

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PANDUIT CORP.,
Petitioner,

v.

CORNING OPTICAL COMMUNICATIONS LLC,
Patent Owner.

Case IPR2017-00009
Patent 9,020,320 B2

Before BEVERLY M. BUNTING, JENNIFER MEYER CHAGNON, and
TERRENCE W. McMILLIN, *Administrative Patent Judges*.

BUNTING, *Administrative Patent Judge*.

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

I. INTRODUCTION

Panduit Corp. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–28 of U.S. Patent No. 9,020,320 B2 (Ex. 1001, “the ’320 patent”). Paper 2 (“Pet.”). Corning Optical Communications LLC (“Patent Owner”), the assignee of the ’320 patent, filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”). Upon consideration of the information presented in the Petition, we determined that Petitioner had demonstrated that there was a reasonable likelihood that it would prevail with at least one challenged claim, and instituted this trial, pursuant to 35 U.S.C. § 314(a), as to claims 1–28 (“the instituted claims”) of the ’320 patent. Paper 7, 25 (“Decision on Institution” or “Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 12, “PO Resp.”), and Petitioner filed a Reply (Papers 29 (confidential version), 30 (public, redacted version), “Reply”).^{1,2} A transcript of the oral hearing held on January 9, 2018, has been entered into the record as Paper 37 (“Tr.”).

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we conclude that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1–28 of the ’320 patent are unpatentable.

¹ We note that this Final Written Decision does not rely on any confidential information in the record.

² Petitioner filed evidentiary objections to certain of Patent Owner’s Exhibits (Paper 16) but did not file a motion to exclude, which is required to preserve any evidentiary objection. See 37 C.F.R. § 42.64(c).

II. BACKGROUND

A. Real Party in Interest

Petitioner names Panduit Corp. as the real party in interest. Pet. 1.

B. Related Matters

The parties indicate that the '320 patent has been asserted in: *Corning Optical Communications LLC v. Panduit Corp.*, 16-cv-00268-GMS (D. Del) filed April 15, 2016. Pet. 1; Paper 4, 1.

C. The '320 Patent (Ex. 1001)

The '320 patent issued on April 28, 2015, from U.S. Patent Application No. 13/746,938, filed on January 22, 2013, and is a continuation of application No. 12/819,081 (now abandoned), which is a continuation-in-part of application No. 12/325,415 (now U.S. Patent No. 8,452,148). Ex. 1001, (45), (21), (22), (63).

The '320 patent is directed to fiber optic connection density and bandwidth in fiber optic apparatus and equipment. *Id.* at 1:32–34. According to the '320 patent, fiber optic equipment is customizable to accommodate application and connection bandwidth needs, and placed in housings mounted in equipment racks. *Id.* at 1:52–55. Available data transmission rates are dependent on the connection bandwidth, and bandwidth is based on factors such as the number of optical fiber ports supported by the fiber optic equipment. *Id.* at 1:55–61.

As shown in Figure 1, reproduced below, fiber optic equipment 10 includes chassis 12 installed in fiber optic equipment rack 14. *Id.* at 4:58–60.

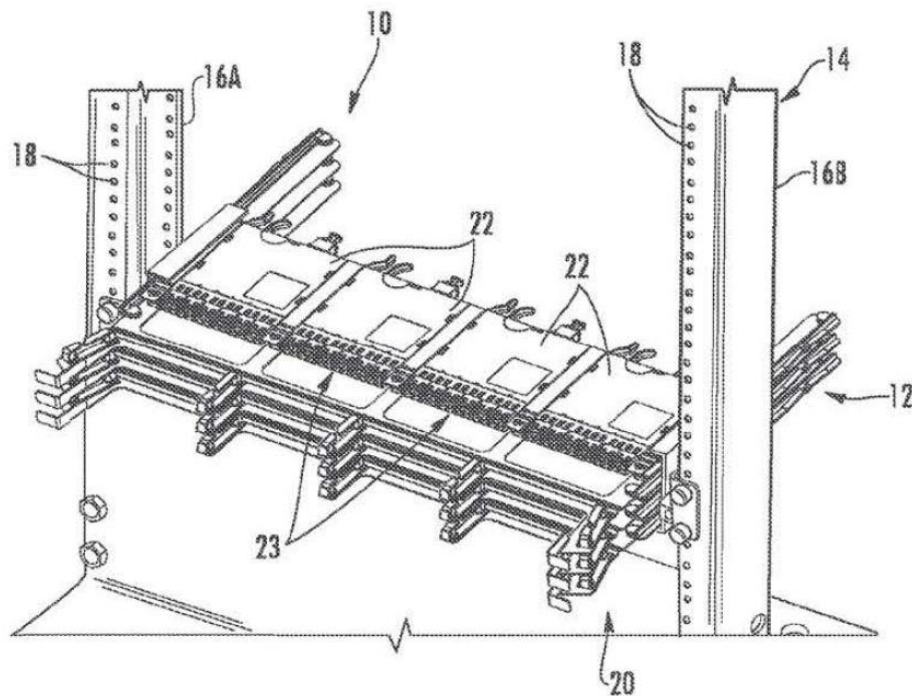


Fig. 1 is a perspective view of the fiber optic equipment rack with 1-U sized chassis supporting fiber optic modules.

Fiber optic equipment rack 14 includes spaced apart vertical rails 16A, 16B, and chassis 12 is attached to rails 16A, 16B. *Id.* at 4:60–5:1. Chassis 12 is supported in fiber optic equipment rack 14 as “1-U-sized shelves, with ‘U’ equal to a standard 1.75 inches in height and nineteen (19) inches in width. In certain applications, the width of ‘U’ may be twenty-three (23) inches.” *Id.* at 5:2–5. Extendable fiber optic trays 20 hold fiber optic modules 22, which support fiber optic connection density and bandwidth connections in a given space, *e.g.*, 1-U space. *Id.* at 5:10–16. The ’320 patent explains that:

[t]he fiber optic equipment trays **20** in this embodiment support up to four (4) of the fiber optic modules **22** in approximately the width of a 1-U space, and three (3) fiber optic equipment trays **20** in the height of a 1-U space for a total of twelve (12) fiber optic modules **22** in a 1-U space. Thus, for example, if six (6) duplex fiber optic components were disposed in each of the

twelve (12) fiber optic modules **22** installed in fiber optic equipment trays **20** of the chassis **12** as illustrated in FIG. 1, a total of one hundred forty-four (144) fiber optic connections, or seventy-two (72) duplex channels (i.e., transmit and receive channels), would be supported by the chassis **12** in a 1-U space. If five (5) duplex fiber optic adapters are disposed in each of the twelve (12) fiber optic modules **22** installed in fiber optic equipment trays **20** of the chassis **12**, a total of one hundred twenty (120) fiber optic connections, or sixty (60) duplex channels, would be supported by the chassis **12** in a 1-U space. The chassis **12** also supports at least ninety-eight (98) fiber optic components in a 1-U space wherein at least one of the fiber optic components is a simplex or duplex fiber optic component.

