

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC., RUCKUS WIRELESS, INC.,
BROCADE COMMUNICATION SYSTEMS, INC., and NETGEAR, INC.,
Petitioner,

v.

CHRIMAR SYSTEMS, INC.,
Patent Owner.

Case IPR2016-01399¹
Patent 8,902,760 B2

Before KARL D. EASTHOM, GREGG I. ANDERSON, and
ROBERT J. WEINSCHENK, *Administrative Patent Judges*.

WEINSCHENK, *Administrative Patent Judge*.

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

¹ Ruckus Wireless, Inc., Brocade Communication Systems, Inc., and Netgear, Inc. filed a petition in IPR2017-00719 (now terminated), and were joined to this proceeding.

I. INTRODUCTION

Juniper Networks, Inc. filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145 of U.S. Patent No. 8,902,760 B2 (Ex. 1001, “the ’760 patent”). Chrimar Systems, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”) to the Petition. On January 4, 2017, we instituted an *inter partes* review of claims 1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145 (“the challenged claims”) of the ’760 patent on the following grounds:

Claims	Statutory Basis	Applied References
1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145	35 U.S.C. § 103(a) ²	Hunter et al., PCT Publication No. WO 96/23377 (published Aug. 1, 1996) (Ex. 1003, “Hunter”); and Bulan et al., U.S. Patent No. 5,089,927 (issued Feb. 18, 1992) (Ex. 1004, “Bulan”)
1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145	35 U.S.C. § 103(a)	Bloch et al., U.S. Patent No. 4,173,714 (issued Nov. 6, 1979) (Ex. 1005, “Bloch”); The Institute of Electrical and Electronics Engineers, Inc., IEEE Standard 802.3-1993 (1993) (Ex. 1006, “IEEE 802.3-1993”); and The Institute of Electrical and Electronics Engineers, Inc., IEEE Standard 802.3u-1995 (1995) (Exs. 1007–1008, “IEEE 802.3-1995”)

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, which was enacted on September 16, 2011, made amendments to 35 U.S.C. §§ 102, 103. AIA § 3(b), (c). Those amendments became effective eighteen months later on March 16, 2013. *Id.* at § 3(n). Because the application from which the ’760 patent issued was filed before March 16, 2013, any citations herein to 35 U.S.C. §§ 102, 103 are to their pre-AIA versions.

Claims	Statutory Basis	Applied References
1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145	35 U.S.C. § 103(a)	Bloch; IEEE 802.3-1993; IEEE 802.3-1995; and Huizinga et al., U.S. Patent No. 4,046,972 (issued Sept. 6, 1977) (Ex. 1009, “Huizinga”)

Paper 8 (“Dec. on Inst.”), 20–21.

After institution, Ruckus Wireless, Inc., Brocade Communication Systems, Inc., and Netgear, Inc. filed a petition in IPR2017-00719 requesting an *inter partes* review of the challenged claims of the ’760 patent and filed a motion requesting joinder to this case. Paper 25, 2. On March 16, 2017, we joined Ruckus Wireless, Inc., Brocade Communication Systems, Inc., and Netgear, Inc. to this case and terminated IPR2017-00719. *Id.* at 5–6. In this Decision, we refer to Juniper Networks, Inc., Ruckus Wireless, Inc., Brocade Communication Systems, Inc., and Netgear, Inc. collectively as Petitioner. Also, after institution, Patent Owner filed a Response (Paper 26, “PO Resp.”) to the Petition, and Petitioner filed a Reply (Paper 33, “Pet. Reply”) to the Response. An oral hearing was held on August 31, 2017, and a transcript of the hearing is included in the record. Paper 63 (“Tr.”).

On September 18, 2017, an *ex parte* reexamination certificate issued for the ’760 patent. Ex. 2056. The *ex parte* reexamination certificate amends independent claim 73 and dependent claim 145. *Id.* at 1:18–19, 1:23–2:9. The *ex parte* reexamination certificate also amends dependent claims 106, 112, 134, and 142, by virtue of their dependency from amended claim 73. *Id.* at 1:20–22. We instituted an *inter partes* review of claims 73, 106, 112, 134, 142, and 145, as originally issued, and, thus, we address the patentability of original claims 73, 106, 112, 134, 142, and 145 in this

Decision.³ *See infra* Sections II.C, II.D; 35 U.S.C. § 318(a) (“the Patent Trial and Appeal Board shall issue a final written decision with respect to the patentability of any patent claim challenged by the petitioner”).

Petitioner, however, does not challenge the patentability of claims 73, 106, 112, 134, 142, and 145, as amended by the *ex parte* reexamination certificate, in the Petition. *See* Pet. 7. Therefore, we did not institute an *inter partes* review of amended claims 73, 106, 112, 134, 142, and 145, and we do not address the patentability of amended claims 73, 106, 112, 134, 142, and 145 in this Decision. *See infra* Section II.E; 35 U.S.C. § 318(a).

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, Petitioner has shown by a preponderance of the evidence that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 of the ’760 patent are unpatentable.

A. *Related Proceedings*

The parties indicate that the ’760 patent is the subject of several cases in the United States District Court for the Eastern District of Michigan, the United States District Court for the Eastern District of Texas, and the United States District Court for the Northern District of California. Pet. 1; Paper 5,

³ Patent Owner’s amendment of original claims 73, 106, 112, 134, 142, and 145 in the *ex parte* reexamination also may be considered a concession of unpatentability, and, thus, a request for adverse judgment as to original claims 73, 106, 112, 134, 142, and 145. *See* 37 C.F.R. § 42.73(b)(3); *Bloom Eng’g Co. v. N. Am. Mfg. Co.*, 129 F.3d 1247, 1249 (Fed. Cir. 1997) (“the making of substantive changes in the claims is treated as an irrebuttable presumption that the original claims were materially flawed”).

2–3; Ex. 1012. The parties also indicate that the following petitions for *inter partes* review are related to this case:

Case No.	Involved U.S. Patent No.
IPR2016-00569	U.S. Patent No. 8,942,107
IPR2016-00573	U.S. Patent No. 9,019,838
IPR2016-00574	U.S. Patent No. 8,902,760
IPR2016-00983	U.S. Patent No. 8,155,012
IPR2016-01151	U.S. Patent No. 9,019,838
IPR2016-01389	U.S. Patent No. 8,155,012
IPR2016-01391	U.S. Patent No. 8,942,107
IPR2016-01397	U.S. Patent No. 9,019,838
IPR2016-01425	U.S. Patent No. 8,155,012
IPR2016-01426	U.S. Patent No. 9,019,838

Pet. 1; Paper 5, 3.

B. *The '760 Patent*

The '760 patent relates to a system for managing, tracking, and identifying remotely located electronic equipment. Ex. 1001, 1:27–30. According to the '760 patent, one of the difficulties in managing a computerized office environment is keeping track of a company's electronic assets. *Id.* at 1:32–57. Previous systems for tracking electronic assets suffered from several deficiencies. *Id.* at 1:62–65. For example, previous systems could not determine the connection status or physical location of an asset and could only track assets that were powered-up. *Id.* at 1:65–2:2.

To address these deficiencies, the '760 patent describes a system for tracking an electronic asset. *Id.* at 2:3–6, 3:23–27. In one embodiment described in the '760 patent, the system includes a central module and a remote module. *Id.* at 3:27–30. The remote module attaches to the electronic asset and transmits a low frequency signal. *Id.* A receiver in the central module monitors the signal transmitted by the remote module and

determines if the status or location of the electronic asset changes. *Id.* at 3:30–32, 3:34–40.

C. *Illustrative Claim*

Claims 1 and 73 are independent. Claim 1 is reproduced below.

1. A BaseT Ethernet system comprising:

a piece of central BaseT Ethernet equipment;

a piece of BaseT Ethernet terminal equipment;

data signaling pairs of conductors comprising first and second pairs used to carry BaseT Ethernet communication signals between the piece of central BaseT Ethernet equipment and the piece of BaseT Ethernet terminal equipment, the first and second pairs physically connect between the piece of BaseT Ethernet terminal equipment and the piece of central BaseT Ethernet equipment, the piece of central BaseT Ethernet equipment having at least one DC supply, the piece of BaseT Ethernet terminal equipment having at least one path to draw different magnitudes of current flow from the at least one DC supply through a loop formed over at least one of the conductors of the first pair and at least one of the conductors of the second pair, the piece of central BaseT Ethernet equipment to detect at least two different magnitudes of the current flow through the loop and to control the application of at least one electrical condition to at least two of the conductors.

Ex. 1001, 17:16–36.

II. ANALYSIS

A. *Level of Ordinary Skill in the Art*

Petitioner argues that a person of ordinary skill in the art would have had “at least a B.S. degree in electrical engineering or computer science, or the equivalent, and at least three years of experience in the design of network communication products.” Pet. 5. Petitioner also argues that a person of ordinary skill in the art would have been “familiar with, *inter alia*,

data communications protocols, data communications standards (and standards under development at the time), and the behavior and use of common data communications products available on the market.” *Id.* (citing Ex. 1002 ¶¶ 49–51). Patent Owner argues that a person of ordinary skill in the art would have had “a B.S. degree (or equivalent) in electrical engineering or computer science, and three years of experience in the design of network communications products.” PO Resp. 14 (citing Ex. 2038 ¶ 26). Patent Owner also argues that a person of ordinary skill in the art would have been “familiar with data communications protocols, data communications standards (and standards under development at the time, including the 802.3 standard), and the behavior of data communications products available on the market.” PO Resp. 14 (citing Ex. 2038 ¶ 26).

Patent Owner indicates that the only difference between the parties’ respective definitions of the level of ordinary skill in the art is that Petitioner uses the phrase “at least.” PO Resp. 14. According to Patent Owner, the phrase “at least” is “too open ended” and “would result in an *expert*, who has a Ph.D. and 15 years of experience, being considered an ordinary artisan.” *Id.* at 14–15. Patent Owner, however, does not identify any specific instance in which the difference between the parties’ respective definitions of the level of ordinary skill in the art impacts the analysis or conclusions of either party, or either party’s declarant, in this case. *See id.*

Our findings and conclusions in this case would be the same under either party’s definition of the level of ordinary skill in the art. To the extent necessary, though, we adopt Patent Owner’s definition, which is supported by the declaration of Dr. Vijay K. Madiseti. *Id.*; Ex. 2038 ¶ 26. As such, we determine that a person of ordinary skill in the art would have had a B.S.

degree (or equivalent) in electrical engineering or computer science and three years of experience in the design of network communications products, and would have been familiar with data communications protocols, data communications standards (and standards under development at the time, including the 802.3 standard), and the behavior of data communications products available on the market.

B. *Claim Construction*

The claims of an unexpired patent are interpreted using the broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–45 (2016). In applying that standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the specification. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An applicant may provide a different definition of the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read into the claims from the specification. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

1. *BaseT*

The challenged claims include the term “BaseT.” *See, e.g.*, Ex. 1001, 17:16–36, 21:37–52. In a decision on institution in IPR2016-01391, which involves the same parties, we construed the term “BaseT” in a related patent to mean “twisted pair Ethernet in accordance with the 10BASE-T or 100BASE-T standards.” *Juniper Networks, Inc. v. Chrimar Systems, Inc.*, Case IPR2016-01391, slip op. at 11–12 (PTAB Dec. 22, 2016) (Paper 9).

Our construction is consistent with Petitioner’s proposal that the term “BaseT” be construed to mean “10BASE-T and 100BASE-T.” Pet. 6. Our construction also is consistent with the construction adopted by the United States District Court for the Eastern District of Texas (“District Court”) in a related case. Ex. 2021, 18. Further, Patent Owner “does not contest” our construction. PO Resp. 19. We note that our findings and conclusions in this case are not dependent on a particular construction of the term “BaseT.” Nonetheless, because neither party disputes our prior construction of that term, we adopt it in this case. Specifically, we construe the term “BaseT” in the challenged claims to mean “twisted pair Ethernet in accordance with the 10Base-T or 100Base-T standards.”

2. *Protocol*

Claim 59 and original claim 134 recite “wherein at least one of the different magnitudes of current flow through the loop is part of a detection protocol.” Ex. 1001, 20:61–63, 25:13–15. Patent Owner proposes construing the term “protocol” to mean “a mutually agreed upon method of communication.” PO Resp. 18. Patent Owner argues that its proposed construction is supported by a document entitled “FYI on ‘What is the Internet?’” produced by the User Services Working Group of the Internet Engineering Task Force. *Id.* (citing Ex. 2038 ¶ 104; Ex. 2047, 1). Petitioner responds that Patent Owner’s proposed construction improperly “reads in a requirement that two devices use an agreed upon communication method,” which is not supported by the claim language or the specification. Pet. Reply 21–22.

We agree with Petitioner that Patent Owner’s proposed construction is not the broadest reasonable interpretation. First, Patent Owner does not

direct us to any intrinsic evidence to support its proposed construction, but instead relies on a single piece of extrinsic evidence. PO Resp. 18.

Specifically, Patent Owner cites to a document that discusses the term “protocol” in the context of explaining how “networks that make up the Internet” communicate with one another. Ex. 2047, 1. That, however, is not the context in which the term “protocol” is used in the ’760 patent. For example, the ’760 patent relates to tracking electronic equipment in an Ethernet network. Ex. 1001, 1:27–30, 17:16–36. As a result, we are not persuaded that the extrinsic evidence cited by Patent Owner establishes the meaning of the term “protocol” in the context of the ’760 patent.

Second, Patent Owner’s proposed construction addresses the term “protocol” in isolation from the remainder of the claim language. By limiting the term “protocol” to a mutually agreed upon method of communication, Patent Owner’s proposed construction appears to require a communication protocol. Claims 59 and 134, though, recite a *detection* protocol, not a *communication* protocol. *Id.* at 20:61–63, 25:13–15. Claims 59 and 134 further specify that the detection protocol is based on at least one magnitude of current flow detected by the central Base-T Ethernet equipment. *Id.* Patent Owner does not explain specifically why the central Base-T Ethernet equipment must mutually agree upon a method of communication with other network equipment to detect a magnitude of current flow. See PO Resp. 18; Pet. Reply 21–22.

Third, the specification of the ’760 patent indicates that the detection protocol does not require a mutually agreed upon method of communication. For example, the ’760 patent describes one embodiment as follows:

The existence of a connection between hub 1 and central module 15a is monitored by test voltage source 64 and test voltage monitor 66 through a pair of receive data lines. Current from test voltage source 64 flows through a data line to an isolation transformer within hub 1. The current flows through the primary winding of the isolation transformer and returns on the other receive data line to the test voltage monitor 66. An interruption in the flow of current is detected by the test voltage monitor 66. . . . Similarly, current sourced onto a transmit line from signal modulator 7 and isolation power supply 8 through remote module 16a to the isolation transformer of PC 3A which returns on the other transmit line is monitored by test voltage monitor 84 to verify that both remote module 16a and PC 3A are connected to central module 15a.

Ex. 1001, 8:6–24 (emphases added). In other words, central module 15a (i.e., the central piece of network equipment) monitors the existence of connections with hub 1, remote module 16a, and PC 3A simply by detecting interruptions in the DC current flow between central module 15a and those other pieces of network equipment. *Id.* Thus, the detection protocol described in at least this embodiment of the '760 patent does not require a mutually agreed upon method of communication.

For the foregoing reasons, we do not adopt Patent Owner's proposed construction of the term "protocol." Specifically, we determine that the term "protocol" in claims 59 and 134 is *not* limited to a mutually agreed upon method of communication.⁴ We also determine that further construction of

⁴ Our determination that the term "protocol" does not require a mutually agreed upon method of communication is consistent with the opinion of Patent Owner's expert in a related district court case that "[i]n the context of these claims, 'detection protocol' means that the equipment is configured or designed so that the magnitude of the current (flow) or the impedance in the path allow it to detect or determine some information about the equipment at the other end of the path." Ex. 2020, 9.

the term “protocol” is not necessary to resolve the parties’ dispute regarding claims 59 and 134 in this case. *See infra* Section II.C.5; *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

3. *Powered-Off*

Claim 72 and original claim 145 recite “wherein the piece of BaseT Ethernet terminal equipment is a powered-off piece of BaseT Ethernet equipment.” Ex. 1001, 21:33–36, 25:46–49. In a decision on institution in IPR2016-01391, which involves the same parties, we construed the term “powered-off” in a related patent to mean “without operating power.” *Juniper Networks*, Case IPR2016-01391, slip op. at 9–10 (Paper 9). Our construction is consistent with Petitioner’s proposal that the term “powered-off” be construed to mean “without operating power.” Pet. 6. Our construction also is consistent with the construction adopted by the District Court in a related case. Ex. 2021, 20.

