

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CISCO SYSTEMS, INC. AND OCLARO, INC.  
Petitioners

v.

OYSTER OPTICS, LLC  
Patent Owner

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IPR2017-01874  
Patent 8,374,511

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**NOTICE OF APPEAL BY PETITIONER OCLARO, INC.**

Director of the United States Patent and Trademark Office  
c/o Office of the General Counsel  
United States Patent and Trademark Office  
Madison Building East, Room 10B20  
600 Dulany Street  
Alexandria, VA 22314

Pursuant to 35 U. S. C. §§ 141–44 and 319, and 37 C.F.R. § 90.2–90.3, notice is hereby given that petitioner Oclaro, Inc. (“Petitioner”) appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered February 13, 2019 (Paper 28) in IPR2017-01874 (Exhibit A), and all prior decisions and rulings related thereto or subsumed therein.

Providing the Director with the information contemplated in 37 C.F.R. § 90.2(a)(3)(ii), Petitioner indicates that the issues on appeal may include, but are not limited to, whether, in view of the full trial record, the Patent Trial and Appeal Board erred in deciding that Petitioner has not shown that: Claim 1 of U.S. Patent No. 8,374,511 (the “’511 patent”) is unpatentable under 35 U. S. C. § 103(a) considering Treyz, Ade, and Hardcastle; claim 9 of the ’511 patent is unpatentable under 35 U. S. C. § 103(a) considering Treyz, Ade, Hardcastle, and Hooijmans; claims 2-4 of the ’511 patent are unpatentable under 35 U. S. C. § 103(a) considering Treyz or Corke with Ade, Hardcastle, and Kobayashi; claims 10–12 of the ’511 patent are unpatentable under 35 U. S. C. § 103(a) considering Treyz or Corke with Ade, Hardcastle, Hooijmans and

Kobayashi; claims 5–7 of the '511 patent are unpatentable under 35 U. S. C. § 103(a) considering Treyz or Corke with Ade, Hardcastle, Kobayashi and Ikeda; claims 13–15 of the '511 patent are unpatentable under 35 U. S. C. § 103(a) considering Treyz or Corke with Ade, Hardcastle, Hooijmans, Kobayashi and Ikeda; and any finding or determination supporting or related to the foregoing issues, as well as all other issues decided adversely to Petitioner in the Final Written Decision and in any prior orders, decisions, rulings, and opinions.

This Notice of Appeal is being filed within 63 days after the date of the Final Written Decision and thus within the period in 37 C.F.R. § 90.3.

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a), a copy of this Notice of Appeal is being filed simultaneously with the Patent Trial and Appeal Board, the Clerk's Office for the United States Court of Appeals for the Federal Circuit (along with the required docketing fees), and the Director of the Patent and Trademark Office c/o the Office of the General Counsel at the above-identified address. In addition, pursuant to Fed. Cir. R. 15(a)(1), one paper copy of the notice is also being sent to the Clerk of the Federal Circuit.

Respectfully submitted,

April 16, 2019

Date

/s/ /Darren Donnelly

Darren Donnelly (Reg. No. 44,093)

POLSINELLI LLP

1661 Page Mill Road, Suite A

Palo Alto, California 94304

Tel: (650) 461-7735

Fax: (650) 461-7701

DDonnelly@polsinelli.com

ATTORNEY FOR PETITIONER

**CERTIFICATE OF FILING AND SERVICE**

I, Darren Donnelly, hereby certify that on this 16th day of April, 2019, in addition to being filed electronically through the Patent Trial and Appeal Board's E2E electronic filing system, a true and correct copy of the foregoing NOTICE OF APPEAL BY PETITIONER is being caused to be filed by hand with the Director of the United States Patent and Trademark Office, at the following address:

Director of the United States Patent and Trademark Office  
c/o Office of the General Counsel, Room 10B20  
Madison Building East  
600 Dulany Street  
Alexandria, VA 22134

I also hereby certify that on this 16th day of April, 2019 a true and correct copy of the foregoing NOTICE OF APPEAL BY PETITIONER is being filed electronically with the Clerk's Office of the United States Court of Appeals for the Federal Circuit, and the filing fee being paid electronically. In addition, pursuant to Fed. Cir. R. 15(a)(1), one paper copy of the notice is also being sent to the Clerk of the Federal Circuit.

I also hereby certify that on this 16th day of April, 2019 a true and correct copy of the foregoing NOTICE OF APPEAL BY PETITIONER is being served, by electronic mail on the following parties:

Wayne M. Helge ([whelge@dbjg.com](mailto:whelge@dbjg.com))

James T. Wilson ([jwilson@dbjg.com](mailto:jwilson@dbjg.com))

Aldo Noto ([anoto@dbjg.com](mailto:anoto@dbjg.com))

DAVIDSON BERQUIST JACKSON & GOWDEY L.L.P.

8300 Greensboro Drive, Suite 500

McLean, VA 22102

Dated: April 16, 2019

/s/ Darren Donnelly

Darren Donnelly (Reg. No. 44,093)

POLSINELLI LLP

1661 Page Mill Road, Ste. A

Palo Alto, CA 94304

T: 650-461-7735

F: 650-461-7701

DDonnelly@polsinelli.com

# EXHIBIT A

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CISCO SYSTEMS, INC., and OCLARO, INC.,  
Petitioner,

v.

OYSTER OPTICS, LLC,  
Patent Owner.

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Case IPR2017-01874  
Patent 8,374,511 B2

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Before JAMESON LEE, PATRICK M. BOUCHER, and  
JESSICA C. KAISER, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

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



In response to a Petition (Paper 1, “Pet.”) filed by Cisco Systems, Inc., and Oclaro, Inc. (collectively, “Petitioner”), we instituted an *inter partes* review of claims 1–7 and 9–15 of U.S. Patent No. 8,374,511 B2 (“the ’511 patent”). Paper 11 (“Dec.”); Paper 14. During the trial, Oyster Optics, LLC (“Patent Owner”) filed a Response (Paper 16, “PO Resp.”) to which Petitioner filed a Reply (Paper 18, “Reply”) and Patent Owner filed an authorized Sur-Reply (Paper 23, “Sur-Reply”). An oral hearing was held with the parties, and a copy of the transcript was entered into the record. Paper 27 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1 and 9 of the ’511 patent are unpatentable, but has not shown that claims 2–7 and 10–15 are unpatentable.

## I. BACKGROUND

### A. *The ’511 Patent*

#### 1. *Overview*

The ’511 patent “relates generally to telecommunications and more particularly to transmitters and receivers for fiber optic networks,” and specifically “provide[s] a transceiver card for providing secure optical data

transmission over optical fiber.” Ex. 1001, 1:16–18, 2:22–24. Figure 2 of the ’511 patent is reproduced below.

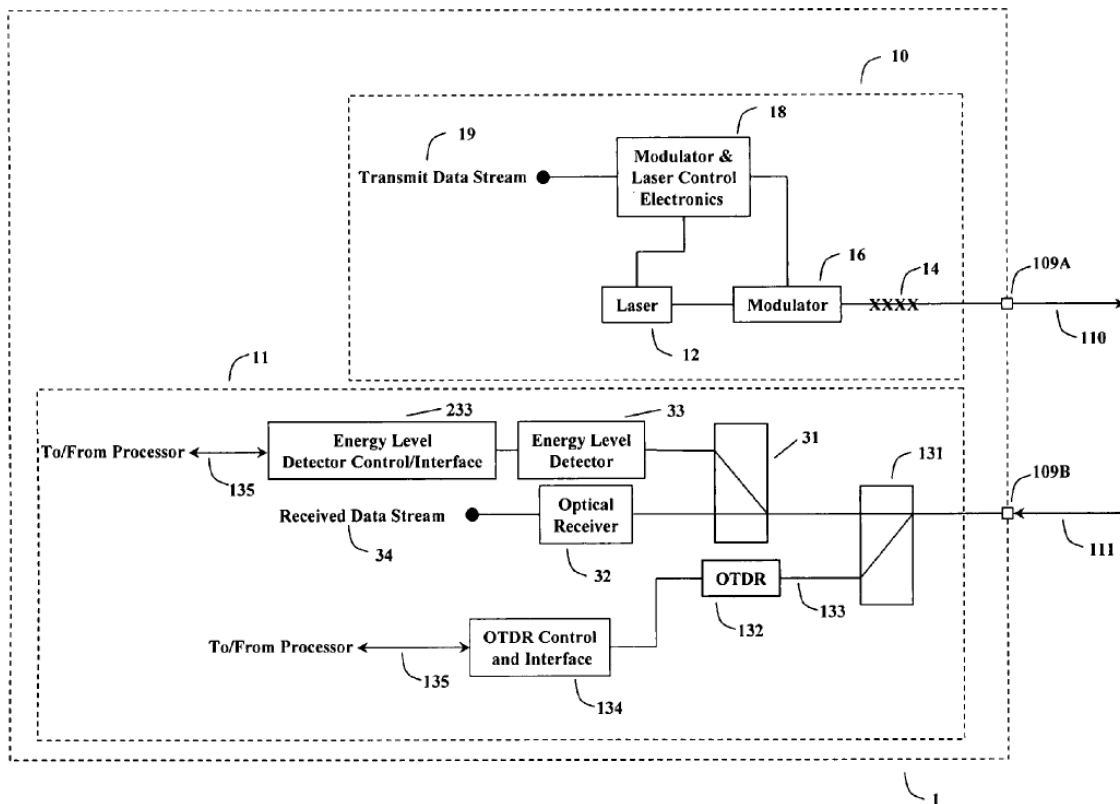


Figure 2

Figure 2 illustrates a structure of a transceiver card that may be used to retrofit an optical fiber multiplexor (“also called a ‘box’ in the industry”). *Id.* at 1:21–22, 4:7–11, 4:28–29. The ’511 patent explains that, in fiber-optic networks, an electronic data stream is fed to such an optical fiber multiplexor, which runs on a specific transmission standard, and the transceiver card is typically “replaceable should a component fail.” *Id.* at 1:20–35.

