Trials@uspto.gov
571-272-7822

Paper 10
Date: November 3, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NOKIA OF AMERICA CORPORATION,
Petitioner,

v.

ALEXANDER SOTO AND WALTER SOTO,
Patent Owner.

IPR2023-00680
Patent 9,887,795

Before THU A. DANG, PATRICK M. BOUCHER, and GARTH D. BAER, *Administrative Patent Judges*.

DANG, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

I. INTRODUCTION

A. Background

Nokia of America Corporation ("Petitioner") filed a Petition requesting an *inter partes* review ("IPR") of claims 1–3, 5, 10–14, and 16–21 ("the challenged claims") of U.S. Patent No. 9,887,795 (Ex. 1001, "the '795 patent"). Paper 1 ("Pet."), 1. Alexander Soto and Walter Soto (collectively, "Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp."). With our authorization, Petitioner filed a Reply and Patent Owner filed a Sur-reply. Paper 8 ("Reply"), Paper 9 ("Sur-reply").

We have jurisdiction under 35 U.S.C. § 314 and 37 C.F.R. § 42.4. For the reasons set forth below, we exercise our discretion under 35 U.S.C. § 325(d) and decline to institute an *inter partes* review.

B. Related Matters

The parties indicate that the '795 patent is the subject of the following district court litigation: *NextGen Innovations, LLC v. Nokia of America Corporation*, No. 2:22-cv-00309 (E.D. Tex.). Pet. 75; Paper 7, 1. In addition, both parties identify the following as related district court matters in which the '795 patent is asserted against different defendants: (1) *NextGen Innovations, LLC v. Infinera Corporation*, No. 2:22-cv-00306 (E.D. Tex.); (2) *NextGen Innovations, LLC v. Fujitsu Network Communications, Inc.*, No. 2:22-cv-00307 (E.D. Tex.); and (3) *NextGen Innovations, LLC v. AT&T Services, Inc.*, No. 2:22-cv-00308 (E.D. Tex.). Pet. 75–76; Paper 7, 1. Petitioner additionally identifies the following matters as involving the '795 patent: (1) *Nokia Innovations, LLC v. II-VI,*

Inc., No. 4:20-cv-00854 (E.D. Tex.); and (2) *NextGen Innovations, LLC v. II-VI, Inc.*, No. 4:21-cv-07477 (N.D. Cal.). Pet. 75.

Both parties identify IPR2021-01358 ("the related IPR") as involving the '795 patent. Pet. 76; Paper 7, 1. Patent Owner identifies several other *inter partes* reviews as involving the '795 patent or a related patent, namely IPR2021-01359, IPR2021-01361, IPR2023-00681, IPR2023-00682, IPR2023-00834, IPR2023-00835, IPR2023-00838, and IPR2023-00960. Paper 7, 1–2.

C. The '795 Patent (Ex. 1001)

The '795 patent, titled "System and Method for Performing High-Speed Communications Over Fiber Optical Networks," is directed to "optical fiber communications generally, and more specifically to m-ary modulation in optical communication networks." Ex. 1001, code (54), 1:26–28.

The '795 patent describes several embodiments of optical transceiver modules. Ex. 1001, 8:65–11:11. One such embodiment is illustrated in Figure 3 of the '795 patent, which is reproduced below.

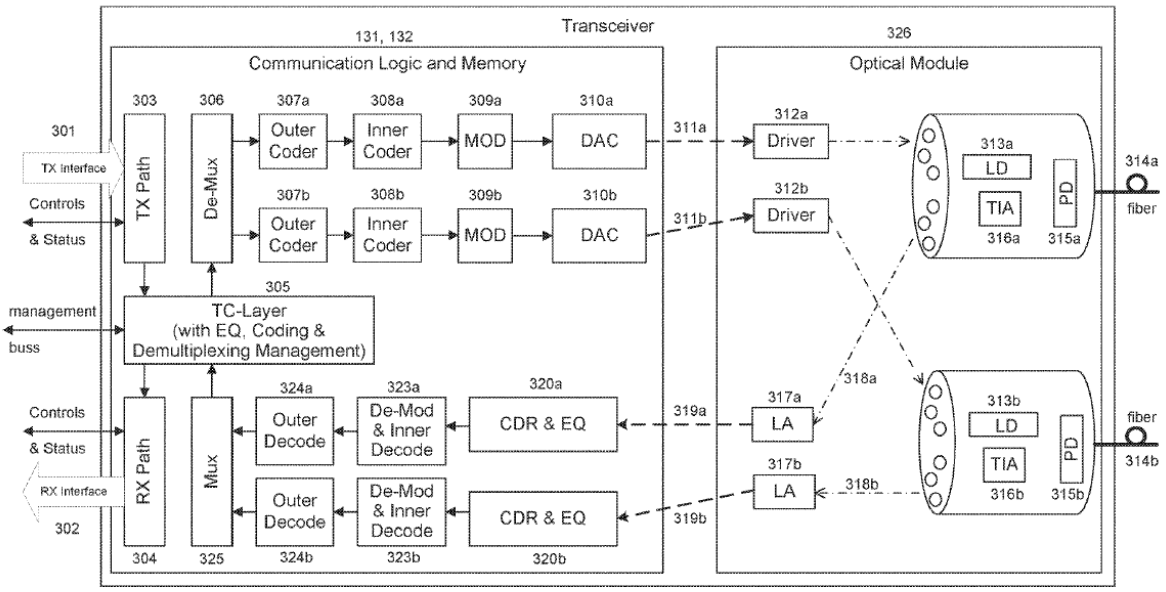

FIG. 3

Figure 3 shows a system block diagram for an implementation of a transceiver with components for transmit-side processing generally in the upper half of the diagram and components for receive-side processing generally in the lower half. *Id.* at 8:65–66, 9:9–13. On the transmit side, signals are received from transmit ("TX") interface 301 and prepared for data transmission by TX path block 303 and transmission convergence layer or media access control ("TC-Layer/MAC") block 305. *Id.* at 9:9–36. Optionally, DeMux block 306 may split the transmitting data into a plurality of paths (two of which are shown in Figure 3), for demultiplexing data across multiple fibers. *Id.* at 9:36–47.

