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Paper No. 28
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RPX CORPORATION,
Petitioner,

v.

CHANBOND LLC,
Patent Owner.

Case IPR2016-00234
Patent 7,941,822 B2

Before JONI Y. CHANG, JENNIFER S. BISK, and JACQUELINE T. HARLOW, *Administrative Patent Judges.*

HARLOW, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Petitioner, RPX Corporation ("RPX"), filed a Petition on November 20, 2015, requesting an *inter partes* review of claims 1–31 of U.S. Patent No. 7,941,822 B2 (Ex. 1001, "the '822 patent"). Paper 1 ("Pet."). Patent Owner, ChanBond LLC ("ChanBond"), filed a Preliminary Response on March 10, 2016. Paper 6 ("Prelim. Resp."). We determined that the information presented in the Petition demonstrated that there was a reasonable likelihood that RPX would prevail with respect to at least one challenged claim. Pursuant to 35 U.S.C. § 314, we instituted trial on June 6, 2016, as to claims 1–31 of the '822 patent. Paper 7 ("Dec.").

After institution, ChanBond filed a Patent Owner's Response. Paper 10 ("PO Resp."). RPX filed a Reply to the Patent Owner's Response to Petition. Paper 12 ("Pet. Reply"). Oral hearing was held January 30, 2017, and the transcript of the oral hearing has been entered into the record as Paper 23.

This final written decision is entered pursuant to 35 U.S.C. § 318(a). We have jurisdiction under 35 U.S.C. § 6.

We hold that RPX has not demonstrated by a preponderance of the evidence that claims 1–31 of the '822 patent are unpatentable under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a).

A. Related Matters

The '822 patent is asserted in several cases in the District of Delaware. Pet. 2–3; Paper 4, 2–3; Paper 15, 2–3. In addition, we have

instituted *inter partes* review of claims 1, 2, 5, 6, 19, 20, 23, and 29 of the '822 patent in IPR2016-01744.

B. The '822 Patent

The '822 patent is entitled "Intelligent Device System and Method for Distribution of Digital Signals on a Wideband Signal Distribution System." Ex. 1001, [54]. The '822 patent is directed to a "system and method for distribution of digital signals onto, and off of, a wideband signal distribution system." Ex. 1001, 1:24–28. Specifically, the '822 patent describes an "intelligent device" that receives an RF signal that has been modulated onto two or more RF channels, and combines that information back into a single stream. *Id*. at 10:55–11:31.

Figure 5 is reproduced below:

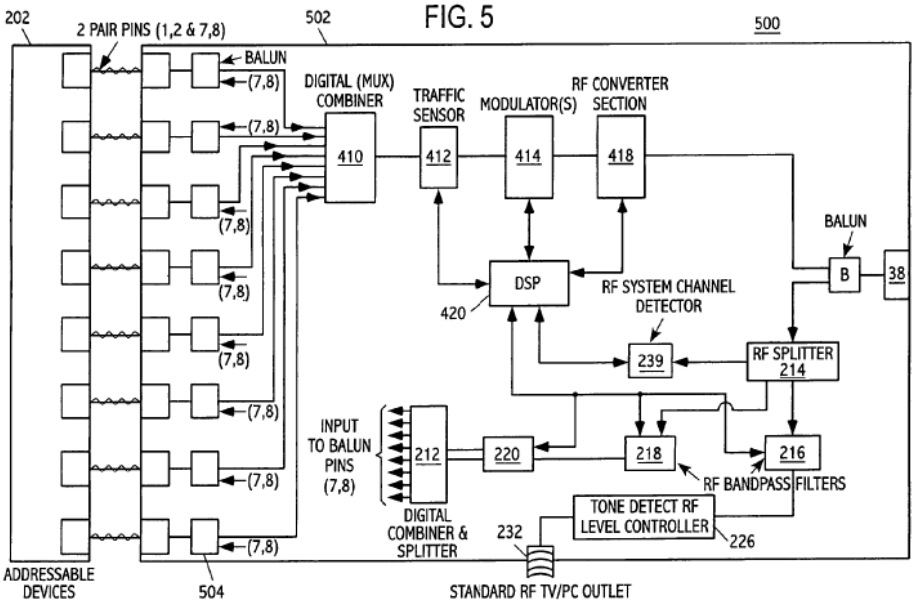

Figure 5 of the '822 patent illustrates the signal path from intelligent device 502 to addressable devices 202. *Id*. at 10:55–11:31.

As depicted in Figure 5, RF splitter 214 splits the signal entering intelligent device 502, and sends information regarding the RF channels in use to RF system channel detector 239. *Id*. at 10:55–60. In addition, the modulated RF signal is differentiated into an IP portion and a non-IP portion, according to the information frequency on the incoming carrier. *Id*. at 10:60–64. The non-IP portion of the signal passes through bandpass filter 216 and is fed to a standard RF television or computer outlet. *Id*. at 10:66–11:2. The IP portion of the signal passes through bandpass filter 218, and is demodulated by demodulator 220, which strips the RF carrier signal from the digital baseband signal. *Id*. at 11:15–20. Subsequently, the digital signals are combined by digital combiner 212, to achieve a parallel to serial conversion. *Id*. at 11:20–25. This signal is routed to addressable device 202. *Id*. at 11:25–31.

C. Illustrative Claim

Of the challenged claims, claims 1 and 19 are independent. Claim 1, reproduced below, is illustrative of the claimed subject matter.

> 1. An intelligent device for receiving and processing RF signals, comprising:
>
> an input configured to receive a modulated RF signal containing multiple channels, and to receive channel in use information which identifies each channel in the modulated RF signal that includes information addressed to at least one addressable device;
>
> a demodulator unit configured to demodulate at least two channels contained in the modulated RF signal when the channel in use information identifies the at least two channels as

> containing information addressed to the at least one addressable device; and
>
> a combiner configured to combine the at least two channels demodulated by the demodulator unit into a digital stream when the channel in use information identifies the at least two channels as containing information addressed to the at least one addressable device, and to output the digital stream to the at least one addressable device.

Ex. 1001, 12:22–40. Claim 19 recites a similar device, but requires "a detector configured to detect each channel contained in the received modulated RF signal that includes information addressed to at least one addressable device, and to generate channel in use information identifying each channel that includes information addressed to the at least one addressable device" (*id*. at 15:5–10), in lieu of "an input configured to . . . receive channel in use information which identifies each channel in the modulated RF signal that includes information addressed to at least one addressable device" (*id*. at 12:24–28), as recited by claim 1.