The parties do not dispute our previous construction, but the parties’ arguments indicate that our interpretation of “without operating power” requires further clarification. Pet. 6; PO Resp. 16–18; Pet. Reply 24–28. Specifically, Petitioner argues that “without operating power” allows for power to be applied to the Base-T Ethernet terminal equipment (Pet. 6), such as power for a component of the Base-T Ethernet terminal equipment (Pet. Reply 24–28). Patent Owner contends that the phrase “without operating power” does not allow for operating power to be applied to the Base-T Ethernet terminal equipment. PO Resp. 17–18. We find that both parties’ requested clarifications are supported by the intrinsic evidence. Specifically,

the '760 patent indicates that power can be applied to a component of the Base-T Ethernet terminal equipment (as Petitioner contends), even though operating power is not applied to the Base-T Ethernet terminal equipment (as Patent Owner contends).

The '760 patent explains that one of the problems with previous tracking systems is that they could only track assets that were powered-up. Ex. 1001, 1:62—2:2. To address that problem, the '760 patent describes a tracking system that can “identify[] the location of network assets without applying power to the assets.” *Id.* at 12:57–59 (emphasis added); *see also id.* at 5:4–6 (“identifying the existence and location of network assets without power being applied to the assets”). Specifically, the '760 patent describes a remote module that attaches to an electronic asset, such as a piece of Base-T Ethernet terminal equipment. *Id.* at 3:27–30. A central module then supplies a DC current for powering the remote module so that the central module can track the connection status of the remote module and the attached Base-T Ethernet terminal equipment. *Id.* at 5:39–43, 5:64–67, 8:6–24. Thus, the specification of the '760 patent describes applying power to the remote module even when the attached Base-T Ethernet terminal equipment is powered-off.

Some of the aforementioned features of the '760 patent are included in claims 1 and 73, which recite that the piece of central Base-T Ethernet equipment has a “DC supply,” and the piece of Base-T Ethernet terminal equipment has “at least one path to draw different magnitudes of current flow from the at least one DC supply.” *Id.* at 17:26–30, 21:43–47. Notably, claims 1 and 73 do not recite a remote module separate from the Base-T Ethernet terminal equipment, thereby supporting Petitioner’s position that

the remote module is a component of the Base-T Ethernet terminal equipment. *Id.* Thus, we determine that the intrinsic evidence indicates that “without operating power” allows for power to be applied to a component of the Base-T Ethernet terminal equipment, but does not allow for operating power to be applied to the Base-T Ethernet terminal equipment.

For the foregoing reasons, we maintain our previous construction that the term “powered-off” in claims 72 and 145 means “without operating power.” We clarify, though, that “without operating power” includes applying power to a component of the Base-T Ethernet terminal equipment, but does not include applying operating power to the Base-T Ethernet terminal equipment.

C. *Obviousness of Claims 1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145 over Hunter and Bulan*

Petitioner argues that claims 1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145 would have been obvious over Hunter and Bulan. Pet. 7. A claim is unpatentable as obvious 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 the 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) any objective indicia of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We have considered the parties’ arguments and supporting evidence, and we determine that Petitioner has shown by a preponderance of the

evidence that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 would have been obvious over Hunter and Bulan.

1. *Overview of Hunter and Bulan*

Hunter relates to a system for providing power to terminal equipment in a computer network. Ex. 1003, Abstract, 16:26.⁵ Hunter explains that power can be provided to terminal equipment in one of three ways. *Id.* at 16:26. First, a local power supply (e.g., in the office) can provide power to the terminal equipment. *Id.* at 16:27–17:1. This is known as “local” power. *Id.* at 17:1–2. Second, power may be delivered to the terminal equipment using the same cable that carries data through the network. *Id.* at 17:2–3. This is known as “phantom” power. *Id.* at 17:3–5. Third, power may be delivered to the terminal equipment using a separate, dedicated power cable. *Id.* at 17:5–6. This is known as “third pair” power. *Id.* at 17:6–8.

Hunter explains that there are advantages and disadvantages to each type of power. *Id.* at 17:9–26. For example, the advantage of phantom power is that it does not require a dedicated power cable, but the disadvantage is that it must be implemented carefully to avoid potential interactions between the power and the data. *Id.* at 17:13–19. The advantage of third pair power is that it separates the power from the data, thereby avoiding potential interactions between them, but the disadvantage is that it requires a dedicated power cable, which can be expensive to install. *Id.* at 17:20–26.

⁵ Petitioner cites to the original page numbers of Hunter, whereas Patent Owner cites to the page numbers that Petitioner added when Hunter was filed as Exhibit 1003 in this case. To avoid confusion, we cite to the original page numbers of Hunter.

Hunter describes a preferred embodiment in which phantom power is provided to terminal equipment using a 10Base-T Ethernet bus. *Id.* at 19:18–19, 21:17–18, 37:19–20. 10Base-T is an IEEE Ethernet standard.⁶ Ex. 1002 ¶ 100 n.5; Ex. 2038 ¶ 32. Hunter explains that the 10Base-T Ethernet bus comprises two twisted pair conductors, with one pair used for transmitting data from the terminal equipment and the other pair used for receiving data into the terminal equipment. Ex. 1003, 21:22–27, 37:20–26. In order to implement phantom power, Hunter teaches that the same two twisted pair conductors of the 10Base-T Ethernet bus that transmit data are used to deliver DC power to the terminal equipment. *Id.* at 21:27–29, 37:26–28. Hunter explains that its phantom power embodiment is not limited to networks that use the 10Base-T Ethernet standard and indicates that it “is also compatible with Ethernet®, Token Ring®, ATM, and isoEthernet® standards.” *Id.* at 21:17–21, 26:3–11.

Hunter further describes the preferred embodiment as including a current protection circuit. *Id.* at 22:27–23:7, 38:12–20. The current protection circuit can be a resettable device, such as a thermistor or polyfuse, which protects both the power supply and the bus from a potentially damaging overcurrent. *Id.* at 23:3–6, 38:15–19.

Bulan relates to an improved current protection circuit. Ex. 1004, 2:9–14. Bulan explains that a typical current protection circuit with just a single threshold value, such as the one described in Hunter, is inadequate because it cannot distinguish between a normal power up event for a DC-to-

⁶ Thus, contrary to Patent Owner’s argument that the asserted prior art relates to telephone technology (PO Resp. 4), Hunter relates to Ethernet technology.

DC converter and an operational fault. *Id.* at 1:26–31, 1:52–2:8. As a result, a typical current protection circuit may stop current from flowing during a normal power up event and prevent the terminal equipment from starting properly, or may allow current to flow during an operational fault and jeopardize the terminal equipment. *Id.* at 1:65–2:8.

Bulan describes an improved current protection circuit that addresses the aforementioned problem. *Id.* at 2:9–14. Specifically, Bulan teaches a current control apparatus that detects whether DC current flow in a path exceeds static and dynamic current limits, and, if so, switches a high impedance into the path. *Id.* at 3:5–21, 4:35–40, 6:34–43. If the high impedance reduces the DC current flow to a trickle and then zero, the current control apparatus detects a normal start up event for a DC-to-DC converter and switches the high impedance out of the path to allow the terminal equipment to start up properly. *Id.* at 3:22–25, 4:62–5:1, 6:43–58. On the other hand, if the high impedance only reduces the DC current flow to a trickle, the current control apparatus detects an operational fault and keeps the high impedance in the path to protect the terminal equipment. *Id.*

2. *Claims 1 and 73*

Claim 1 recites “[a] BaseT Ethernet system” comprising “a piece of central BaseT Ethernet equipment” and “a piece of BaseT Ethernet terminal equipment.” Ex. 1001, 17:16–18. Hunter teaches a 10Base-T Ethernet system with a piece of central 10Base-T Ethernet equipment, such as a hub, and a piece of 10Base-T Ethernet terminal equipment, such as an Integrated Services Terminal Equipment (“ISTE”) device. Pet. 25–29; Ex. 1003, 23:18–20, 32:7–9, 34:18–19, 37:19–28, 39:14–15, Figs. 1, 2.

Patent Owner responds that Petitioner does not show sufficiently that Hunter teaches a Base-T Ethernet system. PO Resp. 34–35, 45–47. Specifically, Patent Owner argues that Hunter repeatedly refers to “Ethernet®,” but does not explain what the term “Ethernet®” means. *Id.* at 34 (citing Ex. 1003, 12, 14, 21, 23, 28, 35, 36). Patent Owner contends that the term “Ethernet®” in Hunter refers to the original trademarked version of Ethernet owned by Xerox Corporation, not the subsequent non-trademarked versions of Ethernet, such as 10Base-T and 100Base-T. PO Resp. 34 (citing Pet. 26; Ex. 1002 ¶ 101 n.6). In addition, Patent Owner alleges that “[w]hile Hunter mentions the terms ‘10Base-T’ and ‘100Base-T,’ he is referring to twisted pair wiring, not Ethernet.” PO Resp. 46–47 (citing Ex. 1003, 21:22–24, 26:5–8, 51 (claim 3); Ex. 2038 ¶¶ 197–198).

Patent Owner’s argument is not persuasive. Patent Owner does not dispute that the term “BaseT Ethernet” in claim 1 includes 10Base-T Ethernet. PO Resp. 18–19. As discussed above, Hunter teaches a 10Base-T Ethernet bus comprising two twisted pair conductors for the transmission of data. Pet. 25–30; Pet. Reply 11–12; Ex. 1003, 26:3–6, 37:19–28. For example, Hunter teaches the following:

In the illustrated embodiment, the bus comprises a 10Base-T bus. A 10Base-T bus conventionally comprises two twisted-pair conductors 240, 250, each used for unidirectional transmission of data. Thus, in this embodiment, one of the twisted pairs (say, 250) is employed for transmitting data from the equipment 260, while the other of the twisted-pairs (say, 240) is used for receiving data into the equipment 260. The present invention preferably employs each of the twisted-pair conductors as a rail by which to deliver DC power to the equipment 260.

Ex. 1003, 37:19–28 (emphasis added). Thus, regardless of whether Hunter’s use of the term “Ethernet®” includes 10Base-T Ethernet, Hunter

independently teaches 10Base-T Ethernet. *Id.* Further, we are not persuaded that Hunter’s use of the term “10Base-T” only refers to twisted pair wiring, not Ethernet, because Patent Owner and Patent Owner’s declarant, Dr. Madisetti, acknowledge that 10Base-T is an IEEE *Ethernet* standard. PO Resp. 6; Ex. 1002 ¶ 100 n.5; Ex. 2038 ¶ 32.

Patent Owner also responds that Petitioner does not show sufficiently that Hunter teaches providing phantom power to Base-T Ethernet terminal equipment. PO Resp. 35–39. Patent Owner contends that the ISTE device in Figure 2 of Hunter (which Petitioner identifies as the Base-T Ethernet terminal equipment (Pet. 28)) is just an intermediate hub. PO Resp. 35–39. Patent Owner alleges that the only terminal equipment in Figure 2 of Hunter is voice instrument 299. *Id.* at 35 (citing Ex. 2038 ¶ 69). According to Patent Owner, when Figures 1 and 2 of Hunter are considered together, those figures “show phantom-power being delivered from a multimedia Hub (‘120’ in Hunter’s Figure 1) through multiple connectors (each labelled ‘297’ in Hunter’s Figure 2) to an intermediate Hub (‘150’ in Hunter’s Figure 1).” PO Resp. 37 (citing Ex. 2038 ¶ 71). Patent Owner concludes that “Hunter’s phantom-power circuit does not connect to the phones (‘end devices’), which are connected to the intermediate Hub through separate connectors (each labelled ‘298’ in Hunter’s Figure 2).” PO Resp. 37 (citing Ex. 2038 ¶ 71).

Patent Owner’s argument is not persuasive. Patent Owner’s argument focuses on the specific configuration shown in Figure 2 of Hunter. PO Resp. 35–39. But, as Petitioner explains in the Petition, Hunter is not limited to the configuration shown in Figure 2. Pet. 28–29. Hunter teaches generally supplying phantom power to network equipment. Ex. 1003, 19:2–7 (“[I]t is

a primary object of the present invention to provide power subsystems for providing either phantom or third pair power to equipment coupled to a local area network.”). For example, Hunter teaches that phantom power and data are delivered to network equipment using the two twisted pair conductors of the 10Base-T Ethernet bus (*id.* at 21:22–29), and that “[i]n an overall LAN, *many pieces of equipment*, each with its own third and fourth transformers, can take power as well as data from the bus” (*id.* at 21:11–13 (emphasis added)). Thus, regardless of the specific configuration shown in Figure 2, Hunter teaches providing phantom power to Base-T Ethernet terminal equipment.

In addition, even if Hunter is limited to the configuration shown in Figure 2, Hunter still teaches providing phantom power to Base-T Ethernet terminal equipment. Specifically, as discussed above, Hunter teaches that equipment 260 in Figure 2 of Hunter is an Integrated Services Terminal Equipment (“ISTE”) device. Ex. 1003, 23:18–20, 39:14–15, Fig. 2. The fact that the “TE” in ISTE device stands for “Terminal Equipment” indicates by itself that equipment 260 is terminal equipment. *Id.* Further, Patent Owner proposed in the Preliminary Response that the term “Ethernet terminal equipment” be construed to mean a “device at which data transmission can originate or terminate and that is capable of Ethernet

communication.”⁷ Prelim. Resp. 14. Consistent with that construction, the evidence of record indicates that Ethernet data transmissions can originate and terminate at the ISTE device in Hunter.⁸ Pet. 28; Ex. 1002 ¶ 104; Ex. 1003, 37:19–28, 39:14–15. Further, Hunter teaches delivering phantom power to equipment 260 in Figure 2 over the same two twisted pair conductors 240, 250 of the 10Base-T Ethernet bus used to transmit data to equipment 260. *Id.* at 37:19–28, Fig. 2.

Moreover, even if Patent Owner were correct that voice instrument 299 is the only terminal equipment in Figure 2 of Hunter, Patent Owner’s argument is not persuasive. Hunter teaches that the phantom power and data transmitted over the 10Base-T Ethernet bus are supplied to *both* equipment 260 *and* voice instrument 299. Pet. Reply 15; Ex. 1003, 38:25–27 (“A voice instrument 299 is therefore couplable to the equipment 260 and receives both data and power therefrom.”).

Claim 1 recites “data signaling pairs of conductors comprising first and second pairs used to carry BaseT Ethernet communication signals between the piece of central BaseT Ethernet equipment and the piece of BaseT Ethernet terminal equipment, the first and second pairs physically

⁷ Patent Owner does not propose a specific construction of the term “Ethernet terminal equipment” in the Response. See PO Resp. 16–19, 35–39. Nonetheless, Patent Owner’s proposed construction in the Preliminary Response is consistent with Petitioner’s proposed construction in the Petition (Pet. 28 (“because (10Base-T) Ethernet data transmissions can originate and terminate there”)) and the District Court’s construction (Ex. 2018, 13).

⁸ Hunter indicates that the ISTE device is compatible with ISDN standards, but Hunter does not indicate that the ISTE device is limited to ISDN standards. Ex. 1003, 23:18–24.

connect between the piece of BaseT Ethernet terminal equipment and the piece of central BaseT Ethernet equipment.” Ex. 1001, 17:19–25. Hunter teaches that the piece of central 10Base-T Ethernet equipment and the piece of 10Base-T Ethernet terminal equipment are physically connected to a 10Base-T Ethernet bus with two twisted pair conductors for carrying power and data between the piece of central 10Base-T Ethernet equipment and the piece of 10Base-T Ethernet terminal equipment. Pet. 29–30; Ex. 1003, 36:6–12, 37:19–28, Fig. 2.