As illustrated in the drawing, transceiver card 1 includes transmitter 10 (which transmits signals over optical fiber 110) and receiver 11 (which receives optical signals over fiber 111). *Id.* at 4:28–30, 4:51–52.

Transmitter 10 includes laser 12, with light emitted from laser 12 passing through modulator 16 and depolarizer 14. *Id.* at 4:32–36. Input data 19 are fed to electronic controller 18, which controls modulator 16 to provide amplitude or phase modulation to the light as a function of the input data. *Id.* at 4:36–41.

Receiver 11 includes three distinct optical paths. First, splitter 131 directs a portion of received light 111 through fiber 133 to optical time-domain reflectometer (“OTDR”) 132. *Id.* at 4:62–64. OTDR 132 can thereby monitor fiber 111 and provide information, through bus 135 under the control of control circuit 134, to a processor “for determining the location of a breach or tap.” *Id.* at 5:4–8. Interruption of the received data can be avoided by operating OTDR 132 at a wavelength different from the transmitted and received data, and with appropriate configuration of splitter 131. *Id.* at 4:54–64.

Second, splitter 31 directs a portion of the remaining light to energy level detector 33, which monitors the light energy in fiber 111. *Id.* at 4:64–67, 5:9–10. A detected drop in amplitude may indicate a tap and allow an alert to be provided, under the control of energy level detector control circuit 233, to the processor over bus 135. *Id.* at 5:10–22.

Third, the residual light from splitter 31 passes to optical receiver 32, which converts the optical signal to electronic form to recover electronic data stream 34 as appropriate for the optical modulation technique employed. *Id.* at 4:64–5:3.

## 2. *Illustrative Claim*

The claims of the '511 patent can be organized into two groups, defined by the two independent claims, i.e., claims 1 and 9. Those independent claims differ in their recitation of “a method for operating an optical fiber multiplexor” in that claim 9 is limited to a phase-modulation mode. *Compare* Ex. 1001, 6:51–67, *with* Ex. 1001, 7:20–8:9. Each independent claim is accompanied by a set of dependent claims, which are identical within the two groups, except for their underlying base claim. *Compare* Ex. 1001, 7:1–19, *with* Ex. 1001, 8:10–27.

Independent claim 1 is thus illustrative of the claims at issue, and is reproduced below.

1. A method for operating an optical fiber multiplexor comprising:
  - feeding input data to a controller of a transmitter of a telecommunications box, the telecommunications box having an electronic data input for the input data and an electronic data output;
  - using the controller, controlling a modulator to modulate light from a laser as a function of the input data;
  - sending the modulated light as an optical signal from the transmitter over an optical fiber;

receiving the optical signals from the optical fiber at a receiver of a further telecommunications box and converting the optical signals to electronic output data;  
passing the optical signals to a photodetector to produce an electric signal; and  
filtering the electrical signal to produce an average optical power.

*Id.* at 6:51–67.

*B. Evidence Relied Upon*

Petitioner relies on the following references.

Corke	US 5,510,917	Apr. 23, 1996	Ex. 1005
Treyz	US 6,529,316 B1	Mar. 4, 2003	Ex. 1010
Hardcastle	US 6,178,025 B1	Jan. 23, 2001	Ex. 1011
Ade	US 5,347,601	Sept. 13, 1994	Ex. 1024
Kobayashi	US 6,404,281 B1	June 11, 2002	Ex. 1025
Ikeda	US 7,016,612 B1	Mar. 21, 2006	Ex. 1033

Pieter W. Hooijmans, *Coherent Optical System Design* (John Wiley & Sons 1994) (Ex. 1008) (“Hooijmans”).

In addition, Petitioner provides Declarations by Scott Bennett, Ph.D., and Daniel Blumenthal, Ph.D. Exs. 1002, 1003, 1034. Dr. Blumenthal was cross-examined by Patent Owner, and a transcript of his deposition was entered into the record. Ex. 2029.

*C. Instituted Grounds of Unpatentability*

Petitioner challenges claims 1–7 and 9–15 under 35 U.S.C. § 103(a) over the following combinations of references. Pet. 25–93; Reply 1–30.

References	Claim(s)
Treyz, Ade, and Hardcastle	1
Treyz, Ade, Hardcastle, and Hooijmans	9
Treyz, Ade, Hardcastle, and Kobayashi	2–4
Treyz, Ade, Hardcastle, Hooijmans, and Kobayashi	10–12
Treyz, Ade, Hardcastle, Kobayashi, and Ikeda	5–7
Treyz, Ade, Hardcastle, Hooijmans, Kobayashi, and Ikeda	13–15
Corke, Ade, and Hardcastle	1
Corke, Ade, Hardcastle, and Hooijmans	9
Corke, Ade, Hardcastle, and Kobayashi	2–4
Corke, Ade, Hardcastle, Hooijmans, and Kobayashi	10–12
Corke, Ade, Hardcastle, Kobayashi, and Ikeda	5–7
Corke, Ade, Hardcastle, Hooijmans, Kobayashi, and Ikeda	13–15

We initially instituted this proceeding only with respect to claims 1 and 9, and only with respect to the challenges involving Corke. Dec. 28. Subsequent to instituting the proceeding, the Supreme Court held that a final written decision under 35 U.S.C. § 318(a) must decide the patentability of all claims challenged in a petition for *inter partes* review. *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348 (2018). Accordingly, we notified the parties that “[w]e modify our institution decision to institute on all of the challenged claims and all of the grounds presented in the Petition.” Paper 14, 2. Neither party requested further briefing in light of that notification.

In the Institution Decision, we noted that “there is some inconsistency in Petitioner’s identification of the specific references involved in some of its challenges.” Dec. 6 n.1. In some instances, Petitioner’s intent is sufficiently clear from the arguments presented in the Petition to discern its intent; in other cases, it is not. *See* Tr. 19:18–21:20 (discussing clarity of Petition), 39:4–23 (Petitioner acknowledging lack of clarity in Petition). In its Reply, Petitioner attempts to clarify the nature of its challenges, and the table above reflects the combination of references asserted in the Reply. But the parties dispute whether we can properly consider all of Petitioner’s challenges in light of that initial lack of clarity. *See id.* at 20:17–21:20 (Petitioner arguing that “Patent Owner ha[d] full notice of the issue of law, in fact, in front of it in these petitions and the grounds that SAS tells us are supposed to be in”), 28:1–29:10 (Patent Owner stating that it “would disagree entirely”); *see also* PO Resp. 17–20 (quoting, *inter alia*, *SAS Institute*, 138 S. Ct. at 1358 (“The statutory provisions before us deliver unmistakable commands. The statute . . . ***makes the petition the centerpiece*** of the proceeding both before ***and after institution.***”)) (emphasis by Patent Owner)).

We agree with Patent Owner’s position. “Like discovery rules in the federal rules of evidence, which are designed to prevent a so-called ‘trial by ambush,’ where a defendant is left guessing as to the asserted arguments and evidence until trial, our rules and procedures similarly aim to prevent patent owners from surprise arguments and evidence, without adequate notice and

opportunity to respond.” *Kingston Tech. Co., Inc. v. Imation Corp.*, Case IPR2015-00066, slip op. at 33–34 (PTAB March 24, 2016) (Paper 19) (citing *Woods v. Int’l Harvester Co.*, 697 F.2d 635, 639 (5th Cir. 1983); *Sub-Chemie, Inc. v. CSP Techs., Inc.*, 2006 WL 2246404, at \*33–34 (S.D. Ind. Aug. 4, 2006)). We address these issues more specifically in the context of the individual challenges discussed below.

#### *D. Real Parties in Interest and Related Proceedings*

Petitioner identifies Cisco Systems, Inc., Oclaro, Inc., and Oclaro Technology Ltd. as real parties in interest. Pet. 1. Patent Owner identifies only itself as a real party in interest. Paper 6, 2.

Both parties identify *Oyster Optics, LLC v. Coriant America Inc.*, No. 2:16-cv-01302 (E.D. Tex.), in which Petitioner Cisco Systems, Inc., is a defendant, as involving the ’511 patent. Pet. 1; Paper 8, 3. Patent Owner also identifies the following district-court proceedings as involving the ’511 patent: (1) *Oyster Optics, LLC v. Infinera Corp.*, No. 2:16-cv-01295 (E.D. Tex.); (2) *Oyster Optics, LLC v. NEC Corp.*, No. 2:16-cv-01296 (E.D. Tex.); (3) *Oyster Optics, LLC v. Nokia Corp.*, No. 2:16-cv-01297 (E.D. Tex.); (4) *Oyster Optics, LLC v. ZTE Corp.*, No. 2:16-cv-01298 (E.D. Tex.); (5) *Oyster Optics, LLC v. Fujitsu Network Communications, Inc.*, No. 2:16-cv-01299 (E.D. Tex.); (6) *Oyster Optics, LLC v. Ericsson Inc.*, No. 2:16-cv-01300 (E.D. Tex.); (7) *Oyster Optics, LLC v. Cisco Systems, Inc.*, No. 2:16-cv-01301 (E.D. Tex.); (8) *Oyster Optics, LLC v. Huawei Technologies Co.*



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*Ltd.*, No. 2:16-cv-01303 (E.D. Tex.); (9) *Oyster Optics, LLC v. Ciena Corp.*, No. 2:17-cv-00511 (E.D. Tex.); and (10) *Oyster Optics, LLC v. Ciena Corp.*, No. 4:17-cv-05920 (N.D. Cal.). Paper 8, 2–3.

In addition, Patent Owner identifies several *inter partes* review proceedings, most involving patents other than the '511 patent, but which Patent Owner indicates “may also affect or be affected by a decision in this proceeding”: IPR2017-01719, IPR2017-01720, IPR2017-01724, IPR2017-01725, IPR2017-01870, IPR2017-01871, IPR2017-01881, IPR2017-01882, IPR2017-02146, IPR2017-02173, IPR2017-02189, IPR2017-02190, IPR2018-00070, and IPR2018-00146. *Id.* at 3–4.