D. Prior Art Relied Upon

In its Petition, RPX relies upon the following prior art references (Pet. 17–18, 40–41, 54–55, 56–57):

Ollikainen	US 6,377,981 B1	Apr. 23, 2002	(Ex. 1012)
Otten	US 6,522,865 B1	Feb. 18, 2003	(Ex. 1011)
Grindahl	US 7,633,893 B2	Dec. 15, 2009	(Ex. 1010)
Rakib	US 2004/0172658 A1	Sept. 2, 2004	(Ex. 1007)
Haugli	WO 99/49592	Sept. 30, 1999	(Ex. 1009)

Data-Over-Cable Service Interface Specifications, Radio Frequency Interface Specification, SP-RFI-I04-980724, Interim Specification (1998) ("DOCSIS 1.1.4") (Ex. 1005).

E. Instituted Grounds of Unpatentability

We instituted the instant trial based on the following grounds of unpatentability:

Claims	Basis	Reference(s)
1–31	§ 103(a)	Rakib and DOCSIS 1.1.4
1–9, 16, 19–25, 29, and 31	§ 103(a)	Haugli and Grindahl
10, 11, and 26	§ 103(a)	Haugli, Grindahl, and Otten
12–14, 17, 18, 27, and 28	§ 103(a)	Haugli, Grindahl, and Ollikainen

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable interpretation in light of the Specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

1. "digital stream" and "digital information stream"

Claims 1 and 19, the sole independent claims of the '822 patent, each recite:

> a combiner configured to combine the at least two channels demodulated by the demodulator unit into a *digital stream* when the channel in use information identifies the at least two channels as containing information addressed to the at least one addressable device, and to output the *digital stream* to the at least one addressable device.

Ex. 1001, 12:34–40; 15:16–23 (emphasis added). In addition, dependent claims 8, 16, 17, 25, and 31, further recite "the digital stream" or "a respective digital stream," and dependent claims 13, 14, 18, 27, and 28 recite a "digital information stream." *Id.* at 13:42–43, 14:11, 14:19, 14:48, 14:56, 14:63, 16:16, 16:47, 16:54, 18:11.

ChanBond contends that the "digital stream" of claims 1 and 19 must be "a common, *i.e.*, the same, digital stream that is output to the at least one addressable device." PO Resp. 27. ChanBond's expert, Scott M. Nettles, Ph.D., elaborates on ChanBond's conception of a "digital stream," testifying that a "stream" is comprised of data packets that are part of the same communication, and that are differentiated from other packets in some way beyond that they share the same destination address. Ex. 2006 ¶ 18.

> Importantly, the packets of a stream are differentiated in some fashion (other than mere destination address) from other packets that may be transmitted over a common communication path so that the packets of the stream are recognized as being part of the same overall communication. This requires more than having the packets addressed to the same destination. Further information is needed so that the receiver recognizes the packets

> as being part of a common communication and, often, have a relationship (*e.g.*, temporal or otherwise) to one another.

Id. This notion that the packets of a stream must be differentiated from other packets that may be sent over the same communication path, beyond by having a different destination address, is central to ChanBond's contention that the challenged claims are nonobvious in view of Rakib and DOCSIS 1.1.4. *See* PO Resp. 27–37.

RPX agrees with ChanBond that, as it is used in the '822 patent, the claim term "digital stream" means "a common (i.e., the same) digital stream." Pet. Reply 2 (quoting PO Resp. 27). RPX disagrees, however, with Dr. Nettles' contention that the data packets of a digital stream "should somehow be related based on their content or have any other 'relationship (e.g., temporal or otherwise)' to one another." *Id*. at 4 (quoting Ex. 2006 ¶ 18). In this regard, RPX asserts that "[t]he '822 patent is agnostic as to the content of the packets that flow through its system." *Id*. at 3–4.

We agree with the parties that the "digital stream" and "digital information stream" of the '822 patent refer, respectively, to "a common digital stream" and "a common digital information stream." This understanding comports with the plain language of the claims. For example, independent claims 1 and 19 each recite "a combiner configured to combine the at least two channels demodulated by the demodulator unit into a digital stream when the channel in use information identifies the at least two channels as containing information addressed to the at least one addressable device[.]" Ex. 1001, 12:34–40, 15:17–23. Claims 13 and 27 likewise recite that "the combiner is configured to output the digital information

demodulated by the wireless demodulator unit as an outgoing digital information stream[.]" *Id*. at 14:9–12, 16:45–48. Thus, the claims contemplate combining channels, or information, into a common stream.

The specification of the '822 patent lends further support to this understanding of "digital stream" and "digital information stream." For example, the specification teaches a preferred embodiment in which eight ten megabits per second signals are combined by a digital combiner such that "the signal exiting the digital combiner 410 would exit at eighty megabits per second." *Id*. at 9:41–44. The resultant 80 megabits per second signal is subsequently described as an "80 megabits per second digital stream[.]" *Id*. at 10:12–13.

The broadest reasonable interpretation of the claim terms "digital stream" and "digital information stream" includes no requirement, however, that the packets of the recited stream must be differentiated from other packets by more than destination address. As explained above, independent claims 1 and 19 of the '822 patent describe the "digital stream" as the product of the combiner combining demodulated channels identified as having information addressed to an addressable device. Ex. 1001, 12:29–40, 15:11–23. Claims 1 and 19 additionally state that the digital stream is output to the addressable device. *Id*. Neither claim 1 nor claim 19 recites further detail concerning the characteristics of the packets of the "digital stream." *Id*.

Moreover, the dependent claims of the '822 patent suggest that a "stream" may include unrelated content from different sources that is

addressed to different destinations. For example, claims 14 and 28, which depend indirectly from claims 1 and 19, respectively, recite that the "combiner is configured to combine the digital information demodulated by the wireless demodulator unit with digital information received from at least one addressable device, and output the combined digital information as the outgoing digital information stream to the wideband distribution unit." Ex. 1001, 14:14–19, 16:49–54. Thus, by their plain language, these claims contemplate that the digital information to be combined may be received from more than one addressable device, and remain agnostic regarding the relationship between the packets in a stream, or the ultimate destination of those packets. *See* Ex. 1020, 96:11–97:8 (testimony by Dr. Nettles that claims 13 and 14 of the '822 patent refer to a "digital information stream" that may include packets from different devices, relating to different content, going to different destinations).