Patent Owner responds that Petitioner does not show sufficiently that the two twisted pair conductors of the 10Base-T bus in Hunter carry Base-T Ethernet communication signals, as required by claim 1. PO Resp. 40–41. Specifically, Patent Owner argues that hubs 140, 150, 160, 180 in Figure 1 of Hunter are connected to multimedia hub 120 through isoEthernet interfaces. *Id.* at 40 (citing Ex. 1003, 34:19–21, 35:14–16, 35:27–28, 36:13–17, 36:28–37:2). According to Patent Owner, isoEthernet interfaces only carry Integrated Services Digital Network (“ISDN”) signals, not Ethernet signals. PO Resp. 40 (citing Ex. 1003, 17:15–18; Ex. 2038 ¶ 76). Patent Owner also argues that hub 170 in Figure 1 of Hunter is connected to multimedia hub 120 through a 10Base-F interface. PO Resp. 40–41 (citing Ex. 1003, 36:20). According to Patent Owner, a 10Base-F interface requires a fiber connection, and “fiber cannot carry electrical current.” PO Resp. 41 (citing Ex. 2038 ¶ 78).

Patent Owner’s argument is not persuasive. Patent Owner focuses on the embodiment shown in Figure 1 of Hunter. PO Resp. 40–41. Hunter, though, is not limited to that embodiment. Hunter teaches that preferably “the bus comprises a *10Base-T bus*,” but notes that “[t]hose of skill in the art

will recognize . . . that the present invention *is also compatible* with Ethernet®, Token Ring®, ATM and *isoEthernet*® standards.” Ex. 1003, 21:17–21, 26:3–11 (emphases added). Similarly, claim 3 of Hunter states that the “bus comprises a two-pair twisted-pair bus selected from the group consisting of: *10Base-T*, Ethernet®, Token Ring®, ATM, *100Base-T*, and *isoEthernet*®.” Ex. 1003, 51 (emphases added). These portions of Hunter teach a network that *preferably* uses a 10Base-T Ethernet bus for connecting network equipment, but *alternatively* may use an isoEthernet bus. Therefore, contrary to Patent Owner’s argument, Hunter is *not* limited to an embodiment in which network equipment is connected by isoEthernet interfaces.

Moreover, even if Hunter is limited to an embodiment in which network equipment is connected by isoEthernet interfaces, Patent Owner’s argument still is not persuasive. As discussed above, Patent Owner alleges that isoEthernet interfaces *only* carry ISDN signals, *not* Ethernet signals. PO Resp. 40 (citing Ex. 1003, 17:15–18; Ex. 2038 ¶ 76). The evidence cited by Patent Owner, however, does not support that argument. The portion of Hunter cited by Patent Owner indicates that isoEthernet interfaces *can* carry ISDN signals, but does not establish that isoEthernet interfaces *only* carry ISDN signals. Ex. 1003, 15:15–18. Further, the portion of Dr. Madisetti’s declaration cited by Patent Owner states that “isoEthernet used ISDN signals, not Ethernet signals,” but Dr. Madisetti provides no support for that statement other than citing the same portion of Hunter discussed above. Ex. 2038 ¶ 76. In contrast, the documentary evidence that Petitioner submitted with the Petition (Pet. iii (exhibit list); Pet. Reply 12) indicates that isoEthernet includes a 10Base-T mode in which the “IsoEthernet layer

functions as a 10Base-T transceiver” (Ex. 1010, 165).⁹ As a result, even if we accept Patent Owner’s premise that hub 120 in Figure 1 of Hunter communicates with hubs 140, 150, 160, 180 using isoEthernet interfaces, the evidence of record indicates that isoEthernet interfaces carry 10Base-T Ethernet signals at least when used in the 10Base-T mode of isoEthernet.

Patent Owner’s argument regarding 10Base-T hub 170 in Figure 1 of Hunter also is not persuasive for an additional reason. As discussed above, Patent Owner alleges that 10Base-T hub 170 is connected to multimedia hub 120 *only* through a 10Base-F interface. PO Resp. 40–41 (citing Ex. 1003, 36:20). The evidence cited by Patent Owner, however, does not support that argument. The cited portion of Hunter states that “[t]he 10Base-T hub 170 *further provides* an Ethernet® AU interface and a single 10Base-F network interface.” Ex. 1003, 34:18–20 (emphasis added). The phrase “further provides” in this portion of Hunter indicates that 10Base-T hub 170 includes an AU interface and a 10Base-F interface, but does not establish that 10Base-T hub 170 *only* includes an AU interface and a 10Base-F interface. *Id.* Further, Hunter teaches that multimedia hub 120 includes a 10Base-T repeater, and Figure 1 of Hunter shows that the 10Base-T repeater in multimedia hub 120 is connected to 10Base-T hub 170 over the 10Base-T Ethernet bus. Pet. Reply 11–12; Ex. 1003, 26:3–8, 32:16–27, 34:18–20, 37:19–28, Fig. 1. This indicates that the 10Base-T Ethernet bus in Hunter carries 10Base-T Ethernet signals from the 10Base-T repeater in multimedia hub 120 to 10Base-T hub 170.

⁹ We cite to the page numbers that Petitioner added to Exhibit 1010. Also, like Hunter, Exhibit 1010 refers to the IEEE 802.9a standard for isoEthernet. Ex. 1003, 15:15–18; Ex. 1010, 160.

At the oral hearing, Patent Owner further argued that, although Hunter teaches a 10Base-T Ethernet bus, Hunter does not teach that the 10Base-T Ethernet bus carries *both* 10Base-T Ethernet signals and DC power. Tr. 126:9–127:11. According to Patent Owner, when the 10Base-T Ethernet bus carries DC power, it only carries ISDN signals. *Id.* at 128:22–129:3. Patent Owner reads Hunter too narrowly. For example, Hunter teaches the following:

In the illustrated embodiment, the bus comprises a 10Base-T bus. *A 10Base-T bus conventionally comprises two twisted-pair conductors 240, 250, each used for unidirectional transmission of data.* Thus, in this embodiment, one of the twisted pairs (say, 250) is employed for transmitting data from the equipment 260, while the other of the twisted-pairs (say, 240) is used for receiving data into the equipment 260. *The present invention preferably employs each of the twisted-pair conductors as a rail by which to deliver DC power to the equipment 260.*

Ex. 1003, 37:19–28 (emphases added). In other words, Hunter teaches *generally* that the 10Base-T Ethernet bus can deliver DC power over the same two twisted pair conductors used to transmit data. *Id.* at 21:22–29, 37:19–28. We, therefore, do not read Hunter as teaching that the 10Base-T Ethernet bus can only carry DC power with ISDN signals. Rather, as discussed above, Hunter indicates that isoEthernet and ISDN are just *alternatives* to a preferred embodiment that uses 10Base-T Ethernet. *Id.* at 21:17–21 (“also compatible with . . . isoEthernet®”); *id.* at 26:3–11 (“also compatible with . . . isoEthernet®”); *id.* at 39:15–16 (“compatible with ISDN standards”).

Claim 1 recites “the piece of central BaseT Ethernet equipment having at least one DC supply, the piece of BaseT Ethernet terminal equipment having at least one path to draw different magnitudes of current flow from

the at least one DC supply through a loop formed over at least one of the conductors of the first pair and at least one of the conductors of the second pair.” Ex. 1001, 17:26–32. Hunter teaches that the piece of central 10Base-T Ethernet equipment includes a DC supply. Pet. 30; Ex. 1003, 35:27–36:1, 37:26–28, 52 (claim 5). Hunter also teaches that the piece of 10Base-T Ethernet terminal equipment includes a DC-to-DC converter and draws current flow from the DC supply through a loop formed over the two twisted pair conductors of the 10Base-T Ethernet bus. Pet. 13, 30–34; Ex. 1002 ¶¶ 109–111; Ex. 1003, 35:27–38:25, 39:5–8. Bulan teaches that a typical piece of terminal equipment includes a DC-to-DC converter that draws different magnitudes of current flow from a DC supply. Pet. 11–13; Ex. 1002 ¶¶ 70, 74; Ex. 1004, 1:52–65.

Patent Owner responds that Petitioner does not show sufficiently that Hunter teaches a path by which a piece of Base-T Ethernet terminal equipment draws different magnitudes of current flow from a DC supply. PO Resp. 47–49. Specifically, Patent Owner refers back to its previous argument, discussed above, that Hunter does not teach providing phantom power to Ethernet terminal equipment. *Id.* at 47. Patent Owner also argues that, even if voice instrument 299 in Figure 2 of Hunter is a piece of Base-T Ethernet terminal equipment, “Hunter’s phantom power path does not connect to it.” *Id.* at 47–49 (citing Ex. 2038 ¶ 201; Ex. 2039, 84:22–85:21).

Patent Owner’s argument is not persuasive. As discussed above, Hunter teaches generally providing phantom power to Ethernet terminal equipment, and is not limited to the configuration shown in Figure 2. Ex. 1003, 19:2–7, 21:11–13, 21:22–29. Further, as also discussed above, Hunter indicates that equipment 260 in Figure 2 is terminal equipment (*id.* at 23:18–

20, 39:14–15, Fig. 2), and there is no dispute that Hunter teaches a path for delivering phantom power to equipment 260 (*id.* at 37:19–28, Fig. 2).

Moreover, Hunter also teaches that the path for delivering phantom power connects to voice instrument 299. Pet. Reply 15; Ex. 1003, 38:25–27 (“A voice instrument 299 is therefore couplable to the equipment 260 and receives both data and power therefrom.”).

Claim 1 recites “the piece of central BaseT Ethernet equipment to detect at least two different magnitudes of the current flow through the loop and to control the application of at least one electrical condition to at least two of the conductors.” Ex. 1001, 17:32–36. Bulan teaches a current control apparatus that detects whether DC current flow in a path exceeds static and dynamic current limits, and, if so, applies an electrical condition by switching a high impedance into the path. Pet. 12, 22–23, 32–33, 35; Ex. 1004, 3:5–21, 4:35–40, 6:34–43. Bulan teaches that, if the high impedance reduces the DC current flow to a trickle and then zero, the current control apparatus detects a normal start up event for a DC-to-DC-converter and applies an electrical condition by switching the high impedance out of the path. Pet. 12–13, 23, 33–35; Ex. 1004, 3:22–25, 4:62–5:1, 6:43–58. In contrast, Bulan teaches that, if the high impedance only reduces the DC current flow to a trickle, the current control apparatus detects an operational fault and keeps the high impedance in the path. Pet. 12, 23, 33, 35; Ex. 1004, 3:22–25, 4:62–5:1, 6:43–58. By combining the current control apparatus of Bulan with the central piece of network equipment of Hunter, as Petitioner proposes (*see infra* Section II.C.8), the current control apparatus of Bulan detects the aforementioned different magnitudes of DC current flow and applies the aforementioned electrical conditions via at least

one of the contacts of the first and second pairs of the 10Base-T Ethernet bus of Hunter. Pet. 15, 31–32; Ex. 1002 ¶¶ 78–79, 109–111. Other than the arguments discussed above, Patent Owner does not dispute that the combination of Hunter and Bulan teaches the above limitation of claim 1.

Original claim 73 recites limitations similar to those discussed above for claim 1. Ex. 1001, 21:37–52. Petitioner identifies evidence showing that the combination of Hunter and Bulan teaches the limitations of original claim 73. Pet. 42. Our analysis of the limitations of claim 1 applies to the similar limitations of original claim 73. Patent Owner raises the same arguments for original claim 73 that we discussed above for claim 1. For the same reasons discussed above, Patent Owner’s arguments are not persuasive.

3. *Claims 31 and 106*

Claim 31 depends from claim 1, and recites “wherein the BaseT Ethernet terminal equipment comprises a controller coupled to the at least one path.” Ex. 1001, 19:34–36. Original claim 106 depends from original claim 73, and recites a similar limitation. *Id.* at 23:53–55. The evidence of record demonstrates that it would have been obvious to a person of ordinary skill in the art that the piece of 10Base-T Ethernet terminal equipment in Hunter includes a controller coupled to the path. Pet. 35–36; Ex. 1002 ¶ 120; Ex. 1003, 10:12–14. Patent Owner does not dispute that the combination of Hunter and Bulan teaches the above limitation of claim 31 and original claim 106.

4. *Claims 37 and 112*

Claim 37 depends from claim 1, and recites “wherein one or more magnitudes of the current flow through the loop represent information about the piece of BaseT Ethernet terminal equipment.” Ex. 1001, 19:52–55.

Original claim 112 depends from original claim 73, and recites a similar limitation. *Id.* at 24:3–6. Hunter teaches that the piece of 10Base-T Ethernet terminal equipment includes a DC-to-DC converter and draws current flow from the DC supply through a loop formed over the two twisted pair conductors of the 10Base-T Ethernet bus. Pet. 13, 30–34; Ex. 1002 ¶¶ 109–111; Ex. 1003, 35:27–38:25, 39:5–8. Bulan teaches that the current control apparatus detects information about the Ethernet terminal equipment based on the magnitudes of current flow through the loop, such as whether the Ethernet terminal equipment is experiencing an overcurrent condition, and, if so, whether the overcurrent condition is due to a normal start up event or an operational fault. Pet. 12–13, 22–23, 32–37; Ex. 1004, 3:5–25, 4:35–40, 4:62–5:1, 6:34–58.

Patent Owner repeats its previous argument that the ISTE device in Hunter is not a piece of Base-T Ethernet terminal equipment. PO Resp. 50 (citing Ex. 2038 ¶ 207). Patent Owner’s argument is not persuasive because, as discussed above, the ISTE device in Hunter is a piece of Base-T Ethernet terminal equipment. *See supra* Section II.C.2. Further, Patent Owner acknowledges that current flow through the loop “provides information about the ISTE Card.” PO Resp. 51.

Patent Owner repeats its previous argument that, even if voice instrument 299 in Hunter is a piece of Base-T Ethernet terminal equipment, Hunter does not teach that the loop of current flow includes voice instrument 299. PO Resp. 50–51 (citing Ex. 2038 ¶ 207). Patent Owner’s argument is not persuasive because, as discussed above, Hunter teaches that the path for delivering phantom power connects to voice instrument 299. *See supra* Section II.C.2.

Patent Owner also argues that an event that causes an overcurrent condition “could occur anywhere in the extended circuit leading from the Bulan hub to the ISTE card and back to the Bulan hub,” and, thus, “Bulan cannot distinguish a short in the wiring from short in a device, such as the ISTE Card.” PO Resp. 51 (citing Ex. 1004, 1:26–31; Ex. 2038 ¶ 209; Ex. 2039, 160:17–161:14). Patent Owner’s argument is not persuasive. As discussed above, Bulan teaches that the current flow through the loop indicates whether the Ethernet terminal equipment is experiencing an overcurrent condition, and, if so, whether the overcurrent condition is due to a normal start up event for a DC-to-DC converter or an operational fault. Pet. 12–13, 22–23, 32–37; Ex. 1004, 3:5–25, 4:35–40, 4:62–5:1, 6:34–58. Regardless of whether the overcurrent condition arose in the ISTE device or somewhere else in the circuit, the fact that the ISTE card (or another piece of terminal equipment) is experiencing an overcurrent condition is information about the Base-T Ethernet terminal equipment, as required by claim 37 and original claim 112. Pet. Reply 21; Ex. 1046 ¶ 88.

5. *Claims 59 and 134*

Claim 59 depends from claim 1, and recites “wherein at least one of the different magnitudes of current flow through the loop is part of a detection protocol.” Ex. 1001, 20:61–63. Original claim 134 depends from original claim 73, and recites a similar limitation. *Id.* at 25:13–15. Bulan teaches that the current control apparatus detects whether DC current flow in a path exceeds static and dynamic current limits, and, if so, switches a high impedance into the path. Pet. 12, 22–23, 32–33, 35, 38; Ex. 1004, 3:5–21, 4:35–40, 6:34–43. Bulan also teaches that, if the high impedance reduces the DC current flow to a trickle and then zero, the current control apparatus

detects a normal start up event, whereas, if the high impedance only reduces the DC current flow to a trickle, the current control apparatus detects an operational fault. Pet. 12–13, 23, 33–35, 38; Ex. 1002 ¶ 127; Ex. 1004, 3:22–25, 4:62–5:1, 6:43–58.

