

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FLEX LOGIX TECHNOLOGIES INC.,

Petitioner

V.

VENKAT KONDA,

Patent Owner

Case IPR2020-00260

Patent 8,269,523 B2

**PATENT OWNER VENKAT KONDA'S
NOTICE OF APPEAL**

Notice is hereby given, pursuant to 35 U.S.C. §§ 141, 142, and 319 and 37 C.F.R. §§ 90.2-90.3, by Patent Owner, Venkat Konda, (“Patent Owner”), that Patent Owner appeals to the United States Court of Appeals for the Federal Circuit the decision by the Patent Trial and Appeal Board (“the Board”) Denying Patent Owner’s Requests for Rehearing of Final Written Decision in IPR2020-00260, entered on September 24, 2021 (Paper 57) and from all underlying findings, determinations, rulings, opinions, orders, issues, and decisions that are adverse to Patent Owner, including, without limitation, those within the Decision on Institution of *Inter Partes* Review, entered August 3, 2020 (Paper 22) and those within the Final Written Decision entered on July 29, 2021 (Paper 55). This notice is timely under 37 C.F.R. § 90.3, being filed no later than 63 days after the Board’s Denying Patent Owner’s Requests for Rehearing of Final Written Decision.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Patent Owner further indicates that the issues on appeal include, but are not limited to: the Board’s determination that (1) claims 1, 16, 20–22, and 32 were anticipated by WO 2008/109756, published September 12, 2008 (“the ’756 PCT”); (2) claims 15, and 17 would have been obvious over the ’756 PCT; and (3) claims 18 and 47 would have been obvious over the combined teachings of the ’756 PCT and U.S. Patent No. 6,940,308, issued September 6, 2005 (“Wong”) in U.S. Patent No. 8,269,523 (“the ’523 patent”); the Board’s determination that the ’523 patent is not entitled to

claim priority to May 25, 2007 or to May 22, 2008; the Board's determination that Provisional Application No. 60/940,394, filed on May 25, 2007 ("the '394 Provisional") was available to the public when the '756 PCT was published on September 12, 2008 and, therefore, qualifies as prior art against the '523 patent, even though MPEP § 103(VII), which is directed to "Access to Provisional Applications," and its statement that "[i]n provisional applications, access or certified copies will only be given with written authority from a named inventor, the assignee of record, or the attorney or agent of record."; the Board's consideration of the expert testimony, fact witness testimony, and other evidence in the record; and the Board's factual findings, conclusions of law, and other determinations supporting or related to the foregoing issues, as well as all other issues decided adversely to Patent Owner in any orders, decisions, rulings, or opinions by the Board.

Contemporaneously with this submission, a copy of the Notice of Appeal is being filed electronically with the Board, and a true and correct copy of this Notice of Appeal is being filed simultaneously by United States Postal Service First-Class mail with the Director of the United States Patent and Trademark Office. In addition, a copy of the Notice of Appeal, along with the required docketing fees, is being electronically filed with the Clerk's Office for the United States Court of Appeals for the Federal Circuit.

Date: November 15, 2021

Respectfully submitted,

/Venkat Konda/

Venkat Konda
Pro Se Counsel
6278 Grand Oak Way
San Jose, CA 95135

CERTIFICATE OF SERVICE

In accordance with 37 CFR § 90.2(a)(1) and § 104.2, I hereby certify that on November 15, 2021, in addition to being filed electronically through the Board's E2E System, the original version of the foregoing, Patent Owner Venkat Konda's Notice of Appeal was filed by United States Postal Service First-class mail on 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
United States Patent and Trademark Office,
P.O. Box 1450,
Alexandria, Virginia 22313-1450.

CERTIFICATE OF SERVICE

I hereby certify that on November 15, 2021, a true and correct copy of the foregoing, Patent Owner Venkat Konda's Notice of Appeal, along with a copy of the Denying Patent Owner's Requests for Rehearing of Final Written Decision, is being filed via the electronic filing system, CM/ECF, with the Clerk's Office of the United States Court of Appeals for the Federal Circuit, at the following address:

United States Court of Appeals for the Federal Circuit
717 Madison Place, N.W., Suite 401
Washington, DC 20005

CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(1), the undersigned certifies that on November 15, 2021, a complete and entire copy of this Patent Owner Venkat Konda's Notice of Appeal was provided via email, to the following Lead Counsel and Back-Up Counsel of record for Petitioner by serving the email correspondence addresses of record as follows:

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Dated: November 15, 2021

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FLEX LOGIX TECHNOLOGIES, INC.,
Petitioner,

v.

VENKAT KONDA,
Patent Owner.

IPR2020-00260
IPR2020-00261
Patent 8,269,523 B2¹

Before SALLY C. MEDLEY, THOMAS L. GIANNETTI, and
JO-ANNE M. KOKOSKI, *Administrative Patent Judges*.

KOKOSKI, *Administrative Patent Judge*.

DECISION

Denying Patent Owner's Requests for Rehearing of
Final Written Decision Determining All Challenged Claims Unpatentable
37 C.F.R. § 42.71(d)

¹ This Decision addresses issues that are the same in both proceedings. The parties are not authorized to use this style heading for any subsequent papers.

I. INTRODUCTION

Venkat Konda (“Patent Owner”) filed a Request for Rehearing of our Final Written Decision² finding that claims 1–7, 11, 15–18, 20–22, 32, and 47 (“the challenged claims”) of U.S. Patent No. 8,269,523 B2 (Ex. 1001, “the ’523 patent”) are unpatentable.³ As explained below, we have considered the arguments presented by Patent Owner in his Request for Rehearing, but we discern no reason to modify the Decision. Accordingly, we deny Patent Owner’s Request for Rehearing.

II. STANDARD OF REVIEW

The party challenging a decision in a request for rehearing bears the burden of showing that the decision should be modified. 37 C.F.R. § 42.71(d). A request for rehearing “must specifically identify all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in a motion, an opposition, a reply, or a sur-reply.” *Id.* A request for rehearing, therefore, is not an opportunity to merely disagree with the Board’s assessment of the arguments or weighing of the evidence, or to present new arguments or evidence.

² Petitioner challenged claims 1, 15–18, 20–22, 32, and 47 in IPR2020-00260 (Paper 1, 3–4), and claims 2–7 and 11 in IPR2020-00261 (Paper 1, 4). We exercised our discretion to issue a single Final Written Decision to be entered in both proceedings. IPR2020-00260, Paper 55, 1 n.1; IPR2020-00261, Paper 58, 1 n.1.

³ *See* IPR2020-00260, Papers 55 (“Decision” or “Dec.”) and 56 (“Request” or “Req. Reh’g”); IPR2020-00261, Papers 58 and 59. Although the analysis herein applies to both proceedings, we refer to the papers and exhibits filed in IPR2020-00260 for convenience.

III. ANALYSIS

In the Decision, we determined that Petitioner demonstrated, by a preponderance of the evidence, that: (1) claims 1–7, 16, 20–22, and 32 were anticipated by the '756 PCT;⁴ (2) claims 11, 15, and 17 would have been obvious over the '756 PCT; and (3) claims 18 and 47 would have been obvious over the combined teachings of the '756 PCT and Wong.⁵ Dec. 33. Petitioner's challenges largely relied on the disclosures of the '394 Provisional,⁶ which is incorporated by reference in its entirety into the '756 PCT. *Id.* at 21 (citing Paper 1, 20–21; Ex. 1009, 2:14–17). We explained that the '394 Provisional qualifies as prior art to the '523 patent because

37 C.F.R. § 1.14(a)(1)(vi) provides, in relevant part, that if an unpublished application is incorporated by reference in an international publication of international application (such as the '756 PCT), a copy of “the unpublished pending application may be provided to any person upon written request and payment of the appropriate fee.” Accordingly, once the '756 PCT published, the '394 Provisional that is incorporated by reference therein became open to the public for inspection. *Therefore, the '394 Provisional is prior art by virtue of the fact that it became publicly available due to its incorporation into the '756 PCT, and in addition it is prior art because it is part of the '756 PCT itself.*

Id. at 21–22 (emphasis added).

In the Request, Patent Owner argues that we erred in determining that the '394 Provisional was available to the public as of the publication of the '756 PCT, and, therefore, qualifies as prior art against the '523 patent. Req.

⁴ WO 2008/109756, published September 12, 2008 (Ex. 1009).

⁵ U.S. Patent No. 6,940,308, issued September 6, 2005 (Ex. 1008).