Id. at 5:33–52.

As shown in Figure 11, reproduced below, fiber optic components 23 are disposed in front opening 126 of fiber optic module 22. *Id.* at 9:41–46.

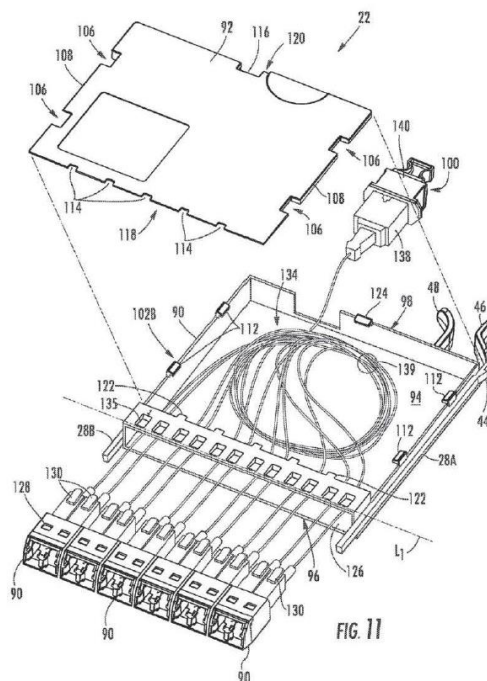


Figure 11 is an exploded view of the fiber optic modules.

In the exemplary embodiment, “fiber optic components **23** are duplex LC adapters **128**, which support single or duplex fiber connections and

connectors.” *Id.* at 9:44–46. The number of fiber optic components 23 disposed in fiber optic module 22 is dependent on width W of front opening 126 (*id.* at 10:2–4) and “[g]reater numbers of fiber optic components 23 equates to more fiber optic connections, which supports higher fiber optic connectivity and bandwidth” (*id.* at 10:5–7).

D. Illustrative Claim

Instituted claims 1, 13, 25, and 27 are independent. Ex. 1001, 19:52–59, 20:43–50, 22:1–5, and 22:12–16. Claim 1, reproduced below, is illustrative of the instituted claims:

1. A fiber optic apparatus, comprising:
a chassis; and
a fiber optic connection equipment provided in the chassis;
the fiber optic connection equipment configured to support a fiber optic connection density of at least ninety-eight (98) fiber optic connections per U space, based on using at least one simplex fiber optic component or at least one duplex fiber optic component.

Id. at 19:52–59.

E. Evidence

Petitioner relies on the following prior art references (Pet. 3–4):

References	Patent	Date	Exhibits
Wheeler	U.S. Patent No. 5,717,810	Feb. 10, 1998	1005
EIA	EIA/ECA-310-E, EIA/ECA Standard, “Cabinets, Racks, Panels, and Associated Equipment,” Electronic Components, Assemblies & Materials Association	Dec. 2005	1006
FOCIS	TIA/TIA-604-10-A, TIA/EIA Standard FOCIS 10, “Fiber Optic Connector Intermateability Standard – Type LC,” Telecommunications Industry Association	Mar. 2002	1007
Smrha	U.S. Patent Appl. Pub. No. 2008/0175551 A1	July 24, 2008	1008

Additionally, Petitioner relies on the declaration of Casimer DeCusatis, Ph.D. (Ex. 1003) and Patent Owner relies on the declaration of Eric R. Pearson (Ex. 2001). The parties rely on other exhibits as discussed below.

F. Instituted Grounds of Unpatentability

We instituted the instant trial based on the following grounds of unpatentability (Dec. 25).

References	Basis	Claims Challenged
Wheeler, EIA, and FOCIS	103	1–11, 13–23, and 25–28
Wheeler, EIA, FOCIS, and Smrha	103	12 and 24

III. ANALYSIS

A. Legal Principles

We analyze the instituted grounds of unpatentability in accordance with the principles stated below.

1. Burden of Proving Unpatentability

In *inter partes* reviews, petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail in this proceeding, Petitioner must support its challenges by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Accordingly, all of our findings and conclusions are based on a preponderance of the evidence.

2. Obviousness

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

B. Level of Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art;

prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). In that regard, Petitioner asserts that a person having ordinary skill in the art would have “(a) a Bachelor’s Degree in Mechanical Engineering or similar, with at least 5 years of experience designing fiber optic equipment and apparatuses; or (b) a Master’s Degree in Mechanical Engineering or similar, with at least 3-5 year[s] of experience designing fiber optic equipment and apparatuses.” Pet. 14 (citing Ex. 1003 ¶¶ 9–20).

According to Patent Owner, one of skill in the art “would have a bachelor’s degree in mechanical engineering, materials science, or a related field; and 2 years of experience in fiber optic equipment.” PO Resp. 1 (citing Ex. 2001 ¶¶ 11–12).

Our determination regarding the patentability of the challenged claims does not turn on the differences between these definitions. We note the parties’ proposals differ in the specific number of years of education and experience required; however, neither party argues this distinction makes a difference in analyzing the asserted grounds or other issues in this proceeding. Based on this record, we accept Petitioner’s formulation as consistent with the challenged patent and the asserted prior art. We, therefore, adopt Petitioner’s proposed level of ordinary skill in the art, finding that a person having ordinary skill in the art would have “(a) a Bachelor’s Degree in Mechanical Engineering or similar, with at least 5 years of experience designing fiber optic equipment and apparatuses; or (b) a Master’s Degree in Mechanical Engineering or similar, with at least 3-5

year[s] of experience designing fiber optic equipment and apparatuses.”
Pet. 14 (citing Ex. 1003 ¶¶ 9–20).