Patent Owner responds that Petitioner “do[es] not identify any mutually agreed upon protocol, and do[es] not explain how Bulan and the TE are communicating using such a protocol.” PO Resp. 52 (Ex. 2038 ¶ 212). Patent Owner’s argument is not persuasive. Patent Owner’s argument is premised on its proposed construction of the term “protocol,” which we do not adopt. *See supra* Section II.B.2. Specifically, as discussed above, we determine that the term “protocol” is *not* limited to a mutually agreed upon method of communication. *See id.* Patent Owner does not provide any other specific reason why the aforementioned teachings of Bulan would not have been considered a detection protocol. *See* PO Resp. 52.

6. *Claims 69 and 142*

Claim 69 depends from claim 1, and recites “wherein the piece of central BaseT Ethernet equipment to distinguish the piece of BaseT Ethernet terminal equipment from at least one other piece of BaseT Ethernet terminal equipment.” Ex. 1001, 21:22–25. Original claim 142 depends from original claim 73, and recites a similar limitation. *Id.* at 25:36–39. Bulan teaches that the current control apparatus determines whether DC current flow exceeds static and dynamic current limits, and, thus, distinguishes one piece of terminal equipment that is experiencing an overcurrent condition from other pieces of terminal equipment that are not experiencing an overcurrent condition. Pet. 12, 22–23, 32–33, 35, 39; Ex. 1002 ¶ 128; Ex. 1004, 3:5–21, 4:35–40, 6:34–43. Bulan also teaches that the current control apparatus

detects whether a piece of terminal equipment is experiencing a normal start up event or an operational fault, thereby distinguishing different pieces of terminal equipment that are experiencing different types of overcurrent conditions. Pet. 12–13, 23, 33–35, 39; Ex. 1002 ¶ 128; Ex. 1004, 3:22–25, 4:62–5:1, 6:43–58. Further, Bulan teaches that the current control apparatus observes an iterative pattern that is unique to a particular piece of terminal equipment, and, thus, distinguishes that piece of terminal equipment from other pieces of terminal equipment. Pet. 39; Ex. 1002 ¶ 128; Ex. 1004, 7:7–13.

Patent Owner responds that the current control apparatus in Bulan does not distinguish one piece of Base-T Ethernet terminal equipment from another because “the Bulan circuit does not have any information on where the current surges are coming from in the network.” PO Resp. 53 (citing Ex. 2038 ¶¶ 214–215). Patent Owner’s argument is not persuasive. Hunter teaches that the central piece of network equipment can include a separate current protection circuit for each piece of Base-T Ethernet terminal equipment. Pet. Reply 20–21; Ex. 1003, 42:21–23; Ex. 1046 ¶ 87. Further, as discussed above, Bulan teaches that the current control apparatus observes an iterative pattern that is “peculiar to the *particular terminal equipment* being connected to the line.” Ex. 1004, 7:7–13 (emphasis added). Thus, in the proposed combination of Hunter and Bulan, the central piece of network equipment includes a separate current control apparatus that detects an overcurrent condition for each piece of Base-T Ethernet terminal equipment, thereby allowing the central piece of network equipment to distinguish one piece of Base-T Ethernet terminal equipment from another. Ex. 1046 ¶ 87. Further, regardless of whether the overcurrent condition arose in a piece of

Base-T Ethernet terminal equipment or somewhere else in the circuit, the fact that the piece of Base-T Ethernet terminal equipment is experiencing an overcurrent condition distinguishes it from others that are not. Pet. Reply 21; Ex. 1046 ¶ 88.

7. *Claims 72 and 145*

Claim 72 depends from claim 1, and recites “wherein the piece of BaseT Ethernet terminal equipment is a powered-off piece of BaseT Ethernet equipment.” Ex. 1001, 21:33–36. Original claim 145 depends from original claim 73, and recites a similar limitation. *Id.* at 25:46–49. As discussed above, we construe the term “powered-off” in claim 72 and original claim 145 to mean “without operating power.” *See supra* Section II.B.3. We also clarify that “without operating power” includes applying power to a component of the Base-T Ethernet terminal equipment, but does not include applying operating power to the Base-T Ethernet terminal equipment. *See id.*

Hunter teaches that the piece of 10Base-T Ethernet terminal equipment includes a DC-to-DC converter that draws current from the DC supply through a loop formed over the two twisted pair conductors of the 10Base-T Ethernet bus. Pet. 13, 30–34, 40–42; Ex. 1002 ¶¶ 109–111; Ex. 1003, 35:27–38:25, 39:5–8. Bulan teaches that a piece of terminal equipment with a DC-to-DC converter, such as the one in Hunter, is not supplied with operating power until the DC-to-DC converter completes its

startup.¹⁰ Pet. 40–42; Ex. 1002 ¶¶ 132–133; Ex. 1003, 38:28–39:8, Ex. 1004, 1:52–62, 6:65–7:14. Bulan also teaches that the detection of the different magnitudes of DC current flow and the application of the electrical conditions discussed above (*see supra* Section II.C.2) occur before the DC-to-DC converter completes its startup, and, thus, before the terminal equipment is supplied with operating power. Pet. 40–42; Ex. 1002 ¶¶ 132–133; Ex. 1004, 1:52–62, 6:65–7:14.

Patent Owner responds that “[b]ecause Bulan supplies operating power to the converter *inside* the purported end device, Bulan is applying operating power to the ‘piece of BaseT Ethernet terminal equipment,’ and therefore, the ‘piece of BaseT Ethernet terminal equipment’ is not ‘powered off.’” PO Resp. 54 (citing Ex. 2038 ¶ 217). According to Patent Owner, “[w]hether the device and the circuit beyond the DC-DC converter are actually operating is irrelevant to the claim requirements” because “[t]hat device—at least via its DC-DC converter—is drawing operating power.” PO Resp. 57 (citing Ex. 2038 ¶ 222).

Patent Owner’s argument is not persuasive. As discussed above, we clarify that “without operating power” includes applying some power to the Base-T Ethernet terminal equipment, such as applying power to a component of the Base-T Ethernet terminal equipment. *See supra* Section II.B.3. Patent Owner does not dispute that the DC-to-DC converter is just a component of the Base-T Ethernet terminal equipment, or that the Base-T

¹⁰ For example, Hunter explains that a DC-to-DC converter “convert[s] 48V to transistor-to-transistor logic (‘TTL’) voltage levels (i.e. 3V or 5V).” Ex. 1003, 39:5–8. Thus, the power applied to the DC-to-DC converter is not the same as the operating power applied to the Base-T Ethernet terminal equipment.

Ethernet terminal equipment is not operational until the DC-to-DC converter completes its startup. *See* PO Resp. 57 (“[w]hether the device and the circuit beyond the DC-DC converter are actually operating is irrelevant”). Patent Owner also does not dispute that, when the current control apparatus detects the different magnitudes of DC current flow and applies the electrical conditions (*see supra* Section II.C.2), the DC-to-DC converter has not completed its startup. *See* PO Resp. 54–57. Thus, we determine that the combination of Hunter and Bulan teaches that the current control apparatus detects the different magnitudes of DC current flow and applies the electrical conditions when the Base-T Ethernet terminal equipment is without operating power. Our determination is consistent with Patent Owner’s position in a related district court case that “[a] television, for example, is a ‘powered-off end device’ when it is turned off, even though it remains connected to AC power and current still flows through some of its components to allow the remote control to turn it on.” Ex. 2021, 18–19.

Moreover, as discussed above, Bulan teaches that the current control apparatus switches a high impedance into the path when DC current flow exceeds static and dynamic current limits. Pet. 12, 22–23, 32–33, 35; Ex. 1004, 3:5–21, 4:35–40, 6:34–43. If the high impedance only reduces the DC current flow to a trickle, the current control apparatus keeps the high impedance in the path, thereby maintaining the current flow to a trickle. Pet. 12, 23, 33, 35; Ex. 1004, 3:22–25, 4:62–5:1, 6:43–58. If the DC current flow eventually reduces to zero, the current control apparatus switches the high impedance out of the path, thereby allowing current to flow again. Pet. 12–13, 23, 33–35; Ex. 1004, 3:22–25, 4:62–5:1, 6:43–58. In this example taught by Bulan, the current control apparatus detects two different

magnitudes of current flow (i.e., a trickle and then zero) and applies an electrical condition to the path (i.e., switching the high impedance out of path) during a time period when there is at most a trickle of current applied to any component of the Base-T Ethernet terminal equipment.

8. *Reasons for Combining Hunter and Bulan*

Petitioner argues that a person of ordinary skill in the art would have had a reason to combine the cited teachings of Hunter and Bulan. Pet. 10–15. We agree with and adopt Petitioner’s reasoning. Specifically, a person of ordinary skill in the art would have substituted the typical current protection circuit in Hunter with the improved current protection circuit in Bulan. *Id.* at 14–15. Hunter and Bulan relate to the same field of endeavor, which is powering network terminal equipment. *Id.* at 10; Ex. 1002 ¶ 68; Ex. 1003, Abstract; Ex. 1004, Abstract. Further, Bulan teaches that typical current protection circuits are inadequate because they cannot distinguish between a normal power up event for a DC-to-DC converter and an operational fault. Pet. 11; Ex. 1002 ¶ 70; Ex. 1004, 1:26–31, 1:52–2:8. As a result, a typical current protection circuit may stop current from flowing during a normal power up event and prevent network equipment from starting properly, or may allow current to flow during an operational fault and jeopardize network equipment. Pet. 11–12; Ex. 1002 ¶ 71; Ex. 1004, 1:65–2:8.

Hunter includes a typical current protection circuit that is a simple thermistor or polyfuse, and, thus, would have suffered from the deficiency identified in Bulan. Pet. 12; Ex. 1002 ¶ 72; Ex. 1003, 38:12–19. A person of ordinary skill in the art would have substituted the current protection circuit in Hunter with the current protection circuit in Bulan because a

person of ordinary skill in the art would have recognized that “the Bulan current control apparatus would be a superior alternative to Hunter’s existing protective device.” Pet. 13; Ex. 1002 ¶¶ 74–75. Further, this substitution would have been a straightforward task with a reasonable expectation of success. Pet. 14–15; Ex. 1002 ¶¶ 76–79.

Patent Owner responds that a person of ordinary skill in the art would not have had a reason to combine the cited teachings of Hunter and Bulan. PO Resp. 19. The crux of Patent Owner’s argument is that a person of ordinary skill in the art would not have had a reason to use phantom power for Ethernet terminal equipment. *Id.* at 19–32. However, as Patent Owner acknowledged at the oral hearing, the basis for Petitioner’s proposed combination of Hunter and Bulan does not relate to using phantom power for Ethernet terminal equipment. Tr. 157:19–158:12. We explain in detail above that Hunter *alone* teaches using phantom power for Ethernet terminal equipment. *See supra* Section II.C.2. The proposed combination of Hunter and Bulan instead relates to substituting the current protection circuit in Hunter with the improved current protection circuit in Bulan. Pet. 10–15. Thus, any alleged issues with using phantom power for Ethernet terminal equipment are not pertinent to the question of whether a person of ordinary skill in the art would have had a reason to combine the cited teachings of Hunter and Bulan in the manner proposed by Petitioner. As such, Patent Owner’s argument is not persuasive. Nonetheless, we address each of Patent Owner’s specific contentions in detail below, and we find that they also are not persuasive for additional reasons.

First, Patent Owner argues that the invention of the ’760 patent is “directed to equipment networked over ‘*pre-existing*’ wiring or cables that

connect pieces of networked computer equipment to a network.” PO Resp. 19 (citing Pet. 3; Ex. 1002 ¶ 45) (emphasis added). According to Patent Owner, at the time of the ’760 patent, a pre-existing Ethernet network would have contained millions of nodes that “commonly” included Bob Smith terminations and common mode chokes. PO Resp. 19–20 (citing Ex. 2038 ¶ 42; Ex. 2039, 43:20–44:2, 45:6–8, 193:6, 195:3–196:3). Patent Owner contends that supplying phantom power to Ethernet terminal equipment using a pre-existing Ethernet network, as proposed in Petitioner’s combination of Hunter and Bulan, “would have burned out the existing Bob Smith terminations” and “would saturate the common mode chokes.” PO Resp. 20–22 (citing Ex. 2038 ¶¶ 45, 47, 48).

Patent Owner’s argument depends on the premise that the invention of the ’760 patent is limited to equipment networked over pre-existing wiring or cables. PO Resp. 19–22. The specification and claims of the ’760 patent, however, do not support that premise. The specification of the ’760 patent states that “[t]his invention is *particularly adapted* to be used with an *existing* Ethernet communications link.” Ex. 1001, 3:40–42. This portion of the ’760 patent indicates that the system of the ’760 patent, while particularly suited for use with an existing Ethernet network, is not limited to such a use. *Id.* Further, the challenged claims of the ’760 patent do not

require a pre-existing Ethernet network or pre-existing wiring or cables.¹¹
Tr. 107:18–111:6.

We also note that Patent Owner does not direct us to specific evidence indicating that the teachings of Hunter or Bulan are limited to Ethernet equipment networked over pre-existing wiring or cables. *See* PO Resp. 19–22. And Patent Owner acknowledged at the oral hearing that applying phantom power to “new” Ethernet terminal equipment would not have caused any problems with Bob Smith terminations or common mode chokes. Tr. 135:1–12. Thus, any alleged issues with Bob Smith terminations or common node chokes in a pre-existing Ethernet network are not pertinent to the question of whether a person of ordinary skill in the art would have had a reason to combine the cited teachings of Hunter and Bulan.

Moreover, even if we accepted Patent Owner’s premise, Patent Owner’s argument still is not persuasive. Patent Owner and Patent Owner’s declarant, Dr. Madiseti, acknowledged that not all pre-existing Ethernet networks included Bob Smith terminations or common mode chokes.¹² Tr. 115:19–116:3, 150:16–151:8; Ex. 1020, 55:19–56:2, 80:16–23. Further,

¹¹ At the oral hearing, Patent Owner argued that the ’760 patent describes transmitting a low DC current, which, according to Patent Owner, would not have damaged Bob Smith terminations or common mode chokes. Tr. 111:7–22. Patent Owner, however, acknowledged that the challenged claims do not recite a limit on the magnitude of the DC current flow. *Id.* at 130:20–131:15.

¹² For example, as Petitioner explains (Pet. Reply 2–4), Bob Smith terminations and common mode chokes were used to satisfy electromagnetic emissions standards (Ex. 1046 ¶ 13), but those emissions standards also could have been satisfied *without* using Bob Smith terminations and common mode chokes (*id.* ¶¶ 18–21).

Petitioner’s declarant, Mr. Ian Crayford, explains that, even for those pre-existing Ethernet networks that did include Bob Smith terminations and/or common mode chokes, it would have been within the knowledge and capabilities of a person of ordinary skill in the art to implement phantom power without damaging the Bob Smith terminations or common mode chokes, such as by incorporating a blocking capacitor. Pet. Reply 4; Ex. 1046 ¶¶ 22–26.

Second, Patent Owner argues that a person of ordinary skill in the art seeking to supply operating power to Ethernet terminal equipment would have supplied that operating power over the unused lines in an Ethernet connection, rather than over the same lines used to transmit data. PO Resp. 22–26. Patent Owner alleges that a standard 10Base-T Ethernet network used eight lines, with four of the lines used to transmit data and the other four lines left unused. *Id.* at 24–26 (citing Pet. 50–51; Ex. 2038 ¶ 54; Ex. 2039, 70:23–71:3). According to Patent Owner, a person of ordinary skill would have provided operating power to Ethernet terminal equipment over the unused lines to avoid interference with the data signals. PO Resp. 23–24 (citing Ex. 1003, 19:20–22; Ex. 2038 ¶¶ 49–51; Ex. 2039, 138:16–139:11).