In a transmit path, transmit data may be provided to outer and inner coder blocks 307, 308 to perform error-correction coding, Reed-Solomon coding, trellis coding, and the like, as appropriate to the application. *Id.* at 9:52–61. Modulation block 309 performs any of a variety of m-ary modulation methods to increase the number of bits per symbol transmitted.

Id. at 10:11–22. Digital-to-analog converter ("DAC") 310 converts the m-ary modulated signal to an analog signal that is processed by laser driver 312, which drives an optical transmitter such as laser diode 313 to transmit an optical signal over fiber 314. *Id.* at 10:27–37.

The receive side of the transceiver includes components that generally implement inverse functions of the transmit side. *See id.* at 10:38–11:11. Photodiode ("PD") 315 detects a received optical signal and converts it to an electrical signal that is amplified by transimpedance amplifier ("TIA") 316 and linear amplifier ("LA") 317, which may also perform signal conditioning. *Id.* at 10:38–51. The electrical signal is processed by clock data recovery ("CDR") and equalization ("EQ") block 320 to recover clock and data signals. *Id.* at 10:51–56. De-Mod & inner decoder block 323 performs complementary demodulation to the m-ary modulation performed by modulation block 309, and, in combination with outer decoder block 324, decodes for error correction and other coding that may have been applied. *Id.* at 10:56–11:4. Optional multiplexer 325 may be applied to multiple signals on the receive side to provide a single signal that is output through receiver circuitry ("RX") path 304 and RX interface 302. *Id.* at 11:4–11.

As illustrated in Figure 3, certain components that include laser driver 312 and linear amplifier 317, as well as laser diode 313, photodiode 315, and transimpedance amplifier 316 on both the transmit and receive side may be embodied in optical module 326. *See id.* at 10:27–51. Optical module 326 "can conform to a form factor of standard optical modules such as the 300pin, XENPAK, X2, XPAK, XFP or SPF and SPF+." *Id.* at 11:25–27.

1. Illustrative Claim

Among the challenged claims, claim 1 is the independent claim. Claim 1 is illustrative and is reproduced below:

> 1. A method for m-ary modulation communication by a pluggable optical transceiver module comprising of:
>
> receiving a first electrical binary data signal through a system interface of the pluggable optical transceiver module;
>
> converting the first electrical binary data signal in the pluggable optical transceiver module to a first electrical m-ary modulation signal;
>
> amplifying the first electrical m-ary modulation signal to drive an optical transmitter in the pluggable optical transceiver module;
>
> emitting a first optical signal on a first wavelength responsive to and representative of the amplified first electrical m-ary modulation signal from the optical transmitter in the pluggable optical transceiver module;
>
> receiving a second optical signal on a second wavelength and producing an electrical signal from an optical detector in the pluggable optical transceiver module;
>
> amplifying the electrical signal to facilitate clock and data recovery in the pluggable optical transceiver module;
>
> recovering a clock data information from the amplified electrical signal to produce a second m-ary modulation signal in the pluggable optical transceiver module;
>
> demodulating the second m-ary modulation signal to a second electrical binary data signal in the pluggable optical transceiver module; and

transmitting the second electrical binary data signal through the system interface of the pluggable optical transceiver module.

Ex. 1001, 14:60–15:22.

II. ANALYSIS

A. Prior Art Relied Upon

Petitioner relies upon the references listed below (Pet. 1–2):

Name	Reference	Date	Exhibit No.
Agazzi '640	US 6,879,640 B1	Apr. 12, 2005	1005
Wei	US 6,873,800 B1	Mar. 29, 2005	1006
Gans	US 5,388,088	Feb. 7, 1995	1007
Eroz	US 7,020,829 B2	Mar. 28, 2006	1008
Agazzi '341	US 7,933,341 B2	Apr. 26, 2011	1009

B. Asserted Grounds of Unpatentability

Petitioner challenges claims 1–3, 5, 10–14, and 16–21 on the following grounds. Pet. 1–2.

Claim(s) Challenged	35 U.S.C. §[1]	References
1–3, 5, 10, 13, 14, 16–19	103(a)	Agazzi '640, Wei (Ground 1)
11, 12	103(a)	Agazzi '640, Wei, Gans (Ground 2)
20, 21	103(a)	Agazzi '640, Wei, Eroz (Ground 3)

[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended various provisions of 35 U.S.C. Petitioner applies the pre-AIA version of 35 U.S.C. § 103(a), and Patent Owner does not contest that this is the applicable version. Pet. 1–2. On the record before us, we agree that the pre-AIA version of 35 U.S.C. § 103(a) applies.

1–3, 5, 10, 16–19	103(a)	Agazzi '341, Wei (Ground 4)
11, 12	103(a)	Agazzi '341, Wei, Gans (Ground 5)
13, 14	103(a)	Agazzi '341, Wei, Agazzi '640 (Ground 6)
20, 21	103(a)	Agazzi '341, Wei, Eroz (Ground 7)

C. Overview of Asserted Prior Art

1. Agazzi '640

Agazzi '640 "relates to methods and apparatus for the transfer of high rates of data over a fiber optic channel[], and in particular embodiments to methods and apparatus which utilize existing fiber optics systems to achieve high data transfer rates." Ex. 1005, 1:16–20. Figure 10 of Agazzi '640 is reproduced below.