C. Claim Construction

The Board interprets claims of an unexpired patent using the broadest reasonable construction 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, 2144–46 (2016). Under the broadest reasonable interpretation standard, and absent any special definitions, claims terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms or phrases must be set forth 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 from the specification into the claims. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

Petitioner does not propose a specific construction for any claim term in its Petition. Pet. 20. Instead, Petitioner asserts that the broadest reasonable construction will suffice. *Id.* Patent Owner does not take a position on claim construction in its Patent Owner Response. *See generally* PO Resp. In our Decision on Institution, we determined that no express construction of any claim term was necessary. Dec. 8–9 (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”)).

Now, having considered the entire record, our determination regarding the obviousness of the challenged claims does not turn on the interpretation of any of the claim terms. Based on the final trial record before us, we determine that no express construction of any claim term is necessary for purposes of this Final Written Decision.

D. Obviousness Based on Wheeler, EIA, and FOCIS with or without Smrha

Petitioner challenges the patentability of claims 1–11, 13–23, and 25–28 of the '320 patent under 35 U.S.C. § 103 as obvious based on Wheeler, EIA, and FOCIS; and claims 12 and 24 based on Wheeler, EIA, FOCIS, and Smrha. Pet. 57. In support thereof, Petitioner identifies the disclosures in the cited references alleged to describe the subject matter in the challenged claims. *Id.* at 57–81. Petitioner supports its arguments and evidence with the testimony of its declarant, Dr. DeCusatis. Ex. 1003.

Patent Owner disagrees, arguing that the combination of Wheeler, EIA, and FOCIS, as well as the proposed combination of Wheeler, EIA, FOCIS, and Smrha, does not teach or suggest the fiber optic connection density limitation of the instituted claims. PO Resp. 17–38. Patent Owner supports its arguments and evidence with the testimony of its declarant, Mr. Pearson. Ex. 2001.

We have reviewed each party's contentions and supporting evidence of record in this trial. For the reasons given below, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–11, 13–23, and 25–28 of the '320 patent would have been obvious based on Wheeler, EIA, and FOCIS; nor claims 12 and 24 based on Wheeler, EIA, FOCIS, and Smrha.

We begin our analysis with a brief summary of the cited references and then address the parties' contentions in turn.

1. Wheeler (Ex. 1005)

Wheeler is titled, "High-Density Fiber Distribution Frame." Ex. 1005, (54). The apparatus disclosed in Wheeler is a high-density fiber distribution frame. *Id.* at 1:13–14. Fiber distribution frame 10 includes spaced apart side-walls 12, 14 and top wall 16. *Id.* at 3:35–37. Mounting fixtures 26, 26' are disposed between sidewalls 12, 14. *Id.* at 3:45–46. Figure 2, reproduced below, illustrates mounting fixtures 26, 26'.

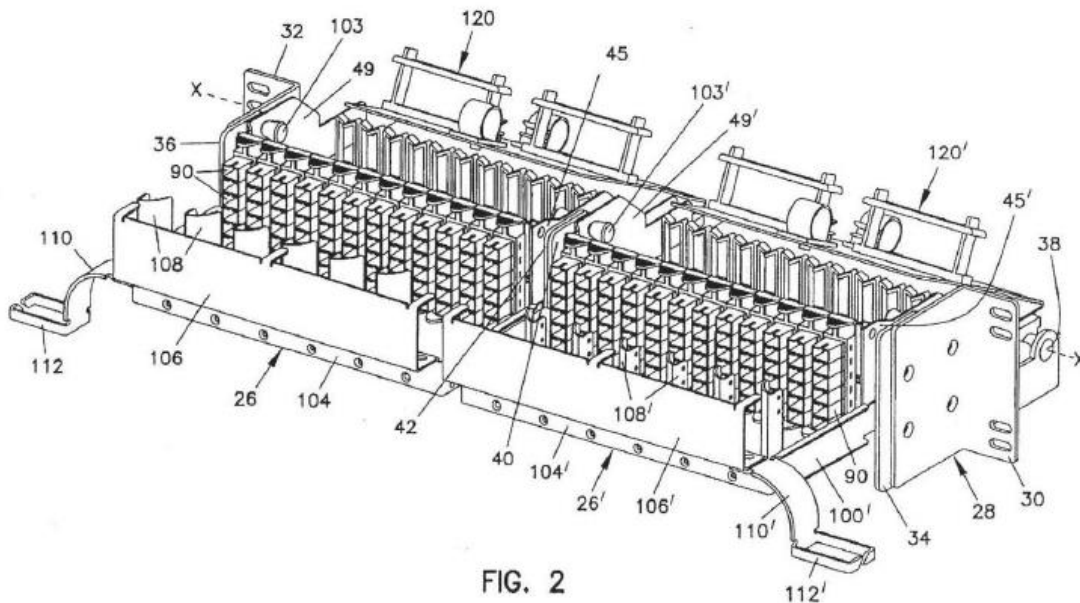


Figure 2 is a perspective view of the mounting fixtures. Fixtures 26, 26' include common mounting bracket 28. *Id.* at 3:56–57. Module 58 receives fiber optic connector adapters, which in a preferred embodiment are six SC adapters for optically coupling two fiber optic connectors. *Id.* at 5:25–32.

2. EIA (Ex. 1006)

EIA is a publication titled “Cabinets, Racks, Panels, and Associated Equipment” published by the Electronic Components, Assemblies & Materials Association of the Electronic Industries Alliance. Ex. 1006. Specifically, EIA is a design standard intended for providing design requirements for sizing of racks, including U-spaces. *Id.* at 7. The unit U refers to a height of 44.45mm (1.75in.) and the preferred width of electronic rack panels is 482.6mm (19in.). *Id.* at 8.