Patent Owner’s argument is not persuasive. Hunter teaches a 10Base-T Ethernet bus that includes only two twisted pair conductors, both of which are used to transmit data. Ex. 1003, 37:19–28. Thus, contrary to Patent Owner’s argument, the 10Base-T Ethernet bus in Hunter does not include any unused lines. *Id.* Further, Hunter teaches delivering DC power over the same lines of the 10Base-T Ethernet bus used to transmit data (*see supra* Section II.C.2) because it “has the advantage of not requiring the installation of a dedicated power cable” (Ex. 1003, 17:13–26). Hunter even addresses

Patent Owner’s alleged concerns about interference by explaining that “a careful phantom power scheme must be implemented to avoid problems that may arise due to interactions between the power and the data.” *Id.* Thus, although alternative ways of providing operating power to Ethernet terminal equipment may have existed (PO Resp. 23–26), that does not detract from the express teachings of Hunter. *See In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012) (“[J]ust because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes.”); *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004).

Third, Patent Owner argues that “[a]t the time of the invention, and for several years afterward, experts in the field were skeptical that operating power could be delivered to terminal equipment using the Ethernet data pairs . . . without disrupting the data propagation.” PO Resp. 27 (citing Ex. 2038 ¶ 56). Specifically, Patent Owner relies on evidence relating to meetings of an IEEE committee. PO Resp. 27–31. In particular, Patent Owner explains that certain members of the committee identified the advantages of supplying power over unused lines (*id.* at 27–29 (citing Ex. 2040, 2–3; Ex. 2044, 3; Ex. 2048)), and identified the technical issues with supplying power over the data lines (PO Resp. 29 (citing Ex. 2044, 2)). Patent Owner also explains that at a meeting in March 2000, “no one brought a motion seeking to apply power to the data-carrying pairs,” (PO Resp. 28 (citing Ex. 2041, 3) (emphasis omitted)), and that it was only in July 2000, after 250 hours of investigation, that the committee was “convinced that putting power on the data pairs was technically feasible without affecting the propagation of Ethernet data” (PO Resp. 30–31 (citing Ex. 2045, 1, 3; Ex. 2046, 2)).

Patent Owner's argument is not persuasive. The evidence cited by Patent Owner relates to whether certain IEEE committee members believed that phantom power should be adopted as an Ethernet standard, not whether phantom power would work in an Ethernet network. PO Resp. 27–31; Ex. 2041, 3 (“The standard for DTE power distribution”). Further, although Patent Owner's evidence indicates that some IEEE committee members were in favor of adopting an Ethernet standard in which operating power was delivered over unused lines, Petitioner identifies evidence indicating that other committee members were in favor of using phantom power as the Ethernet standard. Pet. Reply 7; Ex. 1037, 3 (“Current will be injected via the center taps using a Phantom Power method on the TX and RX pairs.”); Ex. 1040, 3 (“Power over signal pairs allows easier integration of discovery & power control circuitry onto the PHY.”); Ex. 1046 ¶¶ 38–44. In any event, the fact that an alternative way of providing operating power to Ethernet terminal equipment existed and was considered for an IEEE standard does not detract from the express teachings of Hunter. *See Mouttet*, 686 F.3d at 1334; *Fulton*, 391 F.3d at 1200. Moreover, we note that, even if Patent Owner's evidence indicates some amount of skepticism, we determine that it does not outweigh the strong evidence of obviousness presented by Petitioner and discussed in this Decision. *See In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litigation*, 676 F.3d 1063, 1079 (Fed. Cir. 2012).

Fourth, Patent Owner argues that Petitioner does not show sufficiently “that Hunter had the ‘problem’ that the complex Bulan circuit allegedly solves.” PO Resp. 42. More specifically, Patent Owner contends that the central piece of network equipment in Hunter does not need to be able to

determine whether an overcurrent condition is due to a normal power up event or an operational fault. *Id.* at 42–43. Further, according to Patent Owner, Hunter teaches using a simpler thermistor or polyfuse (*id.* at 43–44 (citing Ex. 1003, 40:19–20), and a person of ordinary skill in the art would have been able to select the correct thermistor for a given circuit in order to prevent the thermistor from blocking the necessary start up current (PO Resp. 44–45 (citing Ex. 2038 ¶¶ 84–85)).

Patent Owner’s argument is not persuasive. Hunter itself does not have to identify the problem that would have motivated a person of ordinary skill in the art to combine the cited teachings of Hunter and Bulan. *See KSR*, 550 U.S. at 417. Rather, “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* As discussed above, Bulan explains that a typical current protection circuit with just a single threshold value, such as the one taught by Hunter, cannot distinguish between a normal power up event for a DC-to-DC converter and an operational fault. Pet. 11–12; Ex. 1002 ¶¶ 70–72; Ex. 1003, 38:12–19; Ex. 1004, 1:26–31, 1:52–2:8; Tr. 13:3–15. Because the Base-T Ethernet terminal equipment in Hunter includes a DC-to-DC converter, the current protection circuit in Hunter would have suffered from the same problem described in Bulan. Pet. 13; Ex. 1002 ¶ 74; Ex. 1003, 39:5–8. As a result, even if Hunter does not require the more advanced current protection circuit taught by Bulan, a person of ordinary skill in the art would have recognized it as an improvement. Pet. 13; Ex. 1002 ¶¶ 74–75. Further, even if Bulan’s current protection circuit was more complex than Hunter’s simple thermistor

or polyfuse, that alone does not negate the identified reason for combining the teachings of Hunter and Bulan. See *KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”); *Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) (“The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another.”).

9. Summary

For the reasons discussed above, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 would have been obvious over Hunter and Bulan.

D. Obviousness of Claims 1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145 over Bloch, IEEE 802.3-1993, and IEEE 802.3-1995, and over Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995

Petitioner argues that claims 1, 31, 37, 59, 69, 72, 73, 106, 112, 134, 142, and 145 would have been obvious over Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995. Pet. 7. In the Decision on Institution, we explained that Petitioner demonstrated a reasonable likelihood of prevailing in showing that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 would have been obvious over Bloch, IEEE 802.3-1993, and IEEE 802.3-1995, even without Huizinga. Dec. on Inst. 16. Therefore, we instituted an *inter partes* review on the grounds that claims 1,

31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 would have been obvious over Bloch, IEEE 802.3-1993, and IEEE 802.3-1995, *and* over Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995. *Id.* at 20–21.

We have considered the parties’ arguments and supporting evidence, and we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 would have been obvious over Bloch, IEEE 802.3-1993, and IEEE 802.3-1995, and over Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995.

1. *Overview of Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995*

Bloch describes a system that comprises a control unit and a terminal connected by two communication channels with each communication channel having two conductors. Ex. 1005, Abstract. According to Bloch, “[p]ower feed and bi-directional signalling are accomplished simultaneously over the same four conductors used for the two communication channels without interference.” *Id.* Although Bloch describes this phantom power circuit in the context of a key telephone system, Bloch explains that it “can find application in many different control unit/terminal applications.” *Id.* at 4:49–52.

Bloch explains that the control unit detects DC current pulses applied to the conductors when the terminal switches a resistor into and out of the path. *Id.* at 5:44–55. The DC current pulses detected by the control unit provide information regarding the status of different elements of the terminal. *Id.* at 5:56–6:2. In response to the detected DC current pulses, the

control unit applies voltage pulses to the conductors to control indicators in the terminal. *Id.* at 10:34–40, 11:1–5.

Huizinga also describes a key telephone system. Ex. 1009, 1:6–9. Huizinga explains that, when a user presses a button to select a telephone line, the terminal sends status information to the control unit. *Id.* at 5:29–39. In response, the control unit sends data to the terminal causing a lamp associated with the selected telephone line to light up. *Id.*

IEEE 802.3-1993 and IEEE 802.3-1995 describe a 10Base-T Ethernet network. Ex. 1006, 243; Ex. 1007, 23. In particular, IEEE 802.3-1993 and IEEE 802.3-1995 describe central network equipment, such as a 10Base-T repeater, and terminal equipment. Ex. 1006, 243, 267; Ex. 1007, 27; Ex. 1008, 303–304. IEEE 802.3-1993 and IEEE 802.3-1995 further describe an Ethernet connector comprising one pair of contacts (TD+ and TD-) used to transmit 10Base-T Ethernet communication signals and a second pair of contacts (RD+ and RD-) used to receive 10Base-T Ethernet communication signals. Ex. 1006, 266–267; Ex. 1007, 147–148.

2. *Claims 1 and 73*

Claim 1 recites “[a] BaseT Ethernet system” comprising “a piece of central BaseT Ethernet equipment” and “a piece of BaseT Ethernet terminal equipment.” Ex. 1001, 17:16–18. IEEE 802.3-1993 and IEEE 802.3-1995 teach a Base-T Ethernet system with a piece of central Base-T Ethernet equipment, such as a Base-T repeater, and a piece of Base-T Ethernet terminal equipment, such as a piece of Data Terminal Equipment (“DTE”). Pet. 55–56; Ex. 1006, 243, 267; Ex. 1007, 27; Ex. 1008, 303–304. Patent Owner does not dispute that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 1.

Claim 1 recites “data signaling pairs of conductors comprising first and second pairs used to carry BaseT Ethernet communication signals between the piece of central BaseT Ethernet equipment and the piece of BaseT Ethernet terminal equipment, the first and second pairs physically connect between the piece of BaseT Ethernet terminal equipment and the piece of central BaseT Ethernet equipment.” Ex. 1001, 17:19–25. IEEE 802.3-1993 and IEEE 802.3-1995 teach a connector that physically connects the piece of central Base-T Ethernet equipment and the piece of Base-T Ethernet terminal equipment. Pet. 56–57; Ex. 1006, 266–267; Ex. 1007, 147–148; Ex. 1008, 303–304. IEEE 802.3-1993 and IEEE 802.3-1995 teach that the Ethernet connector comprises one pair of contacts (TD+ and TD-) used to transmit 10Base-T Ethernet communication signals and a second pair of contacts (RD+ and RD-) used to receive Base-T Ethernet communication signals. Pet. 56–57; Ex. 1006, 266–267; Ex. 1007, 147–148. Patent Owner does not dispute that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 1.

Claim 1 recites “the piece of central BaseT Ethernet equipment having at least one DC supply, the piece of BaseT Ethernet terminal equipment having at least one path to draw different magnitudes of current flow from the at least one DC supply through a loop formed over at least one of the conductors of the first pair and at least one of the conductors of the second pair.” Ex. 1001, 17:26–32. Bloch teaches a control unit with a DC power supply. Pet. 57–58; Ex. 1005, 4:14–17, 6:3–10, 6:28–40, Fig. 1. Bloch teaches a terminal that draws different magnitudes of current flow from the DC power supply over two pairs of conductors by switching a resistor into and out of a path between the control unit and the terminal. Pet. 58–59; Ex.

1005, 5:20–30, 5:44–55, 6:3–10, 6:28–40, 9:6–22. By combining the circuit of Bloch with the Base-T Ethernet system of IEEE 802.3-1993 and IEEE 802.3-1995, as Petitioner proposes (*see infra* Section II.D.8), the terminal of Bloch draws the aforementioned different magnitudes of current flow via at least one of the conductors of the first and second pairs of the connector of IEEE 802.3-1993 and IEEE 802.3-1995. Pet. 51–53; Ex. 1002 ¶¶ 156–158. Patent Owner does not dispute that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 1.

Claim 1 recites “the piece of central BaseT Ethernet equipment to detect at least two different magnitudes of the current flow through the loop and to control the application of at least one electrical condition to at least two of the conductors.” Ex. 1001, 17:32–36. Bloch teaches that the control unit detects the DC current pulses applied to the path by the terminal. Pet. 59–60; Ex. 1005, 5:44–6:2, 9:6–15, 10:56–65. Bloch also teaches that, in response to the detected DC current pulses, the control unit applies voltage pulses to the path to control indicators in the terminal. Pet. 60–61; Ex. 1005, 10:34–55, 10:66–11:10. By combining the circuit of Bloch with the Base-T Ethernet system of IEEE 802.3-1993 and IEEE 802.3-1995, as Petitioner proposes (*see infra* Section II.D.8), the control unit of Bloch detects the aforementioned DC current pulses and applies the aforementioned voltage pulses through the connector of IEEE 802.3-1993 and IEEE 802.3-1995. Pet. 51–53; Ex. 1002 ¶¶ 156–158. Patent Owner does not dispute that the

combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 1.¹³

Original claim 73 recites limitations similar to those discussed above for claim 1. Ex. 1001, 21:37–52. Petitioner identifies evidence showing that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the limitations of original claim 73. Pet. 66. Our analysis of the limitations of claim 1 applies to the similar limitations of original claim 73.

3. *Claims 31 and 106*

Claim 31 depends from claim 1, and recites “wherein the BaseT Ethernet terminal equipment comprises a controller coupled to the at least one path.” Ex. 1001, 19:34–36. Original claim 106 depends from original claim 73, and recites a similar limitation. *Id.* at 23:53–55. Bloch teaches that the terminal includes a controller coupled to the path for switching the resistor into and out of the path. Pet. 61–62; Ex. 1002 ¶ 174; Ex. 1005, 9:6–22. Patent Owner does not dispute that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 31 and original claim 106.

4. *Claims 37 and 112*

Claim 37 depends from claim 1, and recites “wherein one or more magnitudes of the current flow through the loop represent information about the piece of BaseT Ethernet terminal equipment.” Ex. 1001, 19:52–55.

¹³ Although not necessary to our ultimate determination, we note that Huizinga teaches that the indicators in the terminal can be lamps that illuminate for different telephone lines. Pet. 61; Ex. 1009, 4:26–30, 5:29–39. Patent Owner does not dispute that the combination of Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the limitations of claim 1 and original claim 73.

Original claim 112 depends from original claim 73, and recites a similar limitation. *Id.* at 24:3–6. Bloch teaches that the control unit detects the DC current pulses applied to the loop by the terminal, which provide information regarding the status of different elements of the terminal. Pet. 59–60, 62–63; Ex. 1005, 5:44–6:2, 9:6–15, 10:56–65. Patent Owner does not dispute that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 37 and original claim 112.

5. *Claims 59 and 134*

Claim 59 depends from claim 1, and recites “wherein at least one of the different magnitudes of current flow through the loop is part of a detection protocol.” Ex. 1001, 20:61–63. Original claim 134 depends from original claim 73, and recites a similar limitation. *Id.* at 25:13–15. Bloch teaches that the control unit detects the DC current pulses applied to the loop by the terminal, which provide information regarding the status of different elements of the terminal. Pet. 59–60, 63–64; Ex. 1005, 5:44–6:2, 9:6–15, 10:3–12, 10:34–40, 10:56–65, 11:37–42. Patent Owner does not dispute that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 59 and original claim 134.

6. *Claims 69 and 142*

Claim 69 depends from claim 1, and recites “wherein the piece of central BaseT Ethernet equipment to distinguish the piece of BaseT Ethernet terminal equipment from at least one other piece of BaseT Ethernet terminal equipment.” Ex. 1001, 21:22–25. Original claim 142 depends from original claim 73, and recites a similar limitation. *Id.* at 25:36–39. Bloch teaches that the control unit detects the DC current pulses applied to the loop by the terminal, which provide distinguishing information regarding the status of

different elements of the terminal. Pet. 59–60, 64–65; Ex. 1005, 5:44–6:2, 9:6–15, 10:56–65. Patent Owner does not dispute that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 69 and original claim 142.¹⁴

7. *Claims 72 and 145*

Claim 72 depends from claim 1, and recites “wherein the piece of BaseT Ethernet terminal equipment is a powered-off piece of BaseT Ethernet equipment.” Ex. 1001, 21:33–36. Original claim 145 depends from original claim 73, and recites a similar limitation. *Id.* at 25:46–49. As discussed above, we construe the term “powered-off” in claim 72 and original claim 145 to mean “without operating power.” *See supra* Section II.B.3. We also clarify that “without operating power” includes applying power to a component of the Base-T Ethernet terminal equipment, but does not include applying operating power to the Base-T Ethernet terminal equipment. *See id.* Bloch teaches that the control unit detects the DC current pulses applied to the loop by the terminal, even when the terminal telephone station is “on hook” and the speakerphone is not operational. Pet. 65–66; Ex. 1002 ¶ 181; Ex. 1005, 11:17–22, 11:31–34.