## II. ANALYSIS

### A. *Legal Principles*

A claim is unpatentable for obviousness under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective

indicia of non-obviousness, i.e., secondary considerations.<sup>1</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); see *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

To prevail on its challenges, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the

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<sup>1</sup> The parties do not address secondary considerations, which accordingly do not form part of our analysis.

burden of proof in *inter partes* review). Furthermore, Petitioner does not 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).

### *B. Level of Skill in the Art*

Neither party articulates a proposed level of skill in the art in its papers, but Petitioner’s declarant, Dr. Blumenthal, addresses the issue. Ex. 1003 ¶¶ 32–33. According to Dr. Blumenthal, a person of ordinary skill in the art in the relevant timeframe “would be a person having a B.S. in Electrical Engineering or a related field with at least five years of experience in designing optical transmission systems, or having an M.S. in Electrical Engineering or a related field.” *Id.* ¶ 33.

Because this proposed level of skill is unchallenged by Patent Owner, we adopt it for this proceeding.

### *C. Claim Construction*

In an *inter partes* review proceeding based on a petition filed prior to November 13, 2018, 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. *See* 37 C.F.R. § 42.100(b) (2017); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Under the broadest

reasonable interpretation standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Neither party proposes an express construction for any claim term. *See* Pet. 25 (“The terms in the challenged claims of the ’511 Patent should each be construed according [to] the broadest reasonable interpretation in view of the specification.”). Nevertheless, we find it necessary to construe the term “telecommunications box,” which is recited in each of the independent claims.

The specification of the ’511 patent states that “an optical fiber multiplexor . . . is also called ‘a box’ in the industry.” Ex. 1001, 1:21–22. Notwithstanding this broad assertion, which we do not find made with sufficient clarity, deliberateness, and precision to qualify as definitional, we generally agree with Patent Owner that “[i]t is clear from the ’511 patent, including Fig. 1, that a ‘telecommunications box’ is not just an optical fiber multiplexor, but rather a ‘box’ that can be configured to contain telecommunications components, for example the components shown in the ’511 patent’s Fig. 1.” PO Resp. 6. That is, the specification of the ’511 patent also includes a number of suggestive references to a physical structure

for a “telecommunications box,” in addition to explicitly illustrating such a physical structure in its Figure 1. *See* Ex. 1001, 1:23–25 (a card “fits into the box”), 2:44–45 (referring to an embedded processor “within the box”), 2:52–58 (referring to alarm devices “on the outside of the box”), 3:12–16 (referring to “compatib[ility] with most existing box dimensions”), 4:21–23 (referring to a faceplate “flush with a front side of [the] box”).

In this context, the testimony of Dr. Blumenthal is pertinent. In his initial Declaration, while discussing certain prior art, Dr. Blumenthal testifies that “the word ‘box’ encompasses any container, such as a housing,” and that “[t]he specification of the ’511 Patent is consistent with this conclusion.” Ex. 1003 ¶ 81. Patent Owner explored this understanding with Dr. Blumenthal on cross-examination. Ex. 2029, 89:10–92:5. Dr. Blumenthal summarized his testimony by stating that “the telecommunications box would have consisted of a transmitter, a receiver, some way of electrically switching or multiplexing the data into those optical channels or receiving such and unpacking them.” *Id.* at 92:1–5. But according to Dr. Blumenthal, because “the notion of a box can scale depending on . . . the size of the system and the amount of data that you were trying to move,” *id.* at 91:21–24, the physical structure of the “telecommunications box” could be widely varied:

So if it’s an optical fiberoptic telecommunications box at the time 2000, 2001 what was really widely known in the industry was I had a rack full of equipment, and that equipment contained various layers of boxes.

The boxes could consist of switches. The boxes could consist of shelves. The boxes consisted of line cards. The boxes consisted sometimes of pizza boxes which were more self-contained.

Some pizza boxes, what were self-contained, I will give you the generic version of what a pizza box would be. I've got electronic data coming in from an electronic telecommunications system, and that pizza box is taking the electronic data from the communications system and now is taking it and putting it out on fibers which have transmitters and receivers.

*Id.* at 90:14–91:6.

Based on this testimony, which we find consistent with the suggestive references to the structure of a “box” in the specification of the '511 patent, we construe a “telecommunications box” as a container, such as a housing, configured to contain telecommunications equipment, such as an optical-fiber multiplexor. Because the evidence shows that one of skill in the art would understand such containers to include a variety of structures, including examples provided by Dr. Blumenthal that range from self-contained “pizza boxes” to open shelves, we conclude that the claims do not impose any particular constraint on the size and structure of the container.

#### *D. Scope and Content of the Prior Art*

##### *1. Treyz*

Treyz describes “optical network equipment such as optical amplifiers that generate optical channel monitor and dynamic spectral filter alarms.” Ex. 1010, 1:10–12. Such optical network equipment may be implemented

using an optical network equipment card that includes one or more optical network equipment modules and control and interface circuitry. *Id.* at 4:43–55. Figure 3 of Treyz is reproduced below.

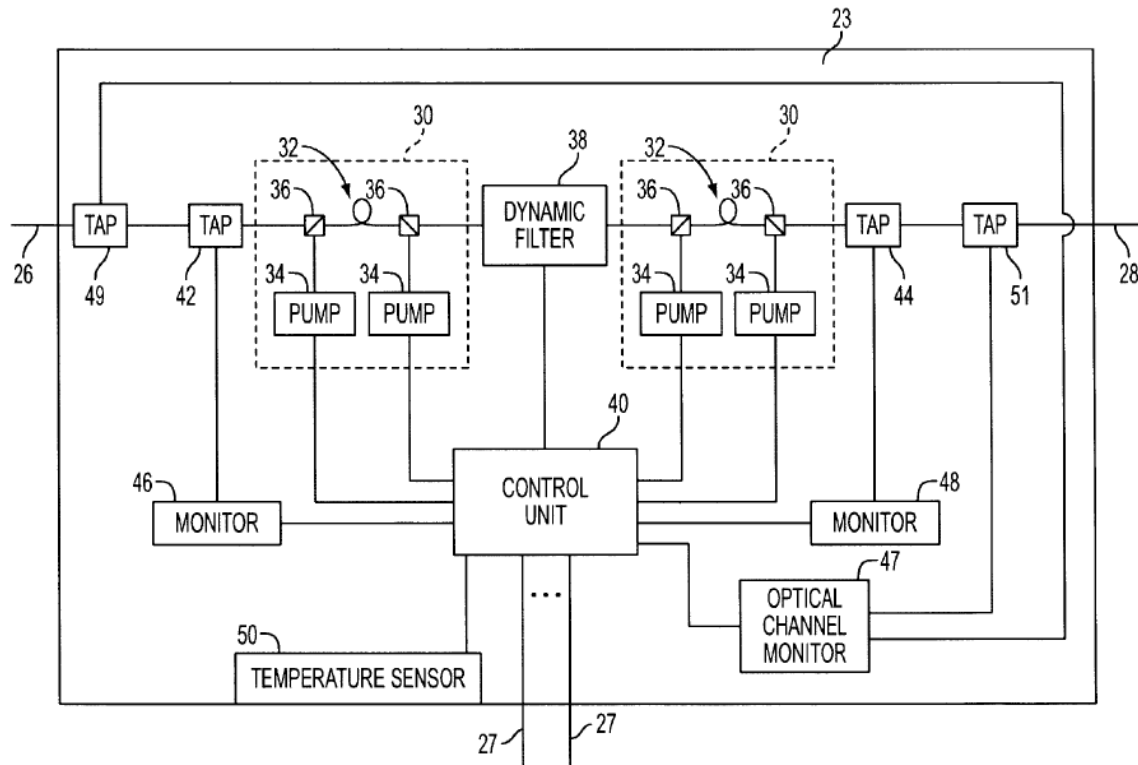


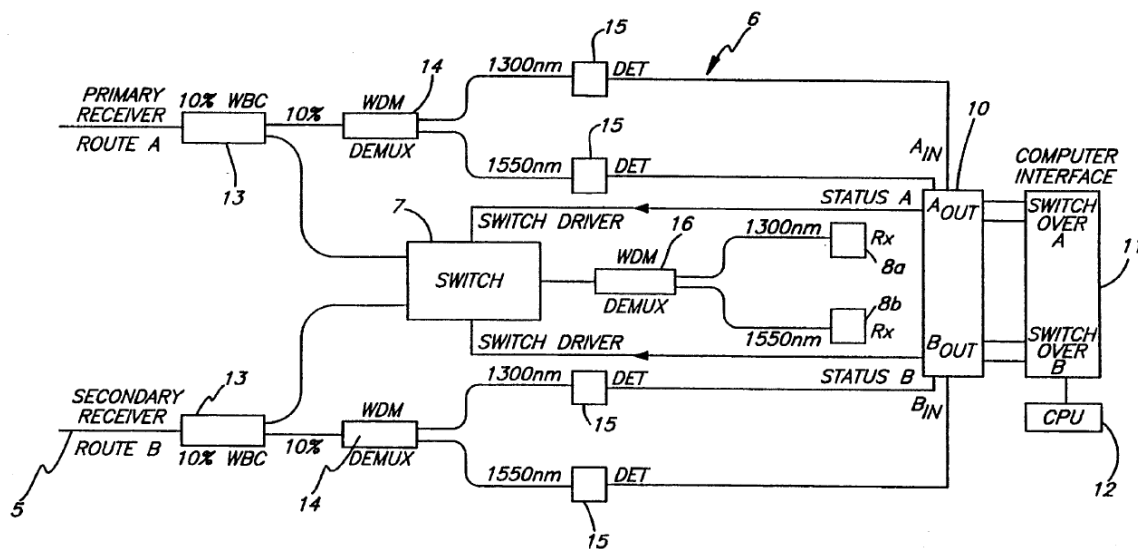
FIG. 3

Figure 3 provides an exemplary structure for the optical equipment module of the optical network equipment card in the form of “an optical amplifier module.” *Id.* at 5:19–22. Treyz discloses that other illustrative modules include “dynamic filter modules, optical channel monitor modules, fil[t]er modules with optical channel monitoring capabilities, dispersion compensation modules, transmitter modules, receiver modules, switch modules, add/drop multiplexer modules, etc.” *Id.* at 5:22–27. As shown in

Figure 3, module 23 includes optical channel monitor 47, which “may be used to measure the power spectrum of input signals . . . that are tapped using optical tap 49 [or] using optical tap 51.” *Id.* at 7:15–28.