3. FOCIS (Ex. 1007)

FOCIS is a publication of the Telecommunications Industry Association of the Electronic Industries Alliance setting forth fiber optic connector intermateability design standards for simplex and duplex connectors and adapters, designated as LC. Ex. 1007, 2, 7. FOCIS establishes standardized dimensions for LC adapter mounting types m=1 through m=4, namely “[t]he dimensions of the surfaces of the adapter that interface with the mounting panel are defined by the cutouts in the panel on which the adapter is mounted.” *Id.* at 10.

4. Smrha (Ex. 1008)

Smrha is titled, “Adapter Panel with Lateral Sliding Adapter Arrays.” Ex. 1008, (54). The apparatus disclosed in Smrha is directed to a termination panel (*id.* ¶ 1) for use with various types of fiber optic adapters (*id.* ¶ 47). Smrha teaches:

An adapter panel arrangement including a chassis and a panel of adapters. The adapters defining open rearward cable connections and open forward cable connections of the panel arrangement. The adapters being arranged in arrays that slide

independently of other adapter arrays to provide access to the open rearward and open forward cable connections.

Id. at (57) (Abstract).

Figure 1 of Smrha, reproduced below, depicts a drawer of the adapter panel arrangement in an open position. *Id.* ¶ 5.

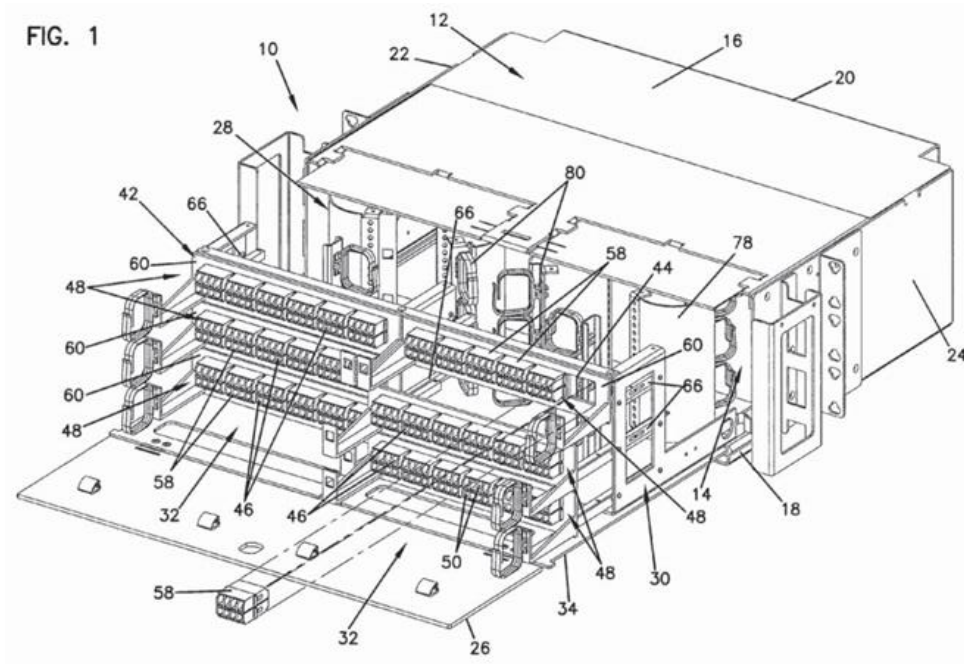


Figure 1 is a front perspective view of the adapter panel arrangement with the drawer in an open position.

5. Discussion

a. Claims 1 and 25

Petitioner asserts that Wheeler discloses the both the chassis and fiber optic connection equipment claim elements recited in independent claims 1 and 25. Pet. 57–58, 71–72 (internal citations omitted). To support its arguments, Petitioner identifies the relevant passages in Wheeler that purportedly meet the corresponding claim limitations, and explains the significance of each identified passage with respect to the corresponding claim limitation. *Id.* For example, Petitioner relies on the teaching in

Wheeler regarding fixture 26 that includes support platform 44 and cross-connect tray 46 for the chassis claim limitation. *Id.* at 57 (citing Ex. 1005, 4:7–12). Petitioner also relies on the teaching in Wheeler regarding module 58 for the fiber optic connection equipment claim limitation. *Id.* at 57–58 (citing Ex. 1005, 5:25–32).

Patent Owner does not dispute these contentions. *See* PO Resp. 15–16, 37–38. We previously instructed Patent Owner that “any arguments for patentability not raised in the [Patent Owner Response] will be deemed waived.” Paper 8, 6; *see also* 37 C.F.R. § 42.23(a) (“Any material fact not specifically denied may be considered admitted.”); *In re NuVasive, Inc.*, 842 F.3d 1376, 1380–81 (Fed. Cir. 2016) (determining Patent Owner waived arguments made only in its Preliminary Response but not raised in the Patent Owner Response after institution). As such, we adopt as our own Petitioner’s analysis of the chassis and fiber optic connection equipment claim elements recited in independent claims 1 and 25.

Independent claim 1 further recites that the fiber optic connection equipment is “configured to support a fiber optic connection density of at least ninety-eight (98) fiber optic connections per U space.” Ex. 1001, 19:55–59. Claim 25 is a method claim, and similarly recites “supporting a fiber optic connection density of at least ninety-eight (98) fiber optic connections per U space using at least one simplex fiber optic component or at least one duplex fiber optic component.” *Id.* at 22:2–5. We refer to this limitation as the “fiber optic connection density limitation.”

For the fiber optic connection density claim limitation, Petitioner relies on Wheeler’s teaching that

[e]ach of modules 58 has a hollow construction which in a preferred embodiment is sized to receive six fiber optic connector adapters disposed in an abutting linear array. . . . specific adapters 90 are well-known and so-called SC adapters for receiving and retaining SC connectors

Pet. 58 (citing Ex. 1005, 5:25–32). Petitioner additionally relies on the teachings of EIA explaining that “[t]he preferred panel width is 482.6mm The modular unit ‘U’ on which panel heights are based is equal to 44.45 millimeters” (*id.* (citing Ex. 1006, 8)), as well as the adapter interface dimensions listed in Figure 2.2.4 of FOCIS (*id.* at 59 (citing Ex. 1007, 21)). Specifically, Petitioner argues that

a POSITA would have been aware of the EIA/ECA-310-E standard which creates a standardized size (1.75” height and 19” length) for panels for mounting fiber optic equipment, such as the fiber distribution frame taught by Wheeler. (Ex. 1003, ¶ 163). The fiber optic equipment mounted to such panels is sized so as to have the same or smaller cross section so that the equipment can fit inside a 1U-sized space in a fiber optic equipment rack.