⁶ Provisional App. No. 60/940,394, filed on May 25, 2007 (Ex. 1026).

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Reh’g 1–2. Specifically, Patent Owner argues that the ’394 Provisional, which was pending when the ’756 PCT published on September 12, 2008, was confidential “[p]ursuant to 35 U.S.C. § 122, 37 C.F.R. § 1.14(a)(1)(vi), 37 C.F.R. § 1.14(c), and Manual of Patent Examining Procedure (“MPEP”) § 103(VII) (8th ed. 2008),” and could only be accessed if Patent Owner granted a power to inspect. *Id.* at 2.

To support his position that the ’394 Provisional was not publicly available, Patent Owner points to MPEP § 103(VII), which, at the time the ’756 PCT was published, stated that access to provisional applications “will only be given to parties with written authority from a named inventor, the assignee of record, or the attorney or agent of record.” Req. Reh’g 13 (quoting MPEP § 103(VII) (8th ed. 2008)) (emphasis omitted). Patent Owner argues that, in contrast, 37 C.F.R. § 1.14(a)(1)(vi) only provides that a copy of a provisional application incorporated by reference or otherwise identified “*may* be provided to any person.” *Id.* (emphasis added).

Therefore, Patent Owner argues,

[t]he ’394 Provisional Application incorporated by reference in the ’756 PCT was **not** open to the public for inspection or to be copied on September 12, 2008 (while the ’394 Provisional was pending at the time) pursuant to 35 U.S.C § 122, 37 C.F.R. § 1.14(a)(1)(vi), 37 C.F.R. § 1.14(c), and MPEP § 103(VII) because a power to inspect had not been granted by Patent Owner.

Id. at 15.

We are not persuaded by Patent Owner’s arguments. Patent Owner’s position that the ’394 Provisional was not available to the public is premised on a mistaken understanding of the rules governing access to unpublished

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pending applications that are incorporated by reference into a publication like the '756 PCT.

Section 1.14(a) of 37 C.F.R. provides several exceptions to the general rule that an unpublished patent application will be preserved in confidence pursuant to 35 U.S.C. § 122(a). In particular, Section 1.14(a)(1)(vi) relates to “unpublished pending applications (including provisional applications) that are incorporated by reference or otherwise identified.” 37 C.F.R. § 1.14(a)(1)(vi) (2008). As of the September 12, 2008 publication of the '756 PCT, § 1.14(a)(1)(vi) stated:

A copy of the application as originally filed of an unpublished pending application *may be provided* to any person, upon written request and payment of the appropriate fee (§ 1.19(b)), if the application is incorporated by reference or otherwise identified in in a U.S. patent, a statutory invention registration, a U.S. patent application publication, or an international patent application publications that was published in accordance with PCT Article 21(2). The Office will not provide access to the paper file of a pending application, except as provided in paragraph (c) or (i) of this section.

(Emphasis added). MPEP § 103(III), titled “Unpublished Abandoned and Pending Applications (Including Provisional Application) That are Identified,” addresses Section 1.14(a)(1)(vi) and explains that “[t]he incorporation by reference of a pending application in . . . a published international application published in accordance with PCT Article 21(2), . . . constitutes special circumstances under 35 U.S.C. 122 warranting that a copy of *the application-as-filed* be provided upon written request” MPEP § 103(III) (8th ed. rev. 7 July 2008) (emphasis added).

The '756 PCT is “an international patent application publication that was published in accordance with PCT Article 21(2),” and the '394

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Provisional was an unpublished pending provisional application when the '756 PCT published. Patent Owner does not identify, nor do we find, any particular fault in the manner in which the '394 Provisional was incorporated by reference into the '756 PCT. Accordingly, pursuant to 37 C.F.R. § 1.14(a)(1)(vi), a copy of the '394 Provisional *application-as-filed* became available “to any person, upon written request and payment of the appropriate fee” as of the publication of the '756 PCT.

Patent Owner, however, centers his arguments in the Request around MPEP § 103(VII), which is directed to “Access to Provisional Applications,” and its statement that “[i]n provisional applications, access or certified copies will only be given with written authority from a named inventor, the assignee of record, or the attorney or agent of record.” MPEP §103(VII) (8th ed. rev. 7 July 2008). In doing so, Patent Owner overlooks that MPEP § 103(VII) also explains that “[p]rovisional applications are also available *in the same manner as any other application,*” which includes when it is incorporated by reference in another publication as set forth in 37 C.F.R. § 1.14(a)(1)(vi). *Id.* (emphasis added). Contrary to Patent Owner’s arguments, therefore, the relevant sections of the MPEP support our determination that the '394 Provisional became available to the public, upon written request and payment of the appropriate fee, when the '756 PCT published on September 12, 2008.

Accordingly, Patent Owner has not demonstrated that we erred in finding that that the '394 Provisional was available to the public as of the September 12, 2008 publication of the '756 PCT.

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III. CONCLUSION

We have reviewed and considered the arguments in Patent Owner's Request, and conclude that Patent Owner has not carried his burden of demonstrating that we misapprehended or overlooked any matters in finding that the challenged claims of the '523 patent are unpatentable.

IV. ORDER

In view of the foregoing, it is

ORDERED that Patent Owner's Request for Rehearing is *denied*.

For PETITIONER:

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Before SALLY C. MEDLEY, THOMAS L. GIANNETTI, and
JO-ANNE M. KOKOSKI, *Administrative Patent Judges*.

KOKOSKI, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)
Denying Patent Owner's Motion to Exclude
37 C.F.R. § 42.64(c)

¹ The papers filed in the two proceedings are the same or substantially similar. Accordingly, we issue a single Decision to be entered in each case. Although the analysis herein applies to both proceedings, unless otherwise noted, we refer to the papers and exhibits filed in IPR2020-00260.

I. INTRODUCTION

We have jurisdiction to conduct these *inter partes* review proceedings under 35 U.S.C. § 6, and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Flex Logix Technologies, Inc. (“Petitioner”) has shown by a preponderance of the evidence that claims 1–7, 11, 15–18, 20–22, 32, and 47 (“the challenged claims”) of U.S. Patent No. 8,269,523 B2 (“the ’523 patent,” Ex. 1001) are unpatentable.

A. Procedural History

Petitioner filed Petitions² to institute *inter partes* reviews of claims 1–7, 11, 15–18, 20–22, 32, and 47, collectively, of the ’523 patent. Venkat Konda (“Patent Owner”) filed a Preliminary Response³ to each Petition. With Board authorization, Petitioner filed a Preliminary Reply, and Patent Owner filed a Preliminary Sur-Reply in each proceeding.⁴ Pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review of claims 1, 15–18, 20–22, 32, and 47 in IPR2020-00260 (Paper 22, “260 Dec.”), and of claims 2–7 and 11 in IPR2020-00261 (Paper 22, “261 Dec.”) on the grounds advanced in the respective Petitions. Patent Owner also filed a Request for Rehearing of the Institution Decision in each proceeding, which was denied.⁵

² IPR2021-00260, Paper 1 (“Pet.”); IPR2020-00261, Paper 1 (“261 Pet.”).

³ IPR2020-00260, Paper 8; IPR2020-00261, Paper 9.

⁴ IPR2020-00260, Papers 12 (Prelim. Reply), 15 (Prelim. Sur-Reply); IPR2020-00261, Papers 13, 16.

⁵ IPR2020-00260, Papers 26 (Request for Rehearing), 31 (Decision Denying Request); IPR2020-00261, Papers 28, 32.

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After institution of trial, Patent Owner filed a Patent Owner Response, Petitioner filed a Reply, and Patent Owner filed a Sur-Reply in each proceeding.⁶ Patent Owner filed a Motion to Exclude Exhibits 1002 and 1003, Petitioner filed an Opposition, and Patent Owner filed a Reply in each proceeding.⁷

Patent Owner also filed a Contingent Motion to Amend the claims, Petitioner filed an Opposition to that Motion, and we provided Preliminary Guidance under the Board's motion to amend pilot program in each proceeding.⁸ Thereafter, Patent Owner filed a Motion to Withdraw the Contingent Motion to Amend, which Petitioner opposed.⁹ We subsequently granted Patent Owner's Motion to Withdraw the Contingent Motion to Amend in each proceeding. IPR2020-00260, Paper 45; IPR2020-00261, Paper 46.

No oral hearing was held, as neither party requested one. *See* IPR2020-00260, Paper 46; IPR2020-00261, Paper 47.