## 2. Corke

Corke “relates to optical communication monitoring and to a control device for connection with optical fibres.” Ex. 1005, 1:11–13. Figure 2 of Corke is reproduced below.



**FIG. 2**

Figure 2 illustrates a structure for a communication monitoring and control device. *Id.* at 5:61–63. Primary and secondary optical fibers appear on the left of the drawing, identified as “PRIMARY RECEIVER” for “ROUTE A,”



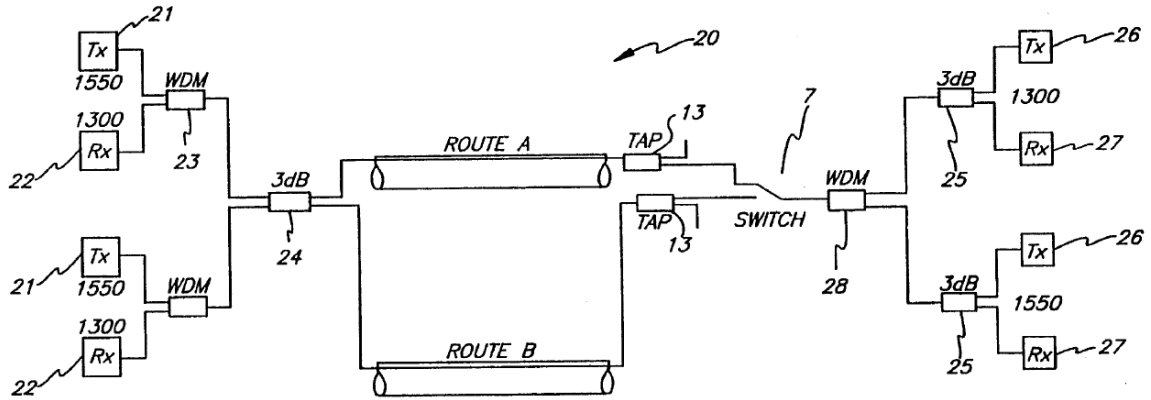
and as “SECONDARY RECEIVER” for “ROUTE B.”<sup>2</sup> *Id.* at 6:3–6. Each of the optical fibers is tapped by tap couplers 13 to direct 10% of the incoming light to demultiplexers 14, with 90% of the light transmitted to switch 7. *Id.* at 6:3–21. Switch 7 operates generally to direct signals to receiver units 8a and 8b, after separation of particular wavelengths by demultiplexer 16, similar to wavelength separation by demultiplexers 14. *Id.* at 5:46–51, 6:16–21.

By diverting a portion of the incoming signals with tap couplers 13, detectors 15 may continuously monitor each wavelength independently. *Id.* at 6:22–26. During normal operation of the device, when both optical fibers are in “good condition,” control circuit 10 defaults to controlling switch 7 to direct signals from the primary optical fiber to receivers 8a and 8b. *Id.* at 6:26–29. But if a fault occurs in the primary optical fiber at either wavelength, as detected by a sufficient drop in intensity at respective detector 15, control unit 10 causes switch 7 to direct signals from the secondary optical fiber to receivers 8a and 8b. *Id.* at 6:30–38.

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<sup>2</sup> Corke refers to these optical fibers with reference numbers 4 and 5. *See* Ex. 1005, 6:3–4. Reference number 4 appears to have been inadvertently omitted from the drawing.

Figure 3 of Corke is reproduced below.

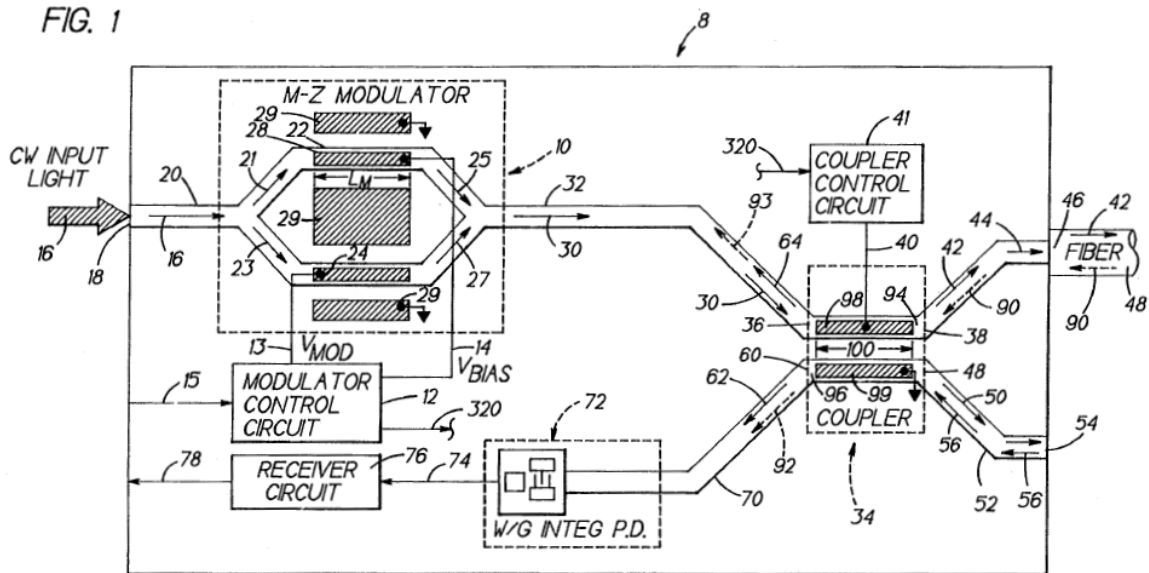


**FIG. 3**

Figure 3 illustrates an embodiment of Corke in which both ends of the communications structure include transmitter/receiver pairs 21, 22 (at the “transmitter” end) and 26, 27 (at the “receiver” end). *Id.* at 7:56–8:2.

### 3. Ade

Ade describes an optical-electronic integrated-circuit transceiver, as illustrated in Figure 1, reproduced below. Ex. 1024, 3:8–10.



The integrated optical transceiver of Figure 1, reproduced above, allows both optical-receiver and optical-transmitter functions. *See id.* at 1:23–38. When operating as an optical transmitter, the transceiver receives input light 16 from an external source, such as a laser (not shown), at input port 18. *Id.* at 3:62–4:5. Modulator 10 phase-modulates the light with modulator control circuit 12, in response to an electrical input signal on line 15, and ultimately outputs the modulated light over fiber 48 after transmission via waveguides internal to the transceiver. *Id.* at 3:62–68, 4:14–21, 4:43–49.

Of particular relevance, Ade describes operation as an optical receiver in a specific embodiment that omits coupler 34, such that “a separate fiber would be used for transmit and receive light.” *Id.* at 16:25–34. In such an embodiment, “the transmit light would exit from the port 46 [as summarized above] and the receive light would enter at the port 54.” *Id.* at 16:25–34. Light received at port 54 is directed to photodetector 72, such that receiver

circuit 76 measures a resulting electrical-current signal and converts the electrical-current signal to a voltage that is output over lines 78. *Id.* at 15:15–20.

#### 4. *Hardcastle*

Hardcastle “relates to the detection of a loss of signal condition in an optical communications system.” Ex. 1011, 1:5–6. Included in Hardcastle’s disclosure is description of a “loss of signal detector,” shown in Figure 8, reproduced below.

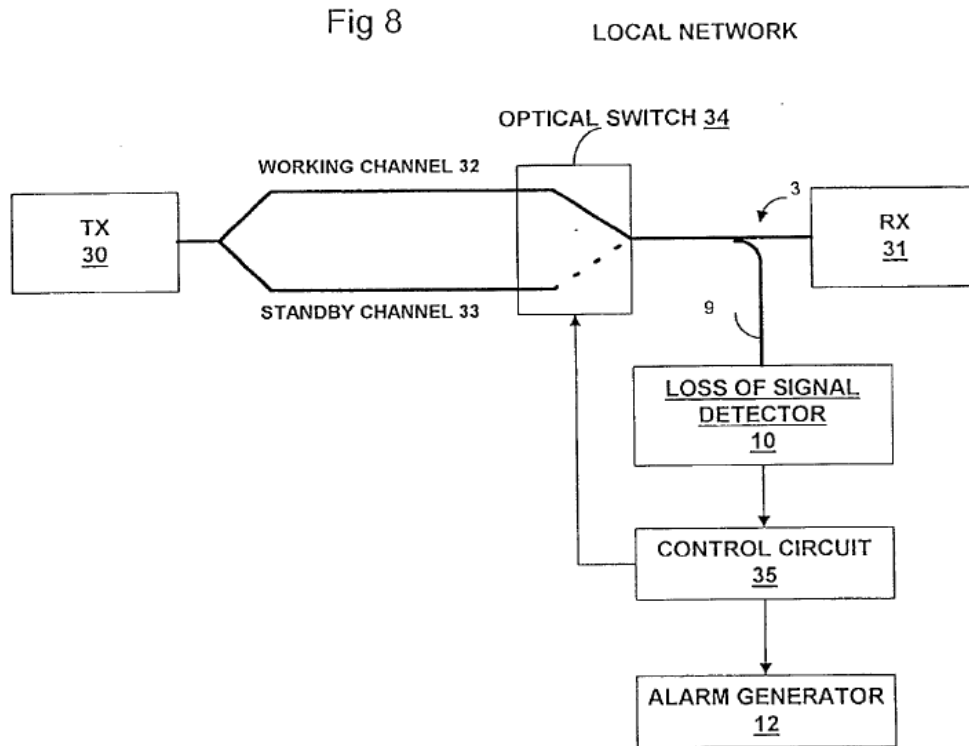


Figure 8 is “a schematic diagram of a local network having an optical switch controlled by a loss of signal detector,” where “connection between a

transmitter 30 and a receiver 31 is provided by a working channel 32 or by a standby channel 33 selectively connected to the receiver by means of an optical switch 34.” *Id.* at 3:66–67, 6:47–51. Loss of signal detector 10, which may be located “adjacent to the receiver 31,” monitors the integrity of an optical fiber comprised by working channel 32 and standby channel 33. *Id.* at 6:52–55.