Pet. 74. Petitioner offers various reasons why a person of ordinary skill in the art, aware of the standardized size for panels used in mounting fiber optic equipment set forth in EIA, would size the fiber optic equipment mounted to such panels to fit inside a 1U-sized space with a specific fiber optic connection density. *Id.* at 74–81. Relying on the testimony of Dr. DeCusatis, Petitioner asserts that one of skill in the art would understand that “the front-facing surface of fiber optic equipment sized to fit in a U-space is sized to the same cross-sectional dimensions.” *Id.* at 75 (citing Ex. 1003 ¶ 26). Petitioner further asserts that the POSITA “would have known that fiber optic adapters (such as adapters 90 taught by Wheeler) and

their corresponding connectors are sized according to specific standards.” *Id.* (citing Ex. 1003 ¶¶ 164–165, 167). Based on this understanding, Petitioner argues that it would be obvious for one of skill in the art, aware that fiber optic adapters and corresponding connectors are sized according to specific standards, “to design the fiber optic equipment of Wheeler according to the well-known and widely adopted standard for the sizing of fiber optic equipment, adapters and connectors.” *Id.* (citing Ex. 1003 ¶¶ 164–165, 167).

Relying further on the testimony of Dr. DeCusatis, Petitioner reasons that the person of skill in the art would have understood (1) the design need to maximize fiber optic connection density within fiber optic equipment; and (2) that higher fiber optic connection density allows for increased adapters, connectors and corresponding bandwidth within that space so that data transfer needs are met using fewer fiber optic equipment units, fewer corresponding fiber optic equipment racks, and less overall space in fiber optic distribution centers. Pet. 75 (citing Ex. 1003 ¶¶ 162–167). With these parameters in mind, Petitioner contends that the POSITA “would know and be motivated to increase the fiber optic density by placing a higher number of standard sized adapters within the standard sized space.” *Id.* at 76 (citing Ex. 1003 ¶¶ 162–167). Petitioner concludes that the POSITA, confronted with the problem of increasing fiber optic connection density within the standard U-space using standard sized adapters, “would be limited to a single predictable solution: increasing the number of adapters included in the fiber optic equipment.” *Id.* (citing Ex. 1003 ¶¶ 162–167).

Recognizing that Wheeler discloses SC-type adapters and the need to fit as many standard sized adapters into a U-space, Petitioner directs our

attention to Wheeler’s disclosure regarding the use of other types of adapters. Pet. 76 (citing Ex. 1005, 5:33–44). Also understanding that FOCIS discusses smaller sized-LC type adapters than the larger SC-type adapters taught by Wheeler, Petitioner reasons one of skill in the art would have been “motivated to use those smaller connectors with the fiber optic equipment of Wheeler in order to fit the maximum number of connections within the U-space.” *Id.* (citing Ex. 1003 ¶¶ 163–164).

Petitioner recognizes that Wheeler does not specify the number of adapters within the U space, and relying on the testimony of Dr. DeCusatis, explains:

[b]ased on the dimensions for mounting a standard sized LC adapter as taught by FOCIS 10A, a standard 1.75” X 19” U-space can accommodate up to 3 rows and up to 67 columns of LC simplex adapters or up to 4 rows and up to 37 columns of LC duplex adapters. ([Ex. 1003] ¶ 168). This adds up to a maximum of 201 total LC simplex adapters or 148 total LC duplex adapters within a U-space. ([Ex. 1003] ¶ 171).

Id. at 76. Petitioner provides additional examples of alternative combinations of standard LC adapters within the standard U-space (*id.* at 76–78), and concludes that it would have been obvious to one of skill in the art “to maximize the number of standard LC adapters in a standard U-space of a fiber optic equipment” based on the recognized need in the art to increase fiber optic connection density, and the “limited number of identified, predictable solutions to the need, and would have a reasonable expectation of success” (*id.* at 77). The cornerstone of Petitioner’s analysis is its contention that “the POSITA would have been able to calculate based on the known standards how many known sized adapters may be fit into the known sized space.” *Id.*

Patent Owner, however, disputes that the combinations based on Wheeler, EIA, and FOCIS or Wheeler, EIA, FOCIS, and Smrha, teach the fiber optic connection density limitation. PO Resp. 17–38. Specifically, Patent Owner challenges the validity of the mathematical calculation performed by Dr. DeCusatis to determine the number of adapters that could be fit into a U-space. *Id.* at 17. According to Patent Owner, “modifying Wheeler’s chassis and fiber optic equipment to use LC instead of SC adapters, to then fit in a certain U-space would **not** satisfy claim 1.” *Id.* (citing Ex. 2001 ¶ 56). Patent Owner argues that the mathematical calculation Petitioner relies on to explain how the fiber optic connection density limitation is met, is deficient because (1) Petitioner “does not explain how the dimensions in [Figure 2.2.4 of] FOCIS relate to Petitioner’s calculations,” nor “identify which of the several different dimensions in the table” of Figure 2.2.4 of FOCIS were relied on to meet the claim limitation. *Id.* at 19 (citing Pet. 76–78). Patent Owner further supports its argument with the testimony of its expert, Mr. Pearson, that the panel contemplated by FOCIS standard has a “‘panel thickness’ of ‘K’ that surrounds the LC adapters” (*id.* (citing Ex. 2001 ¶¶ 29–30)); part of the LC adapter is inserted in the rectangular hole in the panel (*id.* (citing Ex. 2001 ¶¶ 30–35, 37)); and “[t]he FOCIS standard provides minimum and maximum dimensions of this hole in the panel” (*id.* (citing Ex. 2001 ¶¶ 32)) (emphasis added).

Patent Owner further argues that Petitioner incorrectly assumes that the minimum dimensions of this hole represent the size of the LC adapter because

LC adapters are **not** the size of the hole in the panel into which part of them are inserted. Ex. 2001, ¶¶ 32–38. Rather, they have additional structure that allows them to be mounted into a panel.