B. Real Parties-in-Interest

Petitioner identifies Flex Logix Technologies, Inc. as the real party-in-interest. Pet. 1; 261 Pet. 2. Patent Owner identifies Venkat Konda as the

⁶ IPR2020-00260, Papers 33 (“PO Resp.”), 38 (“Pet. Reply”), 42 (“PO Sur-Reply”); IPR2020-00261, Papers 34 (“261 PO. Resp.”), 39 (“261 Pet. Reply”), 43 (“261 PO Sur-Reply”).

⁷ IPR2020-00260, Papers 47 (“PO Mot.”), 50 (“Pet. Opp.”), 51 (“PO Reply”); IPR2020-00261, Paper 50, 53, 54.

⁸ IPR2020-00260, Papers 34 (Motion), 37 (Opposition), 40 (Preliminary Guidance); IPR2020-00261, Papers 35, 38, 41.

⁹ IPR2020-00260, Papers 41 (Motion), 43 (Opposition); IPR2020-00261, Papers 42, 44.

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real party-in-interest. IPR2020-00260, Paper 5, 1; IPR2020-00261, Paper 6, 1.

C. Related Matters

Petitioner identifies the following district court proceeding involving the '523 patent: *Konda Technologies Inc. v. Flex Logix Technologies, Inc.*, No. 5:18-cv-07581 (N.D. Cal.). Pet. 1; 261 Pet. 2. Patent Owner additionally identifies a pending application to reissue the '523 patent: U.S. Patent Application No. 16/202,067, filed November 27, 2018 (“the '067 reissue application”). IPR2020-00260, Paper 5, 2; IPR2020-00261, Paper 6, 2. Examination of the '067 reissue application is stayed pending the termination of these proceedings. *See* IPR2020-00260, Paper 24.

D. The '523 Patent

The '523 patent is titled “VLSI Layouts of Fully Connected Generalized Networks.” Ex. 1001, code (54). The most commonly used VLSI (Very Large Scale Integration) layout in an integrated circuit is based on a two-dimensional grid model comprising only horizontal and vertical tracks. *Id.* at 2:40–42. The '523 patent describes VLSI layouts of generalized multi-stage networks for broadcast, unicast, and multicast connections using only horizontal and vertical links. *Id.* at 3:21–24. The VLSI layouts employ shuffle exchange links, where outlet links of cross links from switches in a stage in one sub-integrated circuit block are connected to inlet links of switches in the succeeding stage in another sub-integrated circuit block. *Id.* at 3:24–28. The cross links are either vertical links or horizontal, and vice versa. *Id.* at 3:28–29.

In one embodiment, the sub-integrated circuit blocks are arranged in a hypercube arrangement in a two-dimensional plane. *Id.* at 3:29–31. The

VLSI layouts exploit the benefits of significantly lower cross points, lower signal latency, lower power, and full connectivity with significantly fast compilation. *Id.* at 3:31–34.

E. Illustrative Claim

Petitioner challenges claims 1–7, 11, 15–18, 20–22, 32, and 47 of the '523 patent. Pet. 1, 3–4; 261 Pet. 1, 4. Claim 1, the only independent claim, is illustrative of the claimed subject matter, and is reproduced below.

1. An integrated circuit device comprising a plurality of sub-integrated circuit blocks and a routing network, and
Said each plurality of sub-integrated circuit blocks comprising a plurality of inlet links and a plurality of outlet links; and

Said routing network comprising of a plurality of stages y , in each said sub-integrated circuit block, starting from the lowest stage of 1 to the highest stage of y , where $y \geq 1$; and

Said routing network comprising a plurality of switches of size $d \times d$, where $d \geq 2$, in each said stage and each said switch of size $d \times d$ having d inlet links and d outlet links; and

Said plurality of outlet links of said each sub-integrated circuit block are directly connected to said inlet links of said switches of its corresponding said lowest stage of 1, and said plurality of inlet links of said each sub-integrated circuit block are directly connected from said outlet links of said switches of its corresponding said lowest stage of 1; and

Said each sub-integrated circuit block comprising a plurality of forward connecting links connecting from switches in a lower stage to switches in its immediate succeeding higher stage, and also comprising a plurality of backward connecting links connecting from switches in a higher stage to switches in its immediate preceding lower stage; and

Said each sub-integrated circuit block comprising a plurality straight links in said forward connecting links from switches in said each lower stage to switches in its immediate succeeding higher stage and a plurality cross links in said forward connecting links from switches in said each lower stage to switches in its immediate succeeding higher stage, and further comprising a plurality of straight links in said backward connecting links from switches in said each higher stage to switches in its immediate preceding lower stage and a plurality of cross links in said backward connecting links from switches in said each higher stage to switches in its immediate preceding lower stage,

said plurality of sub-integrated circuit blocks arranged in a two-dimensional grid of rows and columns, and

said all straight links are connecting from switches in each said sub-integrated circuit block are connecting to switches in the same said sub-integrated circuit block; and said all cross links are connecting as either vertical or horizontal links between switches in two different said sub-integrated circuit blocks which are either placed vertically above or below, or placed horizontally to the left or to the right,

each said plurality of sub-integrated circuit blocks comprising same number of said stages and said switches in each said stage, regardless of the size of said two-dimensional grid so that each said plurality of sub-integrated circuit block with its corresponding said stages and said switches in each stage is replicable in both vertical direction or horizontal direction of said two-dimensional grid.

Ex. 1001, 35:23–36:14.

F. Prior Art and Asserted Grounds

Petitioner asserts that the challenged claims would have been unpatentable on the following grounds:

Claims Challenged	35 U.S.C. §¹⁰	Reference(s)
IPR2020-00260		
1, 16, 20–22, 32	102	'756 PCT ¹¹
15, 17	103	'756 PCT
18, 47	103	'756 PCT, Wong ¹²
IPR2020-00261		
2–7	102	'756 PCT
11	103	'756 PCT, Wong

Pet. 3–4; 261 Pet. 4. Petitioner relies on the Declaration of R. Jacob Baker, Ph.D., P.E. (“Baker Declaration,” Ex. 1002).¹³ Patent Owner relies on the Declaration of Vipin Chaudhary, Ph.D. (“Chaudhary Declaration,” Ex. 2025).

II. PATENT OWNER’S MOTION TO EXCLUDE

Patent Owner moves to exclude Exhibits 1002 and 1003, the Declaration and Curriculum Vitae, respectively, of Dr. Baker “and all the support presented in the Petition with respect to Ex. 1002 and Ex. 1003.” PO Mot. 1. Patent Owner argues that Dr. Baker is not qualified as a person of ordinary skill in the art “according to Petitioner’s own definition, let alone as an expert witness regarding the field of interconnection networks which is very fundamental to the Challenged Claims of the ’523 [patent] in the

¹⁰ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284–88, amended as 35 U.S.C. §§ 102 and 103. Because the effective filing date of the challenged claims of the ’523 patent is before March 16, 2013, the pre-AIA versions of 35 U.S.C. §§ 102 and 103 apply.

¹¹ WO 2008/109756, published September 12, 2008 (Ex. 1009).

¹² US Patent No. 6,940,308, issued Sept. 6, 2005 (Ex. 1008).

¹³ Dr. Baker’s Declaration is Exhibit 1002 in both proceedings. We refer to “Ex. 1002” when citing paragraphs common to the two declarations, and “260 Ex. 1002” and “261 Ex. 1002” when citing paragraphs that differ.

Petition.” *Id.* at 3 (emphasis omitted). According to Patent Owner, because Dr. Baker states that he relied on his “knowledge and experience in designing, developing, researching, and teaching regarding circuit design and memory devices” in forming the opinions in his declaration, Dr. Baker “by his own admission has no experience in networks.” *Id.* at 2 (quoting Ex. 1002 ¶ 3) (emphasis omitted).

Petitioner responds that Dr. Baker’s “considerable experience and knowledge in field programmable gate array (‘FPGA’) technology as well as interconnected networks” more than qualifies Dr. Baker “to testify from the perspective of a” person of ordinary skill in the art, regardless of whether Petitioner’s or Patent Owner’s proposed level of skill in the art is applied. Pet. Opp. 6–7 (citing Ex. 1002 ¶¶ 5–9, 14; Ex. 1003). Petitioner also contends that Patent Owner’s arguments are “directed to the sufficiency of the challenged evidence, as opposed to its admissibility” because Patent Owner “essentially address[es] the credibility of Dr. Baker’s testimony.” *Id.* at 4 (citing *MindGeek, s.a.r.l. v. Skyy Inc.*, IPR2014-01236, Paper 45 at 23 (PTAB Jan. 29, 2016)).