Patent Owner responds that “Bloch’s Terminal device has operating power when the Bloch circuit is operating because the Voltage Regulator 500 ***inside the terminal device*** has operating power, regardless of whether

¹⁴ Although not necessary to our ultimate determination, we note that Huizinga teaches that the status information from the terminal is used by the control unit to determine which telephone station is using a particular telephone line. Pet. 65; Ex. 1009, 5:29–39. Patent Owner does not dispute that the combination of Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995 teaches the above limitation of claim 69 and original claim 142.

the ‘speakerphone’ is operating.” PO Resp. 58–59 (citing Ex. 1005, 3:17–23; Ex. 2038 ¶ 225; Ex. 2039, 211:24–212:21). Patent Owner’s argument is not persuasive. As discussed above, we clarify that “without operating power” includes applying some power to the Base-T Ethernet terminal equipment, such as applying power to a component of the Base-T Ethernet terminal equipment. *See supra* Section II.B.3. Thus, the fact that power is applied to the voltage regulator component of the terminal in Bloch does not mean that operating power is applied to the terminal. Patent Owner does not dispute that, when the control unit detects the different magnitudes of DC current flow and applies the electrical conditions (*see supra* Section II.D.2), the terminal telephone station is “on hook” and the speakerphone is not operational (*see* PO Resp. 59 (“regardless of whether the ‘speakerphone’ is operating”)). Thus, we determine that the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 teaches that the control unit detects the different magnitudes of DC current flow and applies the electrical conditions when the terminal equipment is without operating power. Our determination is consistent with Patent Owner’s position in a related district court case that “[a] television, for example, is a ‘powered-off end device’ when it is turned off, even though it remains connected to AC power and current still flows through some of its components to allow the remote control to turn it on.” Ex. 2021, 18–19.

8. *Reasons for Combining Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995*

Petitioner argues that a person of ordinary skill in the art would have had a reason to combine the cited teachings of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995. Pet. 53–55. We agree with and adopt Petitioner’s reasoning. Specifically, Bloch describes a phantom power circuit in the

context of a key telephone system, but explains that it “can find application in many different control unit/terminal applications.” *Id.* at 43–44 (emphasis omitted); Ex. 1005, 4:49–52. A person of ordinary skill in the art would have combined the circuit of Bloch with the 10Base-T Ethernet network of IEEE 802.3-1993 and IEEE 802.3-1995 to achieve the “benefit of supplying power over the same wires used for the Ethernet communication channel.” Pet. 54; Ex. 1002 ¶ 160. This combination would have “eliminate[d] the need to provide a local power supply or separate conductors and connectors for powering the DTE device,” and would have allowed devices to “communicate and provide status and control information even when they are not operating normally and the communication channel is not in use.” Pet. 54–55; Ex. 1002 ¶ 160.

Patent Owner responds that a person of ordinary skill in the art would not have had a reason to combine the cited teachings of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995. PO Resp. 19. Patent Owner relies on some of the same arguments discussed above with respect to the combination of Hunter and Bulan (*id.* at 19–32), but also presents some additional arguments that are specific to the combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 (*id.* at 32–34). We address each of Patent Owner’s specific contentions in detail below.

First, Patent Owner argues that providing phantom power over pre-existing Ethernet wiring and cables would have damaged Bob Smith terminations and common mode chokes. *Id.* at 19–22. Patent Owner’s argument is not persuasive. As discussed above, Patent Owner’s premise that the invention of the ’760 patent is limited to a pre-existing Ethernet network is not supported by the specification or claims of the ’760 patent.

See supra Section II.C.8. In addition, we note that Patent Owner does not direct us to specific evidence indicating that the teachings of Bloch, IEEE 802.3-1993, or IEEE 802.3-1995 are limited to a pre-existing Ethernet network. *See* PO Resp. 19–22. And Patent Owner acknowledged at the oral hearing that applying phantom power to “new” Ethernet terminal equipment would not have caused any problems with Bob Smith terminations or common mode chokes. Tr. 135:1–12. Thus, any alleged issues with Bob Smith terminations or common mode chokes in a pre-existing Ethernet network are not pertinent to the question of whether a person of ordinary skill in the art would have had a reason to combine the cited teachings of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995.

Moreover, even if we accepted Patent Owner’s premise, Patent Owner’s argument still is not persuasive because not all pre-existing Ethernet networks included Bob Smith terminations or common mode chokes. *See supra* Section II.C.8. And, even for those pre-existing Ethernet networks that did include Bob Smith terminations or common mode chokes, it would have been within the knowledge and capabilities of a person of ordinary skill in the art to implement phantom power without damaging the Bob Smith terminations or common mode chokes. *See id.*

Second, Patent Owner argues that a person of ordinary skill in the art would have provided operating power to Ethernet terminal equipment over the unused lines in an Ethernet connection to avoid interference with the data signals. PO Resp. 22–26. In particular, Patent Owner points out that the Ethernet connector taught by IEEE 802.3-1993 and IEEE 802.3-1995 includes two unused pairs of conductors. *Id.* at 24–25 (citing Ex. 1006, 266–267; Ex. 1007, 147).

Patent Owner’s argument is not persuasive. Bloch teaches providing operating power to terminal equipment over the same lines used to transmit data. Pet. 43–44; Ex. 1005, 2:54–61, 5:20–30, Fig. 1. Although Bloch relates to a key telephone system, Bloch explains that its phantom power circuit “can find application in many different control unit/terminal applications.” Ex. 1005, 4:49–52. Further, a person of ordinary skill in the art would have possessed the background knowledge that phantom power also would work in an Ethernet network. *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1362–63 (Fed. Cir. 2013). For example, as discussed above, Hunter teaches providing phantom power to Ethernet terminal equipment over a 10Base-T Ethernet bus. *See supra* Section II.C.2. In addition, at least two patents identified on the face of the ’760 patent, namely U.S. Patent No. 5,994,998 (“Fisher ’998”) and U.S. Patent No. 6,140,911 (“Fisher ’911”) (collectively, “the Fisher patents”), teach providing phantom power to Ethernet terminal equipment.¹⁵ Pet. Reply 5; Ex. 1025, 2:21–41, 3:49–67, 6:7–10; Ex. 1026, 2:32–52, 3:59–4:10, 6:17–20. Thus, although alternative ways of providing operating power to Ethernet terminal equipment may have existed (PO Resp. 23–26), that does not detract from the phantom power technique taught by Bloch (as well as Hunter and the Fisher patents). *See Mouttet*, 686 F.3d at 1334; *Fulton*, 391 F.3d at 1200.

¹⁵ Patent Owner argued at the oral hearing that the Fisher patents do not teach certain limitations of the challenged claims. Tr. 124:7–126:8. However, we do not rely on the Fisher patents to teach any limitations of the challenged claims. We rely on the Fisher patents as evidence that a person of ordinary skill in the art would have known that phantom power would work in an Ethernet network.

Third, Patent Owner argues that members of an IEEE committee were skeptical that phantom power would work in an Ethernet network. PO Resp. 27–32. Patent Owner’s argument is not persuasive. As discussed above, the evidence cited by Patent Owner relates to whether the IEEE committee members believed that phantom power should be adopted as an Ethernet standard, not whether phantom power would work in an Ethernet network. *See supra* Section II.C.8. Further, as also discussed above, at least some committee members were in favor of using phantom power as an Ethernet standard. *See id.* In any event, the fact that an alternative way of providing operating power to Ethernet terminal equipment existed and was considered for an IEEE standard does not detract from the phantom power technique taught by Bloch. *See Mouttet*, 686 F.3d at 1334; *Fulton*, 391 F.3d at 1200. Moreover, we note that, even if Patent Owner’s evidence indicates some amount of skepticism, we determine that it does not outweigh the strong evidence of obviousness presented by Petitioner and discussed in this Decision. *See In re Cyclobenzaprine*, 676 F.3d at 1079.

Fourth, Patent Owner argues that Petitioner’s proposed combination of Bloch, IEEE 802.3-1993, and IEEE 802.3-1995 would have degraded the Ethernet data signal. PO Resp. 32–34. Specifically, Patent Owner argues that switching a resistor into and out of the phantom power circuit, as taught in Bloch, would have created noise and degraded the Ethernet data signal. *Id.* at 32–33 (citing Ex. 2038 ¶ 86; Ex. 2039, 172:20–173:3). In addition, Patent Owner contends that applying operating power to just one side of the transformers in Bloch, as Petitioner proposes in Figure 6 of the Petition, would have saturated the coils and degraded the Ethernet data signal. PO Resp. 33 (citing Ex. 2038 ¶ 87; Ex. 2039, 168:6–14). Patent Owner also

notes that, even if operating power was applied to both sides of the transformers in Bloch, “a saturation problem would still exist because the center taps are never perfectly centered and there can be imbalances in the wires.” PO Resp. 33–34 (citing Ex. 2038 ¶ 88; Ex. 2039, 169:14–15).

Patent Owner’s argument that switching a resistor into and out of the phantom power circuit would have degraded the Ethernet data signal is not persuasive. Patent Owner’s declarant, Dr. Madisetti, states that “[s]witching the resistor would create noise that would degrade the Ethernet data propagation and reduce bandwidth,” but does not otherwise explain or provide support for that statement. Ex. 2038 ¶ 86. In contrast, Petitioner’s declarant, Mr. Crayford, explains that the resistor in Bloch would have produced low frequency signals, which would have been unlikely to interfere with the higher frequency data signals of an Ethernet network. Pet. Reply 8; Ex. 1046 ¶¶ 49–51. Mr. Crayford also explains that, even if the resistor in Bloch would have caused some interference with the Ethernet data signals, it would have been within the knowledge and capabilities of a person of ordinary skill in the art to separate the low frequency resistor signals from the high frequency Ethernet data signals, such as by using a filter. Pet. Reply 8; Ex. 1046 ¶ 49; Ex. 2039, 172:20–173:3.

Patent Owner’s argument that applying operating power to the transformers in Bloch would saturate the coils also is not persuasive. Patent Owner’s argument is premised on annotations that Petitioner added to Figure 1 of Bloch in the Petition. PO Resp. 33 (citing Pet. 45). Specifically, Petitioner added a red line to Figure 1 of Bloch to indicate the flow of DC current through the system, but, as Patent Owner points out, the red line only shows current flowing through one side of the transformer. Pet. 45; PO

Resp. 33. Petitioner's declarant, Mr. Crayford, clarified during his deposition that the annotations to Figure 1 were intended to illustrate the direction of current flow, and that, even if not shown expressly by the annotations, the current clearly flows through both sides of the transformer. Ex. 2039, 167:14–169:22. Specifically, Mr. Crayford stated that he “did not choose to highlight both of the pairs of the twisted pair which is the current path, but clearly they're parallel connectors connected to the same transformers with the power and return path on the center tap,” so “they probably should be highlighted.” *Id.* at 167:23–168:4. Thus, contrary to Patent Owner's argument, Petitioner does not propose applying operating power to just one side of the transformers in Bloch.

Further, we are not persuaded by Patent Owner's argument that, even if operating power was applied to both sides of the transformer in Bloch, there would still be a saturation problem. Bloch teaches that the phantom power circuit “is connected to the two center taps of the transformers,” thereby indicating that applying operating power to the center taps of the transformers would work. Ex. 1005, 3:9–23. Further, consistent with the teaching of Bloch, Mr. Crayford explained that the objective of balancing the coils on either side of the transformer is “very well known.” Ex. 2039, 169:14–22.

In addition to combining the cited teachings of Bloch with IEEE 802.3-1993, and IEEE 802.3-1995, Petitioner also argues that a person of ordinary skill in the art would have had a reason to combine the cited teachings of Bloch and Huizinga. Pet. 53. Although the teachings of Huizinga are not necessary to our ultimate determination in this Decision, we nonetheless agree with and adopt Petitioner's reasoning. Specifically,

Bloch teaches a control unit that detects the status of different elements of a terminal and controls indicators in the terminal. Pet. 53; Ex. 1005, 5:61–6:2, 10:66–11:10. Huizinga teaches that the indicators in Bloch can be lamps that illuminate for different telephone lines. Pet. 53; Ex. 1009, 4:19–30, 5:29–39. These interrelated teachings of Bloch and Huizinga would have provided a person of ordinary skill in the art with a reason to combine Bloch and Huizinga. See *KSR*, 550 U.S. at 418 (explaining that “interrelated teachings” of multiple prior art references may provide a reason to combine known elements). Patent Owner does not dispute that a person of ordinary skill in the art would have had a reason to combine the cited teachings of Bloch and Huizinga.

9. Summary

For the reasons discussed above, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 would have been obvious over Bloch, IEEE 802.3-1993, and IEEE 802.3-1995, and over Bloch, Huizinga, IEEE 802.3-1993, and IEEE 802.3-1995.

E. Amended Claims 73, 106, 112, 134, 142, and 145

A request for an *ex parte* reexamination of the '760 patent was filed on August 29, 2016. Ex. 2056. Both parties knew about the related *ex parte* reexamination, but did not update their mandatory notices under 37 C.F.R. §§ 42.8(a)(3), (b)(2) or otherwise notify us of the related *ex parte* reexamination until the oral hearing on August 31, 2017. Tr. 226:11–228:20; Paper 61, 8:2–12:21. By that time, the related *ex parte* reexamination already had concluded with a notice of intent to issue a reexamination certificate. Tr. 226:11–227:3; Ex. 3006. Neither party

provided an explanation for its delay in notifying us of the related *ex parte* reexamination. Tr. 227:17–228:12; Paper 61, 8:2–12:21.

The *ex parte* reexamination certificate for the '760 patent amends independent claim 73 to further recite that “the piece of central network equipment is a BaseT Ethernet hub.” Ex. 2056, 1:29–30 (emphasis omitted). In other words, amended independent claim 73 incorporates the limitation of original dependent claim 101. Ex. 1001, 23:40–41. The *ex parte* reexamination certificate also amends dependent claim 145, and amends dependent claims 106, 112, 134, and 142, by virtue of their dependency from amended independent claim 73. Ex. 2056, 1:20–22, 2:5–9.

Petitioner does not challenge the patentability of original claim 101 or amended claims 73, 106, 112, 134, 142, and 145 in the Petition. See Pet. 7. As a result, we did not institute an *inter partes* review in this proceeding with respect to original claim 101 or amended claims 73, 106, 112, 134, 142, and 145. See Dec. on Inst. 2, 20–21. We have considered the additional briefing we authorized regarding amended claim 73. See Papers 65–67, 69–72. However, because Petitioner does not challenge the patentability of original claim 101 or amended claims 73, 106, 112, 134, 142, and 145 in the Petition and we did not institute an *inter partes* review with respect to original claim 101 or amended claims 73, 106, 112, 134, 142, and 145, we do not address the patentability of original claim 101 or amended claims 73, 106, 112, 134, 142, and 145 in this Decision. See 35 U.S.C. 318(a) (“the Patent Trial and Appeal Board shall issue a final written decision with respect to the patentability of any patent claim challenged by the petitioner and any new claim added under section 316(d)”).

F. *Patent Owner's Motion to Strike*

Patent Owner filed a Motion to Strike Petitioner's Reply (Paper 47, "PO Mot. Str."), to which Petitioner filed an Opposition (Paper 54, "Pet. Opp. Str.").¹⁶ Patent Owner argues that several portions of Petitioner's Reply should be stricken because they are beyond the scope of a proper reply.¹⁷ PO Mot. Str. 1. Petitioner responds that the Reply is proper because it responds to arguments raised by Patent Owner in the Response. Pet. Opp. Str. 1. We have considered the parties' arguments, and, for the reasons discussed below, Patent Owner's Motion to Strike is *denied*. In addition, to the extent that this Decision does not rely on an argument that Patent Owner contends is improper, Patent Owner's Motion to Strike is moot as to that particular argument.

