PUBLIC VERSION - REDACTED

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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MICROCHIP TECHNOLOGY INC.,
Petitioner,

v.

APTIV TECHNOLOGIES AG AND APTIV TECHNOLOGIES LIMITED,
Patent Owners.

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Case No. PGR2024-00011
U.S. Patent No. 11,681,643

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# PETITIONER'S REPLY BRIEF

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## LISTING OF EXHIBITS

| Exhibit | Description |
|---|---|
| 1001 | U.S. Patent No. 9,460,037 ("'037 Patent") |
| 1002 | Patent Prosecution History for U.S. Patent No. 9,460,037 |
| 1003 | U.S. Patent No. 9,619,420 ("'420 Patent") |
| 1004 | Patent Prosecution History for U.S. Patent No. 9,619,420 |
| 1005 | U.S. Patent No. 9,645,962 ("'962 Patent") |
| 1006 | Patent Prosecution History for U.S. Patent No. 9,645,962 |
| 1007 | U.S. Patent No. 10,545,899 ("'899 Patent") |
| 1008 | Patent Prosecution History for U.S. Patent No. 10,545,899 |
| 1009 | U.S. Patent No. 11,176,072 ("'072 Patent") |
| 1010 | Patent Prosecution History for U.S. Patent No. 11,176,072 |
| 1011 | U.S. Patent No. 11,681,643 ("'643 Patent") |
| 1012 | Patent Prosecution History for U.S. Patent No. 11,681,643 |
| 1013 | Declaration of Eric Welch ("Welch") |
| 1014 | U.S. Patent Publication No. 2006/0206650 ("Chang") |
| 1015 | U.S. Patent Publication No. 2009/0268743 ("Chang II") |
| 1016 | U.S. Patent Publication No. 2004/0019732 ("Overtoom") |
| 1017 | U.S. Patent Publication No. 2006/0195625 ("Hesse") |
| 1018 | *Universal Serial Bus Specification,* Revision 2.0, April 27, 2000 ("USB 2.0 Specification") |
| 1019 | *Universal Serial Bus Type-C Cable and Connector Specification*, Revision 1.2, March 25, 2016 |

| Exhibit | Description |
|---|---|
| 1020 | *Universal Serial Bus Power Delivery Specification*, Rev. 3.0, V1.0a, March 25, 2016 |
| 1021 | *Universal Serial Bus Implementers Forum Full and Low Speed Electrical and Interoperability Compliance Test Procedure,* Revision 1.3, February 2004 |
| 1022 | *On-The-Go and Embedded Host Supplement to the USB Revision 2.0 Specification,* Revision 2.0 version 1.1a, July 27, 2012 (the "OTG Supplement") |
| 1023 | *Universal Serial Bus 3.0 Specification*, Revision 1.0, November 12, 2008 ("USB 3.0 Specification") |
| 1024 | Declaration of Jeffrey L. Ravencraft re USB Specifications. |
| 1025 | U.S. Patent No. 8,683,085 ("Castleberry") |
| 1026 | INTENTIONALLY OMITTED |
| 1027 | INTENTIONALLY OMITTED |
| 1028 | INTENTIONALLY OMITTED |
| 1029 | U.S. Patent No. 8,447,598 ("Chutorash") |
| 1030 | U.S. Patent No. 8,694,803 ("Rafiee") |
| 1031 | GL620USB-A: GeneLink USB PC-to-PC Networking Controller, Specification 1.6, November 17, 2000 |
| 1032 | U.S. Patent Publication No. 2008/0005262 ("Wurzburg") |
| 1033 | U.S. Patent Publication No. 2007/0255885 ("Bohm '885") |
| 1034 | U.S. Patent No. 7,162,566 ("Lin") |
| 1035 | *PL-2501 Product Brochure*, Prolific Technology Inc., September 11, 2002 |

