

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROCHIP TECHNOLOGY INC.,
Petitioner,

v.

APTIV TECHNOLOGIES AG,
Patent Owner.

IPR2024-00496
Patent 10,545,899 B2

Before JEAN R. HOMERE, TERRENCE W. McMILLIN,
and KEVIN C. TROCK, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* McMILLIN.

Opinion Dissenting filed by *Administrative Patent Judge* HOMERE.

McMILLIN, *Administrative Patent Judge*.

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

Microchip Technology Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–6 (“the challenged claims”) of U.S. Patent No. 10,545,899 B2 (Ex. 1007, “the ’899 patent”). Aptiv Technologies AG (“Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2023). For the reasons stated below, we determine that Petitioner has not established a reasonable likelihood that it would prevail with respect to any claim challenged in the Petition. We therefore deny institution of *inter partes* review.

I. BACKGROUND

A. *Real Parties-in-Interest*

Petitioner identifies itself and its subsidiaries as the real parties-in-interest. Pet. 90. Patent Owner identifies itself and Aptiv Services US, LLC as the real parties-in-interest. Paper 5, 2.

B. *Related Matters*

The parties identify the following proceedings related to the ’899 patent or patents in the same family (Pet. 90; Paper 5, 2–3):

Aptiv Technologies AG v. Microchip Technology Inc., Case No. 1:23-cv-00307-JDW (D. Del. March 20, 2023);

Microchip Technology Inc. v. Aptiv Technologies AG, IPR2024-00228 (PTAB filed December 27, 2023);

Microchip Technology Inc. v. Aptiv Technologies AG, IPR2024-00229 (PTAB filed December 27, 2023);

Microchip Technology Inc. v. Aptiv Technologies AG, IPR2024-00230 (PTAB filed December 27, 2023);

Microchip Technology Inc. v. Aptiv Technologies AG, PGR2024-00011 (PTAB filed December 27, 2023);

Microchip Technology Inc. v. Aptiv Technologies AG and Aptiv Technologies Limited, IPR2024-00494 (PTAB filed February 27, 2024);

Microchip Technology Inc. v. Aptiv Technologies AG and Aptiv Technologies Limited, IPR2024-00495 (PTAB filed February 27, 2024); and

Microchip Technology Inc. v. Aptiv Technologies AG and Aptiv Technologies Limited, IPR2024-00558 (PTAB filed February 27, 2024),

C. *The '899 Patent (Ex. 1007)*

The '899 patent relates to a method to enable a vehicle's embedded USB (Universal Serial Bus) host system to connect to multiple mobile devices through a USB hub, regardless of whether the mobile devices are configured to act as USB hosts or USB devices, without USB On the Go (OTG) controllers or additional vehicle wiring or inhibiting the functionality of any consumer devices. Ex. 1007, code (57).

The '899 patent explains that "USB protocols require a point-to-point connection in which one end is the USB Host or master, and the other end is a USB Device or slave. In this way, the flow of messages between the two devices is managed and controlled, whereby the USB Device responds to messages initiated by the USB Host." *Id.* at 1:36–41. The patent further describes that in vehicle systems that employ USB connections, the vehicle is typically the USB host and the USB host function is often embedded into a component of the vehicle infotainment system, such as into the radio or other control module. *Id.* at 1:48–60.

As described in the patent, leading mobile device manufacturers and system designers began designing their mobile device products (such as smartphones) to support both USB host and USB device roles. *Id.* at 2:58–67. In other words, a phone may configure itself such that it can function as a USB device when it needs to be, or as a USB host when it needs to be. *Id.*

If a phone acts as a USB host, then the vehicle system will not function because, by USB convention, two USB hosts cannot directly connect with each other. *Id.* at 3:6–18. The patent states that existing solutions to this problem such as On the Go (OTG) technology and dynamic swapping of ports have disadvantages. *Id.* at 3:29–30.

The patent summarizes the invention as follows:

An embodiment of the present invention provides a system which can be employed between a vehicle's embedded USB Host and at least one, but preferably multiple, consumer facing USB ports provided in the vehicle for connection to consumer devices. The system is configured to recognize and control whether the consumer device is required to be connected to each USB port as a USB Host or as a USB Device. Further, the system is able to dynamically switch the device connection between USB Device mode and USB Host mode when desired. In the case where the consumer device is acting as a USB Device, signals are routed normally through a USB Hub to the Head Unit. In the case where the consumer device is acting as a USB Host, signals between the consumer device and the vehicle's embedded USB Host are routed and processed through a USB Host to Host Bridge which is connected to the USB Hub, thereby rendering the consumer device compatible with the vehicle's embedded USB Host.

Id. at 4:16–33.

Figure 4, reproduced below, illustrates an embodiment wherein a USB hub, a USB bridge, and a switching device are provided as discrete components. *Id.* at 5:24–27.

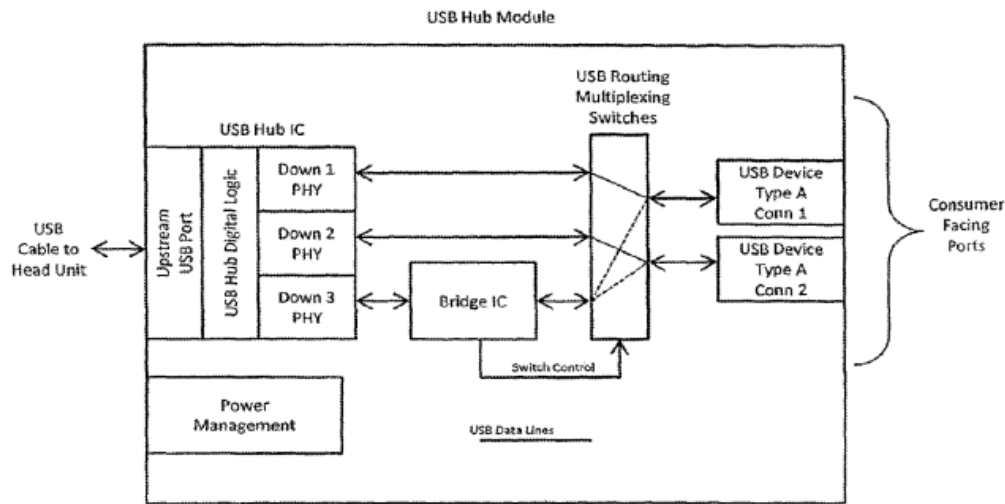


Figure 4 depicts a system configured to render a vehicle's embedded USB host compatible with consumer devices configured to act as a USB host or as a USB device. *Id.* at 5:49–6:17. The system is in the form of a USB hub module having a USB hub IC (integrated circuit), a USB bridge IC, and a switching device having switches. *Id.* The USB hub IC is configured to be connected (via an upstream USB port) to a vehicle's embedded USB host (such as a USB host in a head unit) via vehicle internal wiring. *Id.*

The USB hub IC also includes three downstream USB ports, one of which is connected to the USB bridge IC. *Id.* Two downstream USB ports of the USB hub IC are connected to the switches, such as multiplexing switches. *Id.* The switches are connected to two USB ports in the vehicle, for connection to a consumer device. *Id.* The USB bridge effectively controls the switches. *Id.* The USB hub module is configured such that signals received from a USB port are received by the switching device, and the switching device routes the signals to the USB bridge or the USB hub. *Id.*

In the case where the consumer device is acting as a USB host, the USB bridge IC processes the USB packets from the consumer port and provides them to the USB hub IC, thereby rendering the consumer device compatible with the vehicle's embedded USB host. *Id.* The bridge may be bidirectional and pass USB traffic between two USB hosts. *Id.* at 7:58–8:3. In the case where the consumer device is acting as a USB device, the USB bridge IC controls the switching device such that the switching device provides the USB signaling directly to the USB hub, bypassing the bridge. *Id.* at 6:13–17.

“The architecture illustrated is capable of handling both the operation and data paths associated with the Bridge and the Hub at the same time, thus allowing concurrent operation of consumer devices operating in USB Device mode with consumer devices operating in USB Host mode.” *Id.* at 8:63–67.