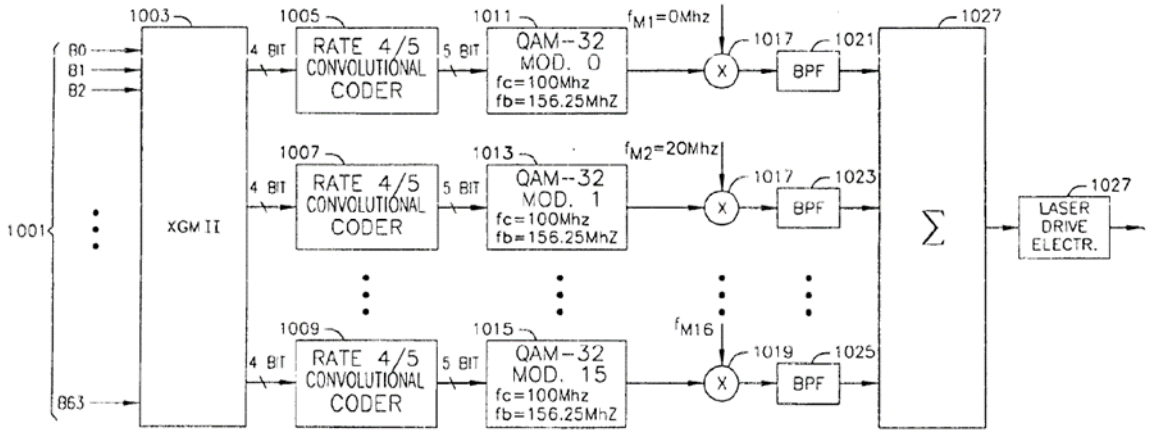

FIG. 10

Figure 10 illustrates a multi-carrier modulation transmitter with trellis encoding. *Id.* at 2:26–27, 2:54–55, 12:5–9, 15:27–28. XGMII ("Input Ten Gigabit Media Independent Interface") block 1003 receives 64 input bit

signals B0–B63, which are divided into sixteen 4-bit "nibbles" that are processed by sixteen parallel convolution coders 1005, 1007, 1009, each of which outputs a 5-bit signal. *Id.* at 8:36–44, 8:66–9:3, 12:5–9. Such 5-bit signals are modulated by respective QAM-32 ("Quadrature Amplitude Modulation 32") modulators 1011, 1013, 1015 for mixing with mixers 1017, 1019, filtering by band-pass filters 1021, 1023, 1025, and summing by combiner circuit 1027, with the output sent to laser drive electronics 1027. *Id.* at 9:3–31, 12:7–11.

Figure 12 of Agazzi '640 is reproduced below.

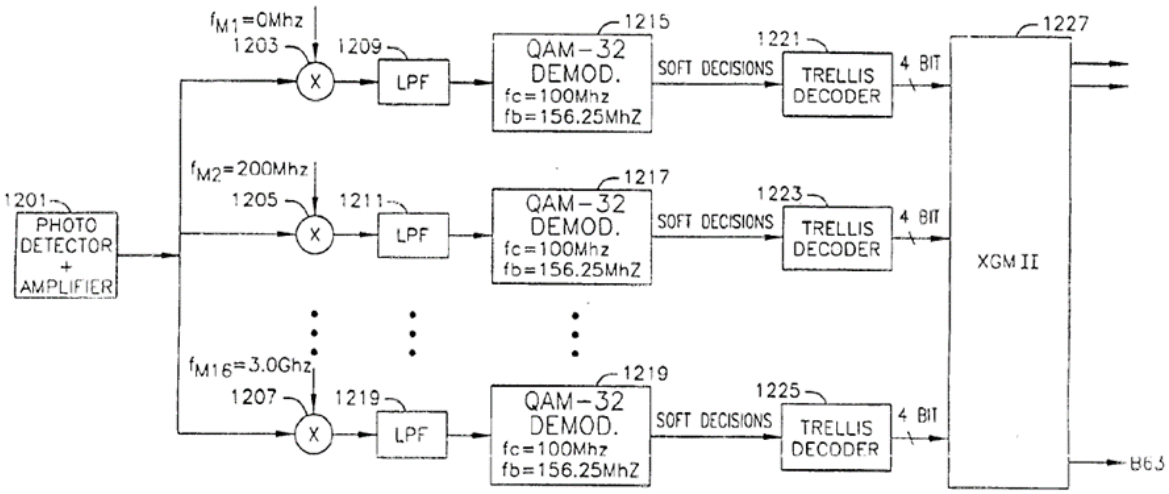

FIG. 12

Figure 12 illustrates a receiver that receives a trellis-coded signal. *Id.* at 2:59–60, 15:56–57. Photodetector/amplifier 1201 receives and amplifies the signal, which is processed with sixteen parallel pathways that include respective mixers 1203, 1205, 1207, low pass filters 1209, 1211, 1219, QAM-32 demodulators 1215, 1217, 1219, and trellis decoders 1221, 1223, 1225 to output 4-bit nibbles so that a 64-bit signal may be output through XGMII block 1227. *Id.* at 15:57–65.

2. Wei

Wei "relates to fiber optic modules." Ex. 1006, 1:19–21. Wei asserts that "[i]t is desirable to package the functions of a [Gigabit Interface Converter ('GBIC')] into the compact size of a [small form pluggable ('SFP')], LC package." *Id.* at 2:2–4. To achieve this, Wei describes implementation of a fiber-optic transceiver module using "vertically stacked receiver and transmitter printed circuit boards." *Id.* at 2:28–29. Wei explains that

> [t]he use of separate vertically stacked printed circuit boards allows packaging the functions of a GBIC within an LC or other small form factor package. One of the printed circuit boards protrudes from the fiber optic module's outer housing, while the other printed circuit board is wholly contained by the outer housing.

Id. at 2:29–35.

3. Gans

Gans relates to "recovering data from optical signals transmitted in different polarizations over the same transmission system," by "us[ing] existing systems to maximum capacity." Ex. 1007, 1:7–19. Specifically, Gans teaches implementing "dual polarization," which is the "simultaneous transmission of two independent signals of different polarizations to represent independent data," thereby doubling the bandwidth. *Id.* at 8:11–21.

4. Eroz

Eroz "relates to communication systems, and more particularly to coded systems." Ex. 1008, 1:38–39. Specifically, Eroz teaches that a requirement of very low frame erasure rate can be satisfied "by using a Gray

8-PSK scheme . . . in conjunction with an outer code, such as Bose, Chaudhuri, and Hocquenghem (BCH), Hamming, or Reed-Solomon (RS) code." *Id.* at 7:10–16.

5. Agazzi '341

Agazzi '341 "relates generally to data communications and, more particularly, to systems and methods for performing digital signal processing in a communications system and communication devices." Ex. 1009, 1:15:18. Figure 2 of Agazzi '341 is reproduced below.