Figure 10 of Hardcastle is reproduced below.

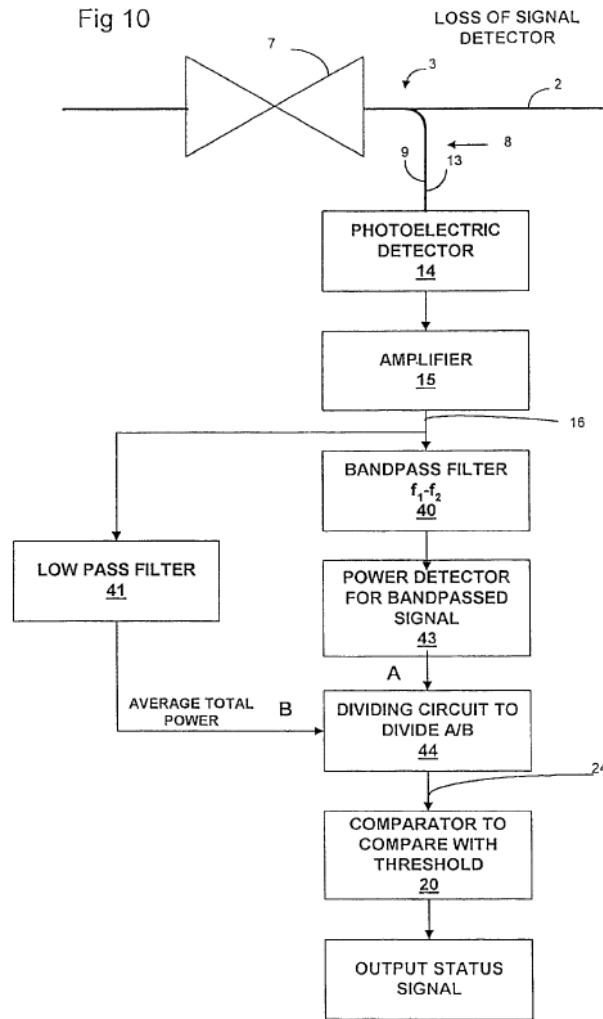


Figure 10 illustrates an embodiment for loss of signal detector 10. *Id.* at 7:1–4. Optical tap signal 9 is received from optical tap 8, and is transmitted to photoelectric detector 14, which produces an electrical signal output. *Id.* at 7:5–8. The electrical signal is amplified by transimpedance amplifier 15 to create monitor signal 16, which is filtered by low pass filter 41 to “provide[] an average power signal B which is representative of the power spectral density of the detected optical signal at zero frequency.” *Id.* at 7:7–32.

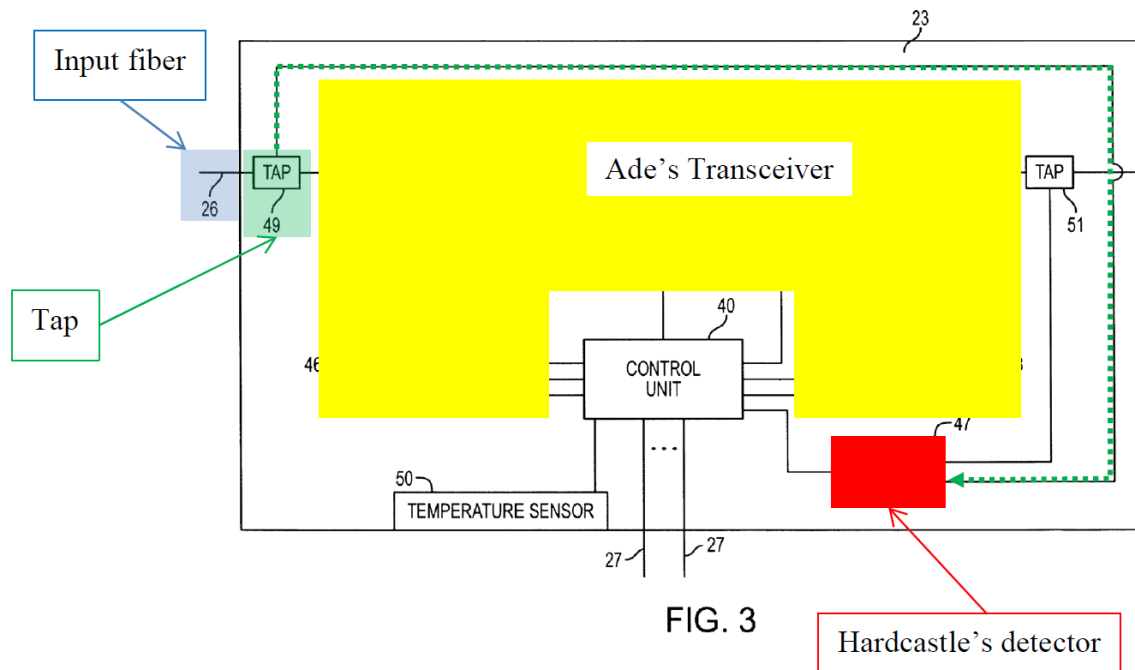
### *E. Treyz-Based Grounds*

#### *1. Independent Claim 1*

Petitioner challenges independent claim 1 as unpatentable under 35 U.S.C. § 103(a) over the combination of Treyz, Ade, and Hardcastle. Pet. 25–51. In providing a motivation for its proposed combination of teachings, Petitioner asserts that “the claims of the ’511 Patent . . . recite well known electrical components of fiber optic transmitters and receivers,” and that “these circuits were so well-known that Treyz . . . do[es] not discuss them in detail, because a [person of ordinary skill in the art] would have already been familiar with such components.” *Id.* at 13–14. Accordingly, Petitioner contends that “Ade is one example of a patent that discloses the components of a transmitter.” *Id.* at 14 (footnote omitted). Similarly, Petitioner contends that Treyz “does not disclose the specific operation or circuitry for an optical power monitor,” but that Hardcastle “does provide detail showing how a

[person of ordinary skill in the art] would implement such a monitor.” *Id.* at 32.

Petitioner presents an annotated version of Figure 3 of Treyz, reproduced below, illustrating how Petitioner proposes to combine the references’ teachings in light of these contentions.



Petitioner’s annotated Figure 3 identifies how Petitioner proposes to incorporate Ade’s transceiver (yellow) and Hardcastle’s power detector (red) into Treyz’s module 23. *Id.* at 33. Citing testimony of Dr. Blumenthal, Petitioner argues as follows regarding the combination: (1) a person of ordinary skill in the art “would understand” that “Treyz’[s] optical channel monitor would be coupled to a generic ‘module 23,’” *id.* at 27 (citing Ex. 1003 ¶ 64); (2) “[i]t would have been obvious to a [person of ordinary

skill in the art] to implement Ade’s transceiver as a module on Treyz’[s] optical card, either as Ade’s integrated chip on a printed circuit board of Treyz’[s] card to form a transceiver card or implementing Ade’s transceiver as discrete components on a printed circuit board of Treyz’[s] card to form a transceiver card,” *id.* at 28 (citing Ex. 1003 ¶¶ 65–66); and (3) “[i]t would have been obvious to implement Treyz’[s] ‘optical channel monitor’ [i.e., element 47] using the circuitry disclosed in Hardcastle,” *id.* at 32–33 (citing Ex. 1003 ¶ 72).

We are not persuaded by Petitioner’s arguments, which, in our view, are improperly guided by hindsight to reconstruct the invention of claim 1. *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“It is impermissible to use the claimed invention as an instruction manual or ‘template’ to piece together the teachings of the prior art so that the claimed invention is rendered obvious.” (citation omitted)). In particular, although Petitioner recognizes that Treyz’s optical network equipment module 23 “may be a transmitter or receiver” that Petitioner likens to the transceiver described by Ade, Petitioner does not rely on mere substitution of Ade’s element for Treyz’s. *Pet. 27*; *see KSR*, 550 U.S. at 416 (“when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result [to avoid obviousness]”). Instead, Petitioner selectively proposes to substitute only certain components of Treyz’s module 23 with Ade’s transceiver, notably excluding optical



channel monitor 47 from substitution or removal. This selectivity appears guided by hindsight to permit the further substitution of optical channel monitor 47 with the power detector of Hardcastle.

In its Reply, Petitioner provides the following characterization: “Treyz discloses that module 23, *which is coupled to OCM 47*, can be a variety of optical equipment, including a receiver.” Reply 3 (emphasis added) (citing Ex. 1010, 5:19–32; Pet. 7–9, 25–28; Ex. 1003 ¶¶ 41–44, 64–67). But as plainly evident from the drawing, optical channel monitor 47 in Treyz *is a part of* amplifier module 23. Ex. 1010, Fig. 3; *see* Tr. 8:10–15 (Petitioner agreeing that “optical channel monitor 47 in Treyz is part of the optical network equipment module 23”). Petitioner has not adequately explained why, if the entire amplifier module is to be swapped out, optical channel monitor 47 would stay.

As Patent Owner observes, in discussing Figure 3, “Treyz explains the reason for arranging the optical channel monitor 47 on an amplifier module 23.” PO Resp. 25. In particular, “the optical channel monitor 47, the control unit 40, and the dynamic filter 38 work together to control the gain spectrum and modify the spectral shape of the gain spectrum amplifier [shown in Figure 1 of Treyz].” *Id.* (citing Ex. 1010, 13:3–50). In light of these teachings, we agree with Patent Owner that, “considered in full, Treyz’s disclosure expressly describes the purpose of an optical channel monitor 47 used in combination with a control unit 40 and a dynamic filter 38 or amplifier stages 30.” *Id.* at 25–26. We thus agree with Patent Owner

that Petitioner has insufficiently—and apart from the application of hindsight—articulated reasons with rational underpinning to support the legal conclusion of obviousness. *See KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d at 988).

In particular, we do not find Petitioner’s reasons for the modifications to Treyz supported by Petitioner’s argument that “Treyz repeatedly states that Figure 3’s monitor configuration is ‘merely illustrative,’” and that a person of skill in the art “would not have read Treyz to be limited to the exemplary configurations illustrated in Figures 3 and 6.” Reply 3 (citing Ex. 1010, 7:49, 7:58–60). In making this argument, Petitioner emphasizes generally that “Dr. Blumenthal’s testimony about Treyz stands uncontroverted without any contrary evidence from [Patent Owner].” *Id.* But we are obligated to evaluate critically even uncontroverted testimony by an expert, particularly when it may appear “plainly inconsistent with the record.” *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1378 (Fed. Cir. 2017) (citing *NantKwest, Inc. v. Lee*, 686 F. App’x 864, 874–75 (Fed. Cir. 2017); *Cordis Corp. v. Boston Sci. Corp.*, 658 F.3d 1347, 1357 (Fed. Cir. 2011)).

In this instance, Dr. Blumenthal provides reasoning that goes beyond the obviousness indicators referred to by the Supreme Court, particularly that “the mere substitution of one element for another known in the field,” with no more than a predictable result, may have been obvious. *See KSR*, 550 U.S. at 416. Notwithstanding Treyz’s unambiguous identification of

module 23 as including optical channel monitor 47, Petitioner instead relies on a *creation of Dr. Blumenthal's* that merely “associate[s]” optical channel monitor 47 with “a generic module.” Ex. 1003 ¶ 43 (“I have created a demonstrative showing [an] example [of] such a circuit including a generic module, rather than the amplifie[r] shown in Figure 3 [of Treyz].”). The mere assertion in Treyz that its specific embodiments are “illustrative” provides insufficient license for the selective modifications Petitioner relies upon, and provides insufficient support for Petitioner’s position that one of skill in the art would have made those specific modifications.

In light of this deficiency, we are led to conclude that Petitioner’s proposed modifications are improperly guided by hindsight. “To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction—an illogical and inappropriate process by which to determine patentability.” *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (citing *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1533 (Fed. Cir. 1983)).

We conclude that Petitioner does not show, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Treyz, Ade, and Hardcastle.

## 2. *Other Claims*

Each of Petitioner's other challenges based on Treyz suffers from the same defect that we have identified above with respect to claim 1. Specifically, claims 2–7 depend directly or indirectly from claim 1. Ex. 1001, 7:1–17. Petitioner's challenges to those claims cite additional references for limitations recited in those claims, but rely on the defective combination of Treyz, Ade, and Hardcastle for the combination of limitations of underlying independent claim 1. *See* Pet. 57–60, 61–66. We therefore reach the same conclusion for claims 2–7 as we do for claim 1.

For the phase modulation of independent claim 9, Petitioner additionally cites Hooijmans, but otherwise relies on the defective combination of Treyz, Ade, and Hardcastle for the other limitations. *See id.* at 52–55. We therefore reach the same conclusion for claim 9, as well as for claims 10–15, which depend from claim 9 and otherwise parallel dependent claims 2–7.

We conclude that Petitioner does not show, by a preponderance of the evidence, that claims 2–7 and 9–15 are unpatentable under 35 U.S.C. § 103(a) over Treyz, Ade, and Hardcastle, in combination with other cited art.

*F. Corke-Based Grounds*

*1. Independent Claim 1*

Petitioner challenges independent claim 1 as unpatentable under 35 U.S.C. § 103(a) over the combination of Corke, Ade, and Hardcastle.<sup>3</sup> Pet. 74–82. In proposing to combine the teachings of Corke, Ade, and Hardcastle, Petitioner asserts that “[b]ecause Corke focuses on the disclosure of an optical power detection arrangement, Corke does not explain the operation of each and every component of a fiber optic network.” *Id.* at 69. Accordingly, and in light of Corke’s disclosure of embodiments with transmitter/receiver pairs at both ends of the communications structure as shown in Figure 3, Petitioner contends that a person of ordinary skill “would have been motivated to implement Corke’s transmitter/receiver pairs in accordance with Ade’s disclosure of the structural elements of transmitters and receivers.” *Id.* (citing Ex. 1003 ¶ 144). In addition, Petitioner contends that a person of skill in the art would have found it “obvious to implement Corke’s ‘detector’ [i.e., detectors 15] using the circuitry disclosed in Hardcastle.” *Id.* at 71. In this context, Petitioner observes that Hardcastle’s

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<sup>3</sup> Some of Petitioner’s section headings refer only to the combination of Corke and Ade, without also referring to Hardcastle. *See, e.g.*, Pet. 68 (heading G). Petitioner’s detailed explanation of its challenge makes sufficiently clear both that it is applying Hardcastle and how it proposes to use Hardcastle’s teachings. We thus determine, as we did in the Institution Decision, that the Petition is sufficiently clear that the challenge involves Corke, Ade, and Hardcastle. Dec. 21 n.4. Petitioner confirms that understanding in its Reply. *See Reply* 19 (heading V).

Figure 10, reproduced above, discloses that “‘monitor signal 16’ is filtered using ‘low pass filter 41’ to ‘provide[] an average power signal B.’” *Id.* at 73 (citing Ex. 1011, 7:29–32).

With these substitutions, Petitioner identifies all elements of independent claim 1. *Id.* at 74–82. That is, Petitioner relies on Corke as disclosing a “telecommunications box” in the form of device 6 that operates to modulate laser light as a function of electronic input data and to receive optical signals at a receiver, as taught by Ade. *Id.* at 75–76; *see id.* at 41–44. Reinforcing its argument with the bidirectional embodiment shown in Corke’s Figure 3, Petitioner reasons that such optical signals would be received at the receiver of a “further telecommunications box,” where they would be converted to electronic output data. *Id.* at 77. In addition, Petitioner relies on the disclosed functionality of Hardcastle, when implemented as detector 15 of Corke, for passing the optical signals to a photodetector and filtering the resulting electrical signal to produce an average optical power. *Id.* at 77–82. Petitioner’s analysis does not suffer from the hindsight selectivity we identified for the Treyz-based grounds because Petitioner proposes a simple substitution of Corke’s detector 15 with Hardcastle’s detector. *See id.* at 72 (annotated Figure 2 of Corke); *KSR*, 550 U.S. at 416 (“when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result [to avoid obviousness]”).

Patent Owner makes three arguments in response. First, Patent Owner argues that the combination of art does not disclose the “feeding input data” and “receiving” steps of independent claim 1 because those steps require the use of a “telecommunications box” having “an electronic data input for the input data and an electronic data output.” PO Resp. 45–50. According to Patent Owner, “Corke’s monitoring system has *optical* data inputs and outputs, and no amount of hand-waving or highlighting of what Corke actually teaches can demonstrate the required *electrical* data input and output in a telecommunications box along with the remainder of the claimed elements.” *Id.* at 46.

In making this argument—and notwithstanding its protestation to the contrary—Patent Owner improperly attacks the references individually, rather than addressing the combination. *Id.* at 49; *see In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not . . . that the claimed invention must be expressly suggested in any one or all of the references.”). That is, we disagree with Patent Owner’s assertion that “Petitioner[] look[s] exclusively to Corke to disclose the claimed ‘telecommunications box,’ though Corke fails to disclose such a ‘box.’” PO Resp. 49. Rather, Petitioner relies on a combination that “implement[s] Corke’s transmitter/receiver pairs in accordance with Ade’s disclosure of the structural elements of transmitters and receivers.” Pet. 69 (citing Ex. 1003 ¶ 144). As Petitioner observes, Ade’s transmitters and receivers include the recited “electronic data input for the input data” and “electronic data

output,” as illustrated by Petitioner’s annotations on Ade’s drawings, and as referenced in its analysis of the Corke-Ade-Hardcastle combination. *Id.* at 40, 41, 76, 77; *see also* Reply 20.

Furthermore, Corke includes sufficient suggestion, bolstered by the uncontroverted testimony of Dr. Blumenthal, that the combination would have been understood to be embodied in a “telecommunications box,” as we have construed the term. In particular, Corke describes “an effective human to machine interface” that includes a “front[ ]panel of the module” where a field engineer may adjust certain settings, as well as “LED’s on the front face-plate which allows the [field engineer] to determine the present status of the module.” Ex. 1005, 7:19–27, 7:46–48. Dr. Blumenthal testified in his original Declaration that the device shown in Figure 2 of Corke, i.e. “device 6,” “is housed in an enclosure with a front panel,” and that, therefore “Corke’s housing is a ‘telecommunications box.’” Ex. 1003 ¶ 157.

Dr. Blumenthal maintained and elaborated on that position when cross-examined that a person of ordinary skill in the art would understand that such disclosure describes a “telecommunications box.” Ex. 2029, 165:20–169:14 (“Now, to me, reading this as a person skilled in the art, if I have a module with a faceplate on it, that is the definition of a telecommunications box in every respect.”).

In light of these considerations, we find that the combination articulated by the Petition includes a “telecommunications box having an



electronic data input for the input data and an electronic data output,” as recited in the claim.

Second, Patent Owner argues that “[i]n an attempt to satisfy the claimed optical signal processing, Petitioner[] illogically attempt[s] to modify Corke in order to place all of the components to perform the claimed optical signal processing on a single transceiver card.”<sup>4</sup> PO Resp. 50. The modification Patent Owner refers to is grounded in Petitioner’s argument that a person of ordinary skill in the art would have combined the teachings of Corke and Ade. In particular, Petitioner observes that “Ade states that it is advantageous to combine a transmitter, a receiver, and a modulator with associated control circuitry, and indeed, does so on a single chip.” Pet. 70 (citing Ex. 1024, 1:64–67). From this prior-art teaching, Petitioner reasons, supported by the uncontroverted testimony of Dr. Blumenthal, that a person of skill in the art “would have recognized that Corke’s optical network would similarly benefit from deploying its transmitters and receivers on a transceiver card in accordance with Ade’s transceiver teachings.” *Id.* (citing

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<sup>4</sup> In advancing this argument, Patent Owner argues the Petition incorrectly asserts that “Corke states that an optical card can include a power monitor.” PO Resp. 50 (citing Pet. 74). As we stated in the Institution Decision, “[w]e agree that Petitioner’s statement is inaccurate because Corke does not disclose a card, and Patent Owner is correct that Dr. Blumenthal repeats the error.” Dec. 23. That error, however, “appears to have been inappropriately duplicated from the Petition’s analysis of Treyz” and does not significantly impact the remainder of Petitioner’s reasoning. *Id.* (citing Pet. 35). Nothing in the record developed during trial shows our understanding of the Petition was incorrect in this regard.

Ex. 1003 ¶ 145). Petitioner provides the specific rationale that “implementing transmitters and receivers on the same card (rather than on separate cards) would reduce the total number of cards in a communications system, thereby reducing the cost and complexity of the system.” *Id.* (citing Ex. 1003 ¶ 145).

Patent Owner’s disagreement stems from its assertion that Petitioner has “never identified any card actually disclosed in either Corke or Ade.” PO Resp. 51. Accordingly, according to Patent Owner, “[a]s the references disclose no cards, an argument about reducing the total number of cards in a communication system *as an alleged basis for combining references* lacks any foundation in the actual disclosures of the asserted references.” *Id.* We disagree because Ade specifically discloses “a combined optical modulator (transmitter) and detector (receiver) on a single chip/substrate (i.e., a transceiver).” Ex. 1024, 1:54–66. And Dr. Blumenthal explains in his original Declaration that a person of ordinary skill in the art would have understood such disclosure to relate to a card:

While Ade does not specifically state that the “chip” would be mounted to a card, a POSITA would have understood that integrated circuits are universally mounted to a substrate and a module or package, which is then attached to a “card.” In the absence of such mounting, a semiconductor chip is mechanically fragile, and would be virtually unusable. Accordingly, Ade’s disclosure of a chip strongly teaches and suggests an associated substrate and “card” to a POSITA.

Ex. 1003 ¶ 144. In light of this uncontroverted evidence, Patent Owner’s argument is not persuasive.

Third, Patent Owner argues that Petitioner’s reasoning for combining the teachings of Corke and Hardcastle “is entirely conclusory and employs impermissible hindsight to pick and choose aspects of Hardcastle’s Fig. 10 for use in Corke.” PO Resp. 52. But as Petitioner replies, its “combination does not prohibit the inclusion of additional components from Figure 10 of Hardcastle.” Reply 23. Rather, Petitioner’s analysis focuses on those aspects of the combination that relate to the limitations recited in the claim, but more generally relying on Hardcastle’s “implementation level details” for the detector taught by Corke. Pet. 71–74. Accordingly, Patent Owner’s argument is not persuasive.

We find that Petitioner shows, by a preponderance of the evidence, that every limitation of claim 1 is taught or suggested by the combination of Corke, Ade, and Hardcastle, and Petitioner also provides a sufficient showing of a motivation to combine these references supported by a rational underpinning. Accordingly, We conclude that Petitioner shows, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Corke, Ade, and Hardcastle.

## *2. Independent Claim 9*

In challenging independent claim 9, which parallels claim 1 but is limited to phase modulation, Petitioner proposes to add Hooijmans to the

combination it relies on for claim 1.<sup>5</sup> Pet. 84–85. Hooijmans is a portion of a textbook discussing coherent optical system design, and discloses a variety of known modulation techniques, including phase modulation. Ex. 1008, 70–72. Petitioner reasons that a person of skill in the art would have been motivated to implement the combination asserted for claim 1 “using the phase modulation scheme disclosed in Hooijmans,” thereby satisfying the requirements of claim 9. Pet. 84. Petitioner observes that Corke includes express disclosure of optical modulation, but without identification of a specific modulation scheme. *Id.* Petitioner supports its reasoning that a person of skill in the art would thus have found it obvious to implement phase modulation in the combined system with uncontroverted testimony by Dr. Blumenthal, which we credit. *See* Ex. 1003 ¶ 178. We find Petitioner provides sufficient reasoning with a rational basis for combining the teachings of the cited references.

Patent Owner makes no argument separate from its arguments directed at claim 1, addressed above. We do not find those arguments persuasive for the reasons discussed above.

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<sup>5</sup> The Petition’s error with respect to identification of the challenge is repeated by omitting reference to Hardcastle. *See* Pet. 84–85 (referring to “Corke/Ade” in reference to its challenge for claim 1). For the reasons explained above, we treat the challenge as Petitioner clearly intends and as we did in the Institution Decision, i.e., as including Hardcastle. Dec. 24 n.5. Petitioner confirms that understanding in its Reply. *See* Reply 19 (heading V).

We conclude that Petitioner shows, by a preponderance of the evidence, that independent claim 9 is unpatentable under 35 U.S.C. § 103(a) over Corke, Ade, Hardcastle, and Hooijmans.

### 3. *Dependent Claims 2–4 and 10–12*

Claims 2–4 and 10–12 recite limitations related to scaling the electrical signal after filtering, with claims 2–4 depending from claim 1 and claims 10–12 depending from claim 9. Ex. 1001, 7:1–7, 8:10–16. For these limitations, Petitioner appears to rely on Kobayashi, which Petitioner characterizes as “disclos[ing] an optical power monitor with improved linearity across a wide range of input powers.” Pet. 21. But the Petition’s lack of clarity regarding the specific references involved in the challenge is problematic for these claims.

The Petition identifies its challenge of claims 2–4 as involving the combination of Corke, Ade, and Kobayashi, and identifies its challenge of claims 10–12 as involving Corke, Ade, Hooijmans, and Kobayashi. *Id.* at 85–89. Notably, neither of these identifications includes Hardcastle, which Petitioner clearly relies on for its challenges of underlying independent claims 1 and 9. We emphasize that the lack of clarity for these challenges differs in an important respect from those directed at the independent claims. In the case of claims 1 and 9, although Hardcastle was not identified in summary descriptions of the challenges, such as in the section headings, the Petition’s detailed analysis explained how Hardcastle was being applied.

That is not the case with the challenges to claims 2–4 and 10–12, which make *no* mention of Hardcastle whatsoever. *See id.*

In its Reply, Petitioner asserts that its challenges to claims 2–4 and 10–12 “rely upon Hardcastle as well” because they “build upon” the challenges to the independent claims. Reply 24–25. We acknowledge this position with our tabular summary of the asserted grounds, *supra*. Nevertheless, the problem with this position is one we noted in the Institution Decision. *See* Dec. 25–27. That is, in addressing these dependent claims, the Petition contends that a person of ordinary skill in the art “would have found it obvious to use Kobayashi’s improved optical power monitor to implement Corke’s ‘detector.’” Pet. 85. The Petition explains that “Corke includes a device with a power monitor, but does not explain how to implement such a circuit,” and that “Kobayashi’s power monitor would have been viewed as a suitable option because it generates an accurate measured power signal.” *Id.*

This reasoning for incorporating Kobayashi’s power monitor into the combination generally parallels the reasoning Petitioner offers for incorporating Hardcastle’s power monitor when addressing underlying independent claim 1. *See id.* at 71 (“Corke, however, does not disclose the specific operation or circuitry for an optical power monitor. Hardcastle, however, does provide detail showing how a POSITA would implement such a monitor.”). In the Institution Decision, we found that “[t]he Petition does not reconcile—nor offer any reasoning that could potentially

reconcile—the simultaneous substitution of Corke’s power monitor with the power monitor disclosed in Hardcastle *and* the power monitor disclosed in Kobayashi.” Dec. 26.

In its Reply, Petitioner addresses this concern by asserting that “the Petition explains the combination including Hardcastle and Kobayashi by referring to Ground 3,” which involves *Treyz*, not *Corke*. Reply 25. Notwithstanding its utter omission of any discussion of Hardcastle in the challenges to the dependent claims, Petitioner expects Patent Owner and us to piece together an argument by referring to a ground that involves a different reference. This demands too much. It is incumbent upon Petitioner to “specify where each element of the claim is found in the prior art patents or printed publications relied upon.” 37 C.F.R. § 42.104(b)(4). “A brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.” *DeSilva v. DiLeonardi*, 181 F.3d 865, 867 (7th Cir. 1999).

We conclude that Petitioner does not show, by a preponderance of the evidence, that claims 2–4 are unpatentable under 35 U.S.C. § 103(a) over Corke, Ade, Hardcastle, and Kobayashi, nor that claims 10–12 are unpatentable under 35 U.S.C. § 103(a) over Corke, Ade, Hardcastle, Hooijmans, and Kobayashi.

4. *Dependent Claims 5–7 and 13–15*

Claims 5–7 and 13–15 recite limitations related to comparison of the scaled electrical signal (as determined in claim 2 or 10) with a reference voltage, with claims 5–7 depending from claim 2 and claims 13–15 depending from claim 10. Ex. 1001, 7:8–16, 8:17–25. For these limitations, Petitioner additionally cites Ikeda, which it characterizes as “disclos[ing] an energy level detector including a[] ‘comparator.’” Pet. 23.

The challenges of claims 5–7 and 13–15 suffer from the same defect as the challenges to claims 2 and 10, from which they respectively depend, i.e., competing substitution of one component by two parts from two different references. The problem is made even worse by inclusion of a third competing part from yet another reference, Ikeda. Even Petitioner’s Reply does not adequately elucidate how to reconcile the teachings of now *three* references involving power monitors in combination without the application of hindsight. Petitioner’s assertion that “Ikeda’s circuitry would have been substituted for Corke’s single-threshold solution within control circuit 10 to enable warning alarms for engineers,” Reply 27–28, merely emphasizes that teachings from the references are being selected by using the claims as a template for reconstruction, which amounts to improper use of hindsight. *See In re Fritch*, 972 F.2d at 1266.

We conclude that Petitioner does not show, by a preponderance of the evidence, that claims 5–7 are unpatentable under 35 U.S.C. § 103(a) over Corke, Ade, Hardcastle, Kobayashi, and Ikeda, nor that claims 13–15 are



unpatentable under 35 U.S.C. § 103(a) over Corke, Ade, Hardcastle, Hooijmans, Kobayashi, and Ikeda.

*G. Other Patent Owner Arguments*

Patent Owner argues: “The Board’s partial institution decision (Paper 11) was unlawful under 35 U.S.C. § 314, and the Board cannot correct that unlawful order by issuing an unauthorized Order (Paper 14) attempting to modify the institution decision outside of the statutory period for issuing institution decisions.” PO Resp. 12. Patent Owner asserts:

First, the Board’s institution “modification” order improperly attempts to address, without the statutorily-mandated rulemaking, how to govern a proceeding covering all challenged claims and grounds, including those for which a petitioner failed to establish a reasonable likelihood of prevailing. Second, the Board lacks authority to modify an unlawful institution decision once the statutory timeframe for issuing an institution decision has expired.

*Id.* For those reasons, Patent Owner asserts the issuance of a final written decision in this case would be improper and seeks dismissal of the Petition.

*Id.* at 17. For reasons discussed below, we reject both aspects of Patent Owner’s reasoning and decline to dismiss the Petition on these bases.

1.

In the Institution Decision, we determined that Petitioner demonstrated a reasonable likelihood of prevailing on some claims and grounds, but did not demonstrate a reasonable likelihood of prevailing on other claims and grounds. We are not persuaded by Patent Owner’s

argument that, absent promulgation of new rules, we are precluded from reaching a final written decision with respect to the claims and grounds for which we determined Petitioner had not presented a reasonable likelihood of success at the time of institution of review. The current rules already cover the situation in which, at the time of institution of review, the Board determines that there are claim(s) and ground(s) for which the Petitioner has not shown a reasonable likelihood of prevailing at trial.

Specifically, Patent Owner notes 37 C.F.R. § 42.108(a), which allowed the Board to “authorize the review to proceed on all or some of the challenged claims and on all or some of the grounds of unpatentability asserted for each claim,” and 37 C.F.R. § 42.108(b) (2016), which allowed the Board to “deny some or all grounds for unpatentability for some or all of the challenged claims” prior to institution of *inter partes* review.” *Id.* at 13. Patent Owner further cites 37 C.F.R. § 42.108(c), which provides: “*Inter partes* review shall not be instituted for a ground of unpatentability unless the Board decides that the petition supporting the ground would demonstrate that there is a reasonable likelihood that at least one of the claims challenged in the petition is unpatentable.” *Id.* at 14.

None of these referenced parts of 37 C.F.R. § 42.108 requires exclusion of any claim or ground from an instituted proceeding—including those for which the Board has determined that Petitioner has not shown a reasonable likelihood that it would prevail in establishing unpatentability. Thus, the rules that were in effect at the time of institution of review in this

proceeding already covered the situation in which the trial includes challenged claims and corresponding grounds of unpatentability for which the Petitioner has not shown a reasonable likelihood of prevailing.

Patent Owner further notes:

In implementing these final rules, the Agency stated, “The Board will identify the grounds upon which the review will proceed on a claim-by-claim basis. Any claim or issue not included in the authorization for review is not part of the review.” 77 Fed. Reg. 48,689. Indeed, the Agency specifically stated that the regulations *did not adopt* comments requesting that “all challenged claims to be included in the *inter partes* review when there is a reasonable likelihood of prevailing with respect to one challenged claim.” 77 Fed. Reg. 48,702-03.

PO Resp. 14. As is the case with 37 C.F.R. § 42.108, however, such statements do not indicate the Board is *prohibited* from including all challenged claims in the *inter partes* review—including when a petitioner shows a reasonable likelihood of success at trial with respect to just some (or even only one) of the challenged claims and just some (or even only one) of the asserted grounds of unpatentability. *See, e.g., FMC Techs., Inc. v. OneSubsea IP UK Ltd.*, Case IPR2016-00378, 2016 WL 5219870 (PTAB June 30, 2016) (instituting review “on all the challenged claims and on all of the asserted grounds, as raised in the Petition,” upon finding a reasonable likelihood of success with respect to one claim).

In short, Patent Owner asserts that in the circumstances of this case, issuing a final written decision on all challenged claims and grounds identified in the Petition is “contrary to and specifically rejected by the

regulations promulgated by the Agency to govern *inter partes* review,” and that the Board may not depart from those regulations. *Id.* at 15–16.

According to Patent Owner, issuing a final written decision here would be improper. *Id.* at 17. For reasons discussed above, we disagree with and reject Patent Owner’s contention that issuing a final written decision with respect to all challenged claims and grounds identified in the Petition is contrary to regulation.

2.

We are not persuaded that the statutory due date under 35 U.S.C. § 314(b) for determining whether to institute an *inter partes* review was violated in this proceeding.

Patent Owner asserts that under 35 U.S.C. § 314(b), the due date for determining whether to institute *inter partes* review is three months from the date of filing of a preliminary response, if a preliminary response has been filed; or, if no preliminary response has been filed, then three months from the last date on which such a preliminary response may be filed. PO Resp. 13. We agree with Patent Owner’s articulation of the due date for the Board to determine whether to institute *inter partes* review. We also agree with Patent Owner that in this case, because Patent Owner filed a preliminary response on November 28, 2017 (Paper 7), the due date for the Board to determine whether to institute review was February 28, 2018. *Id.*

According to Patent Owner, however, the Board's complete determination of whether to institute an *inter partes* review did not occur until May 7, 2018 (Paper 14). *Id.* at 16–17. Patent Owner explains:

The Board's Institution Decision (Paper 11) issued on February 27, 2018, but this Institution Decision partially instituted in a manner that the Supreme Court has confirmed was not in accordance with law. *SAS*, 138 S. Ct. at 1355 (“The Director’s claimed ‘partial institution’ power appears nowhere in the text of § 318, or anywhere else in the statute for that matter.”) The Board’s modification Order (Paper 14) attempted to bring the content of the Board’s Institution Decision into compliance with § 314(a), but the modification Order also fails to comport with the governing statute by violating the mandatory timing of institution decisions, 35 U.S.C. § 314(b).

*Id.* at 16.

We determine that Patent Owner’s contention is misplaced because the question before the U.S. Supreme Court in *SAS Institute*, and decided by the Supreme Court, was not whether a partial institution decision was null and void, as though the Board never determined whether to institute an *inter partes* review, but whether the Board must issue a final written decision with respect to the patentability of every patent claim challenged by a petitioner.

In *SAS Institute*, the U.S. Supreme Court framed the issue before it this way:

When the Patent Office initiates an *inter partes* review, must it resolve *all* of the claims in the case, or may it choose to limit its review to only *some* of them? The statute, we find, supplies a clear answer: the Patent Office must “issue a final written decision with respect to the patentability of *any* patent claim challenged by the petitioner.” 35 U.S.C. § 318(a) (emphasis added). In this context, as in so many others, “any” means “every.” The agency cannot curate the claims at issue but must decide them all.

*SAS Institute*, 138 S. Ct. at 1352–53. We recognize that the Supreme Court explained: “The Director, we see, is given only the choice ‘whether’ to institute an inter partes review. That language indicates a binary choice—either institute review or don’t.” *Id.* But that is not a holding that the Board’s institution decision in *SAS Institute* was null and void. Rather, the Court in *SAS Institute* simply recognized that the Board instituted review, but incorrectly limited the scope of the review. *SAS Institute* did not preclude a scope correction by the Board, including where the time of correction is after the due date for the Board to decide whether to institute review. Similarly, the U.S. Court of Appeals for the Federal Circuit, subsequent to the Supreme Court’s decision in *SAS Institute* and for the Board proceeding underlying *SAS Institute*, did not vacate the Board’s initial institution decision in that proceeding. *See also AC Techs. S.A. v. Amazon.com, Inc.*, 912 F.3d 1358 (Fed. Cir. 2019) (“[N]either § 314(b)’s timing requirements nor § 314(d)’s limits on appealability alter the Board’s statutory obligation to rule on all claims and grounds presented in the petition.”) (citing *SAS*, 138 S. Ct. at 1356).

Here, the Board’s decision on whether to institute review (Paper 11) was issued on February 27, 2018. The subsequent order (Paper 14) correcting the scope of review, dated May 7, 2018, did not change the fact that the Board decided on February 27, 2018, to institute review.

3.

In addition to the arguments addressed above, Patent Owner raises a constitutional argument based on the fact that “[a]t the time Patent Owner’s patent issued, the express provisions of the Patent Act did not make patents revocable through *inter partes* review.” PO Resp. 58. Patent Owner asserts:

Retroactively subjecting Patent Owner’s vested patent rights to new qualifications—including possible cancelation by a newly constituted, non-Article III body operating under new statutes, rules, and procedures, including procedures contrary to 35 U.S.C. § 282(a)—presents a constitutional concern sufficient to preclude invalidation of the claims.

*Id.* at 58–59. We do not address this argument. As the Supreme Court has cautioned, “[c]onstitutional questions obviously are unsuited to resolution in administrative hearing procedures and, therefore, access to the courts is essential to the decision of such questions.” *Califano v. Sanders*, 430 U.S. 99, 109 (1977).

### III. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1 and 9 of U.S. Patent No. 8,374,511 B2 are held to be unpatentable;

FURTHER ORDERED that, based on a preponderance of the evidence, claims 2–7 and 10–15 of U.S. Patent No. 8,374,511 B2 have not been shown to be unpatentable; and

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



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PETITIONER:

Brian W. Oaks  
Wayne O. Stacy  
BAKER BOTTS L.L.P  
brian.oaks@bakerbotts.com  
wayne.stacy@bakerbotts.com

Darren Donnelly  
POL SINELLI LLP  
ddonnell@polsinelli.com

PATENT OWNER:

Wayne M. Helge  
James T. Wilson  
Aldo Noto  
DAVIDSON BERQUIST JACKSON & GOWDEY L.L.P.  
whelge@dbjg.com  
jwilson@dbjg.com  
anoto@davidsonberquist.com