1. *IsoEthernet*

Patent Owner argues that Petitioner presented a new theory of unpatentability in the Reply based on Hunter's teaching of isoEthernet. PO Mot. Str. 2. Specifically, Patent Owner contends that "[t]he Reply newly asserts that 'Hunter's disclosure of isoEthernet also teaches Ethernet' and interjects new concepts: '[i]soEthernet . . . 10Base-T and ISDN modes' and 'isoEthernet interfaces.'" *Id.* (citing Pet. Reply 12:5–8, 15:21–16:4, 18:10–17; Ex. 1046 ¶¶ 48, 67–69, 74, 80–81).

¹⁶ We authorized Patent Owner to file a motion to strike and Petitioner to file an opposition. Paper 42, 3.

¹⁷ Patent Owner also argues that Petitioner's Reply should be stricken in its entirety. PO Mot. Str. 1. Because we are not persuaded that any specific portions of the Reply should be stricken, we also are not persuaded that the entire Reply should be stricken.

We are not persuaded that the disputed portions of Petitioner’s Reply are improper. Petitioner explains in the Petition that Hunter preferably uses a 10Base-T Ethernet bus, but points out that Hunter is not limited to a 10Base-T Ethernet bus because Hunter also is compatible with 100Base-T, isoEthernet, and ISDN. Pet. 25 (“[T]he bus comprises a 10Base-T bus.”); *id.* at 26 (“a system applying other BaseT Ethernet standards, such as **100Base-T**”); *id.* at 26 (“[T]he present invention is also compatible with **Ethernet**®, Token Ring®, ATM, and **isoEthernet**® standards.”); *id.* at 28 (“compatible with ISDN standards”). Petitioner also argues in the Petition that “it would have been obvious to a PHOSITA to implement the teachings of Hunter in a system applying other BaseT Ethernet standards.” *Id.* at 26. Thus, Petitioner’s reliance on isoEthernet is *not* a new theory of unpatentability raised for the first time in the Reply. *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015).

Further, Patent Owner argues in the Response that Hunter does not teach a Base-T Ethernet system. PO Resp. 40–41. In particular, Patent Owner contends that the “isoEthernet® interfaces [in Hunter] were part of an IEEE standard called 802.9a,” which indicates that “isoEthernet used ISDN signals, **not Ethernet signals**, to transmit data.” *Id.* at 40 (citing Ex. 1003, 17:15–18; Ex. 2038 ¶ 76). Petitioner responds in the Reply by explaining why Patent Owner’s argument in the Response is incorrect. Pet. Reply 11–12. Specifically, in the Reply, Petitioner identifies evidence indicating that isoEthernet includes both an ISDN mode *and* a 10Base-T mode, and, as a result, is not limited to carrying just ISDN signals. *Id.* at 12 (citing Ex. 1003, 23:21–24, Ex. 1010, 165; Ex. 1032, 377; Ex. 1046 ¶ 68). Thus, Petitioner’s argument regarding isoEthernet in the Reply properly

responds to an argument raised by Patent Owner in the Response. *See* 37 C.F.R. § 42.23(b); *Belden*, 805 F.3d at 1078–79. Further, we rely on the disputed portions of Petitioner’s Reply only to explain, at least in part, why we are not persuaded by Patent Owner’s argument in the Response. *See supra* Section II.C.2; *Belden*, 805 F.3d at 1078–79.

We note that Patent Owner specifically objects to Petitioner’s reliance on “a newly-cited IEEE standard for 802.9,” which Petitioner submitted as Exhibit 1032 with the Reply. PO Mot. Str. 2 (citing Pet. Reply 12:5–8, 12:14–18, 18:16; Ex. 1032). Patent Owner contends that Hunter only teaches “the trademarked version ‘isoEthernet®,’” and Petitioner does not link the trademarked version of isoEthernet in Hunter with the IEEE standard described in Exhibit 1032. PO Mot. Str. 2–3 (citing Pet. 26 n.8; Ex. 2055, 25:10–14, 31:9–21). Patent Owner also argues that Hunter refers to “IEEE draft standard 802.9a,” but Exhibit 1032 is not a draft and only describes IEEE standard 802.9. PO Mot. Str. 3 (citing Ex. 1003, 16:7; Ex. 1032).

For the reasons discussed above, Petitioner’s argument in the Reply regarding isoEthernet is a proper response to an argument raised by Patent Owner in the Response, not a new theory of unpatentability. Thus, we see no problem with Petitioner’s reliance on Exhibit 1032 to support its argument regarding isoEthernet in the Reply. Nonetheless, we do not rely on Exhibit 1032 in this Decision. Rather, as discussed above, we rely on Exhibit 1010 as showing that isoEthernet includes a 10Base-T mode. *See supra* Section II.C.2. Petitioner submitted Exhibit 1010 with the Petition (Pet. iii), and cites Exhibit 1010 in the Reply (Pet. Reply 12). Also, like Hunter, Exhibit 1010 refers to the IEEE 802.9a standard for isoEthernet. Ex.

1003, 15:15–18; Ex. 1010, 160. Patent Owner does not raise any specific objections to Petitioner’s reliance on Exhibit 1010 in the Motion to Strike. See PO Mot. Str. 1–3.

Patent Owner also argues that “had the **Petition** relied on isoEthernet (trademarked or otherwise) and/or Ex. 1032 as a basis for Ground 1, [Patent Owner] would have provided evidence with its Response that, as late as 1999, the IEEE isoEthernet committee prohibited combining phantom-power and Ethernet data signals (‘10Base-T mode’) to ‘insure[] that 10Base-T services are unaffected.’”¹⁸ PO Mot. Str. 3 (citing Ex. 2055, 38:23–39:18). Patent Owner also presented this argument at the oral hearing and referred to it as an offer of proof under Fed. R. Evid. 103(a)(2). Tr. 83:2–18, 218:8-21. In connection with this offer of proof, Patent Owner alleged that it would have presented this evidence in a sur-reply, but was denied the opportunity to do so by the Board. *Id.*

Fed. R. Evid. 103(a)(2) provides that “[a] party may claim error in a ruling to . . . exclude evidence only if the error affects a substantial right of the party,” and the party “informs the court of its substance by an offer of

¹⁸ The evidence that Patent Owner allegedly would have presented to support this argument is a *draft* IEEE 802.9f standard dated June 17, 1999. Tr. 83:2–18; Paper 44 ¶ 4; Ex. 2055, 35:15–39:18. We do not see how a draft IEEE standard dated after Hunter’s publication date limits the express teachings of Hunter. Further, Patent Owner’s attempt to rely on this draft IEEE 802.9f standard is inconsistent with Patent Owner’s position that Petitioner cannot rely on evidence relating to an isoEthernet standard other than the IEEE 802.9a standard expressly mentioned in Hunter. Tr. 75:16–77:19. As discussed above, the evidence relating to an isoEthernet standard that we rely on in this Decision is Exhibit 1010, which refers to the IEEE 802.9a standard mentioned in Hunter. See *supra* Section II.C.2; Ex. 1003, 15:15–18; Ex. 1010, 160 (“IEEE 802.9a standard—IsoEthernet”).

proof” We did not, however, exclude any evidence offered by Patent Owner or deny Patent Owner the opportunity to file a sur-reply in this proceeding. Patent Owner instead made a strategic decision to seek a motion to strike instead of a sur-reply. Specifically, Patent Owner requested “leave to file a motion to strike Petitioner’s Reply Briefs in IPR Nos. 2016-01389, 2016-1391, 2016-1397, and 2016-1399 *or, in the alternative*, for leave to file a Sur-Reply.” Ex. 3008, 1 (emphasis added). In other words, Patent Owner identified a motion to strike as the preferred method to respond to Petitioner’s Reply, and identified a sur-reply as an alternative to the motion to strike. *Id.* Because we granted Patent Owner’s request for leave to file a motion to strike, we did not grant the proposed alternative of a sur-reply. Paper 42, 2–3. Patent Owner did not at any time prior to the oral hearing request a clarification of our ruling or identify any error in our ruling. Further, Patent Owner’s attempt at the oral hearing to re-characterize its request as being for *both* a motion to strike *and* a sur-reply (Tr. 222:11–223:17) is contradicted by the express language Patent Owner used in its request to the Board (Ex. 3008, 1).

Moreover, the disputed portions of Petitioner’s Reply that address isoEthernet are not necessary to our ultimate determination in this proceeding. As discussed above, Hunter’s teachings regarding 10Base-T Ethernet alone satisfy the disputed limitations of the challenged claims. *See supra* Section II.C.2. Therefore, we determine that the challenged claims would have been obvious over Hunter and Bulan, even without relying on Hunter’s teachings regarding isoEthernet.

2. *Bob Smith Terminations and Common Mode Chokes*

Patent Owner argues that Petitioner addresses Bob Smith terminations and common mode chokes for the first time in the Reply. PO Mot. Str. 4 (citing Pet. Reply 2:15–4:14, 6:7–10; Exs. 1021–1024, 1029; Ex. 1046 ¶¶ 12–21). Specifically, Patent Owner argues that Petitioner knew that the invention of the '760 patent is directed to equipment networked over pre-existing wiring and cables (PO Mot. Str. 4 (citing Pet. 3)), and that pre-existing Ethernet networks included Bob Smith terminations and common mode chokes (PO Mot. Str. 4 (citing Ex. 2039, 45:10–21; Ex. 2055, 65:13–67:11)), but did not address them in the Petition.

We are not persuaded that the disputed portions of Petitioner's Reply are improper. Patent Owner raises the issue of Bob Smith terminations and common mode chokes in the Response (PO Resp. 19–22), and Petitioner responds in the Reply with an explanation and evidence showing why Patent Owner's argument in the Response is incorrect (Pet. Reply 2–4). Thus, the portions of Petitioner's Reply that address Bob Smith terminations and common mode chokes are a proper response to an argument raised by Patent Owner in the Response, not a new theory of unpatentability. *See* 37 C.F.R. § 42.23(b); *Belden*, 805 F.3d at 1078–80. Further, we rely on the disputed portions of Petitioner's Reply only to explain, at least in part, why we are not persuaded by Patent Owner's argument in the Response. *See supra* Sections II.C.8, II.D.8; *Belden*, 805 F.3d at 1078–79.

Moreover, the disputed portions of Petitioner's Reply that address Bob Smith terminations and common mode chokes are not necessary to our ultimate determination in this proceeding. As discussed above, the premise of Patent Owner's argument regarding Bob Smith terminations and common

mode chokes—that the invention of the ’760 patent is limited to equipment networked over pre-existing wiring or cables—is not supported by the specification or claims of the ’760 patent. *See supra* Sections II.C.8, II.D.8. Therefore, we determine that the challenged claims would have been obvious over the asserted prior art combinations, even without relying on the disputed portions of Petitioner’s Reply.

3. *Fisher and De Nicolo Patents*

Patent Owner argues that Petitioner submitted new exhibits with the Reply, specifically, the Fisher and De Nicolo patents, to show that using phantom power in an Ethernet network was known at the time of the ’760 patent. PO Mot. Str. 5 (citing Pet. Reply 4:15–13, 9:18–10:4; Exs. 1025–1028; Ex. 1046 ¶¶ 27–35). Patent Owner acknowledges that Petitioner presents the same position in the Petition, but contends that Petitioner cannot cite new evidence in the Reply to support that position. PO Mot. Str. 5 (citing Pet. 4–5).

We are not persuaded that the disputed portions of Petitioner’s Reply are improper. Petitioner’s position that using phantom power in an Ethernet network was known at the time of the ’760 patent is presented in the Petition. Pet. 4–5. Patent Owner argues in the Response that “operating Power-over-Ethernet (‘PoE’) did not exist in 1997” (PO Resp. 8), and Petitioner responds in the Reply by citing to the Fisher and De Nicolo patents as evidence that Patent Owner’s argument in the Response is incorrect (Pet. Reply 5 (citing Exs. 1025–1028)). Thus, the portions of Petitioner’s Reply that cite to the Fisher and De Nicolo patents are a proper response to an argument raised by Patent Owner in the Response, not a new theory of unpatentability. *See* 37 C.F.R. § 42.23(b); *Belden*, 805 F.3d at

1078–80. Further, we rely on the disputed portions of Petitioner’s Reply only to explain, at least in part, why we are not persuaded by Patent Owner’s argument in the Response. *See supra* Sections II.C.8, II.D.8; *Belden*, 805 F.3d at 1078–79.

We note that Patent Owner specifically objects to Petitioner’s reliance on the De Nicolo patents because Patent Owner alleges it could have demonstrated that the De Nicolo patents are not prior art to the ’760 patent. PO Mot. Str. 5–6. We do not rely on the De Nicolo patents in this Decision. Rather, as discussed above, we rely on Hunter and the Fisher patents as showing that using phantom power in an Ethernet network was known at the time of the ’760 patent. *See supra* Sections II.C.8, II.D.8.

Moreover, the disputed portions of Petitioner’s Reply that rely on the Fisher and De Nicolo patents are not necessary to our ultimate determination in this proceeding. As discussed above, the teachings of Hunter alone demonstrate that using phantom power in an Ethernet network was known at the time of the ’760 patent. *See supra* Sections II.C.2, II.C.8, II.D.8. Therefore, we determine that the challenged claims would have been obvious over the asserted prior art combinations, even without relying on the disputed portions of Petitioner’s Reply.

4. *Alleged Skepticism*

Patent Owner argues that Petitioner addresses the objective indicia of non-obviousness, including skepticism of those skilled in the art, for the first time in the Reply. PO Mot. Str. 6 (citing Pet. Reply 6:14–7:15; Exs. 1035–1042; Ex. 1046 ¶¶ 36–44). Specifically, Patent Owner contends that Petitioner was “aware of the secondary considerations issues, but failed to address them in the Petition.” PO Mot. Str. 6.

We are not persuaded that the disputed portions of Petitioner's Reply are improper. Patent Owner raises the issue of skepticism by those skilled in the art in the Response (PO Resp. 27–32), and Petitioner responds in the Reply with an explanation and evidence showing why Patent Owner's argument in the Response is incorrect (Pet. Reply 6–7). Thus, the portions of Petitioner's Reply that address the alleged skepticism of those skilled in the art are a proper response to an argument raised by Patent Owner in the Response, not a new theory of unpatentability. *See* 37 C.F.R. § 42.23(b); *Belden*, 805 F.3d at 1078–80. Further, we rely on the disputed portions of Petitioner's Reply only to explain, at least in part, why we are not persuaded by Patent Owner's argument in the Response. *See supra* Sections II.C.8, II.D.8; *Belden*, 805 F.3d at 1078–79.

Moreover, the disputed portions of Petitioner's Reply that address the alleged skepticism of those skilled in the art are not necessary to our ultimate determination in this proceeding. As discussed above, even if we just consider the evidence submitted by Patent Owner, it does not establish that those of ordinary skill in the art were skeptical that phantom power would work in an Ethernet network. *See supra* Sections II.C.8, II.D.8. Therefore, we determine that the challenged claims would have been obvious over the asserted prior art combinations, even without relying on the disputed portions of Petitioner's Reply.

5. *CAT-3 and CAT-5 Cabling*

Patent Owner argues that Petitioner addresses the number of conductors in CAT-3 and CAT-5 cabling for the first time in the Reply. PO Mot. Str. 7 (citing Pet. Reply 10:5–16; Ex. 1031; Ex. 1046 ¶ 61). Specifically, Patent Owner contends that Petitioner knew that CAT-3

cabling was used for 10Base-T Ethernet and CAT-5 cabling was used for 100Base-T Ethernet, and, thus, “could have included” argument and evidence in the Petition regarding the number of conductors in that cabling. PO Mot. Str. 7.

We are not persuaded that the disputed portions of Petitioner’s Reply are improper. Patent Owner raises the issue of the number of conductors in CAT-3 and CAT-5 cabling in the Response (PO Resp. 25–26), and Petitioner responds in the Reply with an explanation and evidence showing why Patent Owner’s argument in the Response is incorrect (Pet. Reply 10). Thus, the portions of Petitioner’s Reply that address the number of conductors in CAT-3 and CAT-5 cabling are a proper response to an argument raised by Patent Owner in the Response, not a new theory of unpatentability. *See* 37 C.F.R. § 42.23(b); *Belden*, 805 F.3d at 1078–80.