FIG. 2

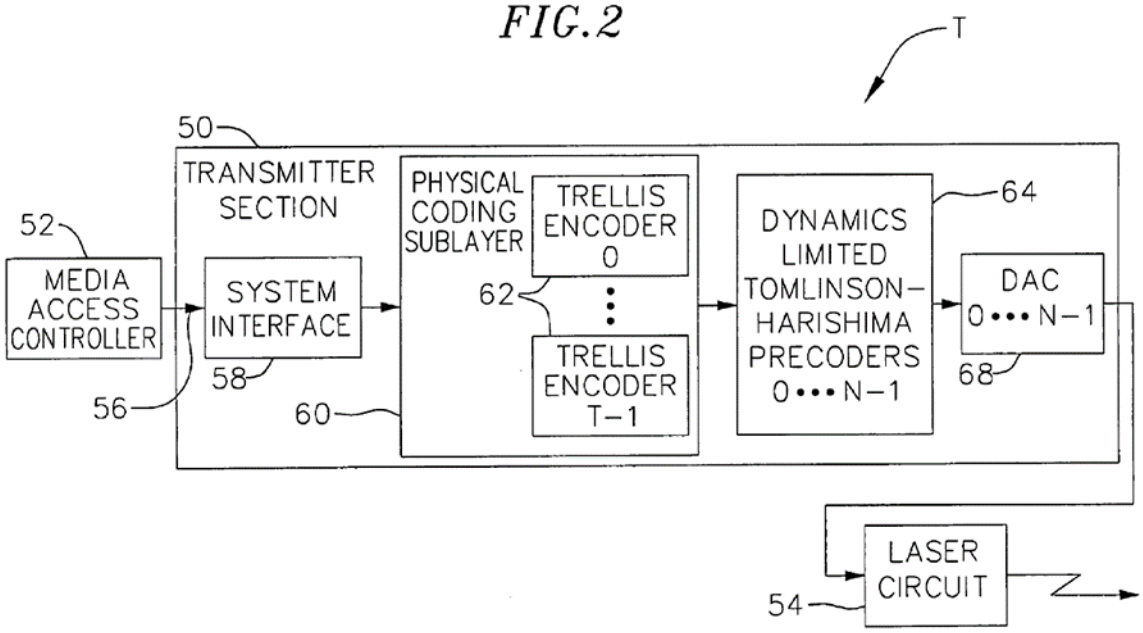

Figure 2 is a block diagram of a transmitter that incorporates parallel equalization. *Id.* at 2:46–48. Transmitter section 50 encodes signals received from media access controller 52 to provide an encoded data stream that drives laser circuit 54. *Id.* at 4:66–5:3. Transmitter section 50 sequentially includes system interface 58, physical coding sublayer 60 with trellis encoders 62, Tomlinson-Harashima precoders 64, and a set of parallel digital-to-analog converters 68. *Id.* at 5:9–18, 5:45–51, 6:33–39.

Figure 5 of Agazzi '341 is reproduced below.

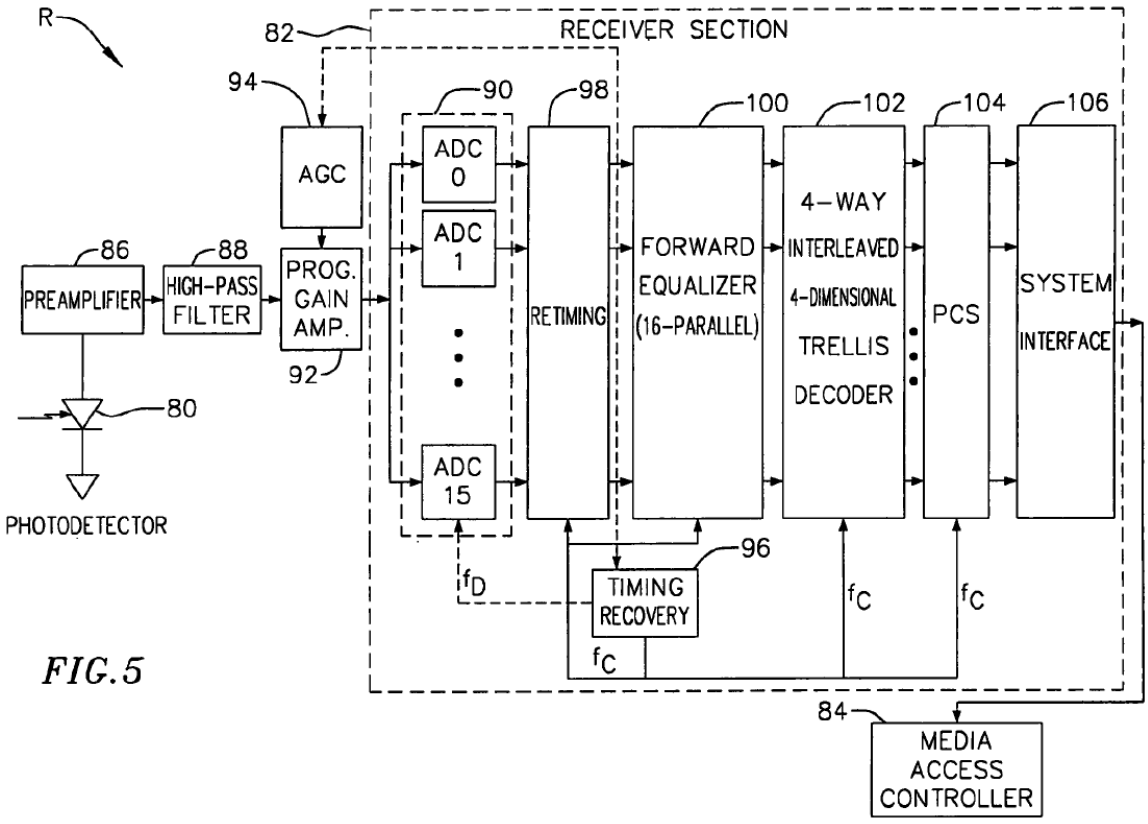

FIG.5

Figure 5 is a block diagram of a receiver that may be used with the transmitter of Figure 2. *Id.* at 2:53–56. Photodetector 80 receives optical signals from an optical channel to provide an encoded data stream to receiver section 82 after amplification by preamplifier 86 and filtration by high-pass filter 88. *Id.* at 6:40–49. The amplitude of the input signal provided to the set of parallel analog-to-digital converters 90 is controlled by programmable gain amplifier 92, whose gain is controlled by automatic gain control 94. *Id.* at 6:50–60. The set of parallel analog-to-digital converters 90 samples the received analog data stream to generate digital signals that are processed by retiming circuit 98, parallel forward equalizers 100, and four-way interleaved four-dimensional trellis decoders 102. *Id.* at 7:4–46. Outputs of parallel trellis decoders 102 drive physical coding sublayer 104,

which "performs several operations that are complementary to those performed by the physical coding sublayer 60" of Figure 2, and the signals are routed to system interface 106 and media access controller 84. *Id.* at 7:47–55.