Id. Petitioner’s expert does not identify any actual LC adapter in the prior art. Nor is FOCIS intended to provide the dimensions of actual LC adapters, as it explicitly notes that “[f]ully dimensioned components are not within the scope or intent of FOCIS.” Ex. 1007, 7; Ex. 2001, ¶¶ 28, 36 (emphasis added).

PO Resp. 20. In Patent Owner’s view, Petitioner’s calculation is incorrect because it “artificially inflate[s] the amount of non-adapter space by (a) assuming that LC adapters are smaller than they actually are; and (b) ignoring the equipment and space required to mount LC adapters in actual fiber optic equipment within a chassis structure.” *Id.* Patent Owner concludes that Petitioner’s reliance on FOCIS and EIA to meet the claim limitation is inapposite because the dimensions of the panel opening “do not reflect the dimensions and spacing of actual LC adapters when mounted in fiber optic equipment.” *Id.* (citing Ex. 2001 ¶¶ 29–38, 40–45).

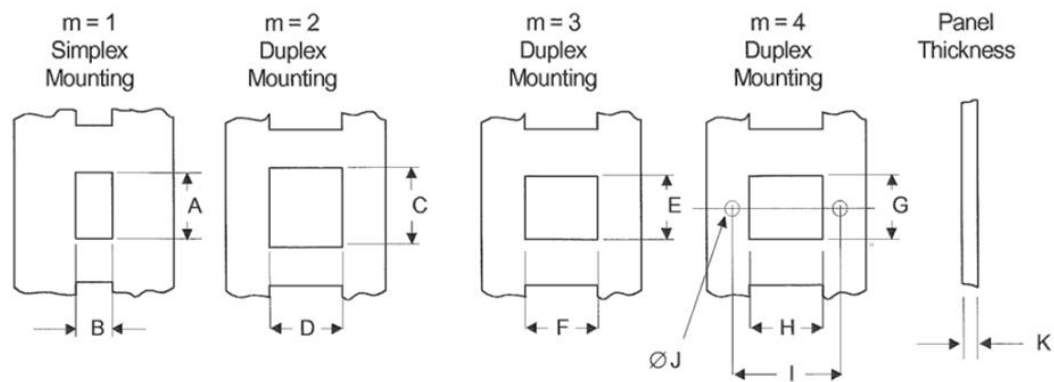
Having considered the entire record, Petitioner does not provide sufficient arguments and credible evidence to support a finding that the combination of Wheeler, EIA, and FOCIS would teach or suggest the fiber optic connection density limitation. At the outset, we note that Petitioner refers to Figure 2.2.4 of FOCIS in its claim chart (Pet. 59), without explaining sufficiently the relevance of this Figure to the fiber optic connector density limitation. See 37 C.F.R. § 42.22 (a)(2) (“(a) Each petition or motion must be filed as a separate paper and must include: . . . (2) A full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent.”); see also Pet. 76 (“Based on the dimensions for mounting a standard sized LC adapter as taught by FOCIS 10A, a standard 1.75” X 19” U-space can accommodate up to 3 rows and up to 67 columns of LC simplex adapters or up to 4 rows and

up to 37 columns of LC duplex adapters. This adds up to a maximum of 201 total LC simplex adapters or 148 total LC duplex adapters within a U-space.” (internal citations omitted)).

Petitioner defends the validity of its mathematical analysis by first comparing Dr. DeCusatis’ calculation with design parameters used by the inventors of the ’320 patent, namely that “the Corning design team was given specific spacing requirements: utilize a standard 1U space and populate it with standardized LC duplex adapters. In turn, through simple math, they determined the maximum density they could achieve.” Reply 4. Like the inventors of the ’320 patent, Petitioner argues its calculations were based on EIA’s teaching regarding the standard dimension of 1.75” x 19” for a U-space (*id.* at 5 (citing Pet. 76; Ex. 1003 ¶ 168)); and that Dr. DeCusatis selected LC adapter dimensions based on the “minimum dimensions for the height and width of the only simplex adapter disclosed in the FOCIS 10A, which is 11.7 mm high and 7.1 mm wide” (*id.* (citing Ex. 1003 ¶¶ 168–169; Ex. 1007, 15)). Using this information, Dr. DeCusatis calculated “that a single U-space can accommodate up to 3 rows and 67 columns of LC simplex adapters and up to 4 rows and up to 37 columns of LC duplex adapters, which results in a maximum of 201 total LC simplex adapters or 148 total LC duplex adapters per U-space.” *Id.* (citing Pet. 76–77; Ex. 1003 ¶¶ 168–174) (footnote omitted). Petitioner asserts that Dr. DeCusatis relied on “a minimum height of 9.5 mm and a minimum width of 13.0 mm, which corresponds to either of the third or fourth configurations, both of which have the same dimensions.” *Id.* at 6 (citing Ex. 1003 ¶¶ 171–172; Ex. 1007, 15). As we discuss below, we are persuaded by Patent Owner’s arguments that one of skill in the art would consider other parameters in addition to the

standard dimensions for a single U-space and standard dimensions for mounting the adapter to the panel.

We also consider Patent Owner’s argument that Petitioner assumed incorrect size and space requirements of LC adapters. Our review of Figure 2.2.4, reproduced below, conforms with Patent Owner’s understanding that the minimum height and minimum width dimensions of 9.5 mm and 13.0 mm, respectively, used by Dr. DeCusatis refer to the size of the opening for receiving and mounting of the adapter, and do not reflect the overall size of the adapter itself.



Dimension	Minimum (mm)	Maximum (mm)
A	11.7	11.8
B	7.1	7.2
C	13.2	13.4
D	13.2	13.4
E	9.5	10.0
F	13.0	13.5
G	9.5	10.0
H	13.0	13.5
I	17.9	18.1
J	2.4	2.6
K	1.2	1.7

Figure 2.2.4 illustrates the adapter interface Opening and related dimensions.

Ex. 1007, 21.