D. Illustrative Claim

Claim 1 is the only independent claim of the '899 patent. Ex. 1007, 9:15–10:39. Claim 1 recites:

A method of supporting data communication between a USB host and a USB enabled consumer device capable of operating in either a USB host mode or in a USB device mode, said method comprising the steps of:

providing a USB hub having a plurality of USB ports

interconnected to the USB host, said USB hub configured to simultaneously broadcast data from the USB host to each USB port in the plurality of USB ports and to transmit data from each USB port to the USB Host;

providing a USB bridge interconnected to the USB hub and configured to connect the USB host to a second USB host;

providing a USB routing switch interconnected to the USB bridge, the USB hub, and the plurality of USB ports;

automatically configuring the USB routing switch to connect a first USB Port of the plurality of USB ports to the USB hub through the USB bridge when a consumer device connected to the USB host mode port is the second USB host; and

automatically configuring the USB routing switch to initiate bidirectional communication with the USB host, wherein the USB routing switch is configured to connect the first USB port directly to the USB hub when the consumer device connected to the first USB port is configured to only respond to communication from the USB host, thereby rendering the consumer device compatible with the USB host.

Id. at 9:15–10:2 (emphasis added).

E. Cited Art

Petitioner relies on the following references:

U.S. Patent Application Publication No. 2006/0206650 A1, filed August 16, 2005, published September 14, 2006 (Ex. 1014, “Chang”); and

U.S. Patent Application Publication No. 2009/0268743 A1, filed May 22, 2008, published October 29, 2009 (Ex. 1015, “Chang II”).

Pet. 4.

F. Asserted Ground

Petitioner challenges claims 1–6 of the ’899 patent based on the following ground (Pet. 4):

Claims Challenged	35 U.S.C. §	References
1–6	103	Chang, Chang II

Petitioner filed a Declaration of Eric Welch (Ex. 1013) in support of its Petition. Patent Owner filed a Declaration of Henry Houh (Ex. 2001) in support of its Preliminary Response.

II. ANALYSIS

A. *The Claim Construction In The Petition Is Contingent*

In an *inter partes* review, our claim construction standard is the same as that of a district court. 37 C.F.R. § 42.100(b). Under the standard applied by district courts, claim terms are generally given their plain and ordinary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

Our rule relating to claim construction provides that “[a]ny prior claim construction determination concerning a term of the claim in a civil action . . . that is timely made of record in the *inter partes* review proceeding will be considered.” 37 C.F.R. § 42.100(b). We have considered the District Court’s claim construction Order and Memorandum (Ex. 1080) that was timely made of record by Petitioner in this proceeding (Paper 8).

Petitioner contends that claim 1 should be construed in accordance with Patent Owner’s interpretation of claim 1 as set forth in Patent Owner’s infringement contentions in the district court litigation between the parties. Pet. 24–28. However, Petitioner requests that we adopt this construction for claim 1, only if, Patent Owner’s interpretation is adopted in the district court litigation. Pet. 24 (“[I]f the district court adopts [Patent Owner]’s proposed interpretation of claim 1 (EX1076, 11–15; EX1072, 339), the PTAB should analyze patentability under the district court’s construction.”), 24–25 (“[I]f the district court adopts [Patent Owner]’s construction, Petitioner requests the Board institute under the district court’s claim construction and find the Challenged Claims unpatentable.”), 27 (“Petitioner demonstrates

unpatentability of the Challenged Claims under this construction.” (footnote omitted)). Thus, the construction of claim 1 proposed in the Petition is contingent upon a particular construction of claim 1 being adopted in the district court litigation.

Petitioner argues that, in the district court litigation, Patent Owner contends that, in the phrase “a USB port *having* a plurality of USB ports” as recited in claim 1 (*see* Ex. 1007, 9:19 (emphasis added)), the term “having” means “possesses” or “interconnected to.” Pet. 26. The District Court considered the arguments of the parties regarding this limitation in claim 1 (Ex. 1080, 13–16),¹ but decided not to construe this limitation (*id.* at 16 (“[I]t is unclear to me if ‘having’ requires further construction. Thus, I will not construe the term.”)). The contingency upon which the claim construction in the Petition is based has not been met and, according to its own terms, the Petition should be denied.

B. The Proposed Construction of Claim 1 Is Not Persuasively Argued Or Adequately Supported

Petitioner disagrees with Patent Owner’s proposed interpretation of claim 1 and, in the district court litigation, contends that claim 1 is indefinite.² Pet. 24 (“Petitioner argues in the district court that claim 1 is indefinite.”); *see also id.* at 25–28 (discussing the indefiniteness of claim 1). Thus, the proposed claim construction upon which the Petition is based is

¹ There are two sets of page numbers on these pages of Exhibit 1080. We refer to the page numbers added to Exhibit 1080 for purposes of this proceeding and set forth in the lower, right corner of the pages. Pages 13–16 of Exhibit 1080 correspond to pages 10–13 of the original document.

² Indefiniteness is not within the scope of this proceeding. *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 275 (2016).

contingent upon adopting a claim construction that Petitioner opposes in the district court litigation and that Petitioner believes is incorrect. In addition, the Petition does not include any explanation or reasoning to support the proposed construction. *See id.* at 24–28. Instead, the Petition refers to the rationale set forth in a brief filed by Patent Owner in the district court litigation. *Id.* at 26 (referring to Exhibit 1076 (Patent Owner’s Opening Claim Construction Brief from the district court litigation)).³ This is an improper incorporation by reference. 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”).

Petitioner’s declarant, Mr. Welch, testifies that claim 1 is indefinite. Ex. 1013 ¶ 216. The only explanation given for adopting Patent Owner’s proposed construction is that the declarant was instructed by Petitioner’s counsel to do so. *Id.* ¶ 217 (“I have been instructed by counsel for [Petitioner] to apply [Patent Owner]’s proposed construction . . . for purposes of rendering my prior art invalidity opinions in this Declaration.”). Neither the Petition nor the supporting declaration contain adequate explanation or reasoning for us to consider the proposed construction.

In this proceeding, Patent Owner argues that “[c]ontrary to Petitioner’s assertion, the Board can decide this proceeding without construing any terms.” Prelim. Resp. 21. The Preliminary Response states:

³ Moreover, our review of the docket from the district court litigation indicates that there has been considerable additional briefing and oral argument in the district court litigation on the claim construction issues. We have not had the benefit in this proceeding of adequate briefing and argument on claim construction. We decline to analyze and adopt a claim construction on the inadequate record here.

“the claim is definite and, despite Petitioner’s assertion, Patent Owner has never sought to revise the claim. (Pet., 25.) Rather, Patent Owner has always maintained that a POSITA [(person of ordinary skill in the art)] would understand the term with reasonable certainty in view of the claims, specification, and prosecution history.” Prelim. Resp. 21 (footnote omitted); *see also id.* at 19 (“Specifically, a POSITA would understand that the plurality of USB ports the hub ‘has’ must include downstream ports.”).

We do not adopt the claim construction upon which the Petition relies because it is not adequately supported. We apply the plain and ordinary meaning to the phrase “a USB port **having** a plurality of USB ports” as recited in claim 1.

C. The Petition Fails To Show The Cited Art Discloses All Elements of Claim 1 As Recited

As noted above, challenged claim 1 is the only independent claim of the ’899 patent. Ex. 1007, 9:15–10:39. All the remaining challenged claims (claims 2–6) are directly or indirectly dependent on claim 1 and, by virtue of their dependency on claim 1, incorporate the limitation “a USB port **having** a plurality of USB ports” as recited in claim 1. *See* 35 U.S.C. § 112(d) (“A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.”).

Petitioner maps the cited art to claim 1 as incorporating the interpretation of claim 1 proposed by Patent Owner in the district court litigation. *See* Pet. 53–56. Specifically, in the Petition, the phrase “a USB port **having** a plurality of USB ports” is rewritten by Petitioner to read “a USB port **[interconnected to]** a plurality of USB ports” or as rewritten with

“**possessing**” in place of “interconnected to.” *Id.*⁴ The Petition alleges unpatentability under this construction. *Id.*; *see also id.* at 27 (“Petitioner demonstrates unpatentability of the Challenged Claims under this construction.” (footnote omitted)).

Petitioner does not contend that the plain and ordinary meaning of “having” as recited in claim 1 is either “interconnected to” or “possessing.” *See generally* Pet. As discussed above, Petitioner contended, in the district court litigation, that “having” as recited in claim 1 rendered the claim “nonsensical” and, thus, indefinite. Ex. 1080, 13–14. And, the District Court considered whether “having” had the same meaning in the context of claim 1 of the ’899 patent as “interconnected to” or “possessing” and determined that these terms were not equivalent. *Id.* at 14. We agree with the District Court.

Thus, the Petition fails to provide a showing that the cited art teaches or suggests “a USB port **having** a plurality of USB ports” as recited in sole independent claim 1 of the ’899 patent.

C. Summary

We decline to institute trial because: (1) the claim construction contingency in the Petition has not been met; (2) the claim construction proposed in the Petition is not adequately supported; and (3) the Petition fails to show that all the limitations of any challenged claim are taught or suggested by the cited art. Petitioner has failed to show a reasonable

⁴ The Petition states that, “[f]or ease of analysis, Petitioner uses [Patent Owner]’s ‘interconnected to’ language since that phrase is used elsewhere in the claims, but the results are the same if ‘possessing’ was used instead.” Pet. 27 n.7.

likelihood that it will prevail in establishing the unpatentability of challenged independent claim 1 or any of the challenged dependent claims.

III. CONCLUSION

For the foregoing reasons, we have determined that Petitioner has not established a reasonable likelihood of prevailing with respect to any claim. Therefore, we do not institute an *inter partes* review.

IV. ORDER

Accordingly, it is

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

IPR2024-00496
Patent 10,545,899 B2

For PETITIONER:

Travis Jensen
Jeremy Jason Lang
ORRICK, HERRINGTON & SUTCLIFFE LLP
tjensen@orrick.com
jlang@orrick.com

For PATENT OWNER:

Alex Yap
Mehran Arjomand
Andrew Jones
Bryan Blumenkopf
MORRISON & FOERSTER LLP
ayap@mofo.com
marjormand@mofo.com
andrewjones@mofo.com
bblumen@mofo.com

HOMERE, *Administrative Patent Judge*, dissenting.

I write separately to voice my disagreement with the majority's decision not to institute trial in this *inter partes* review. Dec. 12–13. The majority concludes that “(1) the claim construction contingency in the Petition has not been met; (2) the claim construction proposed in the Petition is not adequately supported; and (3) the Petition fails to show that all the limitations of any challenged claim are taught or suggested by the cited art.” *Id.* at 12. For those reasons, the majority determines that Petitioner has failed to show a reasonable likelihood that it will prevail in establishing the unpatentability of challenged independent claim 1. *Id.* at 12–13. From that decision, I respectfully dissent.

As an initial matter, it should be noted that claim construction at the Patent Trial and Appeal Board is a question of law, and is reviewed de novo. *See In re Donaldson Co.*, 16 F.3d 1189, 1192 (Fed. Cir. 1994) (en banc). As correctly noted by the majority, our rule relating to claim construction provides that “[a]ny prior claim construction determination concerning a term of the claim in a civil action . . . that is timely made of record in the *inter partes* review proceeding will be considered.” 37 C.F.R. § 42.100(b); Dec. 6. Although we are required to consider a claim construction determination timely made of record by a district court during a civil litigation between the parties, we are not bound by such a determination. *See* Pet. 24 (citing *Western Digital Corp. v. Spex Techs., Inc.*, IPR2018-00082). In this vein, I take exception to the majority's conclusion that because Petitioner's contingent claim construction has not been met,

Petitioner has not met its burden. Dec. 8. More particularly, the majority states the following:

Petitioner contends that claim 1 should be construed in accordance with Patent Owner’s interpretation of claim 1 as set forth in Patent Owner’s infringement contentions in the district court litigation between the parties. Pet. 24–28. However, Petitioner requests that we adopt this construction for claim 1, only if, Patent Owner’s interpretation is adopted in the district court litigation. Pet. 24 (“[I]f the district court adopts [Patent Owner]’s proposed interpretation of claim 1 (EX1076, 11–15; EX1072, 339), the PTAB should analyze patentability under the district court’s construction.”), 24–25 (“[I]f the district court adopts [Patent Owner]’s construction, Petitioner requests the Board institute under the district court’s claim construction and find the Challenged Claims unpatentable.”), 27 (“Petitioner demonstrates unpatentability of the Challenged Claims under this construction.” (footnote omitted)). *Thus, the construction of claim 1 proposed in the Petition is contingent upon a particular construction of claim 1 being adopted in the district court litigation.*

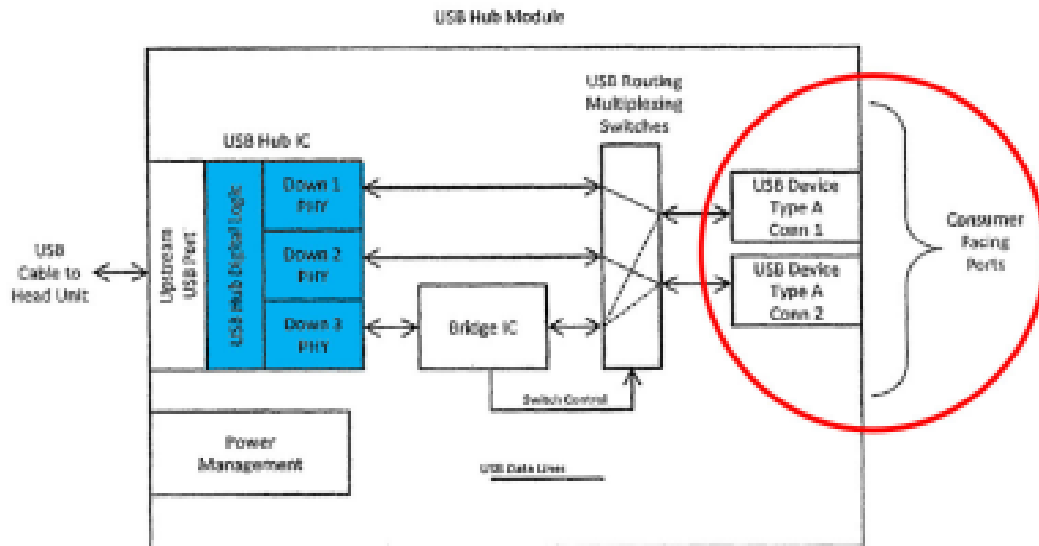
Id. at 8–9 (emphasis added).

The majority simply misapprehends Petitioner’s request. As noted above, Petitioner *requests* that “the PTAB institute under the district court’s claim construction and find the Challenged claims unpatentable” if the district court adopts Patent Owner’s claim construction. *Id.* at 24–25. Petitioner’s request for the PTAB to adopt a particular claim construction is not binding upon this tribunal as we review de novo claim construction issues before us. Therefore, even if we decline to adopt the claim construction proposed by Petitioner, such a refusal is not per se determinative of whether we institute *inter partes* review of the ’899 patent. Accordingly, I find no legal basis to support the majority’s refusal to

institute trial based on this alleged claim construction contingency not being met.⁵ *Id.*

In district court, Petitioner argued the limitation of “providing a USB hub having a plurality of USB ports interconnected to the USB host,” as recited in independent claim 1, is indefinite. Pet. 24–28. Petitioner submits an annotated version of Figure 4 of the ’899 patent, reproduced below, to explain Petitioner’s contentions. Pet. 26.

Figure 4



Petitioner’s annotated version of Figure 4 above illustrates a USB Hub Module including a USB Hub IC in blue containing three (3) downstream ports (e.g., Down 1, 2, 3 PHY) inter-connected to two (2) downstream consumer facing USB ports circled in red. *Id.* Petitioner contends, if the

⁵ See Dec. 9 (asserting that “[t]he contingency upon which the claim construction in the Petition is based has not been met and, according to its own terms, the Petition should be denied”).

claims are not indefinite, it is because the claimed “USB hub” shown in blue is deemed to “ha[ve]” a plurality of downstream consumer facing USB ports circled in red, even though the ports are not actually part of the “USB hub.”

Id. (alteration in original). Petitioner further notes:

Aptiv contends the USB “ha[s]” USB ports (*viz.*, consumer facing ports) “whether those ports are part of the hub or not.” EX1076, 14; *see also id.*, 13 (“The USB hub ‘has’ (i.e., possesses) . . . the consumer facing ports.”). As explicitly stated in Aptiv’s infringement contentions, a USB hub “ha[s]” USB ports if the hub is merely “interconnected to” the ports.

Id. (alterations in original).

Patent Owner argues the claim language is definite and that a POSITA would understand “[t]he hub ‘has’ the downstream consumer facing ports.” Ex. 2001 ¶ 99; *see also* Prelim. Resp. 18–20; Ex. 2001 ¶¶ 96–99. The district court held this language is not indefinite and stated it is unclear whether this language requires construction. Ex. 1080, 10–13; Paper 8, 1–2. The majority disagrees with Petitioner’s assertion that the disputed claim limitation renders the claim indefinite unless “having” is construed as meaning interconnected to. Dec. 9–10. According to the majority, because the Petition improperly incorporates by reference in this proceeding a claim construction document from litigation, and Patent Owner never sought to revise the claim to clarify “having” as encompassing “interconnected to” or “possessing”, it declines to analyze and adopt Petitioner’s claim construction. *Id.* at 9–11. Without providing an independent analysis of the disputed claim limitation, the majority asserts that it agrees with the district court that “having” within the context of disputed limitation of claim 1 in the ’899 patent does not have an equivalent meaning to “possessing” or “interconnecting” as argued by Petitioner. Dec. 12. Still, the majority offers

no rhyme or reason in support of its agreement with the district court’s claim construction. I take exception to this conclusory determination.

Although the Board may decline to adopt a proposed claim construction, “[t]he Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (alteration in original) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

I have considered the district court’s claim construction Order and Memorandum (Ex. 1080) that was timely made of record by Petitioner in this proceeding (Paper 8). Based on my independent review of the ’899 patent in its entirety,⁶ I agree with Petitioner that the recitation of “providing a USB hub having a plurality of USB ports interconnected to the USB host” is ambiguous thereby rendering the claim indefinite because it is unclear as

⁶ Figure 4, above, depicts a USB hub IC configured to render a vehicle’s embedded USB host compatible with consumer devices configured to act as a USB host or as a USB device. Ex. 1007, 5:50–53. The USB hub IC is configured to be connected (via an upstream USB port) to a vehicle’s embedded USB host (such as a USB host in a head unit) via vehicle internal wiring. *Id.* at 5:56–60. The USB hub IC also includes three downstream USB ports, one of which is connected to the switching device (e.g., multiplexing switches) via the USB bridge IC. *Id.* at 5:61–65. The other two downstream USB ports of the USB hub IC are connected directly to the switching device, thereby bypassing the bridge IC. *Id.* at 5:65–67. The switches are connected to two downstream consumer facing USB ports in the vehicle, for connection to a consumer device. *Id.* at 6:1–5. The USB bridge IC effectively controls the switches. *Id.* Therefore, the USB hub module is configured such that signals received from a consumer device via a downstream consumer facing USB port are received by the switching device, which routes the signals to the USB hub IC directly or via the USB bridge. *Id.* at 6:5–8.

to which “plurality of USB ports” the claim refers to.⁷ Giving the term “having” its ordinary and customary meaning,⁸ it denotes possessing, owning, including or holding.⁹ Under this ordinary and customary meaning of the term “having”, the disputed claim limitation would imply—providing a USB hub including a plurality of downstream USB ports interconnected to the host. Although this reading of the claim would comport with the depiction of the downstream ports included in the hub to connect to the host in annotated Figure 4 above,¹⁰ I agree with Petitioner that such a reading of

⁷ The test for definiteness under 35 U.S.C. § 112, second paragraph, is “whether those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted). “[I]f a claim is amenable to two or more plausible claim constructions, the USPTO is justified in requiring the applicant to more precisely define the metes and bounds of the claimed invention by holding the claim unpatentable under 35 U.S.C. § 112, second paragraph, as indefinite.” *Ex parte Miyazaki*, 89 USPQ2d 1207, 1211 (BPAI August 9, 2008) (“precedential”).

⁸ In an *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b). “[T]he ordinary and customary meaning of a claim term 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” and “after reading the entire patent.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 1321 (Fed. Cir. 2005) (en banc).

⁹ *E.g.*, Have: “[T]o hold or maintain as a possession, privilege, or entitlement.” Merriam-Webster Dictionary (accessed August 27, 2024), www.merriam-webster.com/dictionary/having. Ex. 3001.

¹⁰ The USB Hub IC, depicted in annotated Figure 4 above, has, includes or possesses a plurality of downstream ports (aka “USB ports”), (2) the USB

the disputed limitation would render the claim nonsensical. Pet. 26. A POSITA, having read the entire '899 patent would readily appreciate that, when read in light of the Specification, the disputed claim requires a hub interconnecting a plurality of USB ports (i.e., USB consumer facing ports) to the USB host to facilitate the host-to-host configuration or the host-to-device configuration as discussed above. *See* Prelim. Resp. 18–20. On this record, while the plain meaning of “having” is not equivalent to “interconnected to,” I agree with Petitioner that construing “having” to encompass “interconnected to” more accurately captures the essence of the invention to provide a USB hub interconnecting a plurality of (downstream consumer facing) USB ports to the USB host consistent with the '899 patent.

At this stage in the proceeding, for purposes of institution, I determine that consistent with the '899 patent, the recitation of “providing a USB hub having a plurality of USB ports interconnected to the USB host” refers to “providing a USB hub interconnecting a plurality of (downstream consumer facing) USB ports to the USB host.”

Next, because the proposed claim construction discussed above comports with Petitioner’s, I analyze Petitioner’s proposed challenge in light of the asserted claim construction as follows:

Hub IC is also interconnected to a plurality of downstream consumer facing USB ports, and (3) both plurality of USB ports are interconnected to the USB host.

I. Overview of the Asserted Prior Art

1. Chang (Ex. 1014)

Chang relates to “a hub with a host-to-host transmission function” accomplished via “a bridge connected between the host port and hub control unit” allowing first and second hosts to communicate with each other.

Ex. 1014 ¶¶ 1, 5.

Figure 2 illustrates a conventional USB hub and is reproduced below.

Id. ¶ 13.

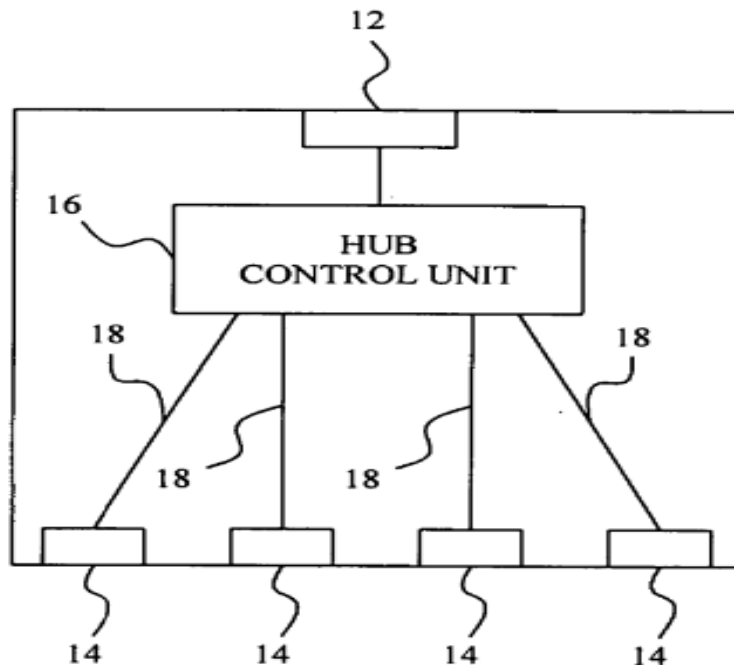


Figure 2 above illustrates a conventional USB hub including uplink port 12 for being linked to a host, downlink ports 14 for being linked to other devices, and hub control unit 16 for establishing communications between the ports. *Id.* ¶ 18. In the conventional USB hub, several transmission paths 18 may be established such that uplink port 12 can communicate with each downlink port 14 as well as devices linked thereto via hub control unit 16. *Id.*

Chang summarizes its invention as follows:

a hub with a host-to-host transmission function comprises a hub control unit, an uplink port connected to the hub control unit for being linked to a first host, a host port for being linked to a second host, and a bridge connected between the host port and hub control unit for the first and second hosts to communicate with each other.

Id. ¶ 5.

Figure 3 illustrates a hub according to the Chang invention, and is reproduced below. *Id.* ¶ 19.

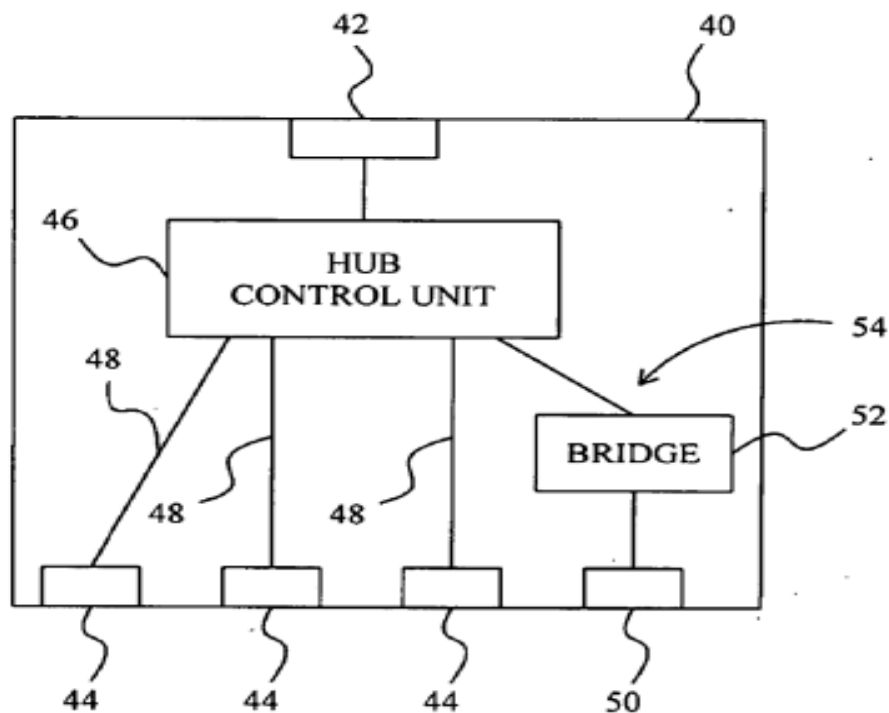


Figure 3 above shows hub 40 including uplink port 42 for being linked to a host, several downlink ports 44 for being linked to consumer devices, and hub control unit 46 for establishing several transmission paths 48 between uplink port 42 and downlink ports 44 such that the host linked to uplink port 42 can communicate with consumer devices linked to downlink ports 44. *Id.* Hub 40 further comprises host port 50 for connecting a

consumer device operating as a host to the host at uplink port 42 via bridge 52 and control hub 46, together forming path 54 enabling host-to-host communications, which may be implemented with a bridge chip. *Id.* ¶¶ 20, 22, 24.

2. *Chang II* (Ex. 1015)

Chang II relates to a data transmission bridge device including a control chip for transmitting data that adopts USB specification, and can utilize switching to bridge between two host devices for transmitting data. Ex. 1015 ¶ 2. In particular, upon detecting the connecting device type (host/slave), the data transmission bridge device automatically switches between different transmission paths, which not only support data transfer between a host device and a slave device (host-to-device communication), but they also can directly support data transfer between two host devices (host-to-host communication). *Id.* ¶¶ 11, 12.

Figure 1 is a schematic diagram for a data transmission bridge device including a control chip for adaptively transmitting data to a detected connecting device and is reproduced below. *Id.* ¶ 15.

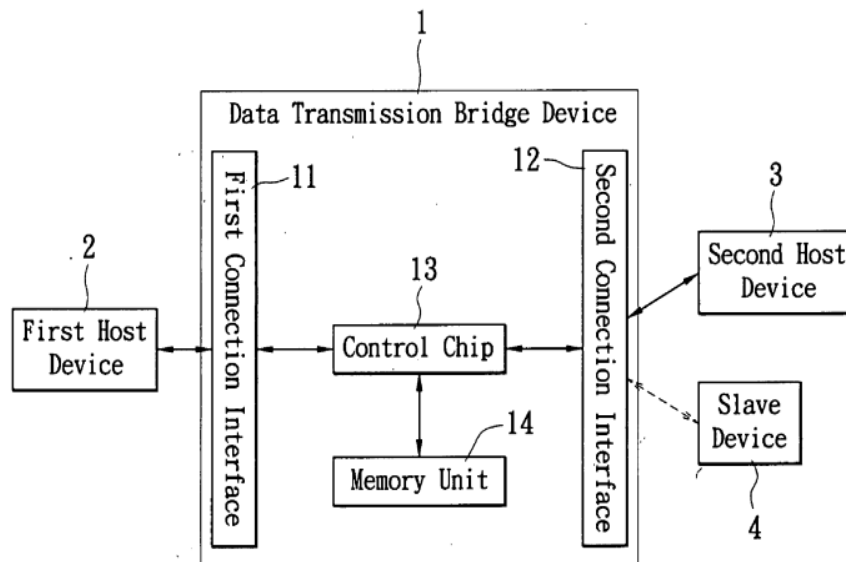


Figure 1 above illustrates data transmission bridge device 1 including first connection interface 11 for connecting to first host device 2, second connection interface 12 for connecting to second host device 3 or slave device 4, control chip 13 enabling connection to a detected host/slave device, and memory unit 14 for storing control data. *Id.* ¶¶ 22, 23.

Figure 5 illustrates a schematic diagram for control chip 13 of data transmission bridge device 1 for adaptively transmitting data to a detected connecting device and is reproduced below. *Id.* ¶¶ 19, 34.

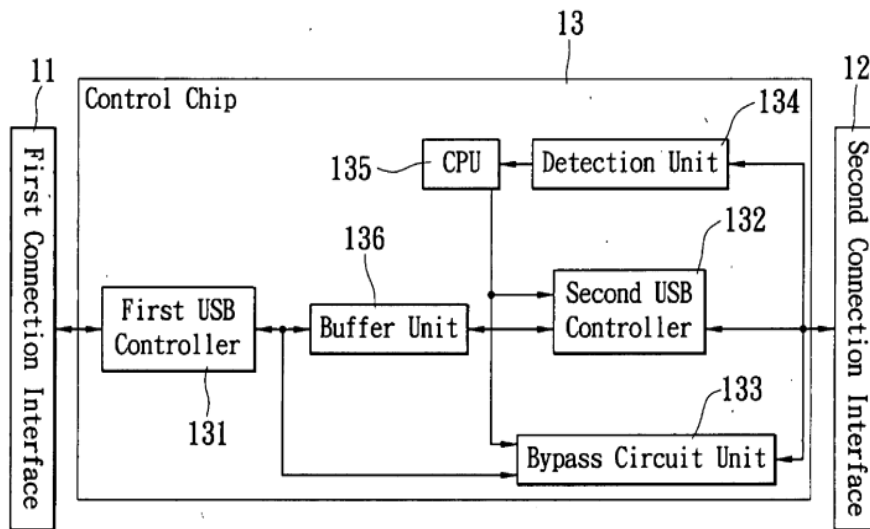


FIG. 5

Figure 5 above shows control chip 13 for data transmission bridge device 1. *Id.* ¶ 34. Chip 13 includes first USB controller 131, second USB controller 132, bypass circuit unit 133, detection unit 134, central processing unit (CPU) 135, and buffer unit 136. *Id.* Upon detecting the type of device currently connected with second connection interface 12, detection unit 134 automatically operates to switch between a virtual host state and a virtual slave state. *Id.* ¶¶ 38, 39. Data transmission bridge device 1 “by automatically detecting the type of connected device to switch between the

proper transmission path, can not only support data transmission between a host device and a slave device, but can also directly support data transmission between two host devices.” *Id.* ¶ 46. Chang II discloses that by “automatically detecting the type of device connected (host or slave) the present invention can switch to the proper transmission path” and provide “direct bridging between two host device[s] for data transfer.” Ex. 1015 ¶ 21. And, “the control chip 13 can . . . switch to the bridge transmission path or the bypass path.” *Id.* ¶ 24.

II. Obviousness over Chang in view of Chang II

Petitioner argues that claims 1–6 are obvious over Chang in view of Chang II. Pet. 4, 38–86. In support of its showing, Petitioner relies upon the Welch Declaration. *Id.* (citing Ex. 1013). I have reviewed Petitioner’s assertions and supporting evidence as well as Patent Owner’s assertions and supporting evidence and I determine based on the record before me there is a reasonable likelihood that the Petitioner would prevail in showing that at least claim 1 is rendered obvious in view of Chang and Chang II.

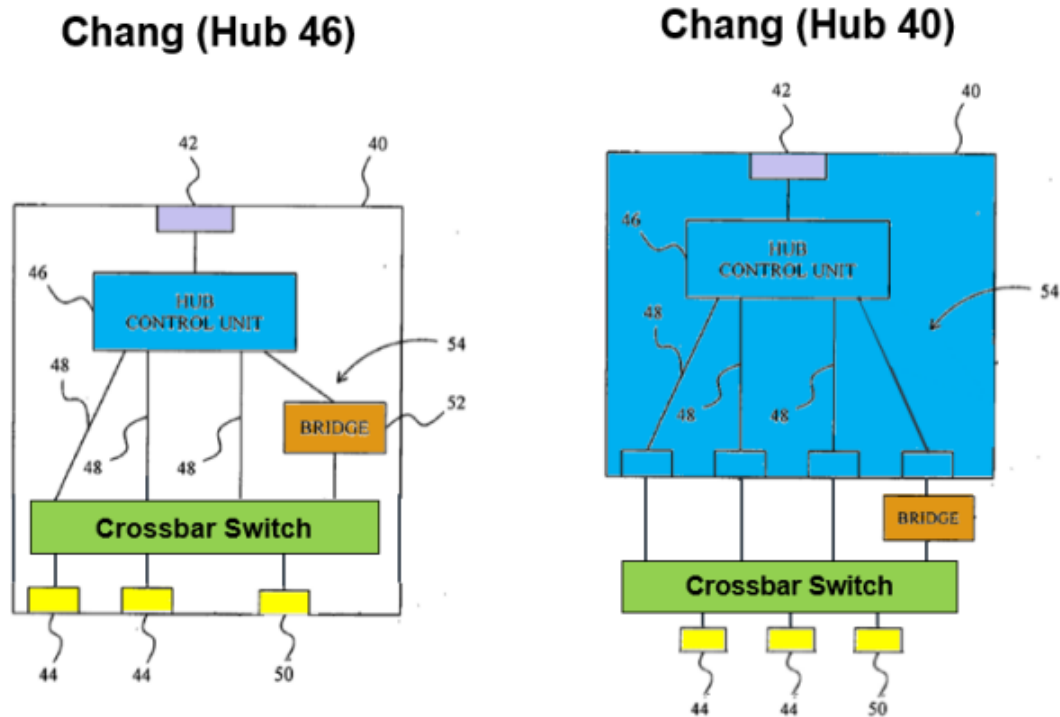
1. Preamble

Independent claim 1 recites “[a] method of supporting data communication between a USB host and a USB enabled consumer device capable of operating in either a USB host mode or in a USB device mode, said method comprising the steps of.” Ex. 1007, 9:15–18.

Petitioner argues Chang II details exemplary switching for either a host-product or a device-product to connect a bridge transmission path (when the product is host) or bypass path (when the product is device). Pet. 42–43. Petitioner argues a POSITA would have been motivated, with a

high expectation of success, to route dual-role ports (and products attached thereto) to an appropriate path using a switch. Pet. 43. Petitioner further argues an obvious implementation is to modify Chang's Figure 3 to include a crossbar switch¹¹ and three dual-role ports. *Id.* (citing Ex. 1013 ¶¶ 188–192).

Figures entitled “Chang (Hub 46)” and “Chang (Hub 40)” illustrate two variations of such an implementation and are reproduced below. Pet. 42–50.



The figure entitled “Chang (Hub 46)” above on the left and the figure entitled “Chang (Hub 40)” above on the right illustrate a crossbar switch (green), three dual-role ports (yellow), an uplink port for being linked to a host (purple), a bridge (orange), and a hub (blue). *Id.* at 29, 43–44, 47–51.

¹¹ A crossbar switch can route any input to any output. Pet. 11.

Petitioner argues that, if the preamble is limiting, both crossbar implementations satisfy the preamble.¹² Pet. 51–52.

Other than arguing there is no motivation to combine, which I address *infra*, Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Nonetheless, the burden of persuasion remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Based on my review and consideration of the current record, I determine that Petitioner has established a reasonable likelihood of prevailing in its contention that Chang and Chang II (with the knowledge of a POSITA) render obvious the Chang (Hub 46) and Chang (Hub 40) crossbar implementations (*see* Pet. 10–12, 38–50) and that these implementations satisfy the preamble (*see* Pet. 51–52). These implementation(s) provide communication between a USB host connected to port 42 and a USB enabled consumer device capable of operating in either a USB host mode or in a USB device mode connected to one of ports 44 or 50.

¹² “In general, a preamble limits the invention if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). “[A]s a general rule preamble language is not treated as limiting.” *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1347 (Fed. Cir. 2012) (citing *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002)).

2. Step 1a) a USB hub and a plurality of USB ports

Independent claim 1 further recites “providing a USB hub having¹³ a plurality of USB ports interconnected to the USB host, said USB hub configured to simultaneously broadcast data from the USB host to each USB port in the plurality of USB ports and to transmit data from each USB port to the USB Host.” Ex. 1007, 9:19–23.

Petitioner argues both crossbar implementations illustrated above satisfy step 1a) and provides two mappings (one for each crossbar implementation) depending on whether the claimed “USB hub” is Chang’s hub control unit 46 or hub 40. Pet. 53–57.

Other than arguing there is no motivation to combine, which I address *infra*, Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on my review and consideration of the current record, I determine that Petitioner has established a reasonable likelihood of prevailing in its contention that Chang and Chang II (with the knowledge of a POSITA) render obvious the Chang (Hub 46) and Chang (Hub 40) crossbar implementations (*see* Pet. 10–12, 38–50) and that these implementations satisfy step 1a) (*see* Pet. 53–57). Consistent with the claim interpretation above, these implementations provide USB hub 40 or 46 interconnecting a plurality of downstream consumer-facing USB ports 44

¹³ In its analysis, Petitioner replaces “having” with “interconnected to” because, according to Petitioner, this is how Patent Owner reads the claim in district court infringement contentions. Pet. 53 n.14. As discussed in the claim construction above, because “interconnected” better captures the essence of the claimed invention in the ’899 patent, the proposed replacement is reasonable for the purpose of claim analysis.

and 50 to the USB host at port 42, the USB hub configured to simultaneously broadcast data from the USB host to each USB port in the plurality of USB ports and to transmit data from each USB port to the USB Host.

3. Step 1b) a USB bridge

Independent claim 1 further recites “providing a USB bridge interconnected to the USB hub and configured to connect the USB host to a second USB host.” Ex. 1007, 9:24–26.

Petitioner argues both crossbar implementations illustrated above satisfy step 1b) and provides two mappings (one for each crossbar implementation) depending on whether the claimed “USB hub” is Chang’s hub control unit 46 or hub 40. Pet. 57–59.

Other than arguing there is no motivation to combine, which I address *infra*, Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on my review and consideration of the current record, I determine that Petitioner has established a reasonable likelihood of prevailing in its contention that Chang and Chang II (with the knowledge of a POSITA) render obvious the Chang (Hub 46) and Chang (Hub 40) crossbar implementations (*see* Pet. 10–12, 38–50) and that these implementations satisfy step 1b) (*see* Pet. 57–59). These implementations provide a USB bridge 52 or the bridge in Chang (Hub 40) interconnected to the USB hub 46 or 40 and configured to connect the USB host connected to port 42 to a second USB host connected to a port 44 or 50.

4. Step 1c) a USB routing switch

Independent claim 1 further recites “providing a USB routing switch interconnected to the USB bridge, the USB hub, and the plurality of USB ports.” Ex. 1007, 9:27–29.

Petitioner argues both crossbar implementations illustrated above satisfy step 1c) and provides two mappings (one for each crossbar implementation) depending on whether the claimed “USB hub” is Chang’s hub control unit 46 or hub 40. Pet. 59–62.

Based on my review and consideration of the current record, I determine that Petitioner has established a reasonable likelihood of prevailing in its contention that Chang and Chang II (with the knowledge of a POSITA) render obvious the Chang (Hub 46) and Chang (Hub 40) crossbar implementations (*see* Pet. 10–12, 38–50) and that these implementations satisfy step 1c) (*see* Pet. 59–62). Each of these implementations provides a USB routing switch in the form of a crossbar switch interconnected to USB bridge 52 or the bridge in Chang (Hub 40), USB hub 46 or 40, and a plurality of USB ports 44 and 50.

Patent Owner argues Petitioner fails to point to any disclosure in either Chang or Chang II disclosing the claimed routing switch. Prelim. Resp. 30–31. According to Patent Owner, Petitioner acknowledges that Chang uses dedicated ports, and does not contemplate using a routing switch. *Id.* (citing Pet. 38). Likewise, Patent Owner argues that although Chang II contemplates purely as a conceptual matter switching between transmission paths, it does not disclose a discrete switch that performs the switching. *Id.* Consequently, Patent Owner submits that “[a] POSITA would understand that switching between transmission paths could be

performed by an element other than a routing switch.” *Id.* (citing Ex. 2001 ¶¶ 60–61).

Based on the preliminary record, I am persuaded that Petitioner has presented sufficient evidence that would support a finding that the combined teachings of Chang with Chang II account for step 1c). As set forth above, in its contentions for this limitation, Petitioner proposes to modify Chang’s hub to incorporate Chang II’s teaching of switching between transmission paths associated with a selected communication type (host-to-host or host-to-device) identified by Chang II’s detecting. Pet. 59–62. Further, Petitioner argues that switching transmission paths was highly predictable, being both well-known and routine to implement using readily available off-the-shelf components. *Id.* at 10–12, 45–47, 60. More particularly, Petitioner offers expert testimony and documentary evidence to support that using a crossbar switch as a switching structure was well known to a POSITA before 2013. Pet. 10–12 (citing Ex. 1013 ¶¶ 88–96; Ex. 1040, 4:39–5:29; Ex. 1041, 1:20–36; Exs. 1060, 1063, 1068; Ex. 1055, 284–288). Accordingly, I am not persuaded by Patent Owner’s argument that Petitioner’s rationale is not supported by evidence.

5. Step 1d) connect through the USB bridge when a consumer device connected is second USB host

Independent claim 1 further recites “automatically configuring the USB routing switch to connect a first USB Port of the plurality of USB ports

to the USB hub through the USB bridge when a consumer device connected to the USB host mode port¹⁴ is the second USB host.” Ex. 1007, 9:30–34.

Petitioner argues both crossbar implementations illustrated above satisfy step 1d) and provides two mappings (one for each crossbar implementation) depending on whether the claimed “USB hub” is Chang’s hub control unit 46 or hub 40. Pet. 62–66.

Other than arguing there is no motivation to combine, which I address *infra*, and arguing the routing switch is not described in the prior art, which I addressed *supra*, Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on my review and consideration of the current record, I determine that Petitioner has established a reasonable likelihood of prevailing in its contention that Chang and Chang II (with the knowledge of a POSITA) render obvious the Chang (Hub 46) and Chang (Hub 40) crossbar implementations (*see* Pet. 10–12, 38–50) and that these implementations satisfy step 1d) (*see* Pet. 62–66). Each of these implementations automatically configure a USB routing switch in the form of a crossbar switch to connect a first USB Port 44 or 50 to USB hub 46 or 40 through USB bridge 52 or the bridge in Chang (Hub 40) when a consumer device connected to port 44 or 50 is the second USB host.

¹⁴ In its analysis, Petitioner replaces “USB host mode port” with “first USB port” because, according to Petitioner, this is how Patent Owner reads the claim in district court infringement contentions. Pet. 62 n.16.

6. Step 1e) connect directly to the USB hub when the consumer device is configured to only respond to communication from the USB host

Independent claim 1 further recites “automatically configuring the USB routing switch to initiate bidirectional communication with the USB host, wherein the USB routing switch is configured to connect the first USB port directly to the USB hub when the consumer device connected to the first USB port is configured to only respond to communication from the USB host, thereby rendering the consumer device compatible with the USB host.” Ex. 1007, 9:35–10:2.

Petitioner argues both crossbar implementations illustrated above satisfy step 1e) and provides two mappings (one for each crossbar implementation) depending on whether the claimed “USB hub” is Chang’s hub control unit 46 or hub 40. Pet. 66–70.

Other than arguing there is no motivation to combine, which I address *infra*, and arguing the routing switch is not described in the prior art, which I addressed *supra*, Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on my review and consideration of the current record, I determine that Petitioner has established a reasonable likelihood of prevailing in its contention that Chang and Chang II (with the knowledge of a POSITA) render obvious the Chang (Hub 46) and Chang (Hub 40) crossbar implementations (*see* Pet. 10–12, 38–50) and that these implementations satisfy step 1e) (*see* Pet. 66–70). Each of these implementations automatically configures a USB routing switch in the form of the crossbar switch to initiate bidirectional communication with the USB host connected to port 42, wherein the crossbar switch is configured to connect first USB port 44 or 50 directly to USB hub 46 or 40 when the

consumer device connected to first USB port 44 or 50 is configured to only respond to communication from the USB host, thereby rendering the consumer device compatible with the USB host.

7. Motivation to Combine/Expectation of Success

Petitioner argues:

Chang discloses a hub with dedicated downstream device ports (for host-device connections) and a dedicated downstream host port (for a host-host connection through a bridge). It would have been obvious to modify Chang in view of Chang II and a POSITA's knowledge to include dual-role port(s) and a switch to route the ports to the appropriate transmission path.

Pet. 38 (citing Ex. 1013 ¶¶ 175–202).

Petitioner argues “[a]s the ’899 patent admits, consumer products (*e.g.*, smartphones and other mobile device[s]) with dual-role USB capabilities were gaining popularity before the 2013 priority date . . . a POSITA would have been motivated to combine Chang’s dedicated device- and host-ports to create one or more dual-role ports.” *Id.* at 38–39.

Petitioner further argues that common sense would dictate such a modification as “it would be impractical, and inconvenient at best, to require consumers to understand when to switch connections between dedicated host- and device-ports when using a dual-role product.” *Id.* at 38 (citing Ex. 1013 ¶ 177). Petitioner additionally argues that modifying Chang to include dual-role ports would further Chang’s express goal of easily establishing a connection between a computer and another computer. *Id.* at 39 (citing Ex. 1014 ¶ 3). According to Petitioner, a POSITA would have had a high expectation of success in modifying Chang to include the dual-role ports because dual-role ports and host/device detection were already well-known using commercially available components and well-understood

signaling. *Id.* at 40 (citing Ex. 1025, 3:10–32, 3:40–4:8, 7:34–40; Ex. 1052, 3:21–50). Further Petitioner argues that, “Chang II discloses switching functionality to select the appropriate transmission path depending on the consumer product operating mode, *e.g.*, ‘host-to-host transmission path 54’ or ‘transmission paths 48.’” *Id.* at 41 (citing Ex. 1017 ¶ 57; Ex. 1052, 3:7–20; Ex. 1053 ¶¶ 31–34).

Furthermore, Petitioner argues “a POSITA would have recognized that Chang effectively provides a roadmap to implement switching to support dual-role ports” because Chang describes a transmission path 54 for host-to-host connection and a transmission path 48 for host-to-device connection. *Id.* at 40–42. Accordingly, Petitioner states:

in the context of Chang, a POSITA would have been motivated to implement dual-role ports by including a switch (*e.g.*, multiplexer or crossbar) that connects the dual-role port(s) directly to the hub’s upstream port (when the consumer product is configured as a device, *i.e.*, path 48) or to the hub through the bridge (when the consumer product is configured as host, *i.e.*, path 54). Welch, ¶¶182–187. A POSITA would have been further motivated to improve Chang in view of Chang II, because Chang II expressly states its relevance to USB hubs. *See* EX1015, [0027] (invention performs “similar[ly] to the commonly known USB HUB function”); *see also id.*, [0040] (“control chip 13 at this time ***functions like a USB Hub chip***”) (emphasis added); Welch, ¶181.

Id. at 41–42 (alteration in original).

Patent Owner argues a POSITA would not have been motivated to combine Chang and Chang II. Prelim. Resp. 21–34. Patent Owner contends “Petitioner relies on the general existence of dual-role devices and its expert’s say-so as the foundation for its hindsight-based combination.”

Id. at 21. Patent Owner makes three arguments as to why a POSITA would have no reason to consider using Chang II to modify Chang. *Id.* at 22–28.

First, Patent Owner argues “[n]othing about Chang II suggests it is intended for use with dual-role devices . . . [because] Chang II does not mention dual-role devices . . . instead consistently and exclusively refers to either a ‘host device 3’ or a separate and distinct ‘slave device 4’ as the possible downstream device.” *Id.* at 22. Patent Owner additionally argues Chang II’s disclosure that a second interface could use any of the connector types covered under the USB specification and the existence of Micro-AB connectors is insufficient to provide sufficient motivation to combine Chang and Chang II. *Id.* at 23–24.

Second, Patent Owner contends a POSITA would not have referenced Chang II to implement a dual-role port because Chang II does not consider a single device capable of operating in both host and device modes and Chang II expressly requires an adapter to swap between a USB connection used for hosts and a USB connection used for USB devices. *Id.* at 25.

Third, Patent Owner argues “[a] POSITA would not have considered using Chang II to modify Chang for the additional reason that adding steps and components to Chang, as Petitioner proposes, would only have complicated Chang’s design and frustrated Chang’s ‘express goal’ of ‘easily establishing a connection between a computer and another computer.’” *Id.* at 27.

Patent Owner additionally argues Petitioner’s justifications for combining Chang and Chang II ignore and mischaracterize Chang II’s disclosures. *Id.* at 28–34.

First, Patent Owner argues that three of Petitioner’s motivation-to-combine arguments fail to mention Chang II’s teachings at all and therefore fail as a matter of law. *Id.* at 28–30. According to Patent Owner, none of Petitioner’s arguments regarding popularity, cost saving, and common sense refers to any teaching in Chang II, let alone explains why a POSITA would have combined elements from specific references *in the way the claimed invention does*. *Id.* at 29–30.

Second, Patent Owner contends Petitioner’s arguments based on “common-sense” fail because the common-sense rationalization alone is legally insufficient to supply a motivation to combine Chang and Chang II and also because of lack of evidentiary support of cost savings. *Id.* at 31–32.

Third, Patent Owner contends Petitioner’s arguments that a POSITA would have been motivated to add dual-role ports to Chang to further Chang’s express goal of easily establishing a connection between a computer and another computer suffer from a failure of proof because Chang already provides a way to accomplish its express goal, and Chang does so by using dedicated ports for host-to-host and host-to-device communication. *Id.* at 32–33. In connection with this third argument, Patent Owner argues that Petitioner’s proposed modifications to Chang would complicate Chang’s solution by adding steps and components and would only have frustrated Chang’s express goal. *Id.* at 33.

Fourth, Patent Owner argues the Petition overstates Chang II’s passing mentions of a USB hub as a suggestion that Chang II’s bridge would be considered for improving Chang’s solution, which involved a hub and a bridge. Prelim. Resp. 33–34 (citing Ex. 1015 ¶¶ 27, 40). According to Patent Owner, the paragraphs of Chang II upon which the Petition relies do

not suggest that the disclosed bridge could be used with a hub; they instead indicate that when using its “bypass path,” the “data transmission bridge device” provides an “intermediate transmission function (similar to the commonly known USB HUB function).” *Id.*

Based on the preliminary record, I am persuaded that Petitioner has presented a sufficient rationale to combine the teachings of Chang with Chang II, and POSITA’s knowledge, with a reasonable expectation of success. I am persuaded that the proposed combination of Chang, Chang II and POSITA pertains to known elements performing their ordinary functions to predictably result in a USB hub module with dual-role port functionality using a crossbar switch to automatically switch between a host-to-host mode or host-to-device mode via a different transmission path depending on whether a detected connecting device is operating as a host or as a device. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). Although Patent Owner correctly argues that the proposed modification of Chang by adding thereto Chang II’s controller including the detection unit and the switching mechanism (e.g., a well-known multiplexer or crossbar switch), would add components to Chang’s system, I do not agree with Patent Owner that such a modification would render Chang’s resulting system more complex. Instead, I agree with Petitioner that the proposed modification of Chang would allow the resulting Chang’s system to be more practical, efficient, and convenient as it would automate the switching between the transmission paths to operate in one of the two modes depending on the detected connecting device. For these same reasons, I do not agree with Patent Owner that the proposed modification would change Chang’s principle of

operation or intended purpose. Simply put, the proposed combination would enhance the operation of the dual port system already disclosed by Chang.

As noted above, based on the preliminary record, I am persuaded that Petitioner's proposed combination of Chang with Chang II, and POSITA's knowledge is no more than a simple arrangement of old elements with each performing the same function it had been known to perform, yielding no more than what one would expect from such an arrangement. Accordingly, Petitioner has sufficiently established for purposes of institution that a POSITA would have been motivated to make the proposed combination.¹⁵

For purposes of institution, I find that Petitioner's rationale, which is supported by the testimony of Mr. Welch, is a sufficient demonstration, at this stage, of a motivation to combine the references with a reasonable expectation of success. *KSR*, 550 U.S. at 417–18.

8. Conclusion Regarding Independent Claim 1

For the foregoing reasons, I determine that Petitioner has established a reasonable likelihood of prevailing on its assertion that independent claim 1

¹⁵ It has been held that where the claimed subject matter involves more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness *must* be based on “an apparent reason to combine the known elements in the fashion claimed.” *KSR*, 550 U.S. at 417–18. That is, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.* at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Such reasoning can be based on interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. *Id.* at 417–18.

would have been obvious in view of the combination of Chang, Chang II, and POSITA's knowledge.

9. Claims 2–6

Petitioner contends that claims 2–6, which depend directly or indirectly from independent claim 1, would have been obvious over the combination of Chang, Chang II, and POSITA's knowledge. Pet. 70–83.

I have reviewed Petitioner's showing as to the additional limitations of claims 2–6, and find that Petitioner has sufficiently shown that the combination of Chang and Chang II teaches each of the limitations of these claims at this stage of the proceeding. *Id.* I further note that Patent Owner does not separately address the patentability of these claims beyond its arguments as to independent claim 1, addressed above. *See* Prelim. Resp. I determine, on the current record and for purposes of institution, that the information presented in the Petition demonstrates a reasonable likelihood that Petitioner would prevail in its obviousness contentions regarding claims 2–6.

III. Conclusion

For the foregoing reasons, I determine that the information presented establishes a reasonable likelihood that Petitioner would prevail in showing that at least one challenged claim of the '899 patent is unpatentable.