A witness may qualify as an expert if they have “knowledge, skill, experience, training, or education” of a “scientific, technical, or other specialized” nature that is likely to help the Board “to understand the evidence or to determine a fact in issue.” Fed. R. Evid. 702; *see also* PTAB Consolidated Trial Practice Guide, 34 (Nov. 2019), <https://go.usa.gov/xpvPF> (“CTPG”) (There is “no requirement of a perfect match between the expert’s experience and the relevant field.” (citing *SEB S.A. v. Montgomery Ward & Co.*, 594 F.3d 1360, 1373 (Fed. Cir. 2010))). We consider the admissibility of Dr. Baker’s testimony in light of this standard.

As Petitioner points out, Patent Owner “focuses on one paragraph of Dr. Baker’s declaration” and “makes baseless assertions” regarding Dr. Baker’s knowledge and experience. Pet. Opp. 6; *see also id.* at 7 n.3 (arguing that “Patent Owner’s speculation as to the limits of Dr. Baker’s experience based on the mere presence or absence of specific words in Dr. Baker’s CV cannot substantiate Patent Owner’s claims”). We also note that, despite Patent Owner’s concerns regarding Dr. Baker’s qualification as an expert, Patent Owner chose not cross-examine Dr. Baker regarding his credentials or to test his qualifications. *See id.* at 5 n.2. We conclude that Patent Owner does not provide sufficient evidence to support the assertion that Dr. Baker’s testimony should be excluded.

We agree with Petitioner, and find that the otherwise uncontested information in Dr. Baker’s Curriculum Vitae and in his direct testimony establishes that Dr. Baker has sufficient education and experience to qualify as an expert in these proceedings, and for the Board to rely on his testimony in understanding the evidence presented. *See* Pet. Opp. 5–8; Ex. 1002 §§ 3–13; Ex. 1003. We also agree with Petitioner and find that Patent Owner’s challenge is directed to the sufficiency of Dr. Baker’s testimony, rather than articulating a sufficient basis as to why it is inadmissible. *Id.* at 3–5.

“The policy considerations for excluding expert testimony, such as those implemented by the gatekeeping framework established by the Supreme Court in *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993), are less compelling in bench proceedings such as *inter partes* reviews than in jury trials.” *Nestle Healthcare Nutrition, Inc. v. Steuben Foods, Inc.*, IPR2015-00249, Paper 76 at 23 (PTAB June 2, 2016). We will take into account Dr. Baker’s qualifications when evaluating the weight to

be given to his testimony, but the wholesale exclusion of a Dr. Baker's declaration is not called for here. Accordingly, Patent Owner's Motion to Exclude is *denied*.

III. ANALYSIS¹⁴

A. *Level of Ordinary Skill in the Art*

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) education level of workers active in the field.” *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case. *Id.* Moreover, “[t]hese factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art.” *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). In determining the level of ordinary skill, we may also look to the prior art, which may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Additionally, “[a] person of ordinary skill is also a person of

¹⁴ The papers filed in the two proceedings are the same or substantially similar. *See, e.g.*, PO Resp. 1, n. 1 (“Patent Owner indicates to the Board that the same Patent Owner's Response is submitted in both proceedings”). Although the analysis herein applies to both proceedings, unless otherwise noted, we refer to the papers and exhibits filed in IPR2020-00260 for convenience.

ordinary creativity, not an automaton.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007).

Petitioner contends that a person of ordinary skill in the art “would have had a master’s degree in electrical engineering or a similar field, and at least two to three years of experience with integrated circuits and networks,” and that “[m]ore education can supplement practical experience and vice versa.” Pet. 23 (citing Ex. 1002 ¶¶ 18–19). Patent Owner, through its declarant, Dr. Chaudhary, argues that a person of ordinary skill in the art “would have had a master’s degree in electrical/computer engineering or a similar field, and at least two to three years of experience with integrated circuits, interconnection networks and Field Programmable Gate Arrays.” Ex. 2025 ¶ 16.

The only substantive difference between the parties’ contentions as to the level of skill in the art is with regard to the type of experience a person of ordinary skill in the art would have had. We adopt Patent Owner’s definition, which overlaps that set forth by Petitioner, particularly with respect to the two to three years of experience with integrated circuits and networks, and because it is consistent with the prior art. Our determination regarding Petitioner’s challenge does not turn on the differences between Petitioner’s and Patent Owner’s definitions, however, and we note that our conclusion would be the same under either definition.

B. Claim Construction

We apply the claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b) (2019). Under *Phillips*, the “words of a claim ‘are generally given their ordinary and customary meaning,’” which is “the meaning that

the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13. “[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

On the full record now before us, we determine it is not necessary to construe any claim term expressly to resolve the parties’ dispute. *Nidec Motor*, 868 F.3d at 1017l; *see also* Pet. 25 (“Petitioner submits that for purposes of this proceeding, no term requires construction.”); PO Resp. 21 (not requesting construction of any claim term).

C. Whether the ’756 PCT Qualifies as Prior Art

The ’523 patent issued from U.S. Patent Application Serial No. 12/601,275 (“the ’275 application”), which was filed on November 22, 2009 as the national phase entry of PCT Application No. PCT/US2008/064605 (“the ’605 PCT,” Ex. 1007), filed on May 22, 2008. Ex. 1001, code (21), (22); Ex. 1004, 152. The ’275 application claims priority to Provisional Application No. 60/940,394 (“the ’394 Provisional,” Ex. 1026), filed on May 25, 2007. Ex. 1001, code (60). Petitioner contends “the ’523 patent is not entitled to claim priority to May 25, 2007 or to May 22, 2008, because . . . the claims of the ’523 patent are not fully supported, and also are not enabled, by the ’394 provisional or the ’605 PCT.” Pet. 4. Instead, Petitioner contends that the earliest effective filing date for the challenged claims of the ’523 patent is the November 22, 2009 filing date of the ’275 application. *Id.* at 4–5. Because the ’756 PCT

published on September 12, 2008, Petitioner contends that it therefore “qualifies as prior art under pre-AIA § 102(b).” *Id.* at 20.

“It is elementary patent law that a patent application is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides support for the claims of the later application, as required by 35 U.S.C. § 112.” *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008) (citations omitted); *see also Research Corps. Techs. v. Microsoft Corp.*, 627 F.3d 859, 871–72 (Fed. Cir. 2010) (holding that a later-filed application, with claims that were not limited to a “blue noise mask,” was not entitled to the priority filing date of the parent application, which was “limited to a blue noise mask”); *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1377–78 (Fed. Cir. 2009) (holding that “spikeless” claims “added years later during prosecution” were not supported by the specification, which “describe[d] only medical valves with spikes”); *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1158–60 (Fed. Cir. 1998) (holding that generic shaped cup claims of the later-filed child application were not entitled to the filing date of the parent application that “disclosed only a trapezoidal cup and nothing more”). “To satisfy the written description requirement the disclosure of a prior application must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *PowerOasis*, 522 F.3d at 1306 (alteration in original) (citations and emphasis omitted). The sufficiency of written description support is based on “an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.” *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). An earlier application will

satisfy the enablement requirement “only if one skilled in the art, after reading the[] disclosures, could practice the invention claimed . . . without undue experimentation.” *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1253 (Fed. Cir. 2004). “A patent specification need not disclose or teach what is known in the art.” *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1373 (Fed. Cir. 2014) (citing *Streck, Inc. v. Research Diagnostics Sys. Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012); *Hybridtech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986)).

Petitioner has the burden to persuade us that the ’756 PCT qualifies as prior art. “In an *inter partes* review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ . . . and that burden never shifts to the patentee.” *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (quoting 35 U.S.C. § 316(e)). Petitioner asserts that the ’756 PCT (either alone or in combination with Wong) discloses each limitation of claims 1–7, 11, 15–18, 20–22, 32, and 47, and the ’394 Provisional and the ’605 PCT do not provide written description support for, and do not enable, those same claims. Thus, Petitioner has the burden of persuasion, based on all of the evidence, on these assertions. *Id.* at 1378. Following Petitioner’s showing regarding the alleged anticipation or obviousness of the subject matter of the challenged claims in view of the ’756 PCT (260 Dec. 15–24; 261 Dec. 15–20), however, the burden of production shifted to Patent Owner to produce evidence and present persuasive argument based on the evidence to show that the ’756 PCT is not prior art because the challenged claims are entitled to the benefit of the May 22, 2008 filing date of the ’605 PCT or the May 25,

2007 filing date of the '394 Provisional. *See Dynamic Drinkware*, 800 F.3d at 1379.