Patent Owner also argues that, if Petitioner had addressed the number of conductors in CAT-3 and CAT-5 cabling in the Petition, Patent Owner “would have included the cable specification for CAT-3/CAT-5 wiring, confirming that such cables comprise four wire pairs.” PO Mot. Str. 7. (citing Ex. 2055, 171:23–176:13). Patent Owner also presented this argument at the oral hearing and referred to it as an offer of proof under Fed. R. Evid. 103(a)(2). Tr. 220:19–221:2. As discussed above, Fed. R. Evid. 103(a)(2) provides that “[a] party may claim error in a ruling to . . . exclude evidence only if the error affects a substantial right of the party,” and the party “informs the court of its substance by an offer of proof” We did not, however, exclude any evidence offered by Patent Owner or deny Patent Owner the opportunity to file a sur-reply in this proceeding. *See supra*

Section II.F.1. Patent Owner instead made a strategic decision to seek a motion to strike instead of a sur-reply. *See id.*

Moreover, the disputed portions of Petitioner's Reply that address the number of conductors in CAT-3 and CAT-5 cabling are not necessary to our ultimate determination in this proceeding. As discussed above, the portions of Hunter cited in the Petition independently demonstrate that a 10Base-T Ethernet bus may include only two twisted pair conductors, not four. *See supra* Sections II.C.2, II.C.8. Therefore, we determine that the challenged claims would have been obvious over the asserted prior art combinations, even without relying on the disputed portions of Petitioner's Reply.

G. *Petitioner's Motion to Exclude*

Petitioner filed a Motion to Exclude (Paper 46, "Pet. Mot. Excl."), to which Patent Owner filed an Opposition (Paper 50, "PO Opp. Excl."), and Petitioner filed a Reply (Paper 58, "Pet. Reply Excl."). We have considered the parties' arguments, and, for the reasons discussed below, Petitioner's Motion to Exclude is *denied*.¹⁹

1. *Exhibit 2038*

Exhibit 2038 is Dr. Madisetti's Declaration. Petitioner argues that Exhibit 2038 should be excluded under Fed. R. Evid. 401, 402, 403, 702, 703, as irrelevant, prejudicial, and unreliable. Pet. Mot. Excl. 1–11.

¹⁹ Patent Owner requested authorization to file Exhibits 2052–2054 with its Opposition to Petitioner's Motion to Exclude. Paper 60, 2. Patent Owner withdrew that request with respect to Exhibits 2052 and 2053, because Patent Owner did not cite those exhibits in its Opposition. *Id.*; Paper 59, 12:11–15:1. We note that Exhibits 2052 and 2053 would not change our ultimate determination because we deny Petitioner's Motion to Exclude even without considering Exhibits 2052 and 2053.

Specifically, Petitioner argues that Dr. Madisetti: 1) relies on an incorrect date of invention for the challenged claims of the '760 patent (*id.* at 2–4); 2) fails to provide support for his opinion that a person of ordinary skill in the art would have provided operating power over the unused lines in an Ethernet connection (*id.* at 5–6); 3) misunderstands the isoEthernet standard (*id.* at 6–7); 4) fails to provide support for his opinion that the resistor in Bloch would interfere with Ethernet data signals (*id.* at 8); 5) provides inconsistent interpretations of what constitutes terminal equipment (*id.* at 8–10); 6) fails to read the teachings of Hunter as a whole (*id.* at 10); and 7) relies on an improper construction of the claim term “powered-off” (*id.* at 11). Petitioner’s arguments raise a question of the weight that should be given to Dr. Madisetti’s testimony, not admissibility. Therefore, Petitioner’s Motion to Exclude is *denied* with respect to Exhibit 2038.

2. *Exhibits 2040–2046 and 2048*

Exhibits 2040–2046 and 2048 are documents relating to meetings of an IEEE committee. Petitioner argues that Exhibits 2040–2046 and 2048 should be excluded under Fed. R. Evid. 401, 402, 403, 801, 802, 804, 901, as irrelevant, prejudicial, hearsay, and lacking authentication. Pet. Mot. Excl. 11–13. Petitioner’s arguments are not persuasive.

The proponent of an item of evidence must produce evidence sufficient to support a finding that the item is what the proponent claims it is. Fed. R. Evid. 901. Here, Patent Owner submits Mr. Clyde Camp’s testimony that “[t]he 802.3af Committee maintained a record of its proceedings by posting documents pertaining to its work, including meeting minutes and presentations, on its public document server at <http://www.ieee802.org/3/af/public/> (“the Website”),” and that Exhibits

2040–2046 are such records. Ex. 2048 ¶¶ 4–11. Mr. Camp explains that his statements in Exhibit 2048 are based on personal knowledge. *Id.* ¶ 1.

Petitioner, on the other hand, does not provide any specific reason for us to believe that Exhibits 2040–2046 are not what Petitioner and Mr. Camp claim them to be. *See* Pet. Mot. Excl. 11–13.

Hearsay is limited to a statement that a party offers in evidence to prove the truth of the matter asserted in the statement. Fed. R. Evid. 801. Patent Owner offers, and we consider, Exhibits 2040–2046 as evidence of the effect that the statements in Exhibits 2040–2046 would have had on a person of ordinary skill in the art considering the prior art combinations proposed by Petitioner in this case. *See supra* Sections II.C.8, II.D.8. Thus, the statements in Exhibits 2040–2046 are not hearsay because they are not offered as evidence of the truth of the matter asserted.

Petitioner’s arguments regarding the relevance of Exhibits 2040–2046 and 2048 raise a question of sufficiency of proof, not admissibility. Further, as discussed above, we considered Exhibits 2040–2046 and 2048 in connection with Patent Owner’s arguments in the Response, but we do not find Patent Owner’s arguments that rely on Exhibits 2040–2046 and 2048 to be persuasive. *See supra* Sections II.C.8, II.D.8. As a result, Petitioner does not suffer any prejudice by our admission of Exhibits 2040–2046 and 2048. Therefore, Petitioner’s Motion to Exclude is *denied* with respect to Exhibits 2040–2046 and 2048.

3. *Exhibit 2047*

Exhibit 2047 is a document entitled “FYI on ‘What is the Internet?’” produced by the User Services Working Group of the Internet Engineering Task Force. Petitioner argues that Exhibit 2047 should be excluded under

Fed. R. Evid. 401, 402, 403, 801, 802, 805, 901, as irrelevant, hearsay, and lacking authentication. Pet. Mot. Excl. 13–14. Petitioner’s arguments are not persuasive.

The proponent of an item of evidence must produce evidence sufficient to support a finding that the item is what the proponent claims it is. Fed. R. Evid. 901. Here, Patent Owner submits Dr. Madisetti’s testimony that Exhibit 2047 is a document entitled “FYI on ‘What is the Internet?’” produced by the Internet Engineering Task Force, and available at <https://tools.ietf.org/html/rfc1462>. Ex. 2038 ¶ 104. Petitioner, on the other hand, does not provide any specific reason for us to believe that Exhibit 2047 is not what Petitioner and Dr. Madisetti claim it to be. See Pet. Mot. Excl. 13–14.

Hearsay is limited to a statement that a party offers in evidence to prove the truth of the matter asserted in the statement. Fed. R. Evid. 801. Patent Owner offers Exhibit 2047 as evidence of the fact that the term “protocol” had been defined a certain way by the Internet Engineering Task Force, not necessarily for the truth of the definition asserted. PO Resp. 18. Thus, at least certain statements in Exhibit 2047 are not hearsay.

Petitioner’s arguments regarding the relevance of Exhibit 2047 raise a question of sufficiency of proof, not admissibility. Further, as discussed above, we considered Exhibit 2047 in connection with Patent Owner’s proposed construction of the term “protocol,” but we do not find Patent Owner’s arguments that rely on Exhibit 2047 to be persuasive. See *supra* Section II.B.2. As a result, Petitioner does not suffer any prejudice by our admission of Exhibit 2047. Therefore, Petitioner’s Motion to Exclude is *denied* with respect to Exhibit 2047.

4. *Exhibits 2049, 2050, 2054*

Petitioner argues that Exhibits 2049, 2050, and 2054 should be excluded under Fed. R. Evid. 401, 402, 403, as irrelevant and prejudicial. Pet. Mot. Excl. 14–15. Petitioner’s arguments regarding the relevance of Exhibits 2049, 2050, and 2054 raise a question of sufficiency of proof, not admissibility. Further, we do not discern that Petitioner suffers any prejudice by our admission of Exhibits 2049, 2050, and 2054. Therefore, Petitioner’s Motion to Exclude is *denied* with respect to Exhibits 2049, 2050, and 2054.

H. *Patent Owner’s Motion to Exclude*

Patent Owner filed a Motion to Exclude (Paper 45, “PO Mot. Excl.”), to which Petitioner filed an Opposition (Paper 52, “Pet. Opp. Excl.”), and Patent Owner filed a Reply (Paper 57, “PO Reply Excl.”). We have considered the parties’ arguments, and, for the reasons discussed below, Patent Owner’s Motion to Exclude is *denied-in-part* and *dismissed-in-part*.

1. *Exhibits 1021–1024, 1029, and 1043*

Exhibits 1021–1024 are product datasheets, catalogs, and specifications, Exhibit 1029 is U.S. Patent No. 5,321,372, and Exhibit 1043 is U.S. Patent No. 8,155,012, which is related to the ’760 patent and also owned by Patent Owner. Patent Owner argues that Exhibits 1021–1024, 1029, and 1043 should be excluded as improper new evidence for the same reasons set forth in the Motion to Strike. PO Mot. Excl. 4–5; PO Mot. Str. 3–5. Patent Owner’s arguments are not persuasive for the same reasons discussed above with respect to the Motion to Strike. *See supra* Section II.F.2.

Patent Owner also argues that Exhibits 1021–1024 and 1029 should be excluded as impermissible hearsay. PO Mot. Excl. 11. We rely on Exhibits 1021–1024 and 1029 in this Decision only to the extent they provide a basis for certain portions of Mr. Crayford’s declaration that are cited in this Decision. *See supra* Sections II.C.8, II.D.8 (citing Ex. 1046 ¶¶ 22–26). Patent Owner does not dispute that Exhibits 1021–1024 and 1029 present the kinds of facts and data that Mr. Crayford would reasonably rely upon in forming an opinion. *See* PO Mot. Excl. 11; PO Reply Excl. 2–3. As a result, Exhibits 1021–1024 and 1029 do not need to be independently admissible. *See* Fed. R. Evid. 703; *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1373 (Fed. Cir. 2013). Therefore, Patent Owner’s Motion to Exclude is *denied* with respect to Exhibits 1021–1024, 1029, and 1043.

2. *Exhibits 1025 and 1026*

Exhibits 1025 and 1026 are the Fisher patents. Patent Owner argues that Exhibits 1025 and 1026 should be excluded as improper new evidence for the same reasons set forth in the Motion to Strike. PO Mot. Excl. 3–4; PO Mot. Str. 5–6. Patent Owner’s arguments are not persuasive for the same reasons discussed above with respect to the Motion to Strike. *See supra* Section II.F.3.

Patent Owner also argues that Exhibits 1025 and 1026 should be excluded as impermissible hearsay. PO Mot. Excl. 10–11. Hearsay is limited to a statement that a party offers in evidence to prove the truth of the matter asserted in the statement. Fed. R. Evid. 801. Petitioner offers, and we rely on, the statements in Exhibits 1025 and 1026 as evidence of the effect those statements would have had on a person of ordinary skill in the

art, not for the truth of the matter asserted. *See supra* Section II.D.8 (citing Pet. Reply 5; Ex. 1025, 2:21–41, 3:49–67, 6:7–10; Ex. 1026, 2:32–52, 3:59–4:10, 6:17–20). As a result, Exhibits 1025 and 1026 are not hearsay.

However, even if the statements in Exhibits 1025 and 1026 are hearsay, Exhibits 1025 and 1026 are admissible at least under Fed. R. Evid. 803(8). Specifically, Exhibits 1025 and 1026 are records of the activities of the U.S. Patent and Trademark Office, and Patent Owner has not shown that the source of information or circumstances lack trustworthiness. *See* PO Mot. Excl. 10–11; PO Reply Excl. 3; Fed. R. Evid. 803(8); *Fresenius Med. Care Holdings, Inc. v. Baxter Int’l, Inc.*, No. C 03-1431, 2006 WL 1330003, at *2–4 (N.D. Cal. May 15, 2006). Therefore, Patent Owner’s Motion to Exclude is *denied* with respect to Exhibits 1025 and 1026.

3. Exhibits 1036–1042

Exhibits 1036–1042 are documents relating to meetings of an IEEE committee. Patent Owner argues that Exhibits 1036–1042 should be excluded as improper new evidence for the same reasons set forth in the Motion to Strike. PO Mot. Excl. 5–6; PO Mot. Str. 6. Patent Owner’s arguments are not persuasive for the same reasons discussed above with respect to the Motion to Strike. *See supra* Section II.F.4. Therefore, Patent Owner’s Motion to Exclude is *denied* with respect to Exhibits 1036–1042.

4. Exhibit 1044

Exhibit 1044 is U.S. Patent No. 8,942,107, which is related to the ’760 patent and also owned by Patent Owner. Other than pointing out that Exhibit 1044 was filed with Petitioner’s Reply, Patent Owner does not provide any specific reason why Exhibit 1044 should be excluded. *See* PO Mot. Excl. 1–9. Therefore, Patent Owner’s Motion to Exclude is *denied*

with respect to Exhibit 1044.

5. *Exhibits 1027, 1028, and 1030–1035*

We do not rely on Exhibits 1027, 1028, and 1030–1035 in this Decision. Therefore, Patent Owner’s Motion to Exclude is *dismissed as moot* with respect to Exhibits 1027, 1028, and 1030–1035.

I. *Oral Hearing Objections*

Each party objected to arguments presented by the other party during the oral hearing. Petitioner objected that Patent Owner improperly raised new arguments for the first time at the oral hearing regarding the IEEE 802.9f specification, the CAT-3 and CAT-5 cabling specifications, blind power, and power levels. Tr. 216:15–217:7. We considered Patent Owner’s arguments in the Response in light of any additional arguments presented by Patent Owner at the oral hearing, but we ultimately do not find Patent Owner’s arguments persuasive for the reasons discussed in this Decision. Thus, Petitioner does not suffer any prejudice by our admission of the arguments presented by Patent Owner at the oral hearing.

Patent Owner objected that Petitioner raised arguments at the oral hearing that were the subject of Patent Owner’s Motion to Strike and/or Motion to Exclude. Tr. 66:20–67:20. For the reasons discussed above, we deny Patent Owner’s Motion to Strike and deny-in-part and dismiss-in-part Patent Owner’s Motion to Exclude. *See supra* Sections F, H. Thus, we see no problem with the arguments presented by Petitioner at the oral hearing.

J. *Patent Owner’s Observations on Cross Examination*

Patent Owner filed a Motion for Observations on the cross examination of Mr. Ian Crayford (Paper 44), to which Petitioner filed a Response (Paper 55). We have considered Patent Owner’s observations and

Petitioner's responses, and we determine that Patent Owner's observations do not demonstrate any issues with respect to the credibility of Mr. Crayford's testimony. We also have considered Patent Owner's observations in connection with the arguments and evidence discussed above, and we have given Mr. Crayford's testimony the appropriate weight in making our determination in this case.

III. CONCLUSION

Petitioner has shown by a preponderance of the evidence that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 of the '760 patent are unpatentable.

IV. ORDER

In consideration of the foregoing, it is hereby

ORDERED that claims 1, 31, 37, 59, 69, and 72, and original claims 73, 106, 112, 134, 142, and 145 of the '760 patent are shown unpatentable;

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

FURTHER ORDERED that Petitioner's Motion to Exclude is *denied*;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied-in-part* and *dismissed-in-part*; 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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Patent 8,902,760 B2

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