Indeed, our understanding of the dimensions in Figure 2.2.4 of FOCIS is likewise confirmed by the testimony of Dr. DeCusatis that

[a] person of ordinary skill in the art would have understood, based on the FOCIS 10A standard, that an LC simplex adapter requires a minimum mounting space ($m=1$) having a height of 11.7 mm (dimension “A”) and a width of 7.1 mm (dimension “B”). Similarly the POSITA would have understood that an LC duplex adapter requires a minimum mounting space ($m=3$) having a height of 9.5 mm (dimension “E”) and a width of 13 mm (dimension “F”).

Ex. 1003 ¶ 77.

We are not persuaded by the testimony of Dr. DeCusatis explaining that

in the simplex adapter example in a 19” wide U-space, a maximum of three rows and sixty-seven columns could be included in a U-space and that if more non-adapter space were desired, three rows and fifty columns of simplex adapters could be used instead, which would have resulted in more space, leaving a non-adapter height of 9.35 mm and a non-adapter width of 127.6 mm.

Reply 6 (citing Ex. 1003 ¶¶ 168–169). Similarly, for a duplex adapter, we are not persuaded by the testimony of Dr. DeCusatis explaining that

for a 19” wide U-space, four rows and thirty-seven columns could be included in a U-space and that if more non-adapter space were desired, three rows and twenty-five columns of duplex adapters could be used instead, which would have resulted in more space, leaving a non-adapter height of 15.95 mm and a non-adapter width of 157.6 mm.

Id. at 7 (citing Ex. 1003 ¶¶ 171–172).

Instead, we are persuaded by Patent Owner’s argument that the dimensions listed in the above table (upon which Petitioner relies for its calculation) are directed only to the opening required for mounting, and do

not account for other aspects of the adapter as a whole, such as the overall size and shape of the adapter, its mounting arrangement, or spacing between adapters. PO Resp. 18–20. Further, as to the non-adapter space, Patent Owner argues persuasively that Petitioner’s assertion “that a person of ordinary skill in the art ‘would have understood this remaining space as more than sufficient to accommodate any necessary non-adapter elements’” is conclusory and unsupported. *Id.* at 21 (citing Ex. 1003 ¶¶ 168, 169, 171, 172). Indeed, our reviewing Court informs us that Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). That is, other than Dr. DeCusatis’ testimony stating that “the remaining spac[e is] more than sufficient to accommodate any necessary non-adapter elements or material disposed in the front surface of the equipment” (Ex. 1003 ¶ 168), Petitioner does not offer credible evidence demonstrating how much remaining space is required or specific discussion of how one of skill in the art would arrange the adapters in order to meet the fiber optic connection density limitation of the claims. Thus, we accord Dr. DeCusatis’ testimony in this regard minimal weight.

The cross-examination testimony of Dr. DeCusatis, agreeing that one of skill in the art would understand that the connectors would “have to be mounted in actual fiber optic equipment,” further supports Patent Owner’s argument that more information than the dimensions provided in FOCIS are necessary to calculate the potential number of LC adapters that can be mounted in one U-space. PO Resp. 22 (citing Ex. 2001 ¶¶ 35, 52); *see also* Ex. 2004, 28:4–8 (“Q. You understand that, for example, LC simplex and LC duplex adaptors can’t just exist in space or a vacuum. They’ve gotta

have support structure on them, correct? A. Yes, of course.”). Patent Owner also directs us to the cross-examination testimony of Dr. DeCusatis (1) “acknowledg[ing] that the space available for mounting adapters is limited by the support structure into which the adapters must be mounted” (PO Resp. 23 (citing Ex. 2004, 46:8–23)); and (2) recognizing that calculating the theoretical maximum number of adaptors falls short of addressing “any of the actual design considerations one of ordinary skill in the art must account for related to such an approach.” *Id.* For example, Dr. DeCusatis testified:

Q. But in reality, when you’re designing fiber optic equipment, you can’t just maximize the number of adaptors you fit into any space based on simply the dimensions of the space and the dimensions of the adaptors, correct?

A. There might be other design considerations that affect how much space I leave or how much I put around the perimeter of the chassis or things like that. I’m not going to try to address all of these here because I’m not trying to design a full chassis. I’m just trying to give an example of the upper limit in this part of the declaration.

Q. And you didn’t address any of those other limitations in your declaration, is that fair?

A. That’s correct. The declaration is not a design document, it’s not trying to lay out specific dimensions for a chassis. It’s just trying to show the mathematical exercise of figuring out how much density I can achieve in a given amount of rack space.

Ex. 2004, 47:13–48:14 (objections omitted).

Also persuasive is Patent Owner’s argument that adapters require support structure, which Petitioner did not account for in its calculation. PO Resp. 25–29. Specifically, that the POSITA “would have understood that

the structure of Wheeler, or a similar structure, would be necessary to produce a workable system.” *Id.* at 26 (citing Ex. 2001 ¶ 52)). Patent Owner supports this position by pointing out that both Wheeler and FOCIS teach the use of structure around their internal adapters, as shown in annotated Figure 5 of Wheeler, reproduced below. *Id.* at 25–26.

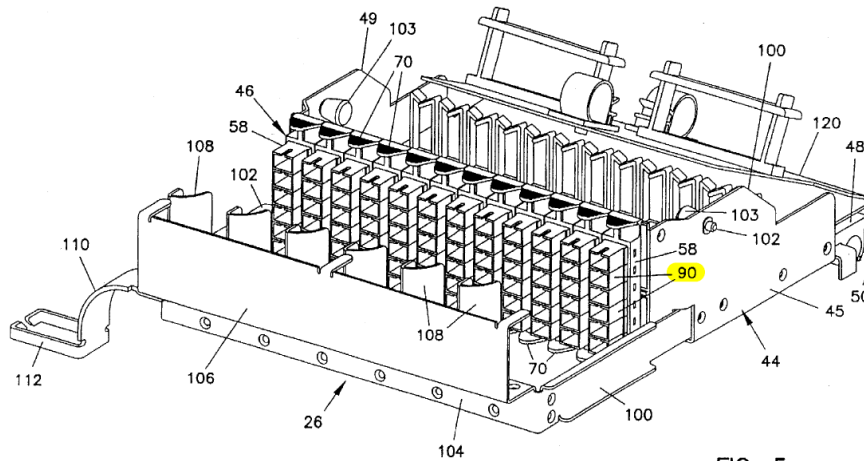


FIG. 5

Figure 5 of Wheeler, as annotated by Patent Owner, to show structure around adapters 90. Ex. 1005, Fig. 5; Ex. 2001 ¶¶ 40–42; PO Resp. 25–26.