The specification of the '822 patent is likewise consistent with an understanding of the claim terms "digital stream" and "digital information stream" as being free from any requirement that the packets of the recited stream be differentiated from other packets by more than destination address. Aside from the claims themselves, the specification of the '822 patent uses the term "digital stream" in only a single instance, to describe signal throughput (the specification nowhere uses the term "digital information stream"). Ex. 1001, 10:10–14. The specification explains that "the channel width can, for example, be increased from 6 MHz per channel to 12 MHz per channel in order to accommodate, for example, the

80 megabits per second digital stream, if adjacent channel space is available or unused." *Id*. Notably absent from the discussion of the "digital stream" in the specification of the '822 patent is any mention of a requirement that the packets of such a stream must be related to each other, or must otherwise be differentiated from other packets that may be transmitted over the same communications path based on something beyond destination address. *Id*. Rather, as Dr. Nettles acknowledges, the 80 megabit per second digital stream described in the specification includes data "coming from different devices" (Ex. 1020, 79:4–6), that is "not all related to the same content" (*id*. at 79:16–19).

Accordingly, while we agree with the parties that the broadest reasonable interpretations of the claim terms "digital stream" and "digital information stream" refer, respectively, to "a common digital stream" and "a common digital information stream," we decline to read into those claim terms any requirement that the relevant "stream" be comprised of data packets that are part of the same communication, and that are differentiated from other packets in some way beyond that they share the same destination address. Nevertheless, for completeness, we observe that our conclusions regarding the obviousness of the challenged claims under each instituted ground of unpatentability, set forth below, apply with equal force regardless of whether the terms "digital stream" and "digital information stream" are deemed to require that the packets in the relevant stream be comprised of data packets that are part of the same communication, and differentiated from other packets in some way beyond by destination address.

2. Other Claim Terms

In the Decision on Institution, we concluded that the claim terms "when," "detector," "additive signal," and "channel identification information," for which RPX proffered constructions in its Petition (Pet. 7–9), did not require express construction, and should be given their plain and ordinary meaning. Dec. 6. Neither RPX nor ChanBond challenges our determination that the plain and ordinary meaning of each of these terms applies in the instant proceedings. Pet. Reply 1 ("RPX agrees with the Board that affording those terms their ordinary and customary meaning is appropriate for the purposes of these proceedings."); PO Resp. 21 ("[T]he term 'when' requires only its 'ordinary and customary meaning.' . . . [T]he term 'detector' is used in accordance with its regular and customary meaning[.]"), 25 ("Insofar as this construction is consistent with the 'ordinary and customary meaning' of this term, Patent Owner agrees, however, it should not be limited unnecessarily by the cited examples from the specification referenced by Petitioner."), 26 ("[T]he claim is plain in meaning as written, no further construction is necessary.").

Accordingly, we conclude that none of the claim terms "when," "detector," "additive signal," and "channel identification information," requires express construction, and afford each term its plain and ordinary meaning.

B. Principles of Law

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

In assessing obviousness,

> [o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit.

KSR, 550 U.S. at 418. "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

The level of ordinary skill in the art may be reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001);

In re GPAC Inc., 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

C. Obviousness Grounds of Unpatentability Based on Rakib and DOCSIS 1.1.4

RPX asserts that claims 1–31 are unpatentable under § 103(a) as obvious in view of Rakib and DOCSIS 1.1.4. Pet. 17–40. Claims 2–18 depend, directly or indirectly, from claim 1, and claims 20–31 depend, directly or indirectly, from claim 19. In support of its assertion, RPX relies upon the Declaration of Frank Koperda ("Koperda Declaration," Ex. 1002), and the Declaration of Christie Poland ("Poland Declaration," Ex. 1019).

1. Rakib

Rakib describes a gateway for coupling a local area network connected to peripheral devices located at a customer's premises to "one or more external networks that deliver analog signals bearing analog video . . . , or modulated with digital video-on-demand data, or IP packets bearing IP telephony data or data from the internet." Ex. 1007, Abstract.

Figure 4A of Rakib is reproduced below:

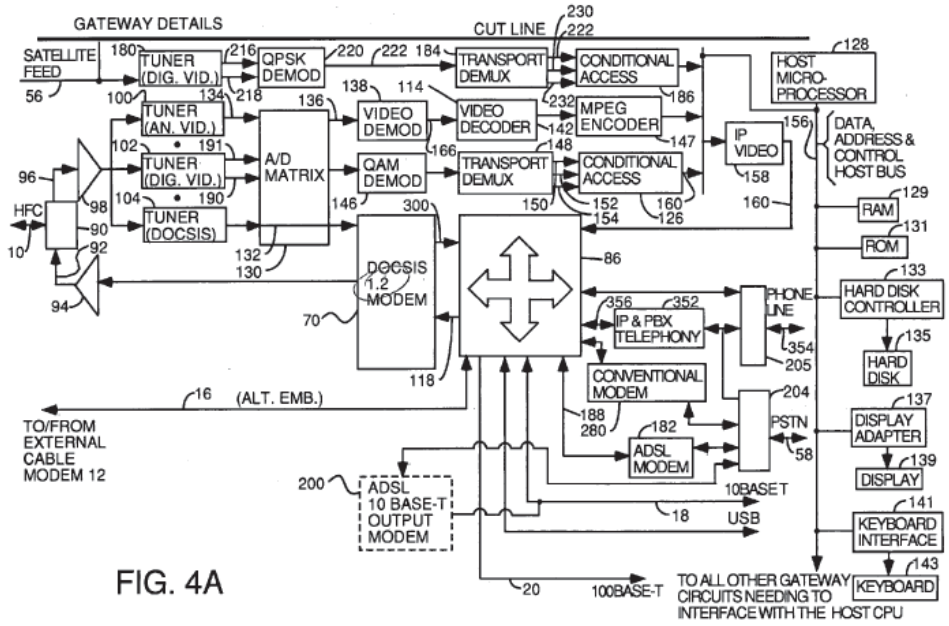

FIG. 4A

Figure 4A depicts "a gateway having ADSL, satellite, cable and broadcast TV antenna interface circuitry." *Id*. at ¶ 30. Rakib discloses that the gateway functions to "deliver requested services to all the peripherals in the customer premises." *Id*. at ¶ 120. Rakib explains that gateway 14 includes "the entire circuitry of a DOCSIS1.2 cable modem **70** therein." *Id*. at ¶ 118. Rakib further states that "[a] DOCSIS modem module can be any known or future developed cable modem that conforms to the DOCSIS standard." *Id*. at ¶ 265. Claims 10 and 26 of Rakib explicitly recite that the claimed cable modem "is compatible with the DOCSIS 1.2 national standard for cable modems as that standard existed as of the filing date of this patent application." *Id*. at claim 10, claim 26.