D. Prosecution History

Independent claim 1 was initially presented in the following form:

> 1. A method for m-ary modulation communication across an optical network by an optical transceiver module comprising of:
>
> receiving a first electrical binary data signal through a system interface of the optical transceiver module;
>
> converting the first electrical binary data signal in the optical transceiver module to a first electrical m-ary modulation signal;
>
> amplifying the first electrical m-ary modulation signal to drive an optical transmitter of the optical transceiver module;
>
> emitting a first optical signal on a first wavelength responsive to and representative of the amplified first electrical m-ary modulation signal from the optical transmitter of the optical transceiver module;
>
> receiving a second optical signal on a second wavelength and producing an electrical signal from an optical detector of the optical transceiver module;
>
> amplifying the electrical signal to facilitate clock and data recovery in the optical transceiver module;
>
> equalizing the amplified electrical signal and recovering clock data information to produce a second m-ary modulation signal in the optical transceiver module;

demodulating the second m-ary modulation signal according to a second electrical binary signal; and

transmitting the second electrical binary signal through the system interface of the optical transceiver module.

Ex. 1002, 240. This claim was rejected in a first Office Action as anticipated by U.S. Patent No. 6,603,822 B2 ("Brede"). *Id.* at 174–176. The first Office Action was made final because the application was a continuation of an earlier application, US Application No. 12/512,968 ("the '968 application"), and "[a]ll claims [we]re drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office Action if they had been entered in the earlier application." *Id.* at 178; *see* Ex. 1001, code (63).

With a Request for Continued Examination, Applicants amended the claims, particularly by amending independent claim 1 to recite a "pluggable" optical transceiver module. Ex. 1002, 142–156. Specifically, indicating added material with underline and deleted material with strikethrough, independent claim 1 was amended as follows:

1. A method for m-ary modulation communication ~~across an optical network~~ by a~~n~~ pluggable optical transceiver module comprising of:

receiving a first electrical binary data signal through a system interface of the pluggable optical transceiver module;

converting the first electrical binary data signal in the pluggable optical transceiver module to a first electrical m-ary modulation signal;

> amplifying the first electrical m-ary modulation signal to drive an optical transmitter ~~of~~ in the pluggable optical transceiver module;
>
> emitting a first optical signal on a first wavelength responsive to and representative of the amplified first electrical m-ary modulation signal from the optical transmitter ~~of~~ in the pluggable optical transceiver module;
>
> receiving a second optical signal on a second wavelength and producing an electrical signal from an optical detector ~~of~~ in the pluggable optical transceiver module;
>
> amplifying the electrical signal to facilitate clock and data recovery in the pluggable optical transceiver module;
>
> ~~equalizing the amplified electrical signal and~~ recovering a clock data information from the amplified electrical signal to produce a second m-ary modulation signal in the pluggable optical transceiver module;
>
> demodulating the second m-ary modulation signal ~~according~~ to a second electrical binary data signal in the pluggable optical transceiver module; and
>
> transmitting the second electrical binary data signal through the system interface of the pluggable optical transceiver module.

Id. at 148. The Examiner initially rejected this form of independent claim 1 in a non-final Office Action. *Id.* at 117, 121–123. In particular, the Examiner explained that

> contend[ing] that the optical transceiver of Figure 3 [of Brede] is "pluggable" when that term is given its broadest reasonable interpretation being that the transceiver of Figure 3 will be plugged in to the network at a central office via the electrical interfaces shown in Figure 3. A similarly broad interpretation

> of the term "pluggable" is met by Brede's disclosure in that at some point the optical transceiver of Figure 3 will be required to be plugged in to another element for power and data input/output.

Id. at 129. Applicants then "argued that the 'pluggable' interpretation by the Examiner on the entirety of Brede's Fig. 3 is flawed." *Id.* at 69–72. Specifically, Applicants argued that the Examiner had applied the broadest *possible* interpretation rather than the broadest *reasonable* interpretation, which Applicants contended "could be [Brede's] optical transmitter 14 and optical receiver 16 elements combined somehow as an optical transceiver that is pluggable via pluggable coaxial lines 22, 28 to the host data terminal (HDT) 12." *Id.* at 71–72.

Although the prosecution of independent claim 1, as well as other dependent claims, addressed anticipation over Brede, further aspects of the prosecution considered obviousness over Brede in combination with other references. Claim 2 depended from claim 1 and originally recited that "the form factor of the optical transceiver module is selected from the group consisting of: SFP; SFP+; XFP; X2; XENPAK; XPA; and 300 pin transceiver form factors." *Id.* at 240. The Examiner rejected this claim for obviousness over Brede and U.S. Patent Publ. No. 2007/0031153 A1 ("Aronson"), asserting that Aronson evidenced that "these types of form factors are well known in the art" and that "[o]ne skilled in the art would have been motivated to utilize any of the claimed form factors in order to meet design requirements, budgetary requirements, or performance requirements such as achieving 10 Gb/s." *Id.* at 126–127.

Applicants amended claim 2 to recite the more generalized limitation that "the form factor of the pluggable optical transceiver module is a

pluggable form factor standard ~~selected from the group consisting of: SFP; SFP+; XFP; X2; XENPAK; XPA; and 300 pin transceiver form factors~~." *Id.* at 149. The Examiner again rejected the claim, this time for obviousness over Brede and U.S. Patent No. 7,729,617 B2 ("Sheth"), which the Examiner cited as evidence that "standardized pluggable form factors are well known in the art." *Id.* at 126–127. As to claim 2, Applicants argued that the Examiner failed to sufficiently establish a motivation to combine the references. *Id.* at 72–73.

