a Ranging Response (RNG-RSP) to the SS. *Id.* at 49–51.

The Ranging Request includes a Management Message Type, Downlink Channel ID, and Type/Length/Value (TLV) encoded information. *Id.* at 49. When joining a network, the SS includes TLV information for “Requested Downlink Burst Profile” and “SS MAC Address” parameters in its Ranging Request. *Id.* The downlink burst profile has parameters including modulation type and forward error correction (FEC) code type. Ex. 1013, 7, 314–315, 547.

The Ranging Response includes TLV information with parameters such as timing adjust, power level adjust, and offset frequency adjust. *Id.* at 50, 665–66. Both the Ranging Request and the Ranging Response include CID⁹, ranging code index, and SS MAC address parameters. *Id.* at 33, 35, 42–43, 49–51, 168, 204–213, 576–579, 664–666.

2. *Claim 1*

Limitation 1A of claim 1 recites “receiving in a first node, a probe request specifying a first plurality of parameters associated with the generation and transmission of a probe, wherein the first plurality of parameters at least specify content payload of the probe and a second node.”

⁷ Base Station. Ex. 1013, 13.

⁸ Subscriber Station. Ex. 1013, 15.

⁹ Connection Identifier. Ex. 1013, 13.

Petitioner contends that IEEE-802.16 discloses a ranging procedure in which the BS (“first node”) communicates with the SS (“second node”). Pet. 8. Petitioner considers the claimed “first plurality of parameters” to include IEEE-802.16’s requested downlink burst profile, CID, ranging code index, and SS MAC address. *Id.* at 8–16. Petitioner asserts that IEEE-802.16 discloses that the Ranging Request specifies parameters associated with generating the Ranging Response, including CID and SS MAC address, which specify the payload of the Ranging Response and the SS. *Id.* at 16 (citing Ex. 1002 ¶ 151).

Patent Owner argues that IEEE-802.16 discloses that the CID is located in the header of MAC management messages, and thus is not a parameter which specifies the content payload of a probe as claimed. Prelim. Resp. 22–25. We agree. Patent Owner annotates IEEE-802.16’s Table 5, shown below:

Table 5—Generic MAC header fields

Name	Length (bits)	Description
CI	1	CRC Indicator 1 = CRC is included in the PDU by appending it to the PDU Payload after encryption, if any 0 = No CRC is included
CID	16	Connection identifier
EC	1	Encryption Control 0 = Payload is not encrypted 1 = Payload is encrypted
EKS	2	Encryption Key Sequence The index of the Traffic Encryption Key (TEK) and Initialization Vector used to encrypt the payload. This field is only meaningful if the EC field is set to 1.
HCS	8	Header Check Sequence An 8-bit field used to detect errors in the header. The transmitter shall calculate the HCS value for the first five bytes of the cell header, and insert the result into the HCS field (the last byte of the MAC header). It shall be the remainder of the division (Modulo 2) by the generator polynomial $g(D) = D^8 + D^2 + D + 1$ of the polynomial D^8 multiplied by the content of the header excluding the HCS field. (Example: [HT EC Type]=0x80, BR=0xAAAA, CID=0x0F0F; HCS should then be set to 0xD5).
HT	1	Header Type. Shall be set to zero.
LEN	11	Length. The length in bytes of the MAC PDU including the MAC header and the CRC if present.
Type	6	This field indicates the subheaders and special payload types present in the message payload.

Prelim. Resp. 23 (citing Ex. 1013, 37) (annotated in red by Patent Owner). IEEE-802.16's Table 5 shows that the CID is a field of a generic MAC header. Petitioner does not show sufficiently that the CID, located in the header, specifies content payload of a MAC message, as required by limitation 1A.

Petitioner alternatively relies on IEEE-802.16's ranging code index that it contends is another example of data that is in a ranging request parameter and is used for the ranging response payload. Pet. 15 (citing Ex. 1013, 49–51, 204–213, 576–579, 665–66; Ex. 1002 ¶ 149). Patent Owner asserts that the portions of IEEE-802.16 that Petitioner cites do not disclose that the ranging code index is sent as part of a ranging request message. Prelim. Resp. 25.

Although the parts of IEEE-802.16 that Petitioner cites disclose that the ranging code index is sent from the SS to the BS and is included in a ranging response (Ex. 1013, 49–51, 204–213, 576–579, 665–66), the cited parts do not disclose that the SS sends the ranging code index to the BS in a ranging request. Consequently, Petitioner has not established that IEEE-802.16 anticipates a ranging code index that is a parameter of a ranging request specifying the content payload of the ranging response corresponding to limitation 1A.

For the foregoing reasons, on this record, we determine that Petitioner has not shown a reasonable likelihood to prevail in showing that claim 1 is anticipated by IEEE 802.16.

3. *Claims 2–7*

Claims 2–7 depend from claim 1 and thus incorporate its limitations.

For the reasons explained in § II.D.2, Petitioner has not shown a

reasonable likelihood to prevail in demonstrating that these claims are anticipated by IEEE-802.16.

4. *Claim 9*

We now address Petitioner’s contentions for claim 9, and Patent Owner’s arguments against those contentions.

a. *Preamble 9PRE*

The preamble of claim 9 recites “A method comprising.”

Petitioner contends that IEEE-802.16’s various processes collectively or the ranging procedure alone discloses the claimed “method.” Pet. 34 (citing *id.* at §§ IX.A.9.b–c; Ex. 1002 ¶ 178).

Patent Owner does not dispute Petitioner’s contention concerning the preamble of claim 9.

As Petitioner shows sufficiently that the preamble is disclosed by IEEE-802.16, we do not decide whether the preamble is limiting.

b. *Limitation 9A*

Limitation 9A recites “a first node transmitting a probe request to a second node, the probe request specifying a first plurality of probe parameters for a physical layer probe, the first plurality of probe parameters comprising a form for the probe including a modulation profile for the probe.”

Petitioner contends that IEEE-802.16’s SS (“first node”) transmits a Ranging Request (“probe request”) and specifies parameters for the Ranging Response (“specifying a first plurality of probe parameters for a physical layer probe”), the parameters comprising a form for the Ranging Response including a burst profile for it (“modulation profile for the probe”). Pet. 34–35 (citing *id.* at §§ IX.A.1.b–e, § IX.A.3.b; Ex. 1002 ¶¶ 179–190).

Petitioner contends that the Ranging Response is a “physical layer probe” because it is transmitted from the PHY¹⁰ layer to maintain the RF link’s quality and ensure correct timing and preferred power for transmissions over the PHY layer. *Id.* at 35 (citing Ex. 1013, 174–182, 199; Ex. 1002 ¶¶ 191–192).

Patent Owner argues that IEEE-802.16’s RNG-RSP message is not a “probe” and that the RNG-REQ message is not a “probe request” because the SS does not compare the RNG-RSP message to a reference signal. Prelim. Resp. 16–17. Limitation 9A does not recite, however, comparing the “probe” with a reference signal (although it could be used for that purpose). Consequently, Patent Owner’s argument does not undermine Petitioner’s showing.

Patent Owner further argues that IEEE-802.16 “makes clear that its SS does not use the ranging procedure or the RNG-RSP message to determine characteristics of a channel.” Prelim. Resp. 17–19. Patent Owner argues that Petitioner is treating “probe” as if it were a nonce word, and that the plain meaning of “probe” is something that is used for channel assessment. *Id.* citing 19–20. On this record, we do not read limitation 9A to require that the “probe” is used for determination of channel characteristics. Patent Owner’s argument is therefore unavailing.

Petitioner shows sufficiently that IEEE-802.16 discloses limitation 9A.

¹⁰ Physical layer. Ex. 1013, 15.

c. Limitation 9B

Claim 9’s limitation 9B recites “the first node receiving the probe from the second node, wherein the probe is generated in accordance with the first plurality of parameters and in accordance with a second plurality of parameters determined by the second node.”

Petitioner contends that “IEEE-802.16’s SS (“first node”) receives the Ranging Response (“probe”) from the BS (“second node”), wherein the Ranging Response is generated according to the Ranging Request’s parameters and Ranging Response’s parameters as determined by the BS.” Pet. 35 (citing *id.* at §§ IX.A.1.b–e; Ex. 1002 ¶¶ 194–196).

Patent Owner’s arguments for Limitation 9A also apply to limitation 9B, and we find them unavailing for the reasons discussed.

d. Conclusion for Claim 9

On the current record, Petitioner shows a reasonable likelihood that claim 9 is anticipated by IEEE-802.16.

5. Claims 10, 14, and 15

Claims 10, 14, and 15 depend from claim 9 and include all of its limitations. Petitioner contends each of these claims are disclosed by IEEE-802.16. Pet. 35, 40–41. Patent Owner presents no arguments specific to these claims. Having considered the evidence cited, Petitioner demonstrates a reasonable likelihood that these claims are anticipated by IEEE-802.16.

E. Ground B: Obviousness over IEEE-802.16

We now address Petitioner’s contention that claims 3 and 12 would have been obvious over IEEE-802.16.

Claim 3 depends from claim 1 and thus includes all of its limitations. For the reasons discussed in § II.D.2, Petitioner has not shown a reasonable likelihood that claim 3 is obvious over IEEE-802.16.

Claim 12 depends from claim 9 and recites that the probe parameters comprise an indication of the number of times to transmit the probe; a number of symbols for the payload of the probe; a cyclic-prefix length for the payload of the probe; and a transmit power scaling factor for the payload of the probe. Petitioner contends that each of these probe parameters are disclosed by IEEE-802.16. Pet. 39. Patent Owner does not dispute Petitioner's contentions at this time.

Petitioner has shown a reasonable likelihood that claim 12 would have been obvious over IEEE-802.16 on the present record.

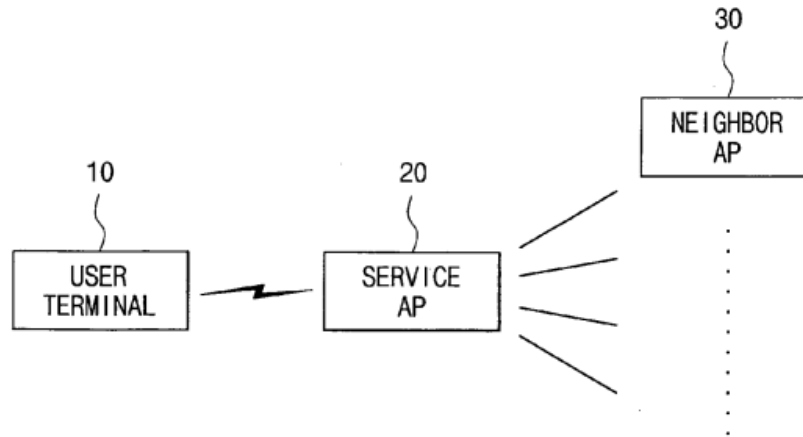
F. Ground C: Obviousness over IEEE-802.16 and Won

Petitioner contends that claims 8, 16, and 24 would have been obvious over the combination of IEEE-802.16 and Won. Pet. 29–34, 41, 47. We address the disclosure of Won, Petitioner's motivation to combine IEEE-802.16 and Won, Petitioner's contentions that claims 8, 16, and 24 would have been obvious over the combination, and Patent Owner's arguments against Petitioner's contentions. We conclude that Petitioner has not shown there is a reasonable likelihood that it will prevail in showing that claims 8 and 24 would have been obvious, but has shown a reasonable likelihood of prevailing for claim 16.

1. Won (Ex. 1008)

Won is titled "Method and System of Detecting Duplicate SSID via Self-Scanning in WLAN." Ex. 1008, code (54). Won's Figure 2 is shown below:

FIG. 2



Won's Figure 2 shows a detection system that includes user terminal 10 and service access point (AP) 20 for providing data service to the user terminal 10 and neighbor APs 30 for transmitting/receiving packets to/from the service AP 20. *Id.* ¶ 26. User terminal 10 sends a scan request to AP 20 and in response service AP 20 generates and sends a probe request packet to neighbor APs 30. *Id.* AP 20 collects probe response packets from the neighbor APs 30, detects whether a service set identifier (SSID) is the same as that used by the AP 20, and informs user terminal of the presence or absence of an AP that uses the same SSID. *Id.* ¶ 27. The presence of an AP that uses the same SSID may result in service failures. *Id.* ¶ 9.

2. Motivation to Combine

Petitioner contends that “Won’s teaching of [user] terminal 10 causing AP 20 to send a probe request would have motivated a POSITA to use a terminal for generating and uploading IEEE-802.16’s similar Ranging Request to its SS because Won’s terminal gives users/administrator more control over probe requests.” Pet. 33 (citing Ex. 1002 ¶ 322).

Petitioner further asserts that the combination of IEEE-802.16 and Won “merely combines known elements (IEEE-802.16’s system with Won’s

terminal 10) according to known methods (Won's configuring terminal 10 to cause AP 20 to transmit a probe request) to yield predictable results (a user terminal generating a Ranging Request and uploading it to SS)." *Id.* at 33–34 (citing Ex. 1002 ¶ 323).

In addition, Petitioner contends that the combination "uses a known technique (using terminal 10 to control AP to send probe request) to improve similar devices (IEEE-802.16's SS and Won's terminal 10) in the same way (enabling a network operator to initiate ranging/probing)." *Id.* at 34 (citing Ex. 1002 ¶ 324).

Petitioner asserts that "[a] POSITA would have expected success in these results given the POSITA's programming and network design skills (e.g., configuring SS's for control by separate processors/computers)." *Id.* (citing Ex. 1002 ¶ 325).

Patent Owner does not dispute Petitioner's stated motivation to combine or reasonable expectation of success at this time.

Petitioner shows sufficiently for this stage of the proceeding that a POSITA would have known to combine IEEE-802.16 and Won in the manner claimed with a reasonable expectation of success.

3. *Claims 8, 16, and 24*

Claims 8 and 24 depend from respective claims 1 and 17. Due to the deficiencies in IEEE-802.16 noted for claim 1 in § II.D.2, for which Petitioner does not rely on Won, Petitioner has not shown there is a reasonable likelihood that it will prevail in demonstrating that these claims would have been obvious.

Claim 16 recites "wherein the probe request is generated by a network operator and uploaded to the first node."

Petitioner contends that IEEE-802.16 discloses management entities and/or network management system that constitute a “network operator” because they manage the MAC layer of the SS. Pet. 29–32. Alternatively, Petitioner asserts that it would have been obvious to use Won’s user terminal (“network operator”) to generate a Ranging Request and upload it to IEEE-802.16’s SS for transmission upstream. *Id.* at 32–34.

Patent Owner does not dispute Petitioner’s contentions specific to claim 16 at this time.

We agree with Petitioner’s undisputed contention that Won discloses that its user terminal (“network operator”) generates a scan request (“probe request”) and uploads it to IEEE-802.16’s SS (“the first node”). On this record, Petitioner thus shows a reasonable likelihood that claim 16 is unpatentable as obvious over the combination of IEEE-802.16 and Won.

G. Ground D: Anticipation by Waxman

We address below Waxman’s disclosure, Petitioner’s contention that Waxman anticipates claims 1–11, 14–19, and 22–24, and Patent Owner’s disputes against Petitioner’s contentions. Pet. 48–61; Prelim. Resp. 27–37.

1. Waxman (Ex. 1007)

Waxman is titled “Device, System and Method of Extended-Range Wireless Communication.” Ex. 1007, code (54). Waxman discloses extended-range wireless communication method that receives a probe request indicating a requested transmission scheme, and transmits a data packet using the requested transmission scheme. *Id.* at code (57).

Waxman’s Figure 1 is shown below.

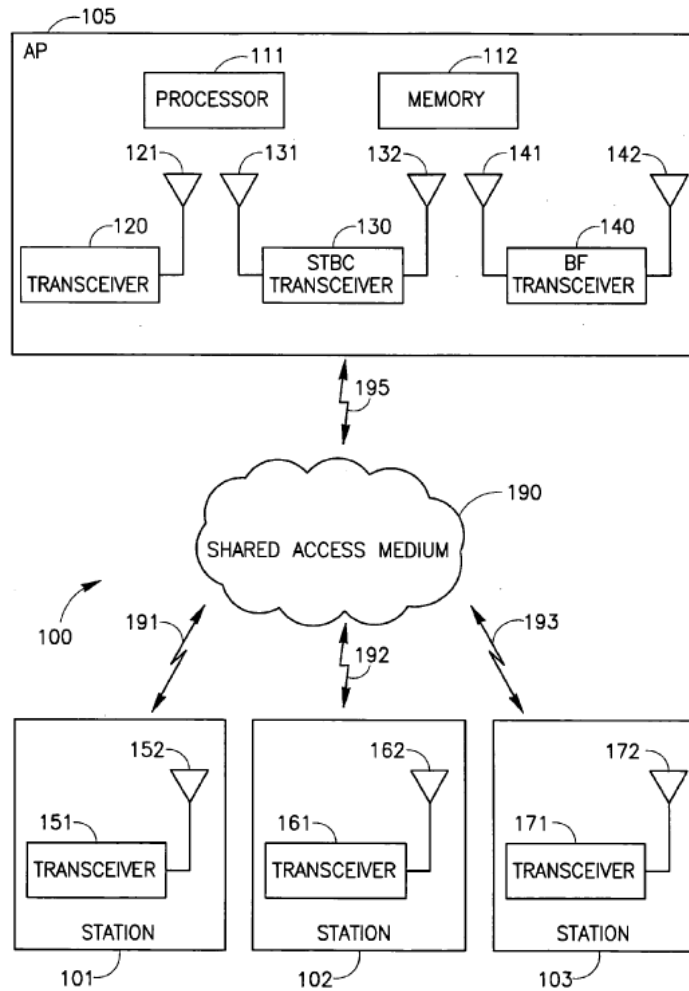


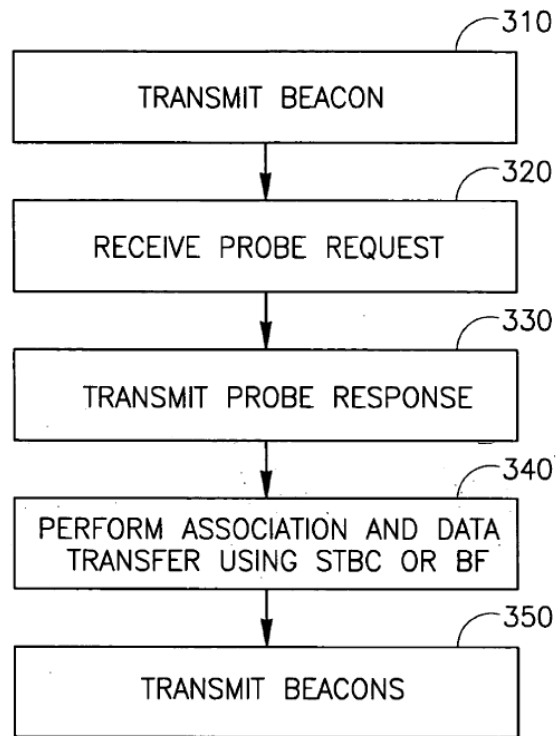
FIG. 1

Figure 1 shows a wireless communication system using extended-range wireless communication. *Id.* ¶ 4. System 100 includes wireless communication stations 101, 102, and 103, and access point (AP) 105, which communicates using shared access medium 190 through wireless links 191, 192, 193, and 195. *Id.*

Stations 101, 102, and 103 may perform active scanning by transmitting a probe request. *Id.* ¶ 30. The probe request includes a Requested Transmission Scheme (RTS) field that indicates to AP 105 a transmission scheme requested by stations 101, 102, and 103. *Id.* AP 105

may determine based on the received probe request and other information that AP 105 is required or requested to transmit data to a certain station using an extended-range transmission scheme such as Transmission Antenna Diversity Scheme (TADS) using Space-Time Block Codes (STBC) or beam forming (BF). *Id.* ¶¶ 1, 15, 30.

Waxman's Figure 3 is shown below.



Waxman's Figure 3 shows a method of extended-range wireless communication implemented by system 100 including stations 102 and 103, and AP 105. *Id.* ¶ 52. In box 310, the AP transmits a beacon. *Id.* ¶ 53. In box 320, the AP receives a probe request transmitted by a station. *Id.* ¶ 54. The probe request includes a parameter requesting the AP to communicate with the station using TADS, for example, STBC or BF communication. *Id.* In box 330, the AP transmits a probe response using the TADS scheme. *Id.* ¶ 55. In box 340, the AP performs association and data transfer between the

AP and station using TADS to transmit the preamble or header portion and data portion of a packet. *Id.* ¶ 56. In box 350, the AP transmits a non-STBC beacon signal periodically or repeatedly. *Id.* ¶ 57.

2. *Claim 1*

Limitation 1A of claim 1 recites “receiving in a first node, a probe request specifying a first plurality of parameters associated with the generation and transmission of a probe, wherein the first plurality of parameters at least specify content payload of the probe and a second node.”

Petitioner contends that the parameters in Waxman’s probe request specify payload content of the probe response. Pet. 49 (citing Ex. 1007 ¶¶ 37, 49, Fig. 2; Ex. 1002 ¶¶ 343–346).

Patent Owner argues that the only three parameters that Waxman discloses in the probe request are the “requested transmission scheme,” “requested number of transmission antennas to be used,” and “other attributes of a requested transmission scheme.” Prelim. Resp. 29–30 (citing Pet. 49; Ex. 1007 ¶¶ 30–35). Patent Owner asserts that Waxman’s parameters specify transmission schemes for use in subsequent messages between the AP and station, not the probe response, and that they do not specify payload content or recipient of the probe response. *Id.* at 30.

We agree with Patent Owner that the Waxman’s parameters relate to how messages are to be transmitted, not the content that is in them. *Id.* Consequently, Petitioner does not show sufficiently that Waxman discloses limitation 1A. Petitioner therefore does not demonstrate there is a reasonable likelihood that it will prevail in showing that Waxman anticipates claim 1.

3. *Claims 2–8*

Claims 2–8 depend from claim 1 and thus incorporate all of its limitations. For the reasons just explained for claim 1 in § II.G.2, Petitioner does not demonstrate sufficiently there is a reasonable likelihood that it will prevail in showing dependent claims 2–8 are anticipated by Waxman.

4. *Claim 9*

Petitioner provides the following comparisons between claim 9 and Waxman:

Claim 9	Analysis
[9PRE]	Identical to [1PRE]. §IX.B.1.a; Ex. 1002, ¶395.
[9A]	Nearly identical to [1A], but recites “physical layer probe” and that the first plurality of parameters “compris[e] a form for the probe
	including a modulation profile for the probe.” §IX.B.1.b; Ex. 1002, ¶¶396-408.
[9B]	Nearly identical to [1B]-[1D] and of the same scope. §§IX.B.1.b-e; Ex. 1002, ¶¶409-421.

Pet. 53–54. Petitioner contends that Waxman’s probe response is a physical layer probe to the extent that the ’690 patent’s probe is. *Id.* at 54 (citing Ex. 1001, 3:42–58, 7:64–8:58; Ex. 1007 ¶¶ 42–43, 56; Ex. 1002 ¶ 404). Petitioner further asserts that Waxman’s probe request specifies an RTS parament that instructs the AP to use a particular transmission scheme. *Id.* (citing Ex. 1007 ¶¶ 32–33). Petitioner contends that Waxman’s “RTS parameter specifies a modulation profile because STBC and BF perform

different modulations.” *Id.* (citing Ex. 1007 ¶¶ 22–28; Ex. 1002 ¶¶ 405–407). Petitioner asserts that “the RTS parameter comprises a form for the probe response including a modulation profile for it.” *Id.* (citing Ex. 1002 ¶ 406).

Patent Owner argues that Waxman fails to disclose a “physical layer probe.” Prelim. Resp. 34–37. Patent Owner argues that Waxman discloses nothing about its probe response being a “physical layer probe,” that Petitioner and Mr. Bertonis have failed to explain why Waxman’s paragraphs 42 and 43 apply to probe responses, and that these paragraphs relate to an embodiment in which there is no probe response. Prelim. Resp. 35–36. Patent Owner further contends that Waxman’s paragraph 56 and box 340 of Figure 3 refer to what happens after a “transmit probe response” and thus “cannot characterize the probe response.” *Id.* at 36–37.

We do not agree with Patent Owner’s arguments. Petitioner presents sufficient evidence that Waxman discloses “physical layer probes” that are packets comprising preambles and payloads. Ex. 1002 ¶¶ 405–407. In addition, Waxman’s paragraphs 42, 43, and 55 expressly state that the probe response may be transmitted from the AP to a station using STBC or BF modulation. Hence, Patent Owner’s arguments do not undermine Petitioner’s showing for claim 9. Petitioner establishes there is a reasonable likelihood that it will prevail in demonstrating that claim 9 is anticipated by Waxman.

5. *Claims 10–11 and 14–16*

Petitioner contends that claims 10–11 and 14–16 are anticipated by Waxman. Pet. 57–60. Patent Owner presents no arguments specific to these

claims. Petitioner shows there is a reasonable likelihood that these claims are anticipated by Waxman.

6. *Claim 17*

Limitation 17A of claim 17 recites in part that “the probe request specif[ies] a first plurality of probe parameters for a physical layer probe, wherein the first plurality of probe parameters compris[es] at least a payload content for the probe and a modulation profile for the probe.”

For the reasons explained for claim 1 in § II.G.2, Petitioner does not show a reasonable likelihood that claim 17 is anticipated by Waxman.

7. *Claims 18–19 and 22–24*

Claims 18–19 and 22–24 depend from claim 17 and thus include all of its limitations. For the reasons just explained for claim 17 in § II.G.6, Petitioner does not show a reasonable likelihood that these dependent claims are anticipated by Waxman.

H. Ground E: Obviousness over Waxman

Petitioner contends that claims 1–11, 14–19, and 22–24 would have been obvious over Waxman. Pet. 48–61. As noted for the anticipation ground D discussed in § II.G, we agree with Patent Owner that Petitioner has not shown that Waxman discloses that the probe request specifies payload content of a probe as recited in claims 1 and 17 and their dependent claims 2–8, and 18–19 and 22–24, respectively. Prelim. Resp. 29–34. For claims 9–11 and 14–16, however, Petitioner has shown a reasonable likelihood that these claims would have been obvious for the reasons explained in § II.G.

I. Ground F: Obviousness over Waxman and Giesberts

Petitioner contends that claims 3–5, 12–13, and 20–21 of the ’690 patent would have been obvious over the combination of Waxman and Giesberts. Pet. 61–64. The disclosure of Giesberts, the motivation to combine Waxman and Giesberts, and the parties’ contentions concerning these claims are addressed below.

1. Giesberts (Ex. 1009)

Giesberts is titled “Method and Apparatus for Access Point Selection Using Channel Correlation in a Wireless Communication System.” Ex. 1009, code (54). Giesberts discloses an active scanning process in which a station issues a probe request to an access point specifying the data rates that the station can support. *Id.* ¶45. The probe request may be enhanced with the MIMO¹¹ modes that the station supports. *Id.* ¶46.

2. Motivation to Combine

Petitioner contends that a POSITA would have been motivated to include Giesberts’ parameters in Waxman to efficiently leverage available communication schemes and optimize communications. Pet. 62 (citing Ex. 1009 ¶¶ 25–26, 41–47; Ex. 1002 ¶¶ 471–478).

Petitioner asserts that “Waxman-Giesberts involves using known techniques (Giesberts’ techniques for AP selection using parameters specified in probe requests) to improve similar devices (Waxman’s stations and APs similar to Giesberts’ stations and APs) in the same way (setting parameters to optimize AP-station communications).” *Id.* (citing Ex. 1002 ¶ 478). Petitioner contends that a POSITA would have expected success in

¹¹ Multiple-Input Multiple-Output. Ex. 1009 ¶ 27.

in combining Waxman and Giesberts because Waxman already teaches various parameters for its probes. *Id.* (citing Ex. 1007 ¶¶ 22–28, 32–33; Ex. 1009 ¶¶ 26, 44–47; Ex. 1002 ¶ 479).

Patent Owner does not dispute Petitioner’s contentions at this time.

Having considered the evidence cited, Petitioner shows sufficiently for this stage of the proceeding that a POSITA would have known to combine Waxman and Giesberts in the manner claimed with a reasonable expectation of success.

3. *Claim 12*

Claim 12 depends from claim 9 and recites that the probe parameters include an indication of the number of times to transmit the probe; the number of symbols for the payload of the probe; a cyclic-prefix length for the payload of the probe; a transmit power for the probe; and a transmit scaling factor for the payload of the probe.

Petitioner contends that Waxman-Giesberts discloses each of these features of claim 12. Pet. 61–64.

Patent Owner does not dispute Petitioner’s contentions specific to claim 12 at this time.

On this record, Petitioner shows there is a reasonable likelihood that claim 12 would have been obvious over the combination of Waxman and Giesberts.

4. *Claim 13*

Claim 13 depends from claim 9 and recites “wherein the probe request is configured such that the probe identifies a hidden node.”

Petitioner contends that Waxman-Giesberts teaches claim 13. Pet. 64 (citing *id.* at §§ IX.B.6, IX.C.2; Ex. 1002 ¶¶ 508, 516). Specifically,

Petitioner asserts that Waxman teaches that when a station does not receive an AP's beacon signal, it transmits a probe request instructing the AP to use an extended-range transmission scheme, thereby revealing itself as a hidden node. Pet. 57 (citing Ex. 1007 ¶¶ 29–30; Ex. 1002 ¶¶ 380–383).

Patent Owner does not dispute Petitioner's contentions at this time.

Petitioner shows there is a reasonable likelihood that claim 13 is unpatentable as obvious over the Waxman-Giesberts combination.

5. *Claims 3–5 and 20–21*

Claims 3–5 depend from claim 1, and claims 20–21 depend from claim 17, and thus incorporate their respective limitations. Because we determined in §§ II.G–H that Petitioner did not show a reasonable likelihood to prevail for claims 1 and 17, we likewise determine that a reasonable likelihood has not been demonstrated for dependent claims 3–5 and 20–21.

J. Ground G: Obviousness over Waxman and Zuckerman

Petitioner asserts that claims 5, 10–11, and 18–19 would have been obvious over the combination of Waxman and Zuckerman. Pet. 65–66.

We consider below the disclosure of Zuckerman, the motivation to combine Waxman and Zuckerman, and the parties' contentions concerning these claims.

1. *Zuckerman (Ex. 1016)*

Zuckerman is titled "Hybrid System Having Multiple Downlink Channels and a Single Uplink Channel." Ex. 1016, code (54). Zuckerman discloses a centralized controller 7 that communicates with wireless clients using OFDMA or OFDM. *Id.* at ¶¶ 6–8.

2. *Motivation to Combine*

Petitioner contends that a POSITA would have been motivated to combine Waxman and Zuckerman because Waxman discloses OFDM, and Zuckerman teaches to use OFDM and OFDMA interchangeably. Pet. 65 (citing Ex. 1016 ¶¶ 64–66; Ex. 1002 ¶ 520). Petitioner further asserts that using Zuckerman’s OFDMA modulation techniques in Waxman’s extended-range communication system allows for more efficient multi-user communications. *Id.* at 65–66 (citing Ex. 1016 ¶¶ 7–8, 94, 104; Ex. 1002 ¶ 522).

According to Petitioner, Waxman-Zuckerman merely uses a known technique (Zuckerman’s OFDMA) to improve similar devices (Waxman’s wireless network similar to Zuckerman’s wireless network) in the same way (the way OFDMA provides multiple access to Zuckerman’s network). *Id.* at 66 (citing Ex. 1002 ¶¶ 522–523).

Patent Owner does not dispute Petitioner’s contentions at this time.

Petitioner shows sufficiently for this stage of the proceeding that a POSITA would have known to combine Waxman and Zuckerman in the manner claimed with a reasonable expectation of success.

3. *Claim 10*

Claim 10 depends from claim 9 and recites “wherein the probe request is configured such that the probe emulates an OFDMA transmission.”

Petitioner contends that a POSITA would have used Zuckerman’s OFDMA modulation techniques in Waxman’s extended-range communication system. Pet. 65 (citing Ex. 1016 ¶¶ 64–66; Ex. 1002 ¶ 520).

Patent Owner does not dispute Petitioner’s contentions specific to claim 10 at this time.

Petitioner shows there is a reasonable likelihood that claim 10 would have been obvious over Waxman-Zuckerman.

4. *Claim 11*

Claim 11 depends from claim 9 and recites “a) the first node transmitting a second probe request to a third node; b) and the first node receiving a second probe from the third node, wherein the second probe is generated according to the second probe request; and wherein the first probe and second probe are transmitted simultaneously using OFDMA.”

Petitioner contends that Zuckerman teaches OFDMA for simultaneous transmissions on the same channel. Pet. 66–67 (citing Ex. 1016 ¶¶ 7–8, 94, 104, 178, 211–212, 215–216; Ex. 1002 ¶¶ 527–532).

Patent Owner does not dispute Petitioner’s contentions specific to claim 11 at this time.

Petitioner shows there is a reasonable likelihood that claim 11 would have been obvious over Waxman and Zuckerman.

5. *Claims 5 and 18–19*

Claim 5 depends from claim 1, and claims 18–19 depend from claim 17, and thus incorporate their respective limitations. Because we determined in §§ II.G–H that Petitioner did not show there is a reasonable likelihood that it will prevail in establishing claims 1 and 17 are unpatentable, we likewise determine that a reasonable likelihood of success has not been demonstrated for these dependent claims.

K. Ground H: Obviousness over Waxman, Giesberts, and Zuckerman

This ground is subsumed by ground G and, thus, for the reasons explained for that ground in § II.J, we similarly determine that a reasonable

likelihood of success has been shown for claims 10 and 11, but not claims 5 and 18–19.

L. Ground I: Obviousness over Waxman and Won

Petitioner contends that claims 7–8, 15–16, and 23–24 would have been obvious over the combination of Waxman and Won. We address the motivation to combine and the parties’ contentions below. Pet. 67–71; Prelim. Resp. 37.

1. Motivation to Combine

Petitioner contends that a POSITA would have been motivated to combine Waxman and Won such that Waxman’s station would have performed an active scanning process that employs techniques of Won’s scanning process to identify duplicate or hidden SSIDs that may cause network problems. Pet. 68 (citing Ex. 1008 ¶¶ 26–27, 35–42, Figs. 2, 4; Ex. 1002 ¶¶ 536–544).

Petitioner further contends that a POSITA would have had an expectation of success in combining Waxman and Won given a POSITA’s skills and familiarity with diagnosing potential problems in a wireless network given Waxman teaches an active scanning process for a wireless system. *Id.* at 69 (citing Ex. 1007 ¶¶ 30, 35, 52–57; Ex. 1008 ¶¶ 7, 10, 35–38; Ex. 1002 ¶¶ 545–546).

Petitioner contends that enabling the user terminal to generate a probe request gives users more control over when to perform scanning. Pet. 70 (citing Ex. 1008 ¶¶ 39–42; Ex. 1002 ¶ 550). Petitioner contends that Waxman-Won combines known elements (Waxman’s system with Won’s terminal 10) according to known methods (configuring Won’s terminal 10 to cause AP 20 to transmit a probe request) to yield predictable results (a user

terminal generating/uploading a probe request). *Id.* at 70–71 (citing Ex. 1002 ¶¶ 549–550, 538–539).

Petitioner further contends that a POSITA would have expected success in using Won’s “user terminal to generate the probe request and send/upload it to the station, particularly since Waxman already teaches an active scanning process for a wireless system.” *Id.* at 71 (citing Ex. 1002 ¶¶ 551–552).

Patent Owner does not dispute Petitioner’s contentions at this time.

Petitioner shows sufficiently on this record that a POSITA would have known to combine Waxman and Won in the manner claimed with a reasonable expectation of success.

2. *Claim 15*

Claim 15 depends from claim 9 and recites “wherein the probe request is configured to diagnose a network problem.”

Petitioner contends that Won addresses the problem of hidden SSIDs by transmitting a probe request packet with the SSID of the service AP and acquiring neighbor AP information from probe responses to reveal the presence of a hidden SSID. Pet. 67 (citing Ex. 1008 ¶¶ 12, 39; Ex. 1002 ¶¶ 536–537). Petitioner contends that Won explains that its scanning function prevents unstable network service, as well as bandwidth or service costs issues, by uncovering hidden SSIDs. *Id.* at 67–68 (citing Ex. 1008 ¶¶ 26–27, 30, 35–42; Ex. 1002 ¶¶ 536–544).

Patent Owner does not dispute Petitioner’s contentions specific to claim 15.

Petitioner shows there is a reasonable likelihood that claim 15 is obvious over Waxman and Won.

3. *Claim 16*

Claim 16 depends from claim 9 and recites “wherein the probe request is generated by a network operator and uploaded to the first node.”

Petitioner contends that both Waxman and Won disclose generating and transmitting a probe request by a station to initiate an active scanning process. Pet. 69 (citing *id.* at §§ IX.B.1.c, IX.B.8; Ex. 1007 ¶¶ 30, 35; Ex. 1008 ¶¶ 7–10). Petitioner asserts that Won provides further details as to how the scanning process is initiated. *Id.* (citing Ex. 1002 ¶¶ 547–549).

Specifically, Petitioner contends that Won’s user terminal (“network operator”) transmits a request to the service AP, which in turn transmits the probe request to neighboring APs. *Id.* at 69–70 (citing Ex. 1008 ¶¶ 6, 13–14, 19, 26, 35, Figs. 2, 4).

Patent Owner does not dispute Petitioner’s contentions specific to claim 16 at this time.

Petitioner shows on this record there is a reasonable likelihood that claim 16 is obvious over Waxman and Won.

4. *Claims 7–8 and 23–24*

Claims 7–8 depend from claim 1 and claims 23–24 depend from claim 17. We determined that Waxman does not disclose limitations 1A and 17A of respective claims 1 and 17 in §§ II.G.2, II.G.6, and II.H because it does not show a probe request with parameters specifying payload content of a probe. Petitioner does not rely on Won to disclose these deficiencies. Consequently, Petitioner does not show there is a reasonable likelihood that it will succeed in demonstrating claims 7–8 and 23–24 would have been obvious over the combination of Waxman and Won.

M. Ground J: Anticipation by DOCSIS-2.0

Petitioner contends that claims 1–2, 6–7, 9, and 14–15 are anticipated by DOCSIS-2.0. We address below the disclosure of DOCSIS-2.0 and the parties’ contentions concerning these claims.

1. DOCSIS-2.0 (Ex. 1010)

DOCSIS-2.0 is titled “Data-Over-Cable Service Interface Specifications, DOCSIS 2.0, Radio Frequency Interface Specification.” Ex. 1010, 1. DOCSIS-2.0 discloses a ranging process to acquire correct timing offset such that the cable modem’s transmissions are aligned with the correct time slot. *Id.* at 197. A cable modem (CM) transmits a Ranging Request message (INIT-RNG-REQ or RNQ-REQ) to a cable modem termination system (CMTS). *Id.* at 12, 197. The CMTS responds with a Ranging Response message (RNG-RSP) addressed to the individual CM. *Id.* at 134, 197. The Ranging Response message includes a temporary SID assigned to the cable modem unit registration is complete, as well as the RF power adjustment and offset frequency adjustment and any timing offset corrections. *Id.* at 197.

DOCSIS-2.0 also discloses a test procedure in which a CMTS transmits a Test Request (TST-REQ) to a CM. *Id.* at 184–186. Responsive to the Test Request, the CM transmits an upstream signal using the commanded modulation rate, carrier frequency, and power level. *Id.* at 185–186.

2. Claim 1

Limitation 1A of claim 1 requires “receiving in a first node, a probe request specifying a first plurality of parameters associated with the

generation and transmission of a probe, wherein the first plurality of parameters at least specify content payload of the probe and a second node.”

Petitioner contends that DOCSIS-2.0’s ranging process aligns a CM’s transmissions to the correct time slot. Pet. 72. According to Petitioner, the CM obtains upstream channel characteristics from the CMTS in an Upstream Channel Descriptor (UCD) message (“probe request”) that includes Type/Length/Value (TLV) information including modulation rate, frequency, and power spectral density parameters for generating upstream signals. *Id.* at 72–74 (citing Ex. 1010, 22, 135–136, 197). The UCD message includes a ranging required parameter that requires the CM to perform ranging on the upstream channel. *Id.* at 74 (citing Ex. 1010, 139; Ex. 1002 ¶¶ 566–567). The UCD message also includes TLV parameters for “physical-layer burst attributes” including modulation type and source address. Pet. 74–75 (citing Ex. 1010, 132–135, 140–142; Ex. 1002 ¶¶ 568–570).

Petitioner asserts that the UCD message specifies many parameters (“first plurality of parameters”) including modulation rate and type, which are used for forming a Ranging Request (“probe”) when the ranging required parameter is ‘1’ or ‘2’. *Id.* at 75 (citing Ex. 1010, 139, 146–147, 197–198). Petitioner argues that the UCD parameters are associated with generating and transmitting a Ranging Request. *Id.* (citing Ex. 1002 ¶ 571).

Additionally, Petitioner contends that the UCD message includes a Downstream Channel ID is added to the Ranging Request’s payload. *Id.* at 75–76 (citing Ex. 1010, 146–147). Petitioner contends that the Downstream Channel ID specifies content (the identifier) for the Ranging Request’s

payload (“specify content payload of the probe”). *Id.* at 76 (citing Ex. 1010, 136–137, 146–147; Ex. 1002 ¶¶ 572–573).

Petitioner further asserts that the UCD parameters include the source address which specifies the CMTS (“specify . . . a second node”) that transmits the UCD message and subsequently receives the Ranging Request. *Id.* (citing Ex. 1010, 133, 136, 146–147; Ex. 1002 ¶¶ 574–575).

Patent Owner argues that Petitioner’s ranging arguments fail to disclose a “probe” and, consequently, “a ‘probe request.’” Prelim. Resp. 40–41. Patent Owner argues that “Petitioner turns things around” by mapping the Ranging Request to the claimed “probe.” *Id.* at 41 (citing Pet. 75, 79).

We agree with Patent Owner’s argument. Petitioner reads the claimed “probe” onto DOCSIS-2.0’s Ranging Request. Pet. 72–76. Since the Ranging Request is a “request” and Petitioner has not established it to be a “probe” under the plain meaning of the term, Petitioner does not establish a reasonable likelihood of showing that claim 1 is anticipated by DOCSIS-2.0’s ranging.

Next, Petitioner relies on DOCSIS-2.0’s testing for limitation 1A. Pet. 76–79. Petitioner asserts that DOCSIS-2.0 has a test mode that receives a Test Request (“probe request”) from the CMTS in a MAC management message that is used to force a CM into a test mode. *Id.* at 76 (citing Ex. 1010, 133–134, 184). The Test Request includes a MAC Management Message Header, Mode, and TLV-Encoded Information for the Channel. *Id.* at 76–77 (citing Ex. 1010, 185). If the Mode is not 0, the CM begins the test mode using the channel parameters included in the Test Request, including the commanded modulation rate, carrier frequency, and power level in the

TLV information, to transmit an upstream signal, which Petitioner asserts is a “Test Response.” *Id.* at 77 (citing Ex. 1010, 185; Ex. 1002 ¶¶ 576–577). The Test Request’s header includes additional parameters such as the source address. *Id.* at 78 (citing Ex. 1010, 132–135; Ex. 1002 ¶ 578).

Petitioner contends that the Test Request specifies many parameters (“first plurality of parameters”) including carrier frequency, modulation rate, and power level, that are used in the Test Response. *Id.* at 79 (citing Ex. 1010, 185). Petitioner asserts that the Test Request’s parameters are associated with generating and transmitting the Test Response. *Id.* (citing Ex. 1002 ¶ 579).

Petitioner further asserts that the Test Request’s mode parameter specifies the Test Response and thus specifies a payload for the Test Response (“specify content payload of the probe”). *Id.* Petitioner argues that the Test Request’s parameters also include a source address, which specifies the CMTS (“specify . . . a second node”) that transmits the Test Request and subsequently receives the Test Response. *Id.* (citing Ex. 1010, 133; Ex. 1002 ¶¶ 580–581).

Patent Owner argues that DOCSIS-2.0’s testing does not disclose a “probe” and, consequently, a “probe request.” Prelim. Resp. 45–48. Specifically, Patent Owner asserts that a CM’s continuous test transmissions in response to a Test Request do not constitute a “probe” and that Petitioner has not shown that the TST-REQ message is a “probe request” under any construction. *Id.* at 48.

We determine that Petitioner has not explained sufficiently how the mode parameter specifies the content payload of the probe. As Petitioner describes it, the mode parameter merely determines whether the CM is in

test mode. Pet. 77 (citing Ex. 1010, 185; Ex. 1002 ¶¶ 576–577). The mode parameter thus does not specify the content in the “Test Response” message.

As a result, Petitioner has not shown there is a reasonable likelihood that it will prevail in showing that claim 1 is anticipated by DOCSIS-2.0.

3. *Claims 2 and 6–7*

Claims 2 and 6–7 depend from claim 1 and include all of its limitations. As Petitioner has not shown a reasonable likelihood of success for claim 1 for the reasons just explained in § II.J.2, Petitioner likewise does not show a reasonable likelihood of success for claims 2 and 6–7.

4. *Claim 9*

We now address Petitioner’s contentions for claim 9, and Patent Owner’s arguments against those contentions.

a. *Preamble 9PRE*

The preamble of claim 9 recites “A method comprising.”

Petitioner contends that DOCSIS-2.0’s ranging procedure or test procedure discloses the claimed “method.” Pet. 83 (citing *id.* at §§ IX.F.5.b–c).

Patent Owner does not dispute Petitioner’s contention.

Petitioner shows a reasonable likelihood that DOCSIS-2.0 discloses the claimed “method” so we do not decide whether the preamble is limiting.

b. *Limitation 9A*

Limitation 9A recites “a first node transmitting a probe request to a second node, the probe request specifying a first plurality of probe parameters for a physical layer probe, the first plurality of probe parameters comprising a form for the probe including a modulation profile for the probe.”

Petitioner relies on DOCSIS-2.0's Ranging Request as disclosing the claimed "probe." Pet. 83–84. For the reasons stated for claim 1, we agree with Patent Owner that DOCSIS-2.0's Ranging Request does not disclose the claimed "probe." Prelim. Resp. 40–41. Because Petitioner's mapping to DOCSIS-2.0's ranging procedure fails for this reason, we proceed to consider only Petitioner's contentions concerning DOCSIS-2.0's testing procedure.

For DOCSIS-2.0's testing, Petitioner contends that the CMTS transmits a Test Request ("probe request") to the CM and specifies parameters for the upstream signal which Petitioner characterizes as a "Test Response" ("first plurality of probe parameters for a physical layer probe"). Pet. 84. According to Petitioner, the parameters specify the form for the Test Response including a modulation rate and type ("form for the probe including a modulation profile for the probe"). *Id.* (citing §§ IX.F.1.b–e; Ex. 1002 ¶¶ 624–628). Petitioner contends that the Test Response is a "physical layer probe" because it is configured using physical-layer parameters (e.g., modulation rate). *Id.* (citing Ex. 1010, 24, 140–142). Petitioner further asserts that it is also a "physical layer probe" because it is used to test the timing of communications on the physical layer. *Id.* (citing Ex. 1010, 185–186; Ex. 1002 ¶¶ 629–630).

Patent Owner argues that DOCSIS-2.0's testing procedure does not determine the characteristics of a channel by comparing transmissions to a reference, and that "probe" is not merely a nonce word but requires construction as something used for channel assessment under its plain and ordinary meaning. Prelim. Resp. 45–48.

On this record, we do not read limitation 9A to require that the “probe” is compared with a reference or used for determination of channel characteristics. Patent Owner’s argument is unavailing.

Petitioner shows sufficiently for this stage of the proceeding that limitation 9A is disclosed by DOCSIS-2.0’s testing procedure, but not its ranging procedure.

c. Limitation 9B

Claim 9’s limitation 9B recites “the first node receiving the probe from the second node, wherein the probe is generated in accordance with the first plurality of parameters and in accordance with a second plurality of parameters determined by the second node.”

Petitioner contends that DOCSIS-2.0 discloses that the CMTS receives the Test Response (“probe”) from the CM, and that the Test Response is generated in accordance with the Test Request’s parameters and Test Response’s parameters as determined by the CM. Pet. 84–85 (citing *id.* at §§ IX.F.1.b–e; Ex. 1002 ¶¶ 635–639).

Other than the arguments already addressed for limitation 9A, Patent Owner does not present any additional arguments for limitation 9B.

Petitioner shows sufficiently on this record that limitation 9B is disclosed by the DOCSIS-2.0 testing procedure.

d. Conclusion for Claim 9

On the current record, Petitioner shows there is a reasonable likelihood that claim 9 is anticipated by DOCSIS-2.0.

5. Claims 14–15

Claims 14–15 depend from claim 9 and include all of its limitations. Petitioner contends each of these claims are disclosed by DOCSIS-2.0.

Pet. 85. Patent Owner presents no arguments specific to these claims.
Petitioner shows a reasonable likelihood that these claims are anticipated by DOCSIS-2.0.

N. Ground K: Obviousness over DOCSIS-2.0 and ISO8802-2

Petitioner contends that claims 1–2, 6–7, 9, and 14–15 would have been obvious over the combination of DOCSIS-2.0 and ISO8802-2.

Pet. 71–85. We address below the disclosure of ISO8802-2, the motivation to combine DOCSIS-2.0 and ISO8802-2, and the parties’ contentions concerning these claims.

1. ISO8802-2 (Ex. 1011)

ISO8802-2 is an “IEEE Standard for Information Technology” addressing “Logical Link Control.” Ex. 1011, cover, 6. ISO8802-2’s Figure 4 is shown below:

DSAP address	SSAP address	Control	Information
8 bits	8 bits	8 or 16 bits	M*8 bits

DSAP address	=	Destination service access point address field
SSAP address	=	Source service access point address field
Control	=	Control field [16 bits for formats that include sequence numbering, and 8 bits for formats that do not (see 5.2)]
Information	=	Information field
*	=	Multiplication
M	=	An integer value equal to or greater than 0. (Upper bound of M is a function of the medium access control methodology used.)

Figure 4—LLC PDU format

Id. at 39. Figure 4 defines an LLC¹² PDU¹³ format. Ex. 1011, 39. The format includes fields for destination service access point address, source service access point address, control, and information. *Id.*

2. *Motivation to Combine*

Petitioner asserts that DOCSIS-2.0 expressly teaches to combine it with ISO8802-2. Pet. 79 (citing Ex. 1010, 28). Patent Owner does not assert any arguments against Petitioner's motivation to combine. We determine that Petitioner shows sufficiently that a POSITA would have combined DOCSIS-2.0 and ISO8802-2 in view of DOCSIS-2.0's teaching to use ISO8802-2 test procedure. Ex. 1010, 28.

3. *Claim 1*

Although Petitioner asserts that ISO8802-2 discloses that the Test Response includes the Test Request's information field, limitation 1A requires parameters, which Petitioner maps to ISO8802-2's carrier frequency, modulation rate, and power level, to specify payload content, which Petitioner maps to ISO8802-2's information field. Pet. 79 (citing Ex. 1011, 39, 53; Ex. 1002 ¶ 580). Petitioner thus does not show that ISO8802-2 discloses parameters that specify payload content as required in limitation 1A.

Hence, the addition of ISO8802-2 does not change our view that the Test Request does not specify payload content for the Test Response as Petitioner characterizes it. Petitioner does not show a reasonable likelihood

¹² Logical Link Control. Ex. 1011, 6.

¹³ Protocol Data Unit. Ex. 1011, 6.

that claim 1 would have been obvious over the combination of DOCSIS-2.0 and ISO8802-2.

4. *Claims 2 and 6–7*

Claims 2 and 6–7 depend from claim 1 and include all of the limitations of that claim. For the reasons discussed for claim 1, Petitioner does not show there is a reasonable likelihood that it will prevail in demonstrating that claim 1 would have been obvious over the combination of DOCSIS-2.0 and ISO8802-2.

5. *Claim 9*

Since the addition of ISO8802-2 does not negate our determination based on DOCSIS-2.0 alone in § II.M.4, Petitioner has shown there is a reasonable likelihood that claim 9 would have been obvious over the combination of DOCSIS-2.0 and ISO8802-2.

6. *Claims 14 and 15*

Petitioner demonstrates a reasonable likelihood that claims 14 and 15 would have been obvious over the combination of DOCSIS-2.0 and ISO8802-2 for the reasons stated in § II.M.5.

O. Ground L: Obviousness over DOCSIS-2.0 and Zuckerman

Petitioner contends that claims 8, 10–11, 16–19, and 22–24 would have been obvious over the combination of DOCSIS-2.0 and Zuckerman. Pet. 85–99. We address below the motivation to combine and the parties' contentions concerning these claims.

1. *Motivation to Combine*

Petitioner contends that a POSITA would have been motivated to offload UCD message generation to a network operator to reduce processing burden on the CMTS, and to enable remote control of the CMTS. Pet. 86–87 (citing Ex. 1002 ¶¶ 651–657). Petitioner further asserts that

Zuckerman discloses a centralized synchronizing communication controller 7 that implements the MAC layer and is separate from converters 20, 21 that transmit MAC messages. *Id.* at 87–88 (citing Ex. 1016 ¶¶ 41, 44–45, 69–70, Fig. 1A; Ex. 1002 ¶¶ 655–657). Petitioner contends that, based on Zuckerman, it would have been obvious to separate the network operator that implements the MAC function of generating the UCD message and uploading it to the CMTS to provide a more centralized location separate from the physical layer components. *Id.* at 88.

Petitioner further contends that implementing the CMTS to use a separate system to generate and upload UCD messages is merely the combination of known elements (DOCSIS-2.0's CMTS and known systems for operating it) according to known methods (DOCSIS-2.0's interfaces for connecting with separate systems) to yield predictable results (system that generates the UCD message and uploads it to the CMTS). *Id.* (citing Ex. 1002 ¶ 658). Petitioner further asserts that the combination is achieved by applying known techniques (Zuckerman's creating of a central MAC) to a known device ready for improvement (the CMTS that would benefit from offloading generation of UCD messages). *Id.* (citing Ex. 1002 ¶ 659). Petitioner contends that a POSITA's programming and network design skills would have led to the expected success in achieving this implementation. *Id.* (citing Ex. 1002 ¶¶ 660–661).

Patent Owner does not dispute Petitioner's contentions concerning motivation at this time.

On this record, Petitioner shows a reasonable likelihood that a POSITA would have known to combine DOCSIS-2.0 and Zuckerman in the manner claimed with a reasonable expectation of success.

2. *Claim 10*

Claim 10 depends from claim 9 and recites “wherein the probe request is configured such that the probe emulates an OFDMA transmission.”

Petitioner contends that a POSITA would have used Zuckerman’s OFDMA modulation techniques with DOCSIS-2.0’s testing procedure. Pet. 89–90 (citing Ex. 1016 ¶¶ 6–8, 15, 41, 48–54, 58–65, 71–72, 76, 110, 134, 141; Ex. 1002 ¶ 671).

Patent Owner does not dispute Petitioner’s contentions specific to claim 10 at this time.

Petitioner, on this record, shows there is a reasonable likelihood that claim 10 would have been obvious over DOCSIS-2.0 and Zuckerman.

3. *Claim 11*

Claim 11 depends from claim 9 and further recites “a) the first node transmitting a second probe request to a third node; b) and the first node receiving a second probe from the third node, wherein the second probe is generated according to the second probe request; and wherein the first probe and second probe are transmitted simultaneously using OFDMA.”

Petitioner contends that DOCSIS-2.0 discloses transmitting a second Test Request (“second probe request”) to CM#2 (“third node”). Pet. 91 (citing *id.* at § IX.B.5.b; Ex. 1010, 184–185; Ex. 1002 ¶¶ 675–676).

Petitioner further contends DOCSIS-2.0 discloses that the CMTS receives a second “Test Response” (“second probe”) from CM#2 that is generated according to the second Test Request. *Id.* (citing § IX.F.5.c; Ex. 1002 ¶¶ 679–680).

Petitioner asserts that “Test Responses” would have been transmitted simultaneously using OFDMA “because the messages that trigger them

would have been sent simultaneously or near-simultaneously so that the . . . test procedure would be performed on multiple channels simultaneously.” Pet. 92 (citing *id.* at § IX.G.2; Ex. 1016 ¶¶ 76, 80, 174, 176, 198, 210–212; Ex. 1002 ¶¶ 682–687).

Patent Owner does not dispute Petitioner’s contentions specific to claim 11 at this time.

Petitioner establishes there is a reasonable likelihood that claim 11 would have been obvious over DOCSIS-2.0 and Zuckerman on this record.

4. *Claim 16*

Claim 16 depends from claims 9 and 15 and recites “wherein the probe request is generated by a network operator and uploaded to the first node.”

Petitioner contends that claim 16 would have been obvious over DOCSIS-2.0 and Zuckerman for the same reasons as claim 8 except the CMTS is the “first node.” Pet. 92 (citing *id.* at § IX.G.1; Ex. 1002 ¶ 688). Petitioner has not shown, however, that the combination discloses claim 15 from which claim 16 depends. Consequently, Petitioner does not show there is a reasonable likelihood that claim 16 would have been obvious over DOCSIS-2.0 and Zuckerman.

5. *Claim 17*

For similar reasons discussed for claim 1 in § II.M.2, Petitioner does not show a reasonable likelihood that DOCSIS-2.0 discloses claim 17. The addition of Zuckerman does not change our view. Petitioner does not show a reasonable likelihood that claim 17 would have been obvious over DOCSIS-2.0 and Zuckerman.

6. *Claims 8, 18–19, and 22–24*

Claim 8 depends from claim 1 and claims 18–19 and 22–24 depend from claim 17. Because DOCSIS-2.0 does not disclose claims 1 and 17 for the reasons explained for claim 1 in § II.M.2, and Zuckerman does not cover the noted deficiencies, we determine that claims 8, 18–19, and 22–24 have not been shown to be obvious over DOCSIS-2.0 and Zuckerman.

P. Ground M: Obviousness over DOCSIS-2.0, ISO8802-2, and Zuckerman

Petitioner contends that claims 8, 10–11, 16–19, and 22–24 would have been obvious over the combination of DOCSIS-2.0-ISO8802-2, and Zuckerman. Pet. 85–99.

Because this ground is subsumed by ground L, and the addition of ISO8802-2 does not change our analysis, we determine for this ground that Petitioner has presented a reasonable likelihood that claims 10–11 would have been obvious over DOCSIS-2.0/ISO8802-2/Zuckerman, but has not shown the obviousness contention for claims 8, 16, 18–19, and 22–24 has a reasonable likelihood of success.

III. CONCLUSION

In light of the foregoing, based on the current record and at this stage of the proceeding, we are persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on its assertions that at least one of claims 1–24 of the '690 patent would have been obvious under 35 U.S.C. § 103 based on the grounds set forth in the Petition. Accordingly, we institute trial for all challenged claims on all grounds asserted by Petitioner. 37 C.F.R. § 42.108(a) (“When instituting . . . review, the Board will

authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. At this stage of the proceeding, we have not made a final determination with respect to the patentability of the challenged claims or to the construction of any claim term.

IV. ORDER

For the foregoing reasons, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–24 of the ’690 patent is hereby instituted on all challenges to patentability set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial and that the trial will commence on the entry date of this Decision.

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Patent 8,284,690 B2

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