2. DOCSIS 1.1.4

DOCSIS 1.1.4 is a superseded interim specification drafted by cable operators as part of a telecommunications standard designed to facilitate the deployment of "high-speed data communications systems on cable television systems." Ex. 1005, 1. In particular, DOCSIS 1.1.4 was intended to "allow transparent bi-directional transfer of Internet Protocol (IP) traffic, between the cable system headend and customer locations, over an all-coaxial or hybrid-fiber/coax (HFC) cable network." *Id*.

DOCSIS 1.1.4 describes a Downstream Transmission Convergence sublayer, which permits the transmission of services, such as digital video, over the physical-layer bit stream. *Id*. at § 3.6.1. This sublayer uses 188-byte MPEG packets, which include a 4-byte header followed by a 184 byte payload. *Id*. DOCSIS 1.1.4 explains that this sublayer may include a mixture of Media Access Control ("MAC") payloads and those of other services, as dictated by the cable modem termination system ("CMTS"), i.e., the headend controller for HFC modems. *Id*. at § 5.1. DOCSIS 1.1.4 specifically exemplifies the interleaving of DOC MAC bytes with digital video. *Id*.

3. Rationale to Combine

RPX contends that a relevant skilled artisan would have had reason to incorporate the teachings of DOCSIS 1.1.4, including the MAC management messages, cable modem-CMTS interaction protocols, RSVP support, and cable modem configurations, into the communications network and gateway described by Rakib. Pet. 19–21; Ex. 1002 ¶¶ 104–106, 142–143.

In support of its position, RPX states that an ordinarily skilled artisan would have understood that the cable modems referenced by Rakib "would comply with the DOCSIS standard then in effect, i.e., DOCSIS 1.1, and would operate as discussed [in] paragraphs 52–100 of the Koperda declaration." Pet. 19. RPX asserts also that an ordinarily skilled artisan

> would have found it obvious to apply the teachings of the DOCSIS specification (Ex. 1005) to the cable modem 70 Rakib discloses, particularly in view of Rakib's express suggestion that the modem 70 can be DOCSIS compatible and Rakib's multiple references to the use of DOCSIS modems and DOCSIS data.

Pet. 19–20. RPX does not further elaborate on the purported rationale for combining Rakib and DOCSIS 1.1.4 in the Petition.

ChanBond contends that "[a]s a threshold matter, Petitioner's proposed combination fails."[1] PO Resp. 37. In particular, ChanBond asserts that the record is devoid of evidence that DOCSIS 1.1.4 was in effect at the

[1] ChanBond expressly contests the sufficiency of RPX's asserted rationale for combining Rakib and DOCSIS 1.1.4 in its Patent Owner's Response. PO Resp. 37–38. Although counsel for ChanBond misspoke during oral hearing and indicated that ChanBond had not raised the rationale for combining Rakib and DOCSIS 1.1.4 in the Patent Owner's Response (Paper 23, 50:2–3), counsel concluded oral argument by stating that ChanBond rests on the arguments presented during the hearing "together with the arguments in our papers" (*id*. at 55:15–16). Accordingly, we determine that ChanBond did not waive, or otherwise withdraw its argument concerning the sufficiency of RPX's rationale for combining the cited references. Furthermore, we observe, as detailed below, that irrespective of any statements by ChanBond's counsel, RPX bears the burden of proving, by a preponderance of the evidence, that an ordinarily skilled artisan would have had reason to make the proposed combination. 35 U.S.C. § 316(e).

time of Rakib's invention, or that DOCSIS 1.1.4 was even compatible with Rakib. *Id*. at 37–38. In this regard, ChanBond states that DOCSIS 1.1.5 had purportedly superseded DOCSIS 1.1.4 before the earliest priority date of Rakib, and thus, DOCSIS 1.1.4 would not have been in effect at the time of invention of Rakib. *Id*. at 38; *see also* Ex. 2006 ¶ 69. ChanBond further remarks, as acknowledged by RPX's expert, Mr. Koperda (Ex. 1002 ¶ 104, n.3), that Rakib refers throughout to DOCSIS 1.2, and does not mention DOCSIS 1.1.4. PO Resp. 37. ChanBond, therefore, argues that RPX has not met its burden to show that an ordinarily skilled artisan would have had reason to combine Rakib and DOCSIS 1.1.4. *Id*.

We find that the preponderance of the evidence does not support a conclusion that an artisan of ordinary skill would have had reason to combine the network gateway of Rakib with the protocols and formatting disclosed in DOCSIS 1.1.4.

We are mindful that obviousness inquiry requires "an expansive and flexible approach." *KSR*, 550 U.S. at 415. Such analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id*. at 418. It is axiomatic, however, that a determination of obviousness "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Kahn*, 441 F.3d at 988.

Although *inter partes* review may be instituted where it has been shown that "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition" (35 U.S.C. § 314(a)), "the burden of persuasion is on the petitioner to prove 'unpatentability by a preponderance of the evidence,' 35 U.S.C. § 316(e), and that burden never shifts to the patentee." *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Therefore, petitioners must "adhere to the requirement that the initial petition identify 'with particularity' the 'evidence that supports the grounds for the challenge to each claim.'" *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (quoting 35 U.S.C. § 312(a)(3)).

RPX has not met this requirement. Although we determined in the Decision on Institution that RPX had "articulated reasoning with rational underpinnings" as to why a relevant skilled artisan would have combined Rakib and DOCSIS 1.1.4 under the applicable reasonable likelihood of success standard (Dec. 11), we conclude that RPX has not met its burden to show—by a preponderance of the evidence—that a relevant skilled artisan would have had reason to combine Rakib and DOCSIS 1.1.4.

Applying the preponderance of the evidence standard, as required at this stage in the proceeding, we find that the Petition does not adequately articulate a reason why an ordinarily skilled artisan at the time of invention of the '822 patent would have sought to incorporate the relevant protocols and configurations of the DOCSIS 1.1.4 specification into the gateway of Rakib. *See* Pet. 19–20. RPX identifies "Rakib's express suggestion that the

modem 70 can be DOCSIS compatible and Rakib's multiple references to the use of DOCSIS modems and DOCSIS data" as supplying the rationale to combine the cited references. *Id*. at 19–20. We observe, however, that Rakib does not discuss DOCSIS compatibility in general, as RPX suggests, but rather, focuses explicitly on compatibility with DOCSIS 1.2. *See, e.g.*, Ex. 1007, Fig. 4A ("DOCSIS 1.2 MODEM"), claim 10 ("wherein said cable modem is compatible with the DOCSIS 1.2 national standard for cable modems as that standard existed as of the filing date of this patent application"), claim 26 (same), ¶ 53 ("The particular cable modem shown at 70 is labelled as DOCSIS 1.2 compatible, but it can be any known cable modem design as can the external cable modem."). Although the evidence of record indicates that DOCSIS 1.2 was never formally adopted (*see* Ex. 1002 ¶ 104 n.3; Ex. 1008, 2), Rakib is nevertheless unambiguously directed to a DOCSIS 1.2 compatible modem (*see, e.g.*, Ex. 1007, Fig 4A, ¶ 53, claim 10, claim 26).