1. *Written Description*

Petitioner's contentions are based on "said routing network comprising a plurality of stages y , in each said sub-integrated circuit block, starting from the lowest stage of 1 to the highest stage of y , where $y \geq 1$ " as recited in claim 1. Pet. 7–8. Specifically, Petitioner contends that the '605 PCT and the '394 Provisional (collectively, "the priority applications") do not disclose any sub-integrated circuit blocks that have only one stage ($y=1$) and pluralities of forward and backward connecting links as required by claim 1. *Id.* at 13–14 (citing Ex. 1002 ¶ 56).

Petitioner recognizes that the priority applications illustrate a network with one stage in Figures 2A1–2A3, but argues that the only links shown therein are inlet and outlet links. Pet. 9–10 (citing Ex. 1007, 7:19–21, Figs. 2A1–2A3; Ex. 1026, 4:13–15, Figs. 2A1–2A3; Ex. 1002 ¶ 50) (emphasis omitted). Relying on Dr. Baker's testimony, Petitioner contends that a person of ordinary skill in the art would have recognized that these inlet and outlet links are different than "forward connecting links" and "backward connecting links," at least because claim 1 "recites 'inlet links' and 'outlet links' separately from 'forward connecting links' and 'backward connecting links.'" *Id.* at 10 (citing Ex. 1001, 35:25–27, 35:43–49; Ex. 1002 ¶ 51). Petitioner further contends that a person of ordinary skill in the art would have understood that there cannot be a plurality of forward connecting links that connect switches in a lower stage to switches in its immediate preceding stage, or a plurality of backward connecting links that connect switches in a higher stage to switches in the immediate preceding

lower stage, when there is only one stage in the network. *Id.* (citing Ex. 1002 ¶ 52).

Patent Owner's arguments in response are directed to the disclosure in the priority applications of a network with only one stage ($y=1$).

PO Resp. 9–12. In particular, Patent Owner argues that a person having ordinary skill in the art “would understand that when there is one stage in a butterfly fat tree network as illustrated in FIG. 2A1–3 of the priority applications, it is the first stage as well as the last stage.” *Id.* at 11. Because one stage has neither a preceding nor succeeding stage, Patent Owner argues that a person of ordinary skill in the art would understand that “no forward connecting links are connected from the stage and no backward connecting links are connected from the stage.” *Id.* (citing Ex. 2025 ¶¶ 35–37); *see also* PO Sur-Reply 9–10 (A person of ordinary skill in the art “would have understood that when there is one block there are no forward connecting links and no backward connecting links as illustrated in FIG. 2A3 of the '523 Patent, which is the smallest butterfly fat tree network.” (citing Ex. 2025 ¶ 31)). According to Patent Owner, “[s]uch an understanding for a [person of ordinary skill in the art] is straightforward,” and a person of ordinary skill in the art “would have understood that the named inventor was in possession of the subject matter recited in Claim 1.” PO Resp. 11.

Based on our review of the full record now before us, we determine that Petitioner has established that the priority applications do not provide sufficient written description support for the claims. *See* Pet. 4–14; Ex. 1002 ¶¶ 50–56. More specifically, we find that the priority applications do not reasonably convey to a person of ordinary skill in the art that the inventor

was in possession of the claimed routing network comprising a plurality of stages y when $y=1$ that also meets the additional limitations of claim 1.

Figure 2A3 of the priority applications is reproduced below.

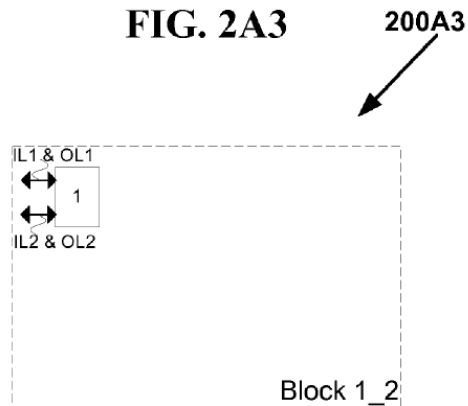


Figure 2A3 depicts the VLSI layout of an example network described in the priority applications, with Block 1_2 comprising switch 1. Ex. 1007, 26:26–28; Ex. 1026, 22:23–25. Switch 1 consists of input switches IL1 and IL2, and output switches OL1 and OL2. Ex. 1007, 26:28–29; Ex. 1026, 22:25–26. The priority applications state that Figure 2A3 illustrates all of the connection links. Ex. 1007, 7:19–21; Ex. 1026, 4:13–15. There is no dispute, on this record, that a person of ordinary skill in the art would have recognized that there are no forward connecting links and no backward connecting links when there is only one stage ($y=1$) in the network. Ex. 1002 ¶¶ 51–52; Ex. 2025 ¶ 31 (Dr. Chaudhary testifying that a person of ordinary skill in the art “would have understood that when there is one block there are no forward connecting links and no backward connecting links as illustrated in FIG. 2A3 of the ’523 patent, which is the smallest butterfly fat tree network.”); Ex. 1051, 122:18–25.

Claim 1, however, further requires that each sub-integrated circuit block comprises, *inter alia*, “a plurality of forward connecting links connecting from switches in a lower stage to switches in its immediate succeeding higher stage” and “a plurality of backward connecting links connecting from switches in a higher stage to switches in its immediate preceding lower stage.” Ex. 1001, 35:43–49. Therefore, establishing proper written description support in the priority applications for claim 1 requires more than showing that the inventor was in possession of a routing network with one stage ($y=1$); the priority applications must also show that the inventor was in possession of a routing network with one stage that meets all of the other limitations of claim 1 as well, including that each sub-integrated circuit block also comprises a plurality of forward and backward connecting links. *See* Ex. 1001, 35:23–36:14 (claim 1).

By acknowledging that a single-stage network does not (and cannot) comprise a plurality of forward and backward connecting links, Patent Owner and Dr. Chaudhary concede that the priority applications do not convey with reasonable clarity to those skilled in the art that the inventor was in possession of a single-stage network comprising a plurality of forward and backward connecting links as recited in claim 1. *See* PO. Resp. 9–11; PO Sur-Reply 9–11; Ex. 2025 ¶¶ 31–34. Neither Patent Owner nor Dr. Chaudhary otherwise explains how a person of ordinary skill in the art would understand that the priority applications disclose a single-stage network that meets all of the limitations of claim 1.

Accordingly, we determine that Petitioner shows, by a preponderance of the evidence, that independent claim 1, and claims 2–7, 11, 15–18, 20–22,

32 and 47 that directly or indirectly depend therefrom, lack written description support in the priority applications when $y=1$.

2. *Enablement*

Petitioner also contends that the priority applications do not teach a person of ordinary skill in the art “how to make and use at least a ‘routing network comprising a plurality of stages y , in each said sub-integrated circuit block, starting from the lowest stage of 1 to the highest stage of y ’ where $y=1$ (i.e., single stage)” that “also includes the remaining limitations of claim 1, including sub-integrated circuit blocks with the recited pluralities of forward connecting links, backward connecting links, straight links, and cross links as claimed in claim 1.” Pet. 18 (citing Ex. 1002 ¶ 63). Petitioner contends that the priority applications do not disclose a one-stage routing network that comprises such links and that “a network with all sub-integrated circuit blocks having a single stage, as included in the claim range of ‘ $y \geq 1$ ’, would have been incompatible with other parts of the claim such as ‘lower stage,’ ‘immediate succeeding higher stage,’ ‘higher stage,’ and ‘immediate preceding lower stage.’” *Id.* at 19 (citing Ex. 1001, 35:43–49; Ex. 1002 ¶ 65). According to Petitioner, “these are plainly and unambiguously incompatible features (i.e., incompatible with a single stage) and no amount of experimentation would have led a” person of ordinary skill in the art to make and use a single-stage network with the forward, backward, straight, and cross links recited in claim 1. *Id.* (citing Ex. 1002 ¶ 65; *Auto. Techs. Int’l, Inc. v. BMW of N. Am., Inc.*, 501 F.3d 1274, 1281, 1284 (Fed. Cir. 2007)).

Relying on Dr. Chaudhary’s testimony for support, Patent Owner argues that the priority applications enable claim 1 for the same reasons that

the priority applications provide written description support for claim 1. PO Sur-Reply 12–13 (citing Ex. 2025 ¶ 37). In particular, Patent Owner argues that “there will be one stage when there is one block as illustrated in FIG. 2A1–3 of the Priority Applications.” *Id.* at 12; *see also* Ex. 2025 ¶ 37 (Dr. Chaudhary’s testimony that this is “straight forward” for a person of ordinary skill in the art to understand, and that “no experimentation is needed to understand it, let alone undue experimentation.”).

Based on our review of the full record now before us, we determine that Petitioner has established that the priority applications do not teach a person of ordinary skill in the art how to make or use the claimed routing network comprising a plurality of stages y when $y=1$, which also meets the additional limitations of claim 1. *See* Pet. 17–19; Ex. 1002 ¶¶ 62–65. As set forth above, we agree with Petitioner and find that the priority applications do not disclose a single-stage network that also comprises a plurality of forward and backward connecting links as recited in claim 1. *See* Section III.C.1, *supra*. We also find persuasive Petitioner’s contention, supported by Dr. Baker’s testimony, that a single stage sub-integrated circuit block is incompatible with the other features of claim 1 (e.g., “immediate succeeding higher stage”), such that “no amount of experimentation” would have taught a person of ordinary skill in the art how to make or use claim 1’s routing network when $y=1$. Pet. 19; Ex. 1002 ¶ 65.

For these reasons, we find that Petitioner establishes, by a preponderance of the evidence, that the priority applications do not teach a person of ordinary skill in the art how to make or use the invention described by independent claim 1 when there is a single stage ($y=1$). Claims 2–7, 11, 15–18, 20–22, 32, and 47 depend, directly or indirectly, from independent

claim 1, and thus are also not enabled by the disclosures in the priority applications.

3. *Conclusion*

For the reasons described above, we determine that Petitioner establishes, by a preponderance of the evidence, that the challenged claims of the '523 patent are not entitled to the benefit of the May 25, 2007 filing date of the '394 Provisional, or the May 22, 2008 filing date of the '605 PCT. Therefore, the earliest effective filing date of the challenged claims is November 22, 2009, the filing date of the '275 application. Accordingly, we determine that the '756 PCT, which published on September 12, 2008, qualifies as prior art to the challenged claims under pre-AIA § 102(b).

D. Anticipation by the '756 PCT

Petitioner contends that claims 1–7, 16, 20–22, and 32 are anticipated by the '756 PCT, and relies on the Baker Declaration in support of its contentions. Pet. 26–76; 261 Pet. 27–82.

Petitioner's challenge largely relies on the disclosure of the '394 Provisional, which is incorporated by reference in its entirety into the '756 PCT. Pet. 20–21; Ex. 1009, 2:14–17. Petitioner submits, and we agree, that the '394 Provisional became publicly available as of the date the '756 PCT published. Pet. 21 (citing 37 C.F.R. § 1.14(a)(1)).

37 C.F.R. § 1.14(a)(1)(vi) provides, in relevant part, that if an unpublished application is incorporated by reference in an international publication of an international application (such as the '756 PCT), a copy of “the unpublished pending application may be provided to any person, upon written request and payment of the appropriate fee.” Accordingly, once the '756 PCT published, the '394 Provisional that is incorporated by

reference therein became open to the public for inspection. Therefore, the '394 Provisional is prior art by virtue of the fact that it became publicly available due to its incorporation into the '756 PCT, and in addition is prior art because it is part of the '756 PCT itself.

We disagree with Patent Owner's argument that "the '394 Provisional Application was **not** available to the public under 37 C.F.R. § 1.14(a)(1)(vi) and (c) for any period after" the '756 PCT published on September 12, 2008, "because the '394 Provisional Application was pending, and Patent Owner never gave permission to anyone and no access was granted under 37 C.F.R. § 1.14(i)." PO Resp. 16. Patent Owner's argument is based on the last sentence § 1.14(a)(1)(vi), which states that "[t]he Office will not provide access to the paper file of a pending application, except as provided in paragraph (c) or (i) of this section." 37 C.F.R. § 1.14(a)(1)(vi) (emphasis added). This sentence, however, is directed to the file history (i.e., paper file) of the unpublished application. It does not preclude access to the application alone.

1. *Claim 1*

Petitioner asserts that the '756 PCT, by way of its incorporation of the '394 Provisional, discloses all of the elements of independent claim 1. Pet. 26–64. For example, Petitioner contends that the '394 Provisional discloses "said routing network comprising of a plurality of stages y , in each said sub-integrated circuit block, starting from the lowest stage of 1 to the highest stage of y , where $y \geq 1$ " because "it discloses a network with a number of stages (y) equal to five, and $5 \geq 1$." Pet. 35 (citing Ex. 1002 ¶ 92). Petitioner uses an annotated version of Figure 1B of the '394 Provisional, shown below, to depict its contentions.

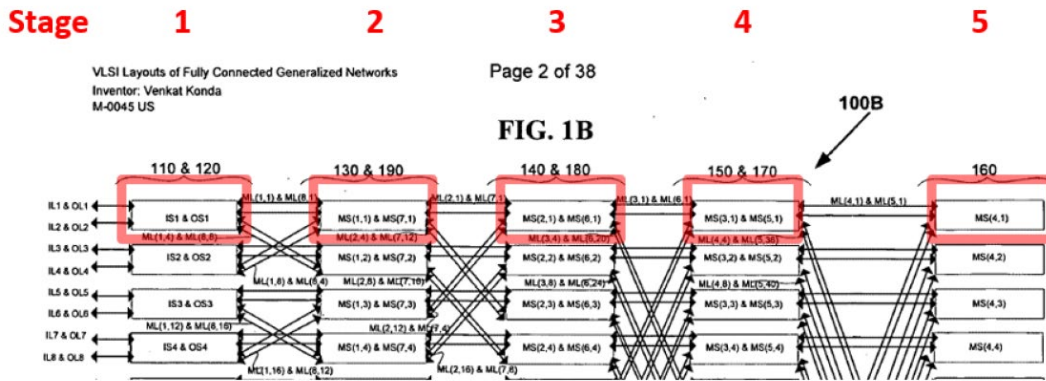


Figure 1B is a diagram of a symmetrical folded multi-link routing network, with Petitioner’s annotations highlighting the five stages in the top-most sub-integrated circuit block. *Id.* (citing Ex. 1026, 2:12–14; Ex. 1002 ¶ 92).

Petitioner further contends that the ’756 PCT, by way of its incorporation of the ’394 Provisional, discloses “said each sub-integrated circuit block comprising a plurality of forward connecting links connecting from switches in a lower stage to switches in its immediate succeeding higher stage, and also comprising a plurality of backward connecting links connecting from switches in a higher stage to switches in its immediate preceding lower stage.” *Id.* at 41–45. Petitioner provides two annotated versions of Figure 1K1 of the ’394 Provisional, shown below, to illustrate its contentions.

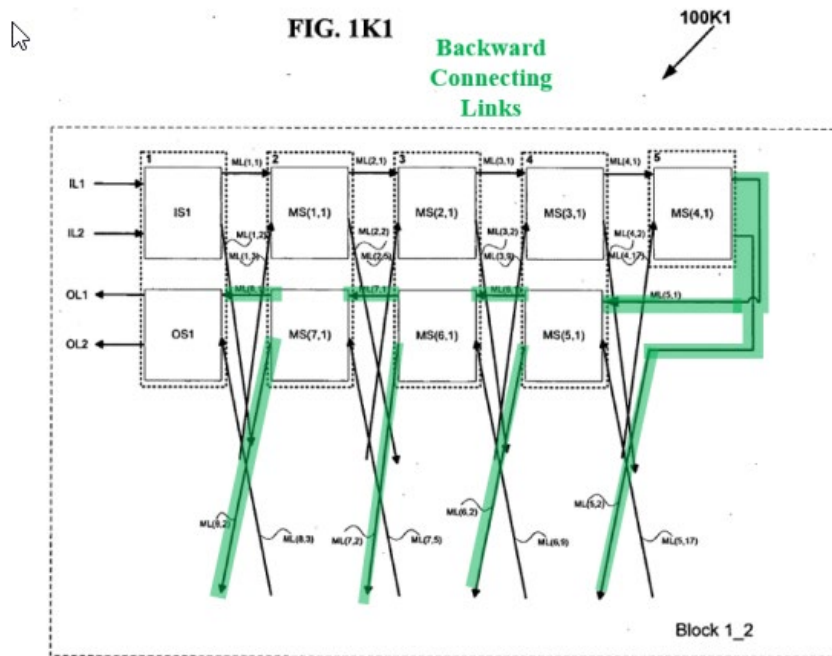
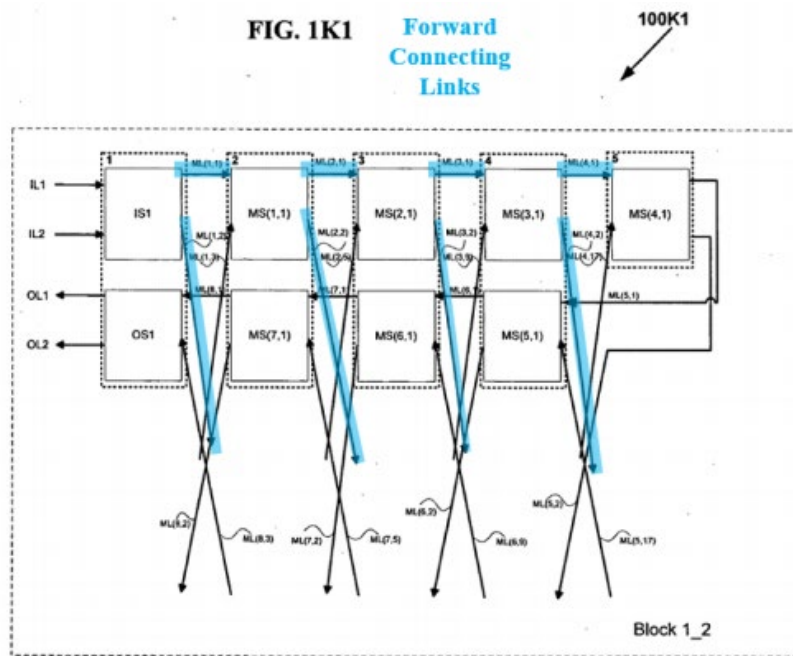


Figure 1K1 shows the detailed connections of one block in a routing network described in the '394 Provisional (Ex. 1026, 3:19–21), with Petitioner's annotations highlighting a plurality of forward connecting links

in blue in the top figure, and a plurality of backward connecting links in green in the bottom figure. Pet. 42–44 (citing Ex. 1002 ¶¶ 104–108).

Patent Owner does not address whether or not the '756 PCT discloses the limitations of claim 1. *See generally* PO Resp. Having reviewed all of Petitioner's assertions regarding claim 1, as well as the supporting evidence, we determine that Petitioner has established, by a preponderance of the evidence, that the '756 PCT anticipates claim 1. Pet. 26–64; Ex. 1002 ¶¶ 79–136.

2. *Dependent Claims 2–7, 16, 20–22, and 32*

Petitioner also contends that the '756 PCT, by way of its incorporation of the '394 Provisional, discloses the limitations of dependent claims 2–7, 16, 20–22, and 32. Pet. 64–76; 261 Pet. 69–80.

Claim 2 depends from claim 1, and further requires an integrated circuit device where the stages and switches in each stage of the two-dimensional grid of the sub-integrated circuit block are scalable by any power of two, and with each multiplication by two, one more stage of switches is added and the cross links between the one more stage of switches are connected in hypercube format. Ex. 1001, 36:15–23. Petitioner contends, with supporting testimony from Dr. Baker, that a person of ordinary skill in the art “would have understood that the '394 provisional application's disclosure of the possible extension of the network of figure 1C ‘for any arbitrarily large’ network . . . discloses the scalability of the network by any power of two.” 261 Pet. 70 (citing Ex. 1026, 20:14; 261 Ex. 1002 ¶ 138). Therefore, according to Petitioner, “the '394 provisional application discloses that the network can be expanded by any power of two by adding additional stages and switches to each of the sub-integrated circuit block,

where the layout of the blocks continues in a two-dimensional grid.” *Id.* at 72 (citing Ex. 1026, 20:20–28, Figs. 1C, 1H; Ex. 1002 ¶ 140).

Claim 3 depends from claim 2 and further recites that “said cross links in succeeding stages are connected as alternative vertical and horizontal links between switches in said sub-integrated circuit blocks.” Ex. 1001, 36:24–27. Petitioner contends that the ’394 Provisional discloses that “inter-block links between switch 1 and switch 2 of corresponding blocks are vertical tracks,” “inter-block links between switch 2 and switch 3 of corresponding blocks are horizontal tracks,” and “[t]he pattern is alternate vertical tracks and horizontal tracks.” 261 Pet. 73–74 (quoting Ex. 1026, 19:25–20:10) (emphasis omitted). According to Petitioner, a person of ordinary skill in the art “would have understood that the ‘inter-block links’ correspond to the ‘cross links’ recited in the claims, as they connect switches in different sub-integrated circuit blocks.” *Id.* at 74 (citing 261 Ex. 1002 ¶ 142).

Claim 16 depends from claim 1 and further recites “said switches comprising active and reprogrammable cross points and said each cross point is programmable by an SRAM cell or a Flash Cell.” Ex. 1001, 37:59–62. Petitioner points to Figures 4A1–4A4 of the ’756 PCT, which “correspond to figures 5A1–5A4 of the ’523 patent” and “relate to the disclosure of implementations of cross point switches in one time programmable and reprogrammable embodiments of networks, including the network in figure 1B of the ’394 provisional.” Pet. 64–67 (citing Ex. 1001, 32:60–35:11, Figs. 5A1–5A4; 260 Ex. 1002 ¶¶ 137–144; Ex. 1009, Figs. 4A1–4A4, 69:1–72:10). Petitioner argues that a person of ordinary skill in the art would have understood that the ’756 PCT “discloses that the switches

in the networks disclosed, including those of the '394 provisional, can be implemented as cross points such as those shown in figure 4A1.” *Id.* at 67 (citing 260 Ex. 1002 ¶ 140). Petitioner further argues that the '756 PCT discloses that transistors controlled by corresponding programmable cells are used to implement the cross points between inlet links and outlet links, and that the programmable cells can be SRAM or Flash cells. *Id.* at 68–69 (citing Ex. 1009, 69:17–70:6; 260 Ex. 1002 ¶¶ 142–144).

Patent Owner does not address whether the '756 PCT discloses the limitations of claims 2–7, 16, 20–22, and 32. *See generally* PO Resp.; 261 PO Resp. Having reviewed all of Petitioner’s assertions regarding dependent claims 2–7, 16, 20–22, and 32, as well as the supporting evidence, we determine that Petitioner has established by a preponderance of the evidence that the '756 PCT anticipates claims 2–7, 16, 20–22, and 32 of the '523 patent. Pet. 64–76; 260 Ex. 1002 ¶¶ 137–154; 261 Pet. 69–82; 261 Ex. 1002 ¶¶ 137–151.

E. Obviousness over the '756 PCT

Petitioner contends that the subject matter of claims 15 and 17 of the '523 patent would have been obvious over the teachings in the '756 PCT. Pet. 76–82.

Claim 15 depends from claim 1 and further recites “wherein said horizontal and vertical links are implemented on two or more metal layers.” Ex. 1001, 37:56–58. Petitioner contends that, although the '756 PCT “does not explicitly disclose that the inlet links and outlet links, which include horizontal and vertical cross links, are routed using two or more metal layers, this feature would have been obvious.” Pet. 77 (citing 260 Ex. 1002 ¶¶ 156–160). Petitioner contends, with supporting testimony from

Dr. Baker, that a person of ordinary skill in the art “would have known that metal layers are typically used to provide electrical connections on an integrated circuit.” *Id.* (citing 260 Ex. 1002 ¶ 156). Petitioner also contends that the ’756 PCT “describes using ‘vias’ to connect inlet links and outlet links (Ex. 1009, 70:14–16), and a [person of ordinary skill in the art] would have known that vias are commonly used to interconnect two different metal layers in an integrated circuit device.” Pet. 77 (citing 260 Ex. 1002 ¶ 157). According to Petitioner, implementing the inlet links in a different metal layer than the outlet links “would have been a mere combination of known components and technologies, according to known methods, to produce predictable results.” *Id.* at 79 (citing 260 Ex. 1002 ¶¶ 159–160).

Claim 17 also depends directly from claim 1, and further recites “wherein said sub-integrated circuit blocks are of equal die size.” Ex. 1001, 37:63–64. Relying on Dr. Baker’s testimony, Petitioner argues that although “the ’394 provisional does not explicitly disclose that the ‘sub-integrated circuit blocks are of equal size,’ it would have been obvious to configure the integrated circuit device of [the ’756 PCT] to use the same layout for each of the sub-integrated circuit blocks on the integrated circuit device.” Pet. 81 (citing 260 Ex. 1002 ¶ 162). Petitioner argues that using “equal (as opposed to unequal) die size would have been recognized as being a mere choice among a finite number of known alternatives, each having predictable outcomes.” *Id.* at 82 (citing 260 Ex. 1002 ¶ 162). Petitioner further argues that reusing the same layout in each of the blocks “would have been recognized as more efficient from a design standpoint and would have ensured uniformity in placing the blocks in the two-dimensional grid and

uniformity in block operation (delays, drive strength, etc.).” *Id.* (citing 260 Ex. 1002 ¶ 162).

Patent Owner does not address whether the ’756 PCT discloses the limitations of claims 15 and 17.¹⁵ *See generally* PO Resp. Having reviewed Petitioner’s assertions regarding claims 15 and 17, as well as the supporting evidence, we determine on this record that Petitioner has established by a preponderance of the evidence that the ’756 PCT renders claims 15 and 17 obvious. Pet. 76–82; 260 Ex. 1002 ¶¶ 155–162.

F. Obviousness over the ’756 PCT and Wong

Petitioner, with supporting testimony from Dr. Baker, contends that the subject matter of claims 11, 18, and 47 of the ’523 patent would have been obvious over the combined teachings of the ’756 PCT and Wong. Pet. 82–92; 261 Pet. 83–90.

Claim 11 depends from claim 6, and recites

wherein $y \geq (\log_2 N)$, where $N > 1$, so that the length of the horizontal shuffle exchange links in the highest stage is equal to

¹⁵ Patent Owner appears to introduce evidence regarding objective indicia of nonobviousness in the Motion to Exclude. PO Mot. 10–15; PO Reply 4–7. A motion to exclude is not a mechanism for making new arguments regarding the patentability of the challenged claims. *See* CTPG 79 (describing what should be included in a motion to exclude). Accordingly, we decline to consider the portions of the Motion to Exclude on this issue. *See also* IPR2020-00260, Paper 23 (cautioning Patent Owner that “any argument not raised” in the Patent Owner Response may be deemed waived.”); CTPG 52 (“Once a trial is instituted, the Board may decline to consider arguments set forth in a preliminary response unless they are raised in the patent owner response.”); *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (explaining that the patent owner waived an issue presented in its preliminary response that it failed to renew in the response during trial).

half the size of the horizontal size of said two dimensional grid of sub-integrated circuit blocks and the length of the vertical shuffle exchange links in the highest stage is equal to half the size of the vertical size of said two dimensional grid of sub-integrated circuit blocks, and

said each sub-integrated circuit block further comprising a plurality of U-turn links within switches of said stages in each said sub-integrated circuit blocks.

Ex. 1001, 37:19–29. Petitioner contends that the '756 PCT discloses all of the limitations of claim 11 except the recited plurality of U-turn links, but that Wong discloses that feature. 261 Pet. 83–84 (citing 261 Ex. 1002 ¶¶ 152–161). Petitioner contends that Wong “discloses a network with the same general topology as figure 1B of the '394 provisional application,” and “that advantages can be obtained in such a network by including ‘corner turning’ in the interconnection network.” *Id.* at 84–86 (citing 261 Ex. 1002 ¶¶ 155–156; Ex. 1008, Fig. 13A, 7:22–31). Petitioner contends that a person of ordinary skill in the art would have understood that Wong’s “corner turning” is the same as the “U-turn link” recited in claim 11. *Id.* at 87 (citing 261 Ex. 1002 ¶ 157).

Petitioner further contends that a person of ordinary skill in the art “would have been motivated to modify the switches included in each stage of the sub-integrated circuit blocks of the network of figure 1B of the '394 provisional to support the corner turning disclosed in Wong.” 261 Pet. 88 (citing 261 Ex. 1002 ¶ 159). According to Petitioner, a person of ordinary skill in the art would have understood that by modifying the switches in the '394 Provisional, “‘shorter routes between logic cells which don’t travel through all $2^{*}(\log_2 N)$ levels of switches’ are provided, as disclosed in Wong.” *Id.* (quoting Ex. 1008, 7:22–31; citing 261 Ex. 1002 ¶ 159).

Petitioner contends that such a modification “would have been straightforward to implement, because Wong discloses how such corner turning can be accomplished.” *Id.* at 89 (citing Ex. 1008, 2:55–56, 8:10–34, Fig. 7; 261 Ex. 1002 ¶ 160).

Claim 18 depends from claim 15, and further requires that the sub-integrated circuit blocks are Lookup Tables, and the integrated circuit device is a FPGA device or block embedded in another integrated circuit device. Ex. 1001, 37:65–38:3. Petitioner contends that the ’756 PCT does not explicitly disclose that the sub-integrated circuit blocks are Lookup Tables, but that Wong does disclose including Lookup Tables with the routing network, and it would have been obvious to include such Lookup Tables in the network described in Figure 1B of the ’394 Provisional, as incorporated by reference into the ’756 PCT. Pet. 83 (citing 260 Ex. 1002 ¶ 164).

Claim 47 depends from claim 1 and further requires that the forward connecting links and backward connecting links use a plurality of inverting or non-inverting buffers to amplify signals driven through them. Ex. 1001, 42:5–10. Petitioner contends that the ’756 PCT does not disclose this additional limitation of claim 47, “but it would have been obvious in view of Wong to include such buffers” in the network of Figure 1B of the ’394 Provisional. Pet. 88 (citing 260 Ex. 1002 ¶ 172). Petitioner contends that Wong discloses a network that includes forward and backward connecting links, and “also discloses that buffers can be inserted to lengthen shorter delay paths until the delay paths match,” and that a person of ordinary skill in the art “would have understood that the buffers disclosed by Wong include ‘non-inverting’ buffers.” *Id.* at 90 (citing Ex. 1008, Fig. 13, 10:60–67, 11:1–6; 260 Ex. 1002 ¶¶ 174–175). According to Petitioner, a person of

ordinary skill in the art “would have been motivated to include buffers in the forward and backward connecting links in the network of figure 1B of the ’394 provisional,” because that person “would have understood that by including buffers, timing and drive strength issues can be rectified such that signals properly propagate through the network.” *Id.* at 91 (citing 260 Ex. 1002 ¶¶ 176–177).

Petitioner further contends that Wong and the ’756 PCT are in the field of interconnection networks used in FPGA devices, and that Wong, like the ’756 PCT, “discloses Benes networks that include a plurality of stages of switches for use in FPGAs.” Pet. 83–84 (citing Ex. 1008, code (54), 1:14–17, 1:59–2:6; Ex. 1009, 13:23–14:5; Ex. 1026, 8:21–9:7, 15:1–2, 2:7–16; Ex. 1002 ¶ 165). Therefore, according to Petitioner, a person of ordinary skill in the art “implementing an integrated circuit device that includes a routing network as disclosed in [the ’756 PCT] would have had reason to look to Wong.” *Id.* at 84 (citing 260 Ex. 1002 ¶ 165); 261 Ex. 1002 ¶ 154.

Patent Owner does not address whether the combined teachings of the ’756 PCT and Wong disclose the limitations of claims 11, 18, and 47. *See generally* PO Resp.; 261 PO Resp. Having reviewed Petitioner’s assertions regarding claims 11, 18, and 47, as well as the supporting evidence, we determine on this record that Petitioner has established, by a preponderance of the evidence, that claims 11, 18, and 47 would have been obvious over the combined teachings of the ’756 PCT and Wong. Pet. 82–92; 260 Ex. 1002 ¶¶ 163–178; 261 Pet. 83–90; 261 Ex. 1002 ¶¶ 152–161.

IV. CONCLUSION

For the reasons given, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–7, 11, 15–18, 20–22, 32, and 47

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of the '523 patent are unpatentable based on the challenges presented in the Petition.

In summary:

Claims	35 U.S.C. §	Reference(s)	Claims Shown Unpatentable	Claims Not Shown Unpatentable
IPR2020-00260				
1, 16, 20–22, 32	102	'756 PCT	1, 16, 20–22, 32	
15, 17	103	'756 PCT	15, 17	
18, 47	103	'756 PCT, Wong	18, 47	
IPR2020-00261				
2–7	102	'756 PCT	2–7	
11	103	'756 PCT, Wong	11	
Overall Outcome			1–7, 11, 15–18, 20–22, 32, 47	

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 1–7, 11, 15–18, 20–22, 32, and 47 are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude (IPR2020-00260, Paper 47; IPR2020-00261, Paper 50) in each proceeding is *denied*; and

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

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