| Exhibit | Description |
|---|---|
| 1036 | *NET1080 USB TurboCONNECT Preliminary Specification*, Revision 0.6, NetChip Technology, Inc., January 31, 2000 |
| 1037 | *M5632 Preliminary Product Brief*, ALi Corporation, September 15, 2002 |
| 1038 | U.S. Patent No. 7,085,876 ("Lai") |
| 1039 | U.S. Patent Publication No. 2009/0185559 ("Chen") |
| 1040 | U.S. Patent No. 3,916,380 ("Fletcher") |
| 1041 | U.S. Patent No. 7,057,413 ("Young") |
| 1042 | U.S. Patent Publication No. 2006/0227759 ("Bohm '759") |
| 1043 | Oral Order, dated December 19, 2017 in *Microchip Technology Incorporated v. Delphi Automotive Systems, LLC et al.*, Case No. 1:17-cv-01194-JDW (D. Del.) |
| 1044 | INTENTIONALLY OMITTED |
| 1045 | Aptiv Technologies Limited's Responses and Objections to Microchip Technology Inc.'s First Set of Interrogatories (Nos. 1-11), dated June 12, 2023 in *Aptiv Technologies AG, v Microchip Technology Inc.*, Case No. 1:23-cv-00307-JDW (D. Del.) |
| 1046 | U.S. Patent Publication No. 2007/0156293 ("Kellzi") |
| 1047 | U.S. Patent No. 7,502,878 ("Wright") |
| 1048 | INTENTIONALLY OMITTED |
| 1049 | *USB in Automotive: Not Just for PCs Anymore,* Brian Ellis, Cypress Semiconductor Corp., Electronic Product News, September 1, 2006 |

| Exhibit | Description |
|---|---|
| 1050 | *The Car Entertainment System*, Niels Koch (published as Chapter 23 in Part 5 ("Infotainment and Navigation Systems" of *New Trends and Developments in Automotive System Engineering*, Marcello Chiaberge (Editor), InTech, 2011 (2014 Reprint)) |
| 1051 | *The Car Entertainment System*, Niels Koch (published as Chapter 23 in Part 5 ("Infotainment and Navigation Systems" of New Trends and Developments in Automotive System Engineering, Marcello Chiaberge (Editor), IntechOpen, 2011) |
| 1052 | U.S. Patent No. 9,864,711 ("Wang") |
| 1053 | U.S. Patent Publication No. 2004/0088449 ("Sakaki") |
| 1054 | Anchor Chips Single-Chip EZ-Link (AN2720SC), product brochure dated November 1998 |
| 1055 | *CMOS Circuit Design, Layout, and Simulation*, R. Jacob Baker, IEEE Press, 1st Edition (1998) ("Baker") |
| 1056 | Library of Congress Catalog Record for *CMOS Circuit Design, Layout, and Simulation*, R. Jacob Baker, IEEE Press, 1st Edition (1998) |
| 1057 | U.S. Copyright WebVoyage Record for *CMOS Circuit Design, Layout, and Simulation*, R. Jacob Baker, IEEE Press, 1st Edition (1998) |
| 1058 | Declaration of Mariellen F. Calter re *CMOS Circuit Design, Layout, and Simulation*, R. Jacob Baker, IEEE Press, 1st Edition (1998) |
| 1059 | Fairchild Semiconductor USB Switch listing from October 16, 2011 printed from Internet Archive Wayback Machine |
| 1060 | Fairchild Semiconductor FSUSB63 3:1 High-Speed USB 2.0 Switch / Multiplexer, dated November, 2010 |
| 1061 | Internet Archive Affidavit of Nathaniel E Frank-White re Exhibits 1031, 1035, 1037 and 1054 |