RPX does not offer adequate explanation as to why a relevant skilled artisan would have sought to combine Rakib with DOCSIS 1.1.4, when Rakib is addressed to DOCSIS 1.2, and makes no mention of DOCSIS 1.1.4. Nor does RPX explain why an ordinarily skilled artisan would have understood Rakib's references to "DOCSIS 1.2 compatible," "DOCSIS modem," or "DOCSIS data" as suggesting combination with DOCSIS 1.1.4. In this regard, we highlight that RPX does not present evidence sufficient to establish any relationship between the cited portions of DOCSIS 1.1.4 and DOCSIS 1.2, or otherwise demonstrate a rationale for combining Rakib with

DOCSIS 1.1.4. Rather, RPX relies solely on Mr. Koperda's unsupported, conclusory testimony (in a footnote) that any differences between DOCSIS 1.1.4 and DOCSIS 1.2 are "not relevant to the downstream/upstream RF channel management" (Ex. 1002 ¶ 104 n.3); testimony to which we give little weight (37 C.F.R. § 42.65(a)).

RPX additionally attempts to bypass Rakib's focus on DOCSIS 1.2 by arguing that an ordinarily skilled artisan "would have understood that the referenced cable modems would comply with the DOCSIS standard then in effect, i.e., DOCSIS 1.1," and would operate as described in the Koperda Declaration. Pet. 19. But RPX's ambiguity in referring to "DOCSIS 1.1" in general, rather than any particular revision of DOCSIS 1.1, is fatal to its position. RPX does not dispute Dr. Nettle's (Chanbond's expert) contention (Ex. 2006 ¶ 69) that DOCSIS 1.1.4 had been superseded by DOCSIS 1.1.5 before the time of invention of Rakib. *See* Pet. Reply 11 ("Even if true, the existence of a new version of a specification would not, by itself, make it improper to use an older version of the same specification in an obviousness combination. That the resulting device might not be the 'latest and greatest' is beside the point."); Paper 23, 12:12–14 ("The fact that a new version came out doesn't make it not obvious over the old version is the only point we're making."). Accordingly, RPX's argument that an ordinarily skilled artisan would have understood the modems described by Rakib as complying with "the DOCSIS standard then in effect" (Pet. 19) militates against a finding that an ordinarily skilled artisan would have sought to combine Rakib with

DOCSIS 1.1.4, and instead supports the conclusion that a relevant skilled artisan would have looked to DOCSIS 1.1.5.

Moreover, the Petition lacks evidence sufficient to establish any relationship between the cited portions of DOCSIS 1.1.4 and DOCSIS 1.1.5, or otherwise lend support to a determination that a relevant skilled artisan would have turned to DOCSIS 1.1.4 when DOCSIS 1.1.5 was in effect. Instead, RPX relies solely on the unsupported, conclusory testimony of Mr. Koperda that his discussion of DOCSIS 1.1.4 "applies to all versions of DOCSIS 1.1, and most all DOCSIS versions both before and after that" (Ex. 1002 ¶ 52); testimony to which we give little weight (37 C.F.R. § 42.65(a)).

Stated plainly, the Petition does not include sufficient evidence of the relationship between the superseded DOCSIS 1.1.4 standard, on which RPX relies, the DOCSIS 1.1.5 standard, which RPX does not dispute governed at the time of invention of Rakib, and the DOCSIS 1.2 draft standard, which is the focus of Rakib, to support a finding, by a preponderance of the evidence, that an ordinarily skilled artisan would have had reason to combine DOCSIS 1.1.4 and Rakib. In this regard, we highlight that RPX's purported evidence of the relationship between these three iterations of the DOCSIS standard is limited to Mr. Koperda's unsubstantiated statement that his analysis of DOCSIS 1.1.4 applies to all versions of DOCSIS 1.1, as well as most subsequent versions of DOCSIS (Ex. 1002 ¶ 52), and his unconfirmed statement that the differences between DOCSIS 1.1.4 and DOCSIS 1.2 do not pertain to RF channel management features (*id*. at ¶ 104 n.3). We find,

however, that Mr. Koperda's unsupported, conclusory testimony is unpersuasive.

Neither do we find persuasive RPX's contention, set forth in its Reply, that the proffered combination is proper because "[t]he combinability of references must be judged solely from a technological perspective" (Pet. Reply 11). First, as explained above, we find that RPX has not adequately established the technical compatibility of DOCSIS 1.1.4 and Rakib because RPX has not shown the relationship between DOCSIS 1.1.4 and DOCSIS 1.1.5 or DOCSIS 1.2. Because RPX has not demonstrated the relationship between these three versions of DOCSIS, RPX has not established this as a case where a person of ordinary skill in the art would have recognized that the protocols and formats disclosed in DOCSIS 1.1.4 would have improved the gateway of Rakib. *KSR*, 550 U.S. at 417. Second, even had RPX shown technical compatibility between DOCSIS 1.1.4 and Rakib, RPX's failure to address the "effects of demands known to the design community or present in the marketplace" *id*. at 418, and in particular, to explain why an ordinarily skilled artisan would have reached back to a superseded version of the DOCSIS standard for combination with Rakib, undermines the contention that there would have been a rationale to combine the cited references.

Rakib's statement that "[a] DOCSIS modem module can be any known or future developed cable modem that conforms to the DOCSIS standard or any new standard for modems" (Ex. 1007 ¶ 265) does not dictate a different result. RPX has not established the existence of any modem

compatible with DOCSIS 1.1.4 at the time of invention of Rakib. Neither has RPX shown that a relevant skilled artisan would have understood Rakib's reference to the "DOCSIS standard" to include the superseded DOCSIS 1.1.4 standard, or that such an artisan would have had reason to reach back to DOCSIS 1.1.4 when Rakib is addressed to combination with DOCSIS 1.2. In addition, as explained above, we do not find persuasive Mr. Koperda's unsupported, conclusory testimony that all versions of DOCSIS 1.1 operate in the same way. RPX alone bears the burden of proving, by a preponderance of the evidence, that an ordinarily skilled artisan would have had reason to combine DOCSIS 1.1.4 with Rakib. Mr. Koperda's unsupported, conclusory statements concerning the similarities between DOCSIS versions are insufficient to meet that burden.

Accordingly, we find that RPX has not established, by a preponderance of the evidences, that claims 1–31 of the '822 patent would have been unpatentable as obvious over Rakib and DOCSIS 1.1.4. Because we determine that RPX has not established the obviousness of the challenged claims, we do not address ChanBond's assertions concerning the status of DOCSIS 1.1.4 as a printed publication, or ChanBond's remaining assertions concerning the deficiencies of the cited combination.

D. Obviousness Grounds of Unpatentability Based on Haugli and Grindahl

RPX asserts that claims 1–9, 16, 19–25, 29, and 31 are unpatentable under § 103(a) as obvious in view of Haugli and Grindahl. Pet. 40–54. RPX relies upon the Koperda Declaration (Ex. 1002) to support its positions.

1. Haugli

Haugli describes "[a] packet data communication system [that] includes a control station and a plurality of mobile terminals that communicate on demand with the control station over a wireless link." Ex. 1009, Abstract. Figure 1 of Haugli is reproduced below:

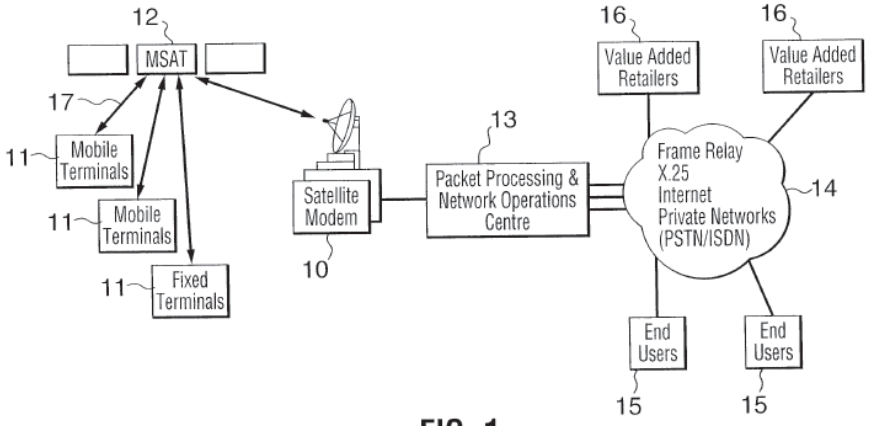

FIG. 1

Figure 1 shows "a block diagram of a multiple rate satellite packet data system." *Id*. at 4:20.[2] Haugli explains that "ground station 10 receives packet data destined for a particular terminal from the network processing center 13 and forwards it via satellite 12 to the destination terminal 11." *Id*. at 5:20–22.

Haugli teaches that data packets may be distributed simultaneously over several channels, and explains that channel assignment information on a control channel can be sent simultaneously with a data message. *Id*.

[2] We note that a second set of page numbers has been added to Haugli. Because the parties reference the original pagination when citing to Haugli, for clarity, we do the same.

at 2:27–3:5. Haugli discloses that "control information informs a particular terminal that the current frame contains a message for that terminal, as well as the channel assignments, and time and frequency reference information." *Id*. at 3:12–14. Haugli states that "[n]o attempt is made to decode the data unless a message is received from the control channel that data is present for the terminal in question." *Id*. at 3:16–17. If, however, the control channel identifies channels containing data for that terminal, "[t]he DSP will extract the packets from the various channels in accordance with the information received on the control channel and arrange them in the appropriate order before outputting them to the data processing circuitry." *Id*. at 3:18–23.

2. Grindahl

Grindahl describes a "fixed wireless access system" that enables a consumer premises equipment ("CPE") unit connected to a LAN or personal computer to communicate wirelessly with a base station, using orthogonal frequency division multiplexing ("OFDM"). Ex. 1010, 1:14–22. Figure 3 of Grindahl is reproduced below:

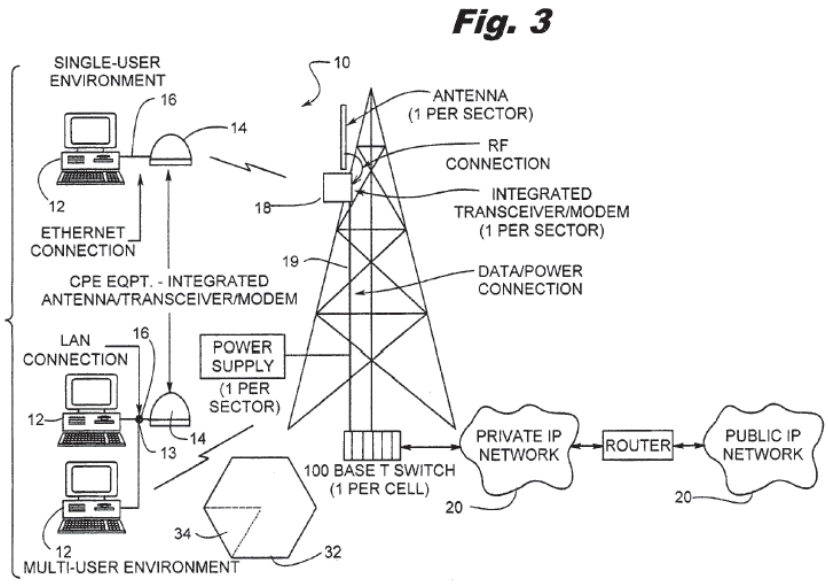

Figure 3 "depicts an overview of a single sector set-up within a cell of a fixed wireless access system" disclosed by Grindahl. *Id*. at 4:15–17. CPE unit 14 is connected, via Ethernet connection 16, to one or more host computers 12, and/or one or more LAN servers 13. *Id*. at 4:50–55. CPE unit 14 communicates with one or more base stations 18 via radio frequency. *Id*. at 4:55–57. Each base station 18 is connected, via Ethernet interface 19, to one or more networks 20. *Id*. at 4:57–61.

Subsequent to the registration of CPE unit 14, base station 18 creates a table including the IP address of each host computer 12, the associated low-level physical network hardware address, and the associated over-the-air hardware address of the CPE unit 14. *Id*. at 6:67–7:4. "In creating this table[,] base station unit **18** is able to ensure that [] it will not transmit messages over the air link when the message includes a level **3** address destination that is not in the address table of base station unit **18**." *Id*. at 7:4–8. Once CPE unit 14 and base station 18 have learned the IP

addresses of host computers 12 the CPE unit services, they effectively operate like a standard Ethernet switch. *Id*. at 6:9–15.

3. Rationale to Combine

RPX asserts that an ordinarily skilled artisan would have sought to "modify terminal 11 of Haugli to incorporate 'hardware necessary to implement Ethernet communication with a user's host computer 12 or LAN server,' as taught by Grindahl" (Pet. 42) in order to permit bidirectional data transfer between one or more of Grindahl's host computers and Haugli's ground station (*id*.). RPX further contends that a relevant skilled artisan, "[m]otivated by a need to provide other common computer interfaces" (*id*. at 43), would have had reason to incorporate Grindahl's Ethernet LAN solution into Haugli (*id*.).

ChanBond responds that an ordinarily skilled artisan would not have had reason to make the proposed combination because Haugli and Grindahl are directed to disparate communications systems designed to work in distinct environments. PO Resp. 47–48. In particular, ChanBond asserts that "*Haugli* is directed to allocating very scarce bandwidth associated with transmitting data between satellites and end terminals in a closed system" (*id*. at 47), while "*Grindahl*, on the other hand, is directed to a terrestrial, metropolitan area network that purportedly distributes data to a large number of fixed customers (*i.e.*, to customer premises equipment or CPE), using simple, single-channel, orthogonal frequency division modulation" (*id*. at 48). ChanBond contends that these design differences result in different network configurations and transmission schemes. In particular, ChanBond

argues, Haugli "receives and buffers all data, then after the fact determines which data is relevant" (*id*. at 49), while Grindahl "receives only selected data, with other data being screened out before ever being sent" (*id*.). ChanBond asserts, therefore, that Haugli and Grindahl are not compatible, and a relevant skilled artisan would not have sought to combine aspects of one system with the other. *Id*.

ChanBond argues further that because "[e]ach of *Haugli's* end terminals 11 is *itself* an intended destination for transmissions from ground station 10" (*id*. at 43), "[t]here is nothing in *Haugli* that suggests the need to or desirability of transferring data off of an end terminal, let alone to do so as a stream, as required by the challenged claims" (*id*. at 43–44). ChanBond also asserts that the I/O serial port of Haugli is "*not* intended for data output to a computer, but rather for data input in the circumstance of programming an internal DSP chip 35." *Id*. at 44. ChanBond thus contends that "[i]n all instances, *Haugli's* end terminal devices 11 are the end of the line for data. That is, once an end terminal has decoded data from the received (and demodulated) satellite signal, that data is not output, in a digital stream or otherwise, to any addressable device." *Id*.

We find that the preponderance of the evidence does not support a conclusion that an artisan of ordinary skill would have had reason to modify the terminal disclosed by Haugli to transfer data between Haugli's ground station and the host computers of Grindahl.

Although we determined in the Decision on Institution that RPX had "articulated reasoning with rational underpinnings" as to why a relevant

skilled artisan would have combined Haugli and Grindahl under the applicable reasonable likelihood of success standard (Dec. 21), we conclude that RPX has not met its burden to show—by a preponderance of the evidence—that a relevant skilled artisan would have had reason to combine Haugli and Grindahl.

Applying the preponderance of the evidence standard, as required at this stage in the proceeding, we find that the Petition does not adequately articulate a reason why an ordinarily skilled artisan at the time of invention of the ’822 patent would have sought to transform end terminal 11 of Haugli into a base station for transferring data between Haugli’s ground station and Grindahl’s host computers. RPX contends that a relevant skilled artisan would have sought to modify Haugli’s end terminal in order to “enabl[e] the transfer of data between [Grindahl’s host] computers and Haugli’s ground station 10.” Pet. 42. But the Petition does not articulate an adequate reason why a skilled artisan would have wanted to make this modification in the first place. *See* Pet. 42–43. Haugli describes a system in which the fixed and mobile end terminals 11 are endpoints in the disclosed communication system. Ex. 1009, Fig. 1, 2:9–22. RPX effectively proposes to reduce Haugli’s end terminals to base stations for communicating data to different end terminal devices, but does not explain why an ordinarily skilled artisan would have wanted to convert Haugli’s end terminals when Haugli already discloses complete end terminals that are capable of communicating with Haugli’s network. Stated plainly, the Petition does not adequately explain why a relevant skilled artisan would have wanted two separate functions

integrated into a single end terminal as disclosed by Haugli to be performed by two separate devices, *i.e.*, the proposed modified Haugli terminal and Grindahl's host computers.

This gap in reasoning is particularly pertinent where, as here, the references to be combined are directed to distinct communications systems that have different network configurations, and use different transmission schemes. Haugli describes a closed system for allocating the limited bandwidth associated with transmitting data between satellites and end terminals, some of which are mobile (*see, e.g.*, Ex. 1009, Fig. 1), while Grindahl is directed to a terrestrial, metropolitan area network that distributes data to a large number of fixed customers (*see, e.g.*, Ex. 1010, Abstract). The Petition does not endeavor to explain why an ordinarily skilled artisan would have sought to modify Haugli away from its original design and network configuration.

Neither do we find persuasive RPX's contention that because Haugli teaches a serial I/O port for programming DSP 35 (Ex. 1009, 10:14–20), a relevant skilled artisan would have been "[m]otivated by a need to provide other common computer interfaces" (Pet. 43) to incorporate Grindahl's Ethernet LAN solution into Haugli (*id.*). Haugli discusses the serial I/O port in describing an implementation of a mobile terminal on a circuit card. Ex. 1009, 10:14–20. Haugli explains that "[a]ccess to the card is through interface unit 43, which provides connections to . . . a serial I/O port, which allows the DSP to be programmed, for example, with the aid of a personal computer." *Id*. at 10:18–20. RPX does not identify any teaching by Haugli

of using the serial I/O port as an interface connection for sending communications received by the end terminal from the ground station to another device, or any suggestion by Haugli that the addition of further interface connections would be desirable. In short, the Petition does not adequately explain a reason why a relevant skilled artisan would have sought to add Grindahl's Ethernet LAN solution to Haugli's end terminals.

We are likewise unpersuaded by RPX's assertion, in its Reply, that ChanBond places too much stock in Haugli's reference to "end terminals," and that "Haugli nowhere suggests that use of an integrated or stand-alone terminal solution is critical or essential to the proper operation of the communication technique it discloses." Pet. Reply 18. Haugli describes a communications system in which data is transmitted from a ground station, via satellite, to end terminals. *See, e.g.*, Ex. 1009, Fig. 1. RPX does not identify, and we do not discern any suggestion by Haugli of an "end terminal" that communicates data received from the ground station to a downstream device, or that transmits data received from a downstream device to the ground station. Furthermore, even granting, for the sake of argument, that RPX is correct that Haugli does not expressly require the use of an integrated or stand-alone terminal, the fact remains that Petitioner does not adequately articulate an affirmative reason why an ordinarily skilled artisan would have sought to modify the integrated end terminal device disclosed by Haugli to function as a base station for Grindahl's host computers. As explained above, with regard to the combination of Rakib and DOCSIS 1.1.4, absent some rational for making the proposed

combination, the mere fact of its technical feasibility is insufficient to supply a reason to combine.

In its Reply, RPX argues, for the first time, that Grindahl would have supplied a relevant skilled artisan with a reason to modify Haugli. Pet. Reply 21. Specifically, RPX asserts that "applying Grindahl's 'middle box' approach to Haugli would have allowed general-purpose computers to be used for sending and receiving email, browsing the web, etc., over Haugli's network, and also would have allowed multiple computers to share the same network interface for that purpose." *Id*.

As an initial matter, we observe that RPX presents new issues in its Reply, by asserting, for the first time, that an ordinarily skilled artisan would have sought to make the proposed combination in order to allow the use of general-purpose computers over Haugli's network, and to permit multiple computers to share the same network interface. As provided in 37 C.F.R. § 42.23(b), however, a "reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, or patent owner response." Thus, "a reply that raises a new issue or belatedly presents evidence will not be considered and may be returned. The Board will not attempt to sort proper from improper portions of the reply." Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,767 (Aug. 14, 2012). Because it includes new arguments concerning the rationale for combining the cited references, we find that RPX's Reply exceeds the proper scope of a reply.

Nevertheless, even were we to overlook the procedural infirmities of RPX's arguments, we would not find them persuasive. As explained above,

Haugli and Grindahl disclose different network architectures, which were designed to facilitate different types of communications systems. In the "middle box" approach of Grindahl, a box "sits in the middle of the network and provides routing and control functions." Ex. 1020, 10:7–9. In contrast, as discussed above, Haugli discloses integrated end terminals that themselves provide the necessary routing and control functions a middle box would perform.

RPX does not identify evidence of record sufficient to support a finding that a relevant skilled artisan would have sought to redesign the communication system taught be Haugli to use a middle box architecture. In this regard, we note that although RPX asserts that it is "undisputed" that a relevant skilled artisan would have sought to apply Grindahl's middle box approach to Haugli in order to obtain the advantages of allowing general-purpose computers to be used on Haugli's network, and of permitting multiple computers to share the same network interface, RPX does not identify any record support for these propositions. Pet. Reply 21.

Furthermore, to the extent RPX attempts to rely on Dr. Nettles' deposition testimony to support its contentions, we find such reliance unpersuasive. Dr. Nettles unambiguously testifies that removing the antenna, transceiver, and modem of Haugli's end terminals and placing them in a separate device would not present advantages in the architecture taught by Haugli. Ex. 1020, 20:12–21:25. Contrary to RPX's intimation, rather than agreeing that it might be advantageous to use a middle box approach with the network of Haugli, Dr. Nettles testifies: "Are there scenarios where

it might be advantageous to split it off? Maybe. But those scenarios are not present in Haugli. I mean, the disclosure of Haugli is such that the advantage is to make this one box, not two." *Id*. at 21:21–25.

Thus, while RPX may be correct that the "middle box" approach described by Grindahl affords certain advantages in the network topology described by Grindahl, the record is devoid of any reason why an ordinarily skilled artisan would have sought to modify Haugli to use Grindahl's middle box approach in Haugli's network, when Haugli relies on integrated end terminals.

Accordingly, we find that RPX has not established, by a preponderance of the evidence, that claims 1–9, 16, 19–25, 29, and 31 of the '822 patent would have been unpatentable as obvious over Haugli and Grindahl. Because we determine that RPX has not established the obviousness of the challenged claims, we do not address ChanBond's remaining assertions concerning the deficiencies of the cited combination.

E. Obviousness Grounds of Unpatentability Based on Haugli, Grindahl, and Otten

RPX asserts that claims 10, 11, and 26 are unpatentable under § 103(a) as obvious in view of Haugli, Grindahl, and Otten. Pet. 54–56. In support of its assertion, RPX relies upon the Koperda Declaration (Ex. 1002), and the Reply Declaration of Frank Koperda ("Koperda Reply Declaration," Ex. 1018).

1. Otten

Otten discloses "[a] hybrid satellite communications system [that] provides communications, particularly Internet access, to computer users." Ex. 1011, Abstract. Otten describes an embodiment in which an RF signal received by a receiver connected to a user's computer "includes both television signals **52** and Internet signals **54**." *Id*. at 8:6–7. Otten additionally explains that the receiver connected to the user's computer separates the TV and Internet signals. *Id*. at 8:6–14.

2. Rationale to Combine

RPX does not present evidence or argument that addresses the deficiencies discussed above with regard to the rationale to combine Haugli and Grindahl. In particular, RPX does not rely on Otten to buttress the purported rationale for combining Haugli and Grindahl. Accordingly, for the reasons set forth above, we conclude that RPX has not shown by a preponderance of the evidence that claims 10, 11, and 26 are unpatentable based on Haugli, Grindahl, and Otten.

F. Obviousness Grounds of Unpatentability Based on Haugli, Grindahl, and Ollikainen

RPX asserts that claims 12–14, 17, 18, 27, and 28 are unpatentable under § 103(a) as obvious in view of Haugli, Grindahl, and Ollikainen. Pet. 56–60. In support of its assertion, RPX relies upon the Koperda Declaration (Ex. 1002).

1. Ollikainen

Ollikainen discloses "a broadcast and interactive data distribution system for distributing broadcast and interactive data services to personal computers using a modular computer/server that is external to the personal computers." Ex. 1012, 1:8–11. Pertinent to this ground of rejection, Ollikainen describes a "cyberstation" that communicates with personal computers in a LAN over a wireless link. *Id*. at 3:66–4:9.

2. Rationale to Combine

RPX does not present evidence or argument that addresses the deficiencies discussed above with regard to the rationale to combine Haugli and Grindahl. In particular, RPX does not rely on Ollikainen to buttress the purported rationale for combining Haugli and Grindahl. Accordingly, for the reasons set forth above, we conclude that RPX has not shown by a preponderance of the evidence that claims 12–14, 17, 18, 27, and 28 are unpatentable based on Haugli, Grindahl, and Ollikainen.

III. CONCLUSION

For the foregoing reasons, we determine that RPX has not shown by a preponderance of the evidence that claims 1–31 are unpatentable.

IV. ORDER

It is

ORDERED claims 1–31 of the ’822 patent are not held unpatentable; and

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

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