Filed on behalf of TQ Delta, LLC
By: Peter J. McAndrews
       McAndrews, Held & Malloy, Ltd.
       500 W. Madison St., 34th Floor
       Chicago, IL 60661
       Tel: 312-775-8000
       Fax: 312-775-8100
       E-mail: pmcandrews@mcandrews-ip.com

UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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CISCO SYSTEMS, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.
———————————

Case IPR2016-01760
Patent No. 9,094,268
———————————

PATENT OWNER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141, 142, and 319, 37 C.F.R. §§ 90.2, 90.3, and 104.2, and Rule 4(a) of the Federal Rules of Appellate Procedure, Patent Owner TQ Delta, LLC ("Patent Owner") hereby appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision (Paper 35) entered by the Patent Trial and Appeal Board on March 12, 2018, and all rulings leading up to that decision.

In particular, and in accordance with 37 C.F.R. § 90.2(a)(3)(ii), Patent Owner identifies at least the following issues on appeal:

- The Board's finding that Claims 1, 2, 4, 11, 12, 14, 16, and 18 of U.S. Patent No. 9,094,268 are unpatentable as obvious over Bowie and Yamano;

- The Board's claim construction; and

- Any Board finding, determination, judgment, or order supporting or related to the aforementioned issues as well as all other issues decided adversely to Patent Owner in any orders, decisions, ruling, and opinions.

Patent Owner is concurrently filing a copy of this Notice of Appeal with the Director of the United States Patent and Trademark Office and the Patent Trial and Appeal Board, and a copy of the same, along with the required fees, with the United States Court of Appeals for the Federal Circuit.

Dated: April 9, 2018

Respectfully submitted,

/Peter J. McAndrews/
Peter J. McAndrews
Registration No. 38,547
McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th Floor
Chicago, Illinois 60661
Office: (312) 775-8000
Fax: (312) 775-8100
Email: pmcandrews@mcandrews-ip.com

Lead Counsel for Patent Owner

CERTIFICATE OF FILING

The undersigned hereby certifies that, in addition to being electronically filed through PTAB E2E, a true and correct copy of the above-captioned **NOTICE OF APPEAL** is being filed by hand with the Director on April 9, 2018, at the following address:

> Director of the U.S. Patent & Trademark Office
> c/o Office of the General Counsel, 10B20
> Madison Building East
> 600 Dulany Street
> Alexandria, VA 22314

The undersigned also hereby certifies that a true and correct copy of the above-captioned **NOTICE OF APPEAL** and the filing fee is being filed via CM/ECF with the Clerk's Office of the United States Court of Appeals for the Federal Circuit on April 9, 2018.

Dated: April 9, 2018

/*Peter J. McAndrews*/
Peter J. McAndrews
Registration No. 38,547
McANDREWS, HELD & MALLOY
500 West Madison Street, 34th Floor
Chicago, Illinois 60661
Telephone: (312) 775-8000

<u>CERTIFICATE OF SERVICE</u>

I hereby certify that a true and correct copy of the foregoing **Patent Owner's Notice of Appeal** was served on April 9, 2018, via email to counsel for Petitioner at the following:

Lead Counsel	Back-up Counsel
David L. McCombs USPTO Reg. No. 32,271 Haynes and Boone LLP 2323 Victory Ave., Suite 700 Dallas, TX 75219 Tel: 214-651-5533 Fax: 214-200-0853 david.mccombs.ipr@haynesboone.com	Theodore M. Foster USPTO Reg. No. 57,456 Haynes and Boone LLP 2323 Victory Ave., Suite 700 Dallas, TX 75219 Tel: 972-739-8649 Fax: 972-692-9156 ipr.theo.foster@haynesboone.com Michael S. Parsons USPTO Reg. No. 58,767 Haynes and Boone LLP 2323 Victory Ave., Suite 700 Dallas, TX 75219 Tel: 972-739-8611 Fax: 972-692-9003 michael.parsons.ipr@haynesboone.com

MCANDREWS, HELD & MALLOY   /Peter J. McAndrews/
                                            Peter J. McAndrews
Telephone: 312-775-8000   Registration No. 38,547
Facsimile: 312-775-8100

CUSTOMER NUMBER: 23446

UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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CISCO SYSTEMS, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.
_____

Case IPR2016-01760
Patent 9,094,268 B2
_____

Before SALLY C. MEDLEY, TREVOR M. JEFFERSON, and
MATTHEW R. CLEMENTS, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

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

I. INTRODUCTION

We instituted *inter partes* review pursuant to 35 U.S.C. § 314 on a petition filed by Cisco Systems, Inc. ("Petitioner") challenging claims 1, 2, 4, 11, 12, 14, 16, and 18 of U.S. Patent No. 9,094,268 B2 (Ex. 1001, "the '268 patent") owned by TQ Delta, LLC ("Patent Owner"). Paper 1 ("Pet."). We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that the challenged claims are unpatentable. Patent Owner's Motion to Exclude is denied.

A. *Procedural History*

Petitioner filed a Petition requesting an *inter partes* review of claims 1, 2, 4, 11, 12, 14, 16, and 18 of the '268 patent. Paper 1 ("Pet."). Patent Owner filed a Preliminary Response. Paper 6. We instituted *inter partes* review of claims 1, 2, 4, 11, 12, 14, 16, and 18 of the '268 patent as unpatentable over Bowie[1] and Yamano[2] under 35 U.S.C. § 103(a). Paper 9 ("Inst. Dec."), 21.

Patent Owner filed a Patent Owner Response (Paper 13, "PO Resp."), to which Petitioner filed a Reply (Paper 15, "Reply"). Pursuant to our Order (Paper 22), Patent Owner filed a listing of alleged statements and evidence

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[1] U.S. Patent No. 5,956,323; filed July 30, 1997, issued Sep. 21, 1999 (Ex. 1005, "Bowie").
[2] U.S. Patent No. 6,075,814; filed May 9, 1997, issued June 13, 2000 (Ex. 1006, "Yamano").

in connection with Petitioner's Reply it deemed to be beyond the proper scope of a reply. Paper 23. Petitioner filed a response to Patent Owner's listing. Paper 28.

We held a hearing on November 8, 2017, and a transcript of the hearing is included in the record. Paper 34 ("Tr.").

B. Related Proceedings

The parties state that the '268 patent is asserted in *TQ Delta LLC v. Comcast Cable Comms., et. al.*, Case No. 1:15-cv-00611 (D. Del.); *TQ Delta LLC v. CoxCom LLC et al.*, Case No. 1:15-cv-00612 (D. Del.); *TQ Delta LLC v. DirecTV et al.*, Case No. 1:15-cv-00613 (D. Del.); *TQ Delta LLC v. DISH Network Corp. et al.*, Case No. 1:15-cv-00614 (D. Del.); *TQ Delta LLC v. Time Warner Cable Inc., et al.*, Case No. 1:15-cv-00615 (D. Del.); and *TQ Delta LLC v. Verizon Comms., Inc.*, Case No. 1:15-cv-00616 (D. Del.). Pet. 1; Paper 4, 2–3. The '268 patent is also involved in *Dish Networks LLC v. TQ Delta LLC*, IPR2016-01469 (PTAB Jul. 21, 2016). Pet. 1; Paper 4, 2–3.

C. The '268 Patent

The '268 patent describes "a multicarrier transmission system having a low power sleep mode and a rapid-on capability." Ex. 1001, 3:35–37. The sleep mode idles a multicarrier transceiver when it is not needed to transmit or receive data, with transmission and reception capabilities quickly restored without requiring full initialization after inactivity. *Id*. at Abstract. The system includes a transceiver at the local central telephone office's location

("CO transceiver") and a transceiver at the customer's premises ("CPE transceiver"), which communicate over a telephone line. *Id*. at 3:66–4:9. Figure 1 reproduced below depicts a preferred embodiment of the invention.
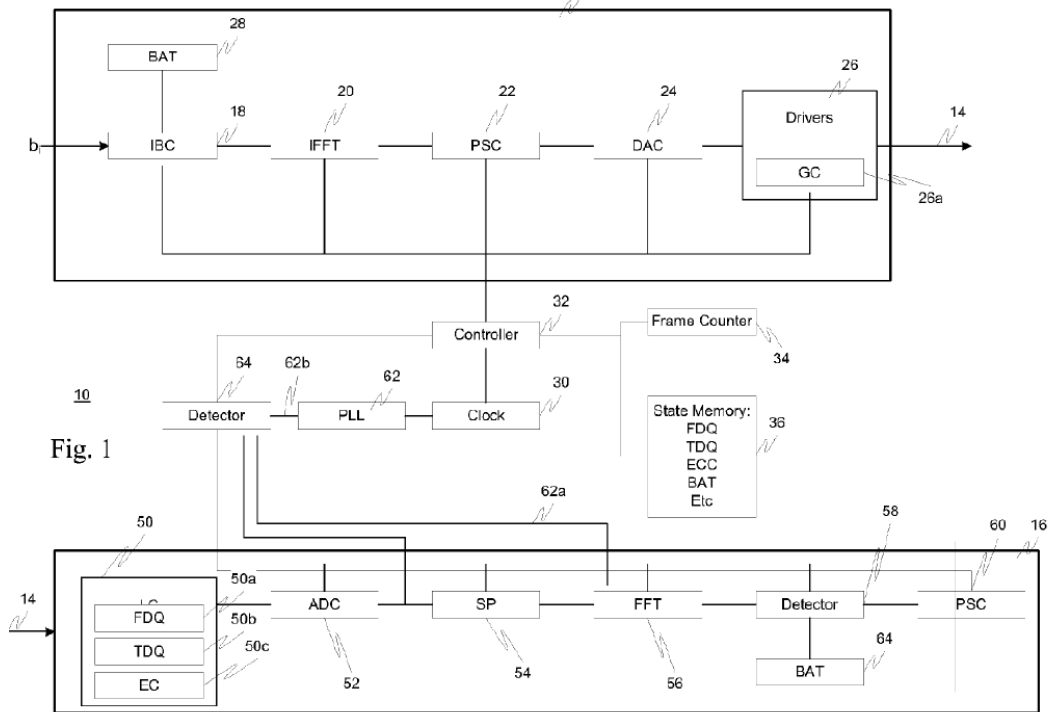

Fig. 1

Figure 1 shows a block diagram of a multicarrier transmission system. *Id*. at 3:50–53. Each transceiver includes "DSL transceiver 10" with "transmitter section 12 for transmitting data over a digital subscriber line 14 and a receiver section 16 for receiving data from the line." *Id*. at 4:18–21, FIG. 1. In one embodiment, the transmitter and receiver sections 12, 16 enter a low power mode (or "sleep" mode), where power is reduced or cut off to the digital modulators/demodulator portions (sections 12, 16) of the transmitter and receiver sections (corresponding to the IFFT 20 (data modulator) and FFT 56 (demodulator) of the CPE transceiver of Figure 1). *Id*. at 6:66–7:21.

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In another embodiment, the transceiver is placed into a "partial" sleep mode "in which only part of each transceiver is powered down." *Id*. at 8:52–60.

The '268 patent specification discloses that a transceiver entering a low power mode must first store a variety of line parameters comprising its "state memory." *Id*. at 6:66–7:14. During sleep mode state, the CO transceiver monitors data subscriber line 14 for an "Exiting Sleep Mode" signal from the CPE transceiver. *Id.* at 7:64–69. The CPE transceiver transmits this signal when the "controller receives an 'Awaken' indication. . . . In response to the 'Awaken' signal, the CPE transceiver retrieves its stored state from the state memory 38; [and] restores full power to its circuitry." *Id*. at 7:64–8:6.

D. Illustrative Claims

Claims 1 and 11 are independent and reproduced below as illustrative of the claims at issue:

1.   A method, in a multicarrier transceiver, comprising: transmitting or receiving a message to enter a low power mode; and
        entering the low power mode, wherein a transmitter portion of the transceiver does not transmit data during the low power mode and a receiver portion of the transceiver receives data during the low power mode, wherein the transceiver is a device that is capable of transmitting or receiving internet and video data.

11.   A method, in a multicarrier transceiver, comprising: transmitting or receiving a message to enter a low power mode for a transmitter portion while a receiver portion remains in a full power mode; and

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> entering the low power mode for the transmitter
> portion while the receiver portion remains in the full
> power mode, wherein the transceiver is a device that is
> capable of transmitting or receiving internet and video
> data.

Ex. 1001, 10:6–14, 10:64–11:4.

II.   ANALYSIS

A. Claim Interpretation

We interpret claims of an unexpired patent using the broadest
reasonable construction in light of the specification of the patent in which
they appear. *See* 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs., LLC v.
Lee*, 136 S. Ct. 2131, 2142–46 (2016). Under the broadest reasonable
construction 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). Any special definition for a claim term must be set
forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*,
30 F.3d 1475, 1480 (Fed. Cir. 1994).

1. "data" (claims 1, 4, 11, 16, 18)

Our Decision on Institution determined that no further interpretation is
required for "data." Inst. Dec. 7. Patent Owner and Petitioner did not
dispute this construction. PO Resp. 24. Based on the record developed
during this proceeding, we determine that no further interpretation is
required for "data."

2. *"storing during low power mode" (claims 4, 14)*

Our Decision on Institution construed "storing during the low power mode" as "maintaining in memory while in a reduced power consumption mode." Inst. Dec. 7–8. Neither party disputes this construction. PO Resp. 24. Based on the record developed during this proceeding, we continue to apply this construction.

3. *"maintaining synchronization with a second transceiver during the low power mode" (claims 2 and 12)*

Dependent claims 2 and 12 recite "maintaining synchronization with a second transceiver during the low power mode." Petitioner did not propose a construction for this term, and our Decision on Institution did not construe this term.

Patent Owner argues that

> the broadest reasonable interpretation of "maintaining synchronization with a second transceiver," in view of the specification, is "maintaining a timing relationship between two transceivers by correcting errors or differences in the timing of the timing reference of the transceiver and the timing reference of a second transceiver," and the Board should adopt this construction.

PO Resp. 19 (citing Ex. 2005 ¶ 83). Patent Owner argues that the '268 patent explains synchronization based on clock synchronization reference signals between the transmitter and receiver clocks and not periodic polls to maintain synchronization. PO Resp. 19–21 (citing Ex. 1001, 4:62–5:4, 5:44–50; Ex. 2005 ¶¶ 83, 84). Patent Owner further contends that the '268 patent

> explains that the clock of a 'remote transceiver, such as a subscribers premises will be synchronized' to the clock in CO transceiver, i.e., a master clock. Ex. 1001 at 4:64-67. Thus, in the context of the '268 patent maintaining synchronization is the process used to 'drive[] clock 30 [in one transceiver] in <u>synchronism</u> with the Master Clock in the driving transmitter [in another transceiver].' Ex. 1001 at 5:53-55 (emphasis added); Ex. 2005 at ¶¶ 82–82.

PO Resp. 17–18. Thus, Patent Owner argues that the construction consistent with the specification of the '268 patent requires maintaining synchronization as described in the '268 patent, which means "maintaining a timing relationship between two transceivers by correcting errors or differences in the timing of the timing reference of the transceiver and the timing reference of a second transceiver." PO Resp. 19.

Patent Owner contends that "construing 'maintaining synchronization' in a manner consistent with the clock synchronism described in the '268 patent is necessary to 'tether the claims to what the specification[] indicate[s] the inventor actually invented.' *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011)." PO Resp. 20. Patent Owner argues that its proposed construction is also consistent with technical dictionaries that refer to checking and correcting variations in timing. PO Resp. 20–21 (citing Ex. 2007, 360; Ex. 2005 ¶ 84). Patent Owner also asserts that the Board's preliminary construction in its Decision to Institute in a related case, IPR2016-01466, credits an argument regarding maintaining synchronization between transceivers based on timing and correction of timing errors between DSL transceivers. PO Resp. 21 (citing

Cisco Sys., Inc. v. TQ Delta, LLC, No. IPR2016-01466, slip op. at 11 (PTAB Feb. 9, 2017) (Paper 7) ("Petitioner explains that ANSI T1.413 uses a synchronization symbol in order to maintain timing by correcting timing errors in communication between DSL transceivers." (citing Ex. 1007, 64)); Ex. 2005 ¶ 85).

Petitioner responds that the '268 patent is not limited to "correcting errors or differences in [] timing" as Patent Owner asserts. Reply 6. Petitioner argues that Patent Owner's construction was added to avoid the cited art and relies on a single embodiment that uses phase lock loops to reach Patent Owner's overly narrow construction. *Id.* (citing Ex. 1011, 88:20–89:5, 86:3–9).

Petitioner states that although the '268 specification discloses maintaining synchronization via phase lock loops, it is not limited and also expressly states that "[o]ther forms of timing signal may, of course, be used" (Ex. 1001, 5:47–50). Reply 6 (emphasis omitted). In light of this intrinsic evidence, Petitioner argues the '268 specification encompasses other forms of timing signals for synchronization and not just a pure tone to correct errors or differences in the timing reference. Reply 6 (citing Ex. 1001, 5:47–50; Ex. 1012 ¶ 5).

Petitioner argues that "the broadest reasonable construction for 'maintaining synchronization with a second transceiver' [] include[s] 'maintaining a timing relationship between transceivers.'" Reply 7 (citing Ex. 1012 ¶ 6).

Having considered the parties' arguments and evidence, we do not agree with Patent Owner's proposed construction that "maintaining synchronization" requires timing synchronization by correcting errors or differences between timing references. The claims of the '268 patent do not recite "synchronization signal" or "synchronization frame" but refer only to "maintaining synchronization" during low power mode without specification as to the method of synchronization. *See, e.g.*, Ex. 1001, 10:6–17 (claims 1 and 2). Indeed, claims 2 and 12 do not recite any particular type of synchronization as a limitation.

We are not persuaded by Patent Owner's argument as the examples cited by Patent Owner (Ex. 1001, 4:42–67, 5:44–55) do not support limiting "maintaining synchronization" as recited in claims 2 and 12, to timing synchronization by "maintaining a timing relationship between two transceivers by correcting errors or differences in the timing of the timing reference of the transceiver and the timing reference of a second transceiver" as Patent Owner asserts. PO Resp. 17–18, 20. Instead, we find that the '268 patent expressly discusses different types of synchronization using different timing signals, synchronization frames, and synchronizing pilot tones. *See* Ex. 1001, 5:5–20, 5:42–67, 6:50, 8:64–9:10, 9:31–36.

We are not persuaded by Patent Owner's argument regarding the preliminary construction of limitations in a related case, IPR2016-01466, being consistent with Patent Owner's narrow construction. That case involved a different patent, U.S. 8,611,404 B2, and the claims at issue included limitations on distinct synchronization signals that are not present

in the claims of the '268 patent. We also are not persuaded by Patent Owner's dictionary definition, which does not address "synchronization" as recited in the challenged claims, but instead, is directed to "synchronous transmission." PO Resp. 20–21 (citing Ex. 2007, 360; Ex. 2005 ¶ 84).

Petitioner notes that, in a related case, Patent Owner previously asserted that "synchronization" refers to a "timing relationship between two transceivers." Reply 5 (citing *Arris Group, Inc. v. TQ Delta, LLC*, IPR2016-01160, slip op. at 24 (PTAB March 28, 2017) (Paper 16); Ex. 1010 ¶ 55; Ex. 1019, 4 (district court construction of "synchronization signal")). We agree with Petitioner that Patent Owner's changed position on synchronization is influenced by the cited prior art and not the scope of the claims in light of the specification. *See, e.g.*, Ex. 1011, 86:3–9 (Patent Owner's declarant explaining additions to proposed construction).

We agree with Petitioner that "maintaining synchronization" encompasses maintaining a timing relationship between transceivers. Patent Owner's proposed construction narrowly limits maintaining synchronization to timing synchronization by correcting errors and is not consistent with the '268 patent specification, which expressly contemplates "[o]ther forms of timing signal." Ex. 1001, 5:47–50. As we discussed above, the '268 patent expressly discusses different types of synchronization using different timing signals, synchronization frames, and synchronizing pilot tones. *See* Ex. 1001, 5:5–20, 5:42–67, 6:50, 8:64–9:10; 9:31–36. Accordingly, based on the full record and the '268 patent specification, we determine that "maintaining synchronization with a second transceiver during the low

power mode" encompasses maintaining a timing relationship between transceivers, including timing and frame synchronization.

4. *"parameter associated with [a/the] full power mode"(claims 4 and 14)*

Independent claim 4 recites "at least one parameter associated with a full power mode," and independent claim 14 recites a similar limitation. Ex. 1001, 10:29–30, 11:17–20.

Patent Owner argues that the '268 patent teaches recording the "state" of the transceiver when the transceiver goes from the state of active data transmission activity to a sleep mode. PO Resp. 23. Patent Owner states:

> The '268 patent lists the parameters included in its state memory that are stored in the low power mode. *See* Ex. 1001 at 7:5-14 ("In pursuance of [entering the sleep mode], the CO transceiver stores its state in its own state memory . . . . The state of the . . . transceivers preferably includes at least the frequency and time-domain equalizer coefficients (FDQ; TDQ) and the echo-canceller coefficients (ECC) of its receiver portion and the gain of its transmitter portion; the transmission and reception data rates; the transmission and reception coding parameters; the-transmission fine gains; and the Bit Allocation Tables.").

PO Resp. 23. Patent Owner argues that the '268 patent teaches a parameter list that "includes only communication protocol-specific parameters that are used for the transmission of data—and does not include loop characteristics." *Id.* (citing Ex. 2005 ¶ 88). In light of the '268 specification, Patent Owner argues that "at least one parameter associated with a[] full power mode" should be construed as "parameter associated with the transmission and/or reception of data during normal operation." *Id.* at 24.

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Petitioner counters that Patent Owner errs by construing the term as limited to parameters associated with the transmission and/or reception of data, ignoring that the claim term states that the parameter is associated with the full power mode. Reply 8. Petitioner argues that full power mode includes operational parameters, such as a measured signal-to-noise ratio ("SNR") which is used to derive transmission/reception parameters. Reply 7–8 (citing Ex. 1012 ¶ 9; Ex. 2005 ¶ 30; Ex. 2008, 82, 108).

We are not persuaded by Patent Owner's proposed construction which relies on the exemplary statements in the '268 patent, which expressly states that stored parameters "preferably include at least" the items listed, indicating that other parameters may be stored. Ex. 1001, 7:8–9. Absent a clear disavowal of scope, Petitioner argues that the claims are simply not limited to the types of parameters listed in the specification. *See Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1367 (Fed. Cir. 2012) (holding full scope of plain and ordinary meaning is appropriate "unless the patentee explicitly redefines the term or disavows its full scope"); *In re Am. Acad. Of Sci. Tech Ctr*., 367 F.3d 1359, 1369 (Fed. Cir. 2004) (holding that features relating to particular embodiments may not be read into the claims absent clear disclaimer in the specification).

In light of the arguments and evidence presented, we are not persuaded that this term requires an express construction. Patent Owner's proposed construction does not add necessary clarity to the claims, as it merely replaces "full power mode operation" with "transmission and/or reception of data during normal operation." The parties, however, do not

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dispute the meaning of "full power mode operation." Accordingly, an express construction is not necessary to resolve the disputes between the parties.

B. Level of Ordinary Skill in the Art

We determine that no express finding on a specific corresponding level of technical education and experience is necessary. Here, the level of ordinary skill in the art is 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. The Parties' Post-Institution Arguments

In our Decision on Institution, we concluded that the arguments and evidence advanced by Petitioner demonstrated a reasonable likelihood that claims 1, 2, 4, 11, 12, 14, 16, and 18 of the '268 patent are unpatentable as obvious under 35 U.S.C. § 103(a) over Bowie and Yamano. Inst. Dec. 21. We must now determine whether Petitioner has established by a preponderance of the evidence that the specified claims are unpatentable over the cited prior art. 35 U.S.C. § 316(e). Our Order previously instructed Patent Owner that "any arguments for patentability not raised in the [Patent Owner Response] will be deemed waived." Paper 10, 6; *see also* 37 C.F.R. § 42.23(a) ("Any material fact not specifically denied may be considered admitted."); *In re Nuvasive, Inc.*, 842 F.3d 1376, 1379–1382 (Fed. Cir. 2016) (holding Patent Owner waived an argument addressed in Preliminary Response by not raising the same argument in the Patent Owner Response).

Additionally, the Board's Trial Practice Guide states that the Patent Owner Response "should identify all the involved claims that are believed to be patentable and state the basis for that belief." Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

With the complete record before us, we note that we have reviewed arguments and evidence advanced by Petitioner to support its unpatentability contentions where Patent Owner chose not to address certain limitations in its Patent Owner Response. In this regard, we determine that the record now contains persuasive, unrebutted arguments and evidence presented by Petitioner regarding the manner in which the asserted prior art teaches corresponding limitations of the claims against which that prior art is asserted. Based on the preponderance of the evidence before us, we conclude that the prior art identified by Petitioner teaches or suggests all uncontested limitations of the reviewed claims. The limitations that Patent Owner contests in the Patent Owner Response are addressed below.

D. Obviousness based on Bowie (Ex. 1005) and Yamano (Ex. 1006)

Petitioner contends that Bowie and Yamano teach the limitations of claims 1, 2, 4, 11, 12, 14, 16, and 18. Pet. 24–46. Petitioner articulates a rationale for combining the teachings of Bowie and Yamano, providing citations to the Declaration of Dr. Kiaei in support of their contentions. *Id.* at 22–24 (citing Ex. 1003, 32–34).

1. Principles of Law

A claim is unpatentable under § 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 skill in the art; and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co*., 383 U.S. 1, 17–18 (1966). We analyze this asserted ground based on obviousness with the principles identified above in mind.

2. Bowie (Ex. 1005)

Bowie discloses a power conservation system for transmission systems in which data is modulated over a communications loop from a central office location to a customer premise. Ex. 1005, 1:4–8. Bowie discloses that to provision ADSL service, ADSL units are located at each end of a wire loop, a first ADSL unit at the customer premises (CPE) and a second ADSL unit at the telephone company central office (COT). *Id.* at 3:51–58. Figure 1, below, shows an ADSL unit.
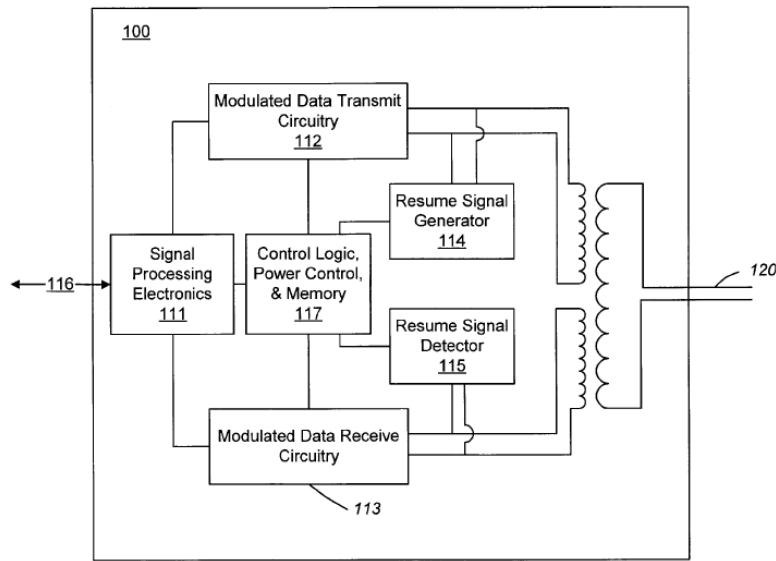
FIG. 1

Figure 1 is a block diagram of ADSL unit 100, with signal processing electronics 111, transmit circuitry 112, and receive circuitry 113, used to send and receive modulated data. *Id.* at 3:34–41.

Bowie teaches that ADSL units enter a low power mode to reduce power requirements. *Id.* at 5:6–8. CPE unit initiates low power mode by sending a "shut-down" signal to the COT unit. *Id.* at 5:8–10. Both the CPE unit and COT unit may store loop characteristics that enable rapid resumption of user data transmission when units return to full power mode. *Id.* at 5:18–25. Each unit then enters low power mode by shutting off the now unnecessary sections of the signal processing, transmitting, and receiving circuitry, including signal processing 111, transmitting 112, and receiving 113 circuitry. *Id.* at 5:26–28. After shutdown, the loop is in an inactive state. *Id.* at 5:28–29. During low power operation, circuitry 115 remains capable of detecting the resume signal. *Id.* at 5:28–29. This resume

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signal may be detected by the COT unit using a 16 kHz AC signal detector 115 that employs conventional frequency detection techniques and remains operative when the COT unit is in low-power mode. *Id.* at 5:52–56. The units return to full power mode after the CPE unit transmits to the COT unit a resume signal. *Id.* at 5:48–59. The stored loop characteristics are used to restore the loop parameters. *Id.* at 5:60–66.

3. *Yamano (Ex. 1006)*

Yamano relates to "the reduction of the required amount of signal processing in a modulator/demodulator (modem) which is transferring packet-based data or other information which is intermittent in nature on a communication channel." Ex. 1006, 1:9–13. Yamano discloses a "receiver circuit of the modem [that] is coupled to receive a continuous analog signal from a communication channel." *Id.* at Abstract. "The receiver circuit monitors the analog signal to detect the presence of idle information. Upon detecting idle information, the receiver circuit enters a standby mode in which the processing requirements of the receiver circuit are reduced." *Id.* Yamano discloses that the modem can be an xDSL modem that communicates with a central office to provide data communications to remote locations. *Id.* at 2:14–21. Figure 3, below, shows a block diagram of receiver circuity of a modem.
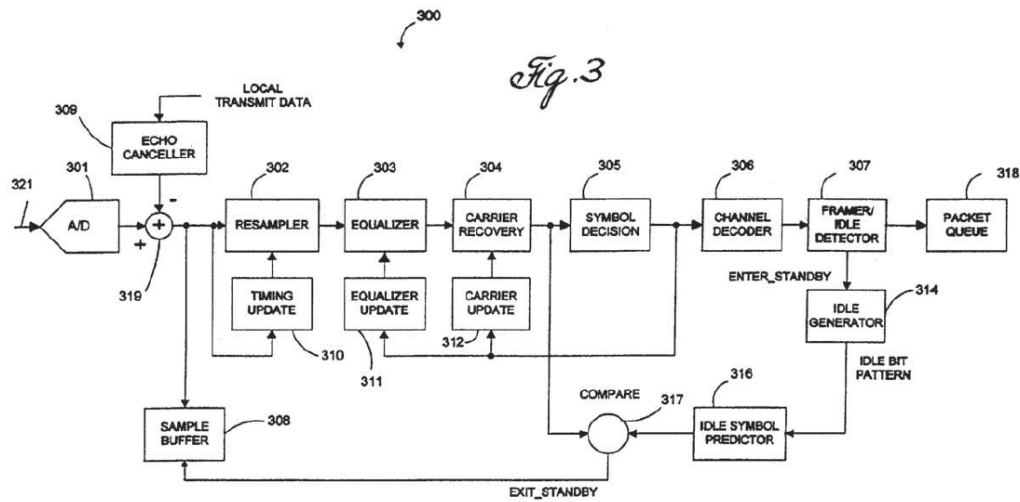
Fig. 3

Figure 3 is a block diagram of receiver circuit 300 of a modem, which includes A/D converter 301, resampler 302, equalizer 303, carrier recovery circuit 304, symbol decision circuit 305, channel decoder 306, framer/idle detector 307, sample buffer 308, echo canceler 309, timing update circuit 310, equalizer update circuit 311, carrier update circuit 312, idle generator 314, idle symbol predictor 316, comparator circuit 317, packet queue 318, and summing node 319. *Id*. at 6:62–7:3. Receiver circuit 300 is coupled to receive an analog RECEIVE signal from communication channel 321 (telephone line). *Id*. at 7:10–13.

Yamano teaches that receive circuitry in a modem can operate in both a "full processing mode" and a "reduced processing mode." *Id*. at 14:25–33. The receiver is in its full processing mode "[u]pon detecting the easily detected signal" where it "perform[s] full demodulation on the incoming RECEIVE signal," and the receiver is in its reduced processing mode in "the absence of the easily detected signal." *Id*. at 14:25–33. Yamano teaches

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that in reduced processing mode, the receive circuit disables a number of components because "there is no packet data being received." *Id*. at 14:33–42.

4. Petitioner's Contentions

With respect to claim 1, Petitioner argues that Bowie and Yamano teach "a multi-carrier transceiver." Pet. 24–26. Petitioner argues that Bowie teaches that this transceiver "transmit[s] or receiv[es] a message to enter a low power mode" (*id*. at 26–27) and "enter[s] the low power mode" (*id*. at 27–28) by shutting off unnecessary portions of the transceiver. Petitioner provides citations to Bowie that teaches the ADSL unit receives a shut-down signal and enters low power mode for the transceiver. *Id*. at 24–28 (citing Ex. 1005, 5:6–9, 5:8–13, 5:17–28; 6:10–11; Ex. 1003, 39–40).

With respect to the claim 1 limitation that recites "wherein a transmitter portion of the transceiver does not transmit data during the low power mode," Petitioner relies on Bowie, which describes shutting down of all unnecessary sections of the transmitting and receiving circuitry of Bowie. Pet. 28 (citing Ex. 1005, 5:25–28; Ex. 1003, 40).

Petitioner then relies on Bowie and Yamano in combination to teach the claim limitation that "a receiver portion of the transceiver receives data during the low power mode." Pet. 28–32. In particular, Petitioner argues that Yamano "teaches how to reduce 'the required amount of signal processing in a modulator/demodulator (modem) which is transferring packet-based data or other information which is intermittent in nature on a communication channel.'" Pet. 29 (quoting Ex. 1006, 1:9–13). Petitioner

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cites this reduction in signal processing applied to DSL technology as the reduced power consumption mode that is applied in Yamano. Pet. 29 (citing Ex. 1006, 15:54–55). Specifically, Petitioner relies on the "burst mode protocol," which is part of the reduced power mode in Yamano. Pet. 29–30 (citing Ex. 1006, 13:56–65, Ex. 1003, 43). Petitioner also cites the processing savings for the receiver and transmitter in Yamano. Pet. 30 (Ex. 1006, 15:63–16:5 (discussing disabled echo canceler used in receive portion as a power savings in the DSL modem)). Petitioner asserts that Yamano's receive process teaches a low power mode because it reduces processing necessary in the receive circuitry. Pet. 30–31. Specifically Petitioner states that

> for a receive circuit in Yamano, [the] direct support of packet traffic means that "[u]pon detecting the easily detected signal, non-idle detector 401 enables the full processing mode of receiver circuit 400, thereby causing receiver circuit 400 to perform full demodulation on the incoming RECEIVE signal." Ex. 1006 at 14:20-29. And, "[a]fter the packet data has been received, non-idle detector 401 detects the absence of the easily detected signal (and the packet data) on the communication channel, and in response, enables a reduced processing mode of receiver circuit 400." Ex. 1006 at 14:29-33. Reduced processing is achieved in the receiving circuit by disabling a number of subcomponents, thereby reducing power consumption. Ex. 1006 at 14:34-42; Ex. 1003 at p. 44-45. Thus, when the receive circuit is not receiving data, processing in the receive circuit is reduced resulting in the DSL modem operating in a lower power mode. Ex. 1003 at p. 45.

Pet. 30–31. Thus, Petitioner argues that the Yamano reduced processing in a DSL modem addresses the same problem of reducing power usage in Bowie.

Pet. 31. Petitioner argues that Yamano improves upon the shut-down of the transmitter and receiver in Bowie, by teaching a method to reduce processing in the transmitter and receiver when not in active use. *Id*.

Finally, Petitioner argues that Bowie and Yamano teach that "the transceiver is a device that is capable of transmitting or receiving internet and video data," as Bowie teaches that the remote source can be an Internet service provider and Yamano teaches that communication is suitable for real-time information, such as voice or video. Pet. 32–33 (citing Ex. 1006, 1:20–21; Ex. 1005, 6:5–8).

With respect to claim 2 that depends from claim 1, Petitioner relies on the arguments and evidence presented for claim 1, arguing that Bowie and Yamano teach the dependent claim 2 limitation for "maintaining synchronization with a second transceiver during the low power mode" because the transceiver in Yamano teaches "[a] periodic poll or some other timing signal would be used to <u>maintain synchronization</u> of these time intervals between receiver circuit 400 and the remote transmitter circuit." Pet. 34 (quoting Ex. 1006, 15:29–32).

For dependent claim 4, Petitioner relies on the arguments and evidence presented for claim 1. Pet. 34–35. With respect to the claim 4 limitation for "storing, during the low power mode, at least one parameter associated with a full power mode," Petitioner asserts that Bowie discloses this limitation by storing characteristics of the loop that were determined during handshaking between the remote modem and the central office. *Id*. at 35–36 (citing Ex. 1005, 5:17–27; 5:60–66; Ex. 1003, 49–51).

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With respect to claim 11, Petitioner relies on the combination of Bowie and Yamano to teach the "transmitting or receiving a message to enter low power mode for a transmitter portion while a receiver portion remains in a full power mode" limitation of claim 11. Pet. 36–40. Petitioner argues that portions of the transceiver in Yamano are in reduced power mode because

> Yamano teaches that "[d]uring full duplex operation, this near end transmitter circuit may be generating a TRANSMIT signal at the same time that receiver circuit 200 is attempting to receive the analog signal from the remote (or far end) transmitter circuit 100." Ex. 1006 at 2:49-53. Yamano also teaches that "the transmitter and receiver circuits provide for direct support of packet traffic, as opposed to continuous bit streams, using low-level modem protocols." Ex. 1006 at 13:49-51. This means that the transmit circuit only sends data when meaningful packets are to be sent and otherwise sends nothing. Ex. 1006 at 13:63-65 ("The transmitter circuit only sends information when there is meaningful packet data available to be sent.").

Pet. 37–38. Thus, as discussed with respect to claim 1, Petitioner relies on the combination of burst mode and receiver operation in Yamano as reduced processing power mode with the low power operation mode in Bowie to teach the limitations of claim 11. Petitioner relies on similar arguments to teach the "entering the low power mode for the transmitter portion while the receiver portion remains in the full power mode" limitation of claim 11. Pet. 40–43. Petitioner provides argument and evidence to assert that:

> Yamano's teaching of a full-duplex DSL system (i.e., a system that can transmit and receive data independently and simultaneously) when applied to Bowie's DSL transceivers results in a transceiver with a receive circuit that can receive

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> while the transmit circuit is not transmitting and vice-versa. Ex.
> 1003 at p. 59. In these situations, the portion not being used
> would shut down, thus resulting in a low-power mode. Ex. 1003
> at p. 59.

Pet. 43. Finally Petitioner provides evidence and argument that Yamano and

Bowie teach "the transceiver is a device that is capable of transmitting or

receiving internet and video data" for the same reasons presented in claim 1.

Pet. 43–44. Petitioner's arguments for claims 12, 14, 16, and 18 rely on the

arguments presented for claims 1 and 11. Pet. 44–46 (citing Ex. 1003, 59–

62).

Notwithstanding Patent Owner's arguments, which we have

considered and which we address below, we are persuaded by a

preponderance of the evidence by Petitioner's showing, which we adopt as

our own findings and conclusions, that claims 1, 2, 4, 11, 12, 14, 16 and 18

of the '268 patent are unpatentable as obvious over Bowie and Yamano

under 35 U.S.C. § 103(a).

5. *Patent Owner's Contentions*

Patent Owner argues that Petitioner has failed to show that the

combination of Bowie and Yamano teaches (1) the "receives data during the

low power mode" limitation or that (2) "the receiver portion remains in the

full power mode" while the transmitter is in low power mode limitation. PO

Resp. 25–28. Patent Owner contends that Bowie and Yamano do not teach

"maintaining synchronization" during low power mode as recited in

dependent claims 2 and 12. *Id*. at 29–34. Patent Owner asserts that Bowie

does not render obvious the limitation for "storing, during the low power

mode, at least one parameter associated with [a/the] full power mode" recited in claims 4 and 14. *Id*. at 35–36.

Patent Owner further argues that a person of ordinary skill in the art would not have been motivated to combine Bowie and Yamano because the references are incompatible, the combination relies on impermissible hindsight, and that the combination would yield an inoperable system. *Id.* at 36–55. We address each of Patent Owner's arguments below.

Petitioner's Declarant Testimony

Patent Owner argues that we should ignore Petitioner's declarant testimony because it is contradictory, and lacks credibility and objective support. PO Resp. 56–59. Specifically, Patent Owner argues that

> [Petitioner's declarant,] Dr. Kiaei's testimony is not reliable or credible, and the Board should give it no weight in evaluating Petitioner's arguments. *See* 37 C.F.R. § 42.65(a); *Icon Health*, 849 F.3d at 1041 (the Board is entitled to "weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed") (quoting *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004)); *Rohm & Haas*, 127 F.3d at 1092 (noting that "[n]othing in the rules [of evidence] or in our jurisprudence requires the fact finder to credit the unsupported assertions of an expert witness"); *In re Nuvasive*, 842 F.3d at 1379-1380 (noting that an agency's factual determination should be based on "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion").

PO Resp. 59. Patent Owner cites examples of Dr. Kiaei's testimony that it contends are wrong on the technology, undermine the knowledge of a person

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of ordinary skill in the art to modify Bowie in view of Yamano, rely only on his alleged expertise, or evade cross-examination. *Id*. at 56–59.

Having reviewed the full record, we are not convinced by Patent Owner's allegations and decline to ignore Dr. Kiaei's testimony. Patent Owner's evidence does not undermine the entirety of Dr. Kiaei's testimony, which we cite, finding it consistent with Petitioner's arguments and citations to the evidence of record. Accordingly, we do not ignore Dr. Kiaei's testimony as Patent Owner urges.

Receives data during low power mode /
Receiver remains in full power mode

With respect to claims 1, 2, and 4, Patent Owner argues that Bowie and Yamano do not teach that a transceiver in low power mode that receives data or transmit data in low power mode. PO Resp. 25–26. Patent Owner argues that Petitioner has not shown "that the transceiver is in the claimed low power mode and, when in the low power mode, its transmitter is not transmitting data and its receiver is receiving data." PO Resp. 26 (Ex. 2005 ¶ 91). Patent Owner argues that Petitioner applies an unreasonably broad interpretation of low power mode that does not comport with the claims and the written description of the '268 patent. According to Patent Owner,

> the claims require that the transceiver enter the claimed low power mode in response to receiving a message and, when in the claimed low power mode, that the transceiver not transmit data. Thus, the claims require that, because the transceiver is in the low power mode, it receive and not transmit data. *See* Ex. 2005 at ¶ 92.

PO Resp. 27.

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Patent Owner argues that Petitioner relies on inherency to teach a low power mode in Yamano by assuming the receive circuitry is receiving data while the transmit circuitry is not transmitting data. *Id*. at 28.

Petitioner argues that Patent Owner misstates Petitioner's argument, which does not rely on inherency. Reply 8–9. Instead, Petitioner states that Bowie teaches entering a low power mode, by disclosing that "upon receipt of the shut-down signal," the ADSL unit "may then enter low-power mode by shutting off the now unnecessary sections of signal processing 111, transmitting 112, and receiving 113 circuitry." Ex. 1005, 5:17–28; Ex. 1003, 39–40; Pet. 27. Petitioner cites Bowie for entering low power mode and shutting off unnecessary circuitry. Reply 9; Ex. 1012 ¶¶ 11–12; Pet. 27.

Petitioner relies on Yamano to teach a transmitter entering low power mode during burst mode, where the "[t]he transmitter circuit only sends information when there is meaningful packet data available to be sent" and otherwise "the transmitter circuit does not transmit any signals on the communication channel." Ex. 1006, 13:56–65; Ex. 1003, 43; Pet. 29–30; Reply 9. Petitioner argues that during burst mode, Yamano reduces processing power as it only transmits data as needed. Reply 8–10; Ex. 1012 ¶ 13; *see also* Ex. 2005 ¶ 116 (Patent Owner's declarant acknowledged burst mode conserves power). Petitioner further cites that during this burst mode, Yamano also teaches enabling the receiver circuit to receive in full power mode. Ex. 1006, 14:20–29; Pet. 30–31; Reply 10–11.

We agree with Petitioner (Pet. 29–31; Reply 10–11), as it is the combination of Yamano and Bowie that Petitioner relies upon to teach the

low power mode. Indeed, Petitioner provides persuasive evidence and argument that Yamano improves upon Bowie's shut-down of both the transmit and receive circuitry by disabling only the circuit not in use (i.e., disabling the transmitter when not transmitting and disabling the receiver when not receiving). Ex. 1003, 45; Pet. 31; Reply 11.

Patent Owner's arguments focus on the requirements of the claims, but do not address the teachings of the combination of the references. Thus, we do not agree that Petitioner relies on inherency with respect to Yamano. Petitioner's arguments are based on the combination of references and the teachings of their low power modes. Moreover, Patent Owner's arguments (PO Resp. 25–27) do not adequately address the combination of Bowie and Yamano, which teach a low power mode where the receiver is receiving data while the transmitter is not transmitting. *See* Pet. 31–32; Reply 10–11.

On the full record, we are not persuaded by Patent Owner's argument and evidence that Bowie and Yamano do not teach or suggest "a transmitter portion of the transceiver does not transmit data . . . and a receiver portion of the transceiver receives data . . . ." during low power mode as recited in the claims.

Maintaining Synchronization

Patent Owner also argues that Petitioner has failed to establish that Yamano teaches "maintaining synchronization with a second transceiver during the low power mode" as recited in claims 2 and 12. PO Resp. 29–34. Patent Owner's arguments are based on its proposed construction for "maintaining synchronization" as requiring "maintaining a timing

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relationship between two transceivers by correcting errors or differences in the timing of the timing reference of the transceiver and the timing reference of a second transceiver." *Id*. at 31. Patent Owner argues that the polling disclosed in Yamano does not suggest maintaining a timing relationship under its proposed construction and, therefore, does not maintain synchronization. *Id*. at 31–32.

We disagree with Patent Owner's arguments as we do not adopt Patent Owner's narrow construction for "maintaining synchronization." Instead, we determine that "maintaining synchronization" requires maintaining a timing relationship between transceivers, including timing and frame synchronization. As we discussed above, maintaining synchronization includes "other forms of timing signal" (Ex. 1001, 5:47–50).

Petitioner argues that Yamano teaches the claim limitation because it states that during a reduced processing time (low power mode) "[a] periodic poll or other timing signal would be used to maintain synchronization of these time intervals between receiver circuit 400 and the remote transmitter circuit." Ex. 1006, 15:29–32; Pet. 34; *see* Ex.1003, 48–49; Reply 12–13. Thus, Petitioner argues that Yamano expressly states the poll or other timing signal is used to maintain synchronization during a reduced processing state.

We agree with Petitioner's argument and evidence. Patent Owner does not dispute that Yamano refers to a poll or other timing signal to maintain synchronization. Instead, Patent Owner argues that such synchronization only occurs at the start of the reception of the data packet

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when the transceiver is already in full power mode. PO Resp. 32. Further, Patent Owner argues that "Yamano's teaching that synchronization is established in full power mode necessarily teaches that synchronization is not maintained in the low power mode." *Id*. at 33 (emphasis omitted). We are not persuaded by Patent Owner's argument.

Yamano teaches a poll or other timing signal to "maintain synchronization" between the receiver and transmitter during a reduced processing state and not merely during full power mode. Ex. 1006, 15:29–32. Patent Owner has not provided sufficient argument or evidence to establish that synchronization during a full power mode in Yamano, excludes synchronization during a low power or reduced processing mode.

We also are not convinced by Patent Owner's argument that "Yamano's poll is neither sent nor received when the receiver is receiving data or in a full power mode." PO Resp. 33 (emphasis omitted). To the contrary, Petitioner provides persuasive evidence and argument that the modem transmitter sends a poll or other timing signal to the terminal during a reduced processing mode to maintain synchronization. *See* Ex.1006, 15:64–16:5 ("the local transmitter circuit is not transmitting local transmit data" and "echo canceler 309 can be disabled when the local transmitter circuit is not transmitting packet information"); 15:29–32 ("poll or some other timing signal would be used to maintain synchronization of these time intervals between receiver circuit 400 and the remote transmitter circuit."); Pet. 34; Ex. 1003, 48–49; Reply 15.

On the full record, we are not persuaded by Patent Owner's argument and evidence that Bowie and Yamano do not teach "maintaining synchronization with a second transceiver during the low power mode."

Storing a Parameter During the Low Power Mode

We are not persuaded by Patent Owner's argument that Bowie does not teach storing a "parameter associated with a/the full power mode," as recited in claims 4 and 14, because Bowie's disclosed loop characteristics are not associated with transmitting data. PO Resp. 35. Patent Owner's arguments are misplaced as they require the stored parameter relate to the "transmission of data" which is not commensurate with the claim term, which recites that the characteristics are "associated" with the full power mode. *Id.* The plain language of the term—"associated with"—is broad, and the Specification does not define or limit "parameter associated with the full power mode operation" to exclude loop characteristics. Indeed, the challenged claims of the '268 patent do not recite any particular parameter.

Patent Owner relies upon a list of state parameters described in the '268 patent at column 7, lines 7 to 14, but that passage does not support Patent Owner's argument because it discloses that "[t]he state . . . preferably includes *at least*" the parameters listed, as opposed to "[t]he state . . . preferably includes *only*" the parameters listed. We, therefore, agree with Petitioner that the Specification contemplates parameters other than those listed explicitly in column 7 of the '268 patent.

Also, we disagree with Patent Owner's contention that Bowie's loop characteristics are physical attributes of the transmission loop like loop

length, diameter, and composition. PO Resp. 35. Patent Owner acknowledges that Bowie teaches storing loop characteristics, such as "attenuation," which "must be determined and exchanged" during "handshaking" and used in full power mode operation. PO Resp. 9 (citing Ex. 1005, 4:64–5:3). Bowie also expressly distinguishes "loop loss characteristics" from these physical attributes by describing loop loss characteristics as "a function of" these physical attributes. Ex. 1005, 5:1–3. In addition, Bowie discloses "loop loss characteristics" as merely one example of the type of information exchanged during handshaking. *Id.* As a result, we disagree with Patent Owner's contention that Bowie stores only physical attributes of the transmission loop.

Based on the foregoing, Petitioner has provided sufficient and persuasive evidence that Bowie teaches the limitation "storing, during the low power mode, at least one parameter associated with [a/the] full power mode."

Motivation to Combine

Patent Owner asserts that Petitioner fails to show that a person of ordinary skill in the art would have combined Bowie and Yamano to arrive at the claimed invention. PO Resp. 36. Patent Owner's numerous arguments, several of which rely on arguments that Yamano and Bowie do not teach the limitations of the challenged claims, are addressed below.

Patent Owner argues that the references are incompatible because the ADSL system of Bowie is not compatible with the burst mode protocol of Yamano. *Id*. at 37–38. Patent Owner bases its argument on the ADSL

standard followed by Bowie, which requires that the transmitter encodes the lack of data with idle information, which would not be compatible with the burst mode transmission in Yamano. *Id*. at 37–39 (citing Ex. 2005 ¶¶ 23, 24, 26, 124–132).

Petitioner responds that Patent Owner mischaracterizes Bowie's teachings, which expressly discuss inactive states for the transmitter where no data is transmitted. Reply 19–20 (citing Ex. 1005, 5:26–28). Thus, Bowie does not require constant transmission of superframes of idle information. Petitioner also refutes Patent Owner's argument that Yamano is incompatible with the superframe structure of the 1995 ADSL standard (PO Resp. 38), because Yamano expressly states that its modem processes a signal from a conventional modem protocol, such as xDSL—of which ADSL is a variant. Reply 20; Ex. 1006, 7:18–20, Ex. 1003, 32–33; Ex. 1001, 1:47–50.

We are not persuaded by Patent Owner's arguments which are grounded in the ADSL standard applicable to Bowie. Patent Owner has not provided persuasive evidence or argument that the xDSL improvements in Yamano would alter the ADSL compliance of Bowie to discourage the combination of Bowie and Yamano. PO Resp. 37–39 (citing Ex. 2005 ¶¶ 23, 24, 26, 124–132). Instead, we credit the testimony of Petitioner's declarant, who testifies that "a POSITA would understand Yamano's burst mode to be compatible with the ANSI standard because low power mode operation is just an additional function that the standard permits." Ex. 1012

¶ 23. Thus, we disagree with Patent Owner that Bowie and Yamano are incompatible.

We also find Patent Owner's argument that the references are combinable only using hindsight reasoning equally unavailing. PO Resp. 40–43. Patent Owner argues that combining Yamano with Bowie would result in superfluous features, by combining incompatible ADSL-based Bowie with Yamano's burst mode embodiment. PO Resp. 40–42. Patent Owner's arguments do not negate that Yamano discloses processing conventional modem protocols, such as xDSL, which are related to the ADSL standard. Reply 21; Ex. 1006, 7:18–20; Ex. 1003, 32–33; Ex. 1001, 1:47–50; *see* Pet. 22–23 (discussing combining xDSL modem techniques with Bowie, which teaches ADSL).

"The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference." *In re Keller*, 642 F.3d 413, 425 (CCPA 1981); *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 418 (2007) (noting that in making a determination of obviousness, we must consider the "inferences and creative steps that a person of ordinary skill in the art would employ"). "[A] person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR v. Teleflex*, 550 U.S. 398, 421 (2007). We credit Petitioner's evidence and argument that a person of ordinary skill in the art would have known to combine ADSL-based teachings of Bowie and xDSL-based teachings of Yamano to improve the power consumption of the Bowie system. Ex. 1003, 33–34; Pet. 22–24; *see also* Ex.1005, Abstract ("conserving power in

terminal"); Ex. 1006, 10:58–59 ("reduce power consumption of the processing element").

Patent Owner further argues that Petitioner's motivation to combine the references is based on an incorrect understanding of the transmitter in Yamano being shut down or disabled during low power mode. PO Resp. 43–44 (citing Ex. 2005 ¶¶ 134–135). Thus, Patent Owner argues that Yamano's reduced processing mode applies to the receiver circuitry and Yamano does not teach shutting down the transmitter Petitioner combines with Bowie. PO Resp. 44 (citing Ex. 2004, 118:10–23; Ex. 1006, 14:20–51; Ex. 2005 ¶ 135).

We agree with Petitioner (Reply 22–23) that Patent Owner cannot show nonobviousness by attacking the references individually. *In re Keller*, 642 F.2d 413, 426 (Fed. Cir. 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986). Petitioner's combination relies on Bowie and Yamano and does not solely depend on Yamano teaching a low power mode for the transmitter. We also determine that Petitioner has provided sufficient evidence and argument that Yamano teaches a low processing mode that disables portions of the transmitter. Patent Owner's declarant agrees that Yamano "conserve[s] power by not communicating idle information." Ex. 2005 ¶ 116. Furthermore, Yamano teaches that burst mode provides low power since "[t]he transmitter circuit only sends information when there is meaningful packet data available to be sent" and otherwise "the transmitter circuit does not transmit any signals on the communication channel." Ex.1006, 13:56–65. Accordingly, we are not persuaded that Petitioner's

argument is based on an incorrect and unsupported interpretation of Yamano.

Patent Owner next argues that Petitioner has failed to establish that Bowie and Yamano teach that the "transceiver is a device that is capable of transmitting or receiving internet and video data" as recited in claims 1 and 11. Patent Owner's argument stems from the burst mode during reduced processing mode would interrupt continuous receipt of video. PO Resp. 46–48. According to Patent Owner, a person of ordinary skill in the art would not have been motivated to combine Yamano with Bowie because the combination would not save power when communicating video data. *Id*. (citing Ex. 2005 ¶ 119).

Patent Owner's arguments on this issue are not commensurate with the scope of claims 1 and 11, which only require that "the transceiver is a device that is capable of transmitting or receiving internet and video data" (Ex. 1001, 10:6–14, 10:64–11:4). *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). The claims do not recite that the data transmitted or received during low power mode be any particular data size or content or that the particular data in the low power mode of the claim be "internet and video data." Furthermore, the claims expressly state that the transceiver be capable of *either* transmitting *or* receiving internet and video data. As Petitioner argues (Reply 24–25), during low power mode, it is possible for the transceiver to receive video and internet data provided by a transmitter. Reply 24 (citing Ex. 1003, 31).

Patent Owner also contends that Petitioner's declarant testimony undermines the argument that Bowie and Yamano are combinable, because a person of ordinary skill in the art "looking at Bowie and Yamano would not have known how to modify the Bowie transceiver to receive data during the low power mode or enter a low power mode for the transmitter portion while the receiver portion remains in full power mode." PO Resp. 50; Ex. 2004, 103:7–104:11, 104:12–105:14, 105:15–16 (discussing modifications to the control logic in Bowie in view of Yamano's teachings). Further, Patent Owner notes that Petitioner's declarant admits that Yamano does not teach shutting down the transmit circuitry when there is nothing to transmit. Ex. 2004, 118:10–23. Thus, Patent Owner argues that "there is no credible evidence in the record to support a finding by the Board that the challenged claims would have been obvious over Bowie in view of Yamano." PO Resp. 51 (citing *In re Nuvasive*, 842 F.3d 1376, 1379–80 (Fed. Cir. 2016)).

Having reviewed Petitioner's declarant testimony and deposition, we disagree with Patent Owner, finding instead that the Petitioner's declarant testimony is consistent with Petitioner's reliance on Bowie for teaching turning both receiver and transmitter portions on or off and Petitioner's reliance on Yamano for teaching power reducing techniques for the transceiver. Ex. 2004, 103:18–104:11. We find that the deposition testimony cited by Patent Owner does not undermine Petitioner's credible declarant testimony and evidence regarding the modification of Bowie in view of Yamano. Specifically, Yamano's teaching that when there is nothing to send, the "transmitter circuit does not transmit any signals"

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(Ex. 1006, 13:60–62) and Bowie's teaching that the "transmitter can be shut down by sending a signal" (Ex. 2004, 119:8–10; Ex. 1005, 7:12–14 ("shut-down signal")) further support Petitioner's declarant testimony that Yamano maintains a low processing mode akin to a low power mode that is combinable with the teachings of Bowie. Ex. 2004, 103:18–104:11.

In sum, we are not persuaded that Petitioner's declarant testimony undermines Petitioner's persuasive argument and evidence regarding the combination of Yamano and Bowie.

Patent Owner's arguments that Yamano's synchronization using a poll or other signal would not have been used in Bowie's ADSL-based modem also are not persuasive. PO Resp. 51–52. Patent Owner's argument is premised on its evidence and argument that there were only two methods— by use of cyclic prefixes or a pilot tone—of timing synchronization in ADSL at the time of the '268 patent and that claims 2 and 12 require one of those synchronization methods. PO Resp. 52 (citing Ex. 2005 ¶¶ 139, 140). We disagree. Claims 2 and 12 state only "maintaining synchronization with a second transceiver during the low power mode" and the '268 patent does not limit "maintaining synchronization" to a particular signal or method. Patent Owner's citation to Petitioner's expert declaration in a related IPR does not denote the limits of claims 2 and 12, nor the teachings of Yamano. PO Resp. 52 (citing declarant testimony in IPR2016-01470). Indeed, Patent Owner's arguments fail to explain why Yamano's teachings of a "poll or *other timing signal*" for maintaining synchronization during a low power mode are inapplicable to the system in Bowie. Ex. 1006, 15:29–32

(emphasis added); *see* Ex. 1003, 28, 31, 48. Accordingly, we are not persuaded that Yamano's synchronization teachings would not have been used in Bowie.

Finally, Patent Owner contends that modifying Bowie to maintain synchronization during a low power mode would render Bowie inoperable for its intended use. PO Resp. 53. Specifically, Patent Owner argues that "modifying the Bowie unit to send or receive the periodic poll of Yamano while in the low power mode would conflict with Bowie's goal of reducing power consumption." *Id.*; *see* Ex. 1005, Abstract, Title, 1:4–8, 2:1–6, 3:1–5, 5:25–30; 5:47–59; Ex. 2005 ¶ 141.

Patent Owner's argument relies on a mischaracterization of Bowie, which teaches ways to reduce power, but does not teach that "maximum" power reduction is its intended purpose. As Petitioner notes (Reply 28–29), Bowie expressly recognizes that power savings vary by implementation. Ex. 1005, 2:3–4, 5:44–46 ("[T]he particular circuit components that can be placed in a low power mode may vary among differing brands, models, and versions of ADSL units.").

Furthermore, Patent Owner's contention that modifying Bowie in view of Yamano's periodic poll would render Bowie inoperable for reducing power consumption, ignores the teachings in Bowie that a portion of the circuitry remains capable of detecting a signal during low power operation (Ex. 1005, 5:28–31). Reply 29. Patent Owner relies on Bowie's teaching that its loop is "inactive" during low power mode, but that teaching does not imply that *all* circuitry must be shut off during low power mode in order to

achieve Bowie's intended purpose. The very next sentence in Bowie describes Resume Signal Detector 115 remaining "on" in order to "remain capable of signal detection during low power operation." Ex. 1005, 5:28–30; *see also id*. at 5:55–56 ("This detector 115 *remains operative* when the unit 232 is in low-power mode." (emphasis added)). Thus, Bowie explicitly recognizes the need for some circuitry to remain "on" during low power mode to receive signals. Contrary to Patent Owner's contention (PO Resp. 54–55), the synchronization signal disclosed in Yamano would be able to go between the modems in a system combining Bowie and Yamano.

We do not agree with Patent Owner's arguments that the combination of Bowie and Yamano would render Bowie inoperable for its power savings purpose or that Bowie teaches away from the proposed combination. PO Resp. 55. Patent Owner has presented insufficient evidence that Bowie discourages or discredits the combination of the power saving techniques in Yamano with the system of Bowie.

In sum, we are not persuaded by Patent Owner's arguments that Petitioner failed to show that a person of ordinary skill in the art would have been motivated to combine Bowie and Yamano. Based on the full record, we determine that Petitioner has established an articulated rationale and reasoning by a preponderance of the evidence for the combination of Bowie and Yamano.

6. Summary

Based on the foregoing and our review of the full record, we find that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4,

11, 12, 14, 16, and 18 of the '268 patent are unpatentable as obvious over Bowie and Yamano under 35 U.S.C. § 103(a).

III.   MOTIONS TO EXCLUDE

Patent Owner filed a Motion to Exclude Inadmissible Evidence (Paper 26, "PO Mot."). Petitioner opposed Patent Owner's Motion in Petitioner's Opposition to Patent Owner's Motion to Exclude (Paper 32, "Pet. Opp.") and Patent Owner replied (Paper 33, "PO Mot. Reply"). As movant, Patent Owner has the burden of proof to establish that it is entitled to the requested relief. *See* 37 C.F.R. § 42.20(c). For the reasons stated below, Patent Owner's Motion to Exclude is *denied*.

Patent Owner moves to exclude paragraphs 1–10, 14, and 16–25 of Exhibit 1012 (Petitioner's Reply Declaration) and Exhibit 1016 (U.S. Patent No. 5, 909,463) under Fed. R. Evid. 402 and 403. PO Mot. 2–12, 12–13.

Patent Owner moves to exclude paragraphs 1–4, 7, 24, and 25 of Exhibit 1012 because Petitioner's Reply does not cite these paragraphs, rendering them irrelevant. PO Mot. 2–3. Patent Owner also argues that the probative value of the evidence is outweighed by the prejudice. *Id.* Patent Owner also moves to exclude paragraphs 5, 6, 8–10, 15, and 16–23 of Exhibit 1012 because these paragraphs improperly introduce new evidence and argument. *Id.* at 3–12. Finally, Patent Owner moves to exclude Exhibit 1016 because it is used to support the new argument in Petitioner's Reply. *Id.* at 12–13. For the paragraphs of Exhibit 1012 and Exhibit 1016, Patent Owner asserts these exhibits present arguments and evidence that should have been presented in the Petition. *Id.* at 3–13.

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A motion to exclude is not a vehicle to argue that a reply contains new arguments. *See Vibrant Media, Inc. v. General Electric C*o., IPR2013-00170, slip op. at 31 (PTAB June 26, 2014) (Paper 56). We agree with Petitioner, that a motion to exclude is available to parties to explain why certain evidence is inadmissible, and is not the proper place to raise arguments regarding the scope of a reply. Trial Practice Guide, 77 Fed. Reg. 48756, 48767 (Aug. 14, 2012); *Liberty Mutual Insurance Co. v. Progressive Casualty Insurance Co*., Case No. CBM2012-00002, slip op. at 62 (PTAB Jan. 23, 2014) (Paper 66) (stating that a motion to exclude "is not a mechanism to argue that a reply contains new arguments or relies on evidence necessary to make out a prima facie case").

We also agree with Petitioner that Patent Owner has not carried its burden to show that the identified paragraphs of Exhibit 1012 and Exhibit 1016 are not admissible under the Fed. R. Evid. 402 and 403. Rule 401 of the Federal Rules of Evidence states that evidence is relevant if "it has any tendency to make a fact more or less probable than it would be without the evidence." Fed. R. Evid. 401. We find that Petitioner has met the threshold to establish that the evidence Patent Owner seeks to exclude is relevant. *See OddzOn Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1407 (Fed. Cir. 1997); *Laird Techs., Inc. v. GrafTech Int'l Holdings, Inc.*, IPR2014-00025, slip op. at 44 (PTAB Mar. 25, 2015).

We are not persuaded by Patent Owner's cursory argument that evidence not cited in Petitioner's Reply is irrelevant or lacks probative value outweighed by its prejudice. PO Mot. Reply 2–7. Indeed Patent Owner has

not provided persuasive evidence that the paragraphs of Exhibit 1012 or

Exhibit 1016 not cited in Petitioner's Reply are prejudicial or would result in

confusion, delay, or wasted time. *Id.*

Accordingly, we deny Patent Owner's motion to exclude paragraphs

of Exhibit 1012 and Exhibit 1016.

IV.   NEW ARGUMENTS AND EVIDENCE IN PETITIONER'S REPLY

Pursuant to our Order (Paper 22), Patent Owner filed a listing of

alleged statements and evidence in connection with Petitioner's Reply it

deemed to be beyond the proper scope of a reply. Paper 23. Petitioner filed

a response to Patent Owner's listing. Paper 28.

Having reviewed Patent Owner's listing of statements and evidence in

connection with Petitioner's Reply it deemed to be beyond the proper scope

of a reply, and Petitioner's response, we do not agree with Patent Owner that

portions of Petitioner's Reply are beyond the scope of a proper reply. The

mere fact that a petitioner submits rebuttal testimony that relies on new

evidence not previously identified in the petition does not suffice to establish

its impropriety. Indeed, the very nature of a reply is to rebut the Patent

Owner's response. 37 C.F.R. § 42.23(b). For example, Patent Owner

identifies evidence and argument addressed in Petitioner's Reply to claim

construction issues first raised in Patent Owner's Response. *See, e.g.*, Paper

23 (items 1 and 2); Paper 28 (citing PO Resp. 19–24 as supporting

Petitioner's response to items 1 and 2). Finding that Petitioner's response to

Patent Owner's claim construction identification is an improper new

argument would deprive Petitioner of the ability to address Patent Owner's claim construction evidence and argument introduced after Institution.

Having fully considered Patent Owner's list of alleged new arguments in Petitioner's Reply and Petitioner's identification of the portions in Patent Owner's Response that prompted Petitioner's Reply, we do not find that Petitioner introduced improper new argument and evidence that is beyond the scope of a proper reply. Our Order in this proceeding states that "the panel is capable of determining whether new argument/evidence is outside the proper scope of a reply when writing the final written decision." Paper 22, 3. In this case, we do not agree with Patent Owner that the portions of Petitioner's Reply and evidence identified in Paper 23 are beyond the scope of a proper reply. Petitioner's reply argument and evidence are sufficiently responsive to Patent Owner's argument and evidence introduced in Patent Owner's response.

V.   CONCLUSION

For the foregoing reasons, Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 4, 11, 12, 14, 16 and 18 of the '268 patent are unpatentable as obvious over Bowie and Yamano under 35 U.S.C. § 103(a). Patent Owner's Motion to Exclude is denied.

VI.   ORDER

For the foregoing reasons, it is:

ORDERED that claims 1, 2, 4, 11, 12, 14, 16 and 18 of the '268 patent are held unpatentable as obvious over Bowie and Yamano under 35 U.S.C. § 103(a);

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied*; 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.

For PETITIONER:

David McCombs
Theodore Foster
Michael Parsons
david.mccombs.ipr@haynesboone.com
ipr.theo.foster@haynesboone.com
michael.parsons@haynesboone.com

For PATENT OWNER:

Peter J. McAndrews
Thomas J. Wimbiscus
Scott P. McBride
Christopher M. Scharff
Rajendra A. Chiplunkar
MCANDREWS, HELD & MALLOY, LTD.
pmcandrews@mcandrews-ip.com
twimbiscus@mcandrews-ip.com
smcbride@mcandrews-ip.com
cscharff@mcandrews-ip.com
rchiplunkar@mcandrews-ip.com