Along this vein, we are also persuaded by Patent Owner's further argument that in addition to support structure, the POSITA would understand that the fiber optic equipment needs to provide access to the adapters, and would account for this need in an actual system, which Petitioner's calculation did not do. PO Resp. 27. For example, Dr. DeCusatis testified

Q. You didn't include any calculations in your declaration to account, for example, for the space needed for finger access to LC simplex and LC duplex adaptors, correct?

A. That's true. The example in my declaration is merely trying to give you an example of how many maximum rows and columns could fit into a given space. And I do tell you the amount of remaining non-adaptor height and width that's

available. I don't attempt to partition that available space out to allow for latches, tabs or whatever other features might be available because Wheeler doesn't give me any dimensions for those.

Ex. 2004, 28:15–29:4. And further,

Q. When you combined Wheeler with TIA and EIA in your obviousness analysis in this case, I didn't see any attempt to discuss how one of ordinary skill in the art might have gained access to the front or rear of the adaptors of fiber-optic module 58. Is that fair?

A. The calculations that we're talking about simply discuss how many adaptors can fit in a given space. So no, there's nothing in here that talks about how you would access that space.

Id. at 29:5–15.

As to EIA, we agree with Patent Owner that Petitioner only relies on EIA to define a “U space” in a rack unit as “44.5 millimeters tall and 482.6 millimeters wide” as an input to its mathematical calculation and not to modify the chassis of Wheeler. PO Resp. 29–31. Additionally, Petitioner only relies on FOCIS for dimensions of LC adapters, which Patent Owner argues is an incorrect understanding of the FOCIS standard. *Id.* at 31–32. Indeed, as discussed above, FOCIS expressly states that “[f]ully dimensioned components are not within the scope of intent of FOCIS-10-A.” Ex. 1007, 7; *see also* Ex. 2001 ¶ 28 (“I note that EIA-310-E contains no information on adapters.”). Thus, we are persuaded by Patent Owner's argument that “simply swapping the SC adapters in Wheeler with the LC adapters in FOCIS does not result in a system that meets the '320 claim limitations, regardless of the U-size of the equipment.” PO Resp. 32 (citing Ex. 2001 ¶¶ 56–57).

For these reasons, and based on the complete record, we are not persuaded by Petitioner's arguments and evidence that the proposed combination of Wheeler, EIA, and FOCIS satisfies the fiber optic connection density limitation recited in claims 1 and 25. Namely, because the dimensions of the hole for receiving the adapter taken from FOCIS and used by Petitioner in a mathematical equation to account for the number of adapters that could theoretically fit within 1 U-space, does not account for all adapter variables, such as mounting structure, and Petitioner provides no other explanation in this regard beyond Dr. DeCusatis' conclusory testimony. Thus, we conclude that Petitioner has not established why it would have been obvious to a person of ordinary skill in the art to combine the teachings of Wheeler, EIA, and FOCIS, in order to arrive at the fiber optic apparatus of claim 1 or the method of claim 25.

b. Claims 2–11, 13–23, 26–28

Claim 13 is independent, and claims 2–11, 14–23, and 26–28 depend directly or indirectly from claims 1, 13, or 25 respectively, and recite limitations in addition to those discussed above with respect to claims 1 and 25. Ex. 1001, 19:60–20:38, 20:43–21:20, 22:1–23. In support of its challenge of claims 2–11, 13–23, 26–28, Petitioner identifies the disclosures in each of these references alleged to describe the respective subject matter. Pet. 57–81. For example, Petitioner relies on the passage in Wheeler, describing module 58 (*id.* at 59 (citing Ex. 1005, 5:25–32)); the description of one U-space in EIA (*id.* (citing Ex. 1006, 8)); and the adapter mounting dimensions in Figure 2.2.4 of FOCIS (*id.* at 60 (citing Ex. 1007, 21)). However, Petitioner's analysis for each of these claims relies on the same

mathematical equation that we found deficient for the reasons discussed above with regard to claims 1 and 25.

Thus, for the same reasons as discussed above, we find that Petitioner has not demonstrated by a preponderance of the evidence that the proposed combination of Wheeler, EIA and FOCIS teaches or suggests each of the limitations recited in claims 2–11, 14–23, and 26–28.

c. Claims 12 and 24

Claims 12 and 24 depend from claim 1 and 13, respectively. Ex. 1001, 20:39–42, 21:21–24. Both of these claims require a fiber optic equipment drawer (*id.*), and Petitioner asserts that the pairs of elongated rail member 64 arranged to engage and slide within guides 66 and mounted in framework structure 30 taught by Smrha satisfy this limitation. Pet. 63–64, 70–71, 81; Ex.1008 ¶¶ 23, 31, Fig. 1, Fig 7, Fig. 12. Petitioner, however, does not rely on Smrha to remedy the deficiencies of the mathematical equation analysis we discussed above with regard to claims 1 and 25. Pet. 27, 73–81.

Therefore, for the same reasons as discussed above, we find that Petitioner has not demonstrated by a preponderance of the evidence that claims 12 and 24 would have been obvious based on the proposed combination of Wheeler, EIA, FOCIS, and Smrha.

IV. CONCLUSION

Based on our further review of the record, and for the foregoing reasons, we conclude that Petitioner has not established by a preponderance of the evidence that claims 1–11, 13–23, and 25–28 of the '320 patent are unpatentable under 35 U.S.C. § 103 based on Wheeler, EIA, and FOCIS or

that claims 12 and 24 of the '320 patent are unpatentable under 35 U.S.C. § 103(a) based on Wheeler, EIA, FOCIS, and Smrha.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–28 of U.S. Patent No. 9,020,320 B2 have not been shown to be unpatentable by a preponderance of the evidence.

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.

IPR2017-00009
Patent 9,020,320 B2

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