Following these and other arguments by the Applicants, the Examiner allowed the application. *Id.* at 60 (Notice of Allowability). The Examiner did not provide any reasons for allowance in the Notice of Allowability. *Id.*

E. Denial Under 35 U.S.C. § 325(d)

"In determining whether to institute or order [an *inter partes* review], the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office." 35 U.S.C. § 325(d). The Director has delegated that discretion to the Board. 37 C.F.R. § 42.4(a).

Patent Owner asserts, *inter alia*, that we should deny the Petition under 35 U.S.C. § 325(d) because the Petition presents substantially the same art and arguments that the Office previously analyzed and Petitioner fails to show that the Office erred during prosecution. Prelim. Resp. 38–52. We agree with Patent Owner for the reasons discussed below.

1. Framework

In evaluating the exercise of discretion to deny institution under Section 325(d), the Board uses the following two-part framework: (1) determining whether the same or substantially the same art previously was

presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of the first part of the framework is satisfied, determining whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) ("*Advanced Bionics*").

Within this two-part framework, the Board considers a number of non-exclusive factors in evaluating whether to exercise its discretion under § 325(d). *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first para.) ("*Becton, Dickinson*"); *see also Advanced Bionics* at 9–11. The factors set forth in *Becton, Dickinson* are as follows:

> (a) the similarities and material differences between the asserted art and the prior art involved during examination;
>
> (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
>
> (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
>
> (d) the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art or patent owner distinguishes the prior art;
> (e) whether petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art; and

> (f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson, Paper 8 at 17–18. *Becton, Dickinson* factors (a), (b), and (d) relate to whether the art or arguments presented in the Petition are the same or substantially the same as those previously presented to the Office. *Advanced Bionics*, Paper 6 at 10. Factors (c), (e), and (f) "relate to whether the petitioner has demonstrated a material error by the Office" in its prior consideration of that art or arguments. *Id.* Only if the same or substantially the same art or arguments were previously presented to the Office do we consider whether petitioner has demonstrated a material error by the Office. *Id.* "At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown." *Id.* at 9.

2. Obviousness Challenges over Agazzi '341 and Wei (Ground 4)

Among Petitioner's challenges, Petitioner alleges obviousness of claims 1–3, 5, 10, and 16–19 over Agazzi '341 and Wei. *See* Pet. 39–58.

i. Whether the Same or Substantially the Same Art or Arguments Were Previously Presented

With respect to the first part of the *Advanced Bionics* framework, we find that substantially the same art and substantially the same arguments were previously presented to the Office.

Petitioner relies on Agazzi '341 for disclosing "an optical transceiver module" that includes "digital signal processors that process signals to be transmitted and received over a channel," wherein the optical transceiver "processes signals for an optical channel using m-ary modulation,

equalization, and forward-error correcting codes." Pet. 39 (citing Ex. 1009, 1:66–2:2, 2:8–29, 3:34–36, 4:33–39, Ex. 1003 ¶ 91). Petitioner further relies on Wei for its disclosure of a "hot pluggable optical transceiver in a small form pluggable . . . type package." *Id.* at 39, 10 (citing Ex. 1006, 3:29–32). In particular, according to Petitioner, "[a] goal of Wei was to create a pluggable optical transceiver module in an SFP package." *Id.* at 10 (citing Ex. 1006, 1:66–2:4).

Petitioner then contends that a person of ordinary skill in the art "would have been understood the transceiver as taught in Agazzi '341, with integrated optoelectronics on a single circuit, would have been implemented in a pluggable form factor as taught in Wei."[2] Pet. 40 (citing Ex. 1003 ¶ 173). In particular, Petitioner contends that the person of ordinary skill would have been motivated to combine the transceiver module of Agazzi '341 with the pluggable from factor of Wei "to create a cost-effective pluggable transceiver with greater data throughput that was easily removable." *Id.* at 40–41.

However, Patent Owner counters that "two examiners and the Board" have "repeatedly" considered "the exact type of grounds raised in the

[2] In addition to reciting the "pluggable" aspect of the optical transceiver module that performs the method of claim 1 in the preamble, this "pluggable" aspect is reiterated in the body of the claim each time the optical transceiver module is recited. Petitioner does not explicitly take a position on whether the preamble is limiting, but expressly addresses the "pluggable" aspect of the optical transceiver in its analysis. *E.g.*, Pet. 2–6, 10, 39–45. Patent Owner does not refer to the preamble, but contends that the primary reference to Agazzi '341 fails to disclose "pluggable" modules, wherein the prosecution history involves repeated consideration of "a second reference cited for a pluggable form factor." *See* Prelim. Resp 1–2, 6, 29–35, 39–49.

Petition: a first reference cited for electrical signal processing components combined with a second reference cited for pluggable form factors." Prelim. Resp. 38. We generally agree with Patent Owner. *Id.*

Although we agree with Petitioner's contention that the "Petition does not include any prior art references that were cited during the original prosecution [of the '795 patent]," we disagree that the references are "not . . . cumulative of any of the art considered by the Examiner" or by the Board in the related IPR. Pet. 66. In particular, we are unpersuaded by Petitioner's contention that the references are not cumulative since "the primary prior art references used in this Petition disclose an optical transceiver module with integrated optoelectronics, as claimed by the '795 Patent, rather than an [optical line termination ("OLT")] device, as disclosed in the primary prior art reference used by the Examiner." *Id.*; *see also id.* at 68 (citing Ex. 1003 ¶ 79) (the primary references in this Petitioner "each discloses an optical transceiver module where the transmitter and receiver optoelectronics are integrated within the transceiver module").

Here, Petitioner relies entirely on Agazzi '341 for all limitations except the "pluggable" aspect. Pet. 39, 44–55. Petitioner contends that a person of ordinary skill in the art would have implemented the integrated optoelectronics of Agazzi '341 "in the pluggable form factor taught by Wei" because market pressures were increasing demand for compact pluggable transceivers, which were easier to install and replace compared to mounted transceivers, and because the Agazzi references expressed general goals of decreasing size and costs and of increasing data throughput. *Id.* at 40–47. Similar to the Applicants' argument during prosecution regarding the combination of Brede and Sheth, Patent Owner argues that the Petition fails

to make a *prima facie* obviousness argument because "the Petition fails to articulate a specific modification of the primary references and fails to show the resulting device that is allegedly obvious." Prelim. Resp. 9; Ex. 1002, 73 ("Applicants respectfully traverse these rejections for at least the reason that they have not stated a proper *prima facie* case for obviousness").

The '795 patent is a continuation of the '968 application, which in turn is a continuation-in-part of US Patent Appl. No. 11/772,187 ("the '187 application"). Ex. 1001, code (63); *see* Ex. 2001. As Patent Owner notes, Agazzi '341 is a continuation-in-part of U.S. Patent Appl. No. 09/795,014, whose publication as U.S. Patent Publ. No. 2001/0035997 ("Agazzi '997") was cited by the Examiner during prosecution of the '187 application. Prelim. Resp. 42; *see* Ex. 2001, 33. Patent Owner particularly observes that "[t]hese two Agazzi references share similarities in Figures 1-5," most notably in Figure 5, which Petitioner relies on extensively in its analysis. Prelim. Resp. 43; *see* Pet. 49–55. We have reviewed these drawings, including Patent Owner's annotated versions of the respective Figures 5, which we agree are "almost identical." *See* Prelim. Resp. 42–43. Notably, the Examiner's specific citation of Agazzi '997 belies Petitioner's argument that the Examiner never had a reference "with integrated optoelectronics." *See* Pet. 68.

In addition to this prosecution history, Patent Owner refers to our consideration of references similarly applied for their teachings of electrical signal processing components in the related IPR. Prelim. Resp. 43–46. For example, Patent Owner observes that the petitioner in the related IPR "relied on Raghavan [i.e., U.S. Patent Publ. No. 2003/0112896 A1] for its description of a transceiver chip including electrical signal processing

components in combination with 'Richard [i.e., U.S. Patent Publ. No. 2003/0118273 A1] for its disclosure of a variety of form factors to allow for use in a hot pluggable environment.'" *Id.* at 44 (quoting IPR2021-01358, Paper 10 at 26). We agree with Patent Owner that "Petitioner describes and uses [] Agazzi '341 in the same way, for the claimed electrical signal processing capabilities in a single chip," with Wei instead of "Richard for pluggable form factors." *Id.* at 44–45 (citing Pet. 39). Because that Raghavan-Richard combination in the related IPR had "significant similarities with the art involved during examination," we exercised our discretion under § 325(d) to deny the petition in the related IPR. *See* IPR2021-01358, Paper 10 at 26–27. As Patent Owner further observes, Petitioner does not "identify any errors with the Board's decision regarding Raghavan and Richard." Prelim. Resp. 45.

With respect to Wei, we also agree with Patent Owner that Petitioner applies Wei in the same manner as Aronson and Sheth during prosecution of the '795 patent, and in the same manner as Richard and Halgren (U.S. Patent Publ. No. 2004/0052528 A1) in the related IPR. *See* Prelim. Resp. 46–47. That is, similar to these other proceedings before the Office, Petitioner relies on Wei for its teaching of a pluggable form factor and proposes to combine that teaching with those of a reference cited for electrical signal processing components.

In light of these similarities, we find that the Petition relies on art and arguments that are substantially the same as previously evaluated by the Office.

ii. Whether the Petitioner Has Demonstrated that the Office Erred in a Manner Material to Patentability

Because the first part of the *Advanced Bionics* framework is satisfied, we next determine whether Petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. *Advanced Bionics*, Paper 6 at 8. Here, we find that Petitioner has not demonstrated that the Office erred in a manner material to the patentability of challenged claims. In particular, we disagree with Petitioner's contention that "Applicants failed to disclose that the pluggable form factors were set out in industry recognized multisource agreements," and thus, we find unpersuasive Petitioner's characterization that these are "error[s] material to the patentability of the Challenged Claims." Pet. 70.

Petitioner argues that "Applicants disclosed well-known pluggable form factors in the Background section" of the provisional application, but "moved this information from the background prior art section into the main portion of the specification" when filing the nonprovisional application that led to the '795 patent. Pet. 69–70 (citing Ex. 1032 ¶ 3; Ex. 1001, 11:25–28). However, there is no dispute between the parties that various references disclosing pluggable form factors are prior art to the '795 patent.

Nor was the Examiner unaware of such references. As Patent Owner points out, during prosecution of the '795 patent, the Examiner stated in an Office Action that form factors "SFP; SFP+; XFP; X2; XENPAK; XPA" were "well known in the art," as evidenced by Aronson. Prelim. Resp. 48 (citing Ex. 1002, 146–147). And Aronson itself, cited by the Examiner, explicitly mentions an industry multisource agreement. *See* Ex. 2003 ¶ 5. And, as Patent Owner points out, the Examiner issued the patents to

Applicants after considering references like Aronson and Sheth as disclosing standard form factors. Prelim. Resp. 40. In fact, included as part of its "DETAILED DESCRIPTION," the '795 patent explicitly states:

> The RX 133,136 and TX 134,135 circuitry of transceivers 100,101, or portions thereof, for example, PD 315a, 315b and LA 317a, 317b, can be combined with *industry standard* optical modules. *Common* optical module standards are 300pin, XENPAK, X2, and XPAK transponders and XFP or SFP and SPF+ transceivers.

Ex. 1001, 11:12–17 (emphases added).

We disagree that there is material error by the Office in Applicants' moving of a description of pluggable form factors from the background of the provisional application to the main portion of the specification when filing a nonprovisional application, particularly because the record clearly demonstrates the Examiner's awareness that such pluggable form factors are prior art. Regardless, the issues raised in this proceeding do not turn on whether pluggable form factors were, or were not, prior art since Patent Owner concedes that they were. *See* Prelim. Resp. 49 ("The inventors did not 'fail to disclose' the standardized nature of pluggable form factors and there is no evidence the Examiner was ignorant of this fact.").

We accordingly determine that Petitioner fails to identify a material error by the Office in its earlier consideration of the art we discuss above.

iii. Agazzi '341-Wei Ground Conclusion

For the obviousness challenges over Agazzi '341 and Wei, we find that: (1) substantially the same art and substantially the same arguments were previously presented to the Office, and (2) Petitioner has not demonstrated that the Office erred.

3. Obviousness over Agazzi '640 and Wei (Ground 1)

In addition to its other challenges, Petitioner alleges obviousness of claims 1–3, 5, 10 13, 14, and 16–19 over Agazzi '640 and Wei. *See* Pet. 9–27. Neither party asserts that Agazzi '640 was involved during examination of the '795 patent. Pet. 9–10; Prelim. Resp. 3–6.

Petitioner cites Agazzi '640 as describing "an optical communications transceiver" with "modulation transmitters and receivers" that "can be integrated on a single integrated circuit," and cites Wei for the same disclosure relied on in the Agazzi '341-Wei challenge discussed *supra*, namely "hot pluggable optical transceiver in a small form pluggable . . . type package." Pet. 9–10 (citing Ex. 1005, abst, 1:44–48, 3:12–49, 3:53–60, 12:20, 16:7–19; Ex. 1006, 1:66–2:17, 2:28–35, 3:29–32, ¶ 58; Ex. 1027 ¶¶ 4, 45; Ex. 1003 ¶¶ 83, 85). Petitioner's rationale for combining the teachings of Agazzi '640 and Wei again parallels the rationale advanced for the Agazzi '341-Wei challenge discussed *supra*: "A [person of ordinary skill in the art] would have been motivated to combine the transceiver module of Agazzi '640 with the pluggable form factor of Wei" for "creating a cost-effective pluggable transceiver with greater data throughput that was easily removable" *Id.* at 12 (citing Ex. 1003 ¶ 97); *see also id.* at 40–41 (Petitioner contending it "would have been understood the transceiver as taught in Agazzi '341, with integrated optoelectronics on a single circuit, would have been implemented in a pluggable form factor as taught in Wei"). Specifically, Petitioner again presents an analysis that parallels its analysis over Agazzi '341 and Wei, this time with Agazzi '640 substituting for Agazzi '341.

Like with the Agazzi '341-Wei combination, in considering the *Becton, Dickinson* factors relevant to the first part of the *Advanced Bionics* test, for this Agazzi '640-Wei combination, we find significant similarities with the art involved during examination (factor (a)) such that the art is cumulative of the art evaluated during examination (factor (b)), and that there is significant overlap with the arguments considered during examination (factor (d)). As Patent Owner asserts, Petitioner argues that "one reference discloses all of the electrical components" and "a second reference discloses the pluggable form factor disclosure." Prelim. Resp. 40–41. Petitioner alleges no different prosecution errors by the Examiner beyond those that we discuss above in the context of the Agazzi '341-Wei challenge in evaluating *Becton, Dickinson* factors (c), (e), and (f), which are relevant to the second part of the *Advanced Bionics* test.

We accordingly also find that, for the obviousness challenges over Agazzi '640 and Wei, (1) substantially the same art and substantially the same arguments were previously presented to the Office, and (2) Petitioner has not demonstrated that the Office erred. We therefore conclude that it is appropriate to exercise our discretion under 35 U.S.C. § 325(d) to deny the Petition with respect to those grounds.

4. Obviousness over Agazzi '640, Wei, and Gans (Ground 2); Aggazi '640, Wei, and Eroz (Ground 3); Agazzi '341, Wei, and Gans (Ground 5); Aggazi '341, Wei, and Agazzi '640 (Ground 6); and Agazzi '341, Wei, and Eroz (Ground 7)

Petitioner adds: Gans to the Agazzi '640-Wei combination (Ground 2) and to the Agazzi '341-Wei combination (Ground 5) to disclose claims 11 and 12; Agazzi '640 to the Agazzi '341-Wei combination (Ground 6) to

disclose claims 13 and 14; and Eroz to the Agazzi '640-Wei combination (Ground 3) and to the Agazzi '341-Wei combination (Ground 7) to disclose claims 20 and 21. Pet. 32–38, 58–65. Neither party asserts that Gans or Eroz were involved during examination of the '795 patent. *See* Pet. 8–9; Prelim. Resp. 19–20, 28.

We find that the addition of Gans and Eroz does not change the calculus regarding whether the same or substantially the same prior art previously was presented to the Office. We find that Gans and Eroz in combination with Agazzi '341 and/or Agazzo '640 have significant similarities with the art involved during examination (Brede) (factor (a)) such that the art is cumulative of the art evaluated during examination (factor (b)), and that there is significant overlap with the arguments considered during examination (factor (d)). Petitioner alleges no different prosecution errors by the Examiner beyond those that we discuss above in the context of the Agazzi '341-Wei and Agazzi '640-Wei challenges in evaluating *Becton, Dickinson* factors (c), (e), and (f), which are relevant to the second part of the *Advanced Bionics* test.

We accordingly find that, for the obviousness challenges further including Gans and Eroz, (1) substantially the same art and substantially the same arguments were previously presented to the Office, and (2) Petitioner has not demonstrated that the Office erred. We therefore conclude that it is appropriate to exercise our discretion under 35 U.S.C. § 325(d) to deny the Petition with respect to those grounds.

5. 35 U.S.C. § 325(d) Conclusion

We conclude that (1) substantially the same art was previously presented to the Office, and (2) Petitioner has not demonstrated that the

Office erred. We therefore conclude that it is appropriate to exercise discretion under 35 U.S.C. § 325(d) to deny the Petition.

III. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine that, for each of Petitioner's challenges, it is appropriate to exercise our discretion under 35 U.S.C. § 325(d) to deny the Petition with respect to those grounds. We accordingly exercise that discretion for the Petition as a whole and deny institution of an *inter partes* review.[3]

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied*, and no trial is instituted.

[3] Because we deny the Petition under 35 U.S.C. § 325(d), we do not reach Patent Owner's request that we deny the Petition under *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 13–14 (PTAB Mar. 20, 2020) (precedential). *See* Prelim. Resp. 52–59; Sur-reply 1–5. Nor do we reach the parties' merits arguments.

For PETITIONER:

Scott Stevens
Karlee Wroblewski
Matthew Welch
Scott.stevens@alston.com
Karlee.wroblewski@alston.com
Matt.welch@alston.com

For PATENT OWNER:

Qi Tong
Irene Lee
ptong@raklaw.com
ilee@raklaw.com