| Exhibit | Description |
|---|---|
| 1062 | Internet Archive Affidavit of Nathaniel E Frank-White re Exhibits 1036, 1049, 1050/1051, and 1058 |
| 1063 | Maxim 4989 Datasheet (USB 2.0 Hi-Speed 2-of-4 Crosspoint Switch), dated August 2008 |
| 1064 | Cypress Semiconductor AN96527 - Designing USB Type-C Products Using Cypress's CCG1 Controllers, dated June 3, 2015 |
| 1065 | Internet Archive Affidavit of Nathaniel E Frank-White re Exhibits 1059, 1063, 1064, 1068, and 1071 |
| 1066 | U.S. Patent No. 9,104,821 ("Dunstan") |
| 1067 | U.S. Patent Publication No. 2010/0265179 ("Ram") |
| 1068 | Fairchild Semiconductor FSUSB30 Low-power, Two-Port, High-Speed USB2.0 Switch, dated January 2007 |
| 1069 | *The ART of Electronics*, P Horowitz and W. Hill, Cambridge University Press, 2nd Edition (1989) |
| 1070 | *Universal Serial Bus: Micro-USB Cables and Connectors Specification*, Revision 1.01, April 4, 2007 |
| 1071 | Fairchild Semiconductor FSA880 / FSA881 – USB Port 2:1 Switch with Accessory and Charger Detection, dated November 2011 |
| 1072 | Excerpts from Aptiv's Supplemental Infringement Contentions (Redline), dated November 8, 2023 in *Aptiv Technologies AG, v Microchip Technology Inc.*, Case No. 1:23-cv-00307-JDW (D. Del.) |
| 1073 | Microsoft Computer Dictionary, 4th ed., Microsoft Press, 1999 ("Microsoft Dictionary") |
| 1074 | STMicrosystems, RM0033 Reference Manual, STM32F205xx, STM32F207xx, STM32F215xx and STM32F217xx advanced ARM-based 32-bit MCUs, Doc ID 15403 Rev 2, December 2010 |

| Exhibit | Description |
|---|---|
| 1075 | Joint Claim Construction Statement (Dkt. No. 115), dated December 6, 2023 in *Aptiv Technologies AG, v Microchip Technology Inc.*, Case No. 1:23-cv-00307-JDW (D. Del.) |
| 1076 | INTENTIONALLY OMITTED |
| 1077 | INTENTIONALLY OMITTED |
| 1078 | INTENTIONALLY OMITTED |
| 1079 | INTENTIONALLY OMITTED |
| 1080 | Claim Construction Order (Dkt. Nos. 201-202), dated July 12, 2024 in *Aptiv Technologies AG, v Microchip Technology Inc.*, Case No. 1:23-cv-00307-JDW (D. Del.) |
| 1081 | INTENTIONALLY OMITTED |
| 1082 | Independent Claim Language (Houh Depo., Ex. 1082) |
| 1083 | Annotated Fig. 4 of Challenged Patents (Houh Depo., Ex. 0001) |
| 1084 | Houh Tr. (2024/12/18, Day 1) |
| 1085 | Houh Tr. (2024/12/19, Day 2) |
| 1086 | Houh Supp. Dec. (EX2019 in IPGR2024-00228) ('420 patent) |
| 1087 | Houh Reply Dec. (EX2019 in IPR2024-00229) ('962 patent) |
| 1088 | Houh Reply Dec. (EX2019 in IPR2024-00230) ('072 patent) |
| 1089 | INTENTIONALLY OMITTED |
| 1090 | Houh Supp. Dec. (EX2019 in IPR2024-00495) ('420 patent) |
| 1091 | Redline of Houh Supp. Dec. (¶¶52-130) to POR (IPR2024-00228) (420 patent) |
| 1092 | Redline of Houh Supp. Dec. (¶¶52-137) to POR (IPR2024-00229) (962 patent) |

| Exhibit | Description |
|---|---|
| 1093 | Redline of Houh Supp. Dec. (¶¶52-119) to POR (IPR2024-00230) (072 patent) |
| 1094 | Redline of Houh Supp. Dec. (¶¶52-119) to POR (PGR2024-00011) (643 patent) |
| 1095 | Redline of Houh Supp. Dec. (¶¶52-142) to POR (IPR2024-00495) (420 patent) |
| 1096 | Rob Voto LinkedIn profile |
| 1097 | Craig Petku LinkedIn profile |
| 1098 | Craig Petku LinkedIn profile (full experience section) |
| 1099 | Microchip Application Note AN2374: USB4916/USB4914 Multi-Host Endpoint Reflector Operation (attached as Ex. J to Aptiv's Amended Complaint (Dkt. 42) in *Aptiv Technologies AG v. Microchip Technology Inc.*, Case No. 1:23-cv-00307-JDW (D. Del., March 20, 2023). |
| 1100 | Sept. 8, 2013 Don Perkins Email Chain re: Apple Meeting Overview and "Flex Connect" Update |
| 1101 | INTENTIONALLY OMITTED |
| 1102 | Reply Declaration of Eric Welch ("Welch Reply") |
| 1103 | Excerpts from *The ART of Electronics*, P Horowitz and W. Hill, Cambridge University Press, 2nd Edition (1989) |
| 1104 | Declaration of John Phillips [FILED UNDER SEAL] |

## I. INTRODUCTION

Aptiv's substantive arguments largely conflate to a single baseless assertion—*i.e.*, that a host-to-device connection in Petitioner's Mux Implementations (Pet., §VII.A.1) results in a "dead-end" state. *E.g.,* POR, 31. Aptiv repackages this argument several ways (§IV.A.1), but they all fail for two separate reasons. *First*, PO relies on a false premise—*i.e.*, that the detection unit is *always* inside Chang's bridge 52. This is plainly not the case and is fatal to PO's argument. §IV.A.2.

*Second*, even if the detection unit was inside Chang's bridge 52, the Mux Implementations work just fine (*i.e.*, can toggle between host-to-device and host-to-host connections). PO fundamentally misunderstands Petitioner's combination. Contrary to PO's assertions, the detection unit is never cutoff from sensing downstream USB signals (*i.e.*, only the location—not the operation—of the detection unit is changed). Thus, the detection unit can detect host/device mode at all times, just as if it were outside the bridge. This, too, is dispositive of PO's argument. §IV.A.3.a.

Further, even accepting PO's scenario that a host-device connection cuts off the detection unit from the mux, Petitioner's combination still works fine, provided the mux reverts to default/initialization/reset state when a mode-change occurs. Whenever the downstream product changes modes, the existing connection is first

closed which (per USB protocol) includes providing reset signaling. Using this signaling to revert the mux to its default/reset/initial condition (*i.e.*, routing incoming USB signals to the bridge/detection unit) avoids PO's purported "dead-end" scenario. §IV.A.3.b.

PO's remaining arguments are equally baseless. §§IV.B-F. Aptiv's secondary considerations fail collectively for lack of nexus, and individually on the merits. Even if credited, Aptiv's secondary considerations cannot overcome Petitioner's strong *prima facie* obviousness case. §§V.A-B.

## II. LEVEL OF SKILL IN THE ART

The parties' POSITA articulations are in the Petition (28-29) and POR (3-4). At Institution, the Board preliminary adopted PO's level of skill in the art, and invited the parties to further address the issue. ID, 18-20.

The Challenged Claims are unpatentable under either party's articulation. Welch Reply, ¶¶18-31. The parties agree on education and that some education/work experience can trade off. *Compare* Pet., 28-29 *with* POR, 3-4. And they agree ***some*** work experience is necessary—Petitioner says "several years," PO says "two years."[1] *Id*. Petitioner's articulation is more granular and

[1] The inventors' education/experience may be considered. LinkedIn profiles (available for two inventors) support Petitioner. EX1096-1098.

identifies several concepts a POSITA would be familiar with. Pet., 28-29. To the extent PO's more generic statement encompasses the same substantive knowledge base, little difference exists between the parties' definitions and the prior art analysis is substantially the same.

But PO's statement regarding experience "with computer network protocols ***such as USB***" is fuzzy. POR, 3. If PO means no USB knowledge/experience is necessary, Petitioner disagrees. At deposition, Dr. Houh equivocated. EX1084, 100:17-101:12. The Challenged Patent (and claims) build on a presumed USB knowledge base, and a POSITA would be familiar with USB industry standards and basic USB concepts mentioned by Petitioner. EX1011, 1:22-24, 3:21-25, 6:32-34 ("The detection and enumeration processes are defined by USB standards and not explained here in detail."), 7:67-8:3, 8:49-52; Welch, ¶¶45-107.

The prior art (*e.g.*, Chang and Chang II) supports Petitioner's assertion re USB familiarity. *See* Chang, [0002] ("USB 2.0 host-to host transmission cable"); Chang II, [0002] ("present invention…***adopts USB specification***"), [0009], [0011]-[0012] ("present invention…***adhere[s] to USB specification***"), [0021] (similar), [0023], [0029]-[0032] (discussing USB compliant connectors), [0046]. Moreover, "USB is the most successful PC peripheral interconnect ever defined," with "2 billion USB devices" shipped in 2006. EX1023, 29. Any suggestion a POSITA is ignorant of USB standards is not credible. PO's criticism of reciting "USB

standards" is belied by Dr. Houh who testified in another IPR that a "POSITA would have had working familiarity with…[particular standards, including] USB 1.1." IPR2020-00102, EX1003, ¶50.

Even if a POSITA was not deemed to have *actual* USB knowledge *ex ante*, Dr. Houh admitted a POSITA could readily review/understand the USB standards. EX1084, 84:15-25, 91:8-17. And Dr. Houh admitted a POSITA would know basic USB concepts like bridging, master/slave architecture, etc. *Id*., 100:17-101:12, 102:3-8 (USB concepts generally), 103:21-104:2 ("master/slave" architecture), 104:24-105:4 (bridges). Accordingly, even under PO's definition, the Challenged Claim is unpatentable. Welch Reply, ¶¶18-31.

## III. DR. HOUH'S TESTIMONY MERITS NO WEIGHT

Dr. Houh's testimony should be given no weight because he: (1) copied his declaration; and (2) lacks the qualifications/knowledge of a POSITA and is not credible.

### A. Dr. Houh Copied His Declaration

Using Microsoft Word, Petitioner redlined Dr. Houh's Supplemental Declaration (EX2019, ¶¶52-119) against the corresponding POR sections. EX1094; *see also* EX1091-1093, EX1095 (showing similar copying in related IPRs). Other than adding paragraph numbers and removing cites to EX2019, Dr. Houh copied his prior art analysis word-for-word from the POR. *Id*. At

deposition, Dr. Houh could not "remember in this case" who wrote his declaration. EX1084, 29:24-30:3.

Nor can PO say it copied Dr. Houh, because Dr. Houh's declaration (in related IPR2024-00230) shows the opposite, stating:

> To the contrary, ***as Dr. Houh explains***, while the POSITA's knowledge….

EX1088, ¶78. Nobody writing their own declaration would ever say this. It is well-established that copycat declarations—like Dr. Houh's—are entitled to little/no weight. *E.g., Xerox Corp. et al. v. Bytemark, Inc*., IPR2022-00624, Paper 12, 5 (PTAB Aug. 24, 2022) (precedential).

### B. Dr. Houh Lacks USB Qualifications and Credibility

Whatever expertise Dr. Houh has in other areas, he is simply not an expert (or POSITA) in the USB technology here. EX1084, 80:9-19 ("I don't have specific professional experience in working with USB…."), 82:22-83:12 ("I did not specifically have work experience with those standards…."), 82:14-83:7. Because Dr. Houh lacks USB experience, he rendered no opinions under Petitioner's POSITA standard. EX1084, 76:25-77:4.

PO's lack of USB knowledge explains why its primary patentability argument fails. §IV.A.3. Apparently, Dr. Houh has multiple years' experience in the following technologies, and others too numerous to list: "natural language

processors and information retrieval systems" (IPR2018-00306, EX1003, ¶92), "content delivery networks" (IPR2018-00864, EX1002, ¶32), "wireless devices" (IPR2020-00316, EX1003, ¶47), TV "remote controls" and "user interaction" (IPR2020-01598, EX1003, ¶45), "web services" (IPR2021-01144, EX1004, ¶¶33-34), "designing GUIs" (IPR2024-00455, EX1003, ¶21), "circuit design, digital design, and/or automation tools" (IPR2024-00476, EX1003, ¶47), and "creating and distributing multimedia" (IPR2017-01133, EX1003, ¶41).

Unsurprisingly, the Board has repeatedly given Dr. Houh's opinions little/no weight. *E.g.,* IPR2017-01133, Paper 68, 22-24 ("[Dr. Houh's] testimony…is entitled to little weight."); IPR2018-00361, Paper 22, 25 ("[W]e…do not credit Dr. Houh's testimony."); IPR2021-00482, Paper 29, 48 ("[W]e give Dr. Houh's testimony in this regard no weight."); IPR2020-00102, Paper 8, 30 ("we question Dr. Houh's testimony…."); IPR2021-01144, Paper 9, 17 ("Dr. Houh's statement…is unsupported"); IPR2014-00086, Paper 42, 22-23 ("inconsistent testimony of Dr. Houh"); IPR2017-00375, Paper 51, 23, 38-40 ("Dr. Houh, 'provides no reasoned analysis or evidentiary support'"). The Board should do the same here.

## IV. PATENT OWNER'S ARGUMENTS ARE BASELESS

### A. PO's "Dead-End" Argument Fails

#### 1. PO Repeats the Same "Dead-End" Argument

PO reprises the same "dead-end" argument under multiple headings. In §VII.B.2, PO asserts Petitioner's combination "would not operate as described" because once it establishes a host-to-device connection "the bridge (and thus the detection unit) is *incapable* of directing the multiplexer to perform any further switching operations," placing the system in a "***dead-end state***." POR., 22-31.

Likewise, in §VII.C.1, PO repeats the same dead-end argument under a different heading. POR, 31-33 ("multiplexer routes the downstream consumer device directly to the USB hub, disconnecting the detection unit that generates the control signals"). And in §VII.E.1, under another heading, PO reframes the same dead-end argument as a purported reason a POSITA would not modify Chang. But PO's underlying argument is the same: "[Petitioner's] combination…[cannot return] from a device mode back to a host mode." POR, 41-42.

And in §VII.E.2, under yet another heading, PO repackages the same dead-end argument: "the proposed combination enters a state from which it cannot return." POR, 42-44. PO adds a slight twist (*viz.*, the combination would "retain[] out-of-date" host/device connection information). *Id*. But this is part-and-parcel of the same dead-end line of argument.

PO nominally raises a reasonable expectation of success argument in

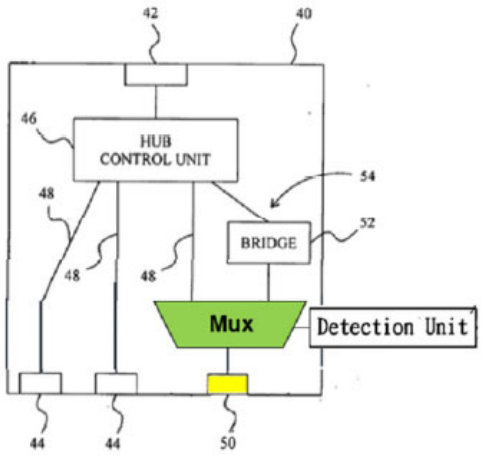
§VII.E.4, but it too derives solely from PO's "dead-end" argument. POR, 48; EX2019, ¶117 (describing purported "loss of detection functionality once a device mode has been entered.").

PO largely rehashes its dead-end argument for claims 1, 5, and 10 in §VII.C.1. POR, 31-33. PO's "bypass" argument for these claims is address below in §IV.C.

Similarly, PO replays its dead-end argument for dependent claims 3-4, 8-9, and 14-15 in §VII.C.3. POR, 36-37. Petitioner further rebuts PO's argument for these claims in §IV.C below.

**2. PO's Dead-End Argument Relies on a False Premise**

PO's dead-end argument—in all its incarnations—relies on the same false premise: that host/device detection takes place in the bridge using USB signals from the multiplexer. *E.g.*, POR, 25. This is fatal to PO's argument. Welch Reply, ¶¶32-38. Petitioner proposed multiple locations for the detection unit. Pet., 48-49 ("locate the detection unit proximate to (or integrated with) the switch"); Welch, ¶¶192-193. For example, when discussing the combination, Mr. Welch provides the following "example deployment of a detection unit (e.g., in view of Chang II)," with the detection unit *outside* the bridge:




*Id.*, ¶192. He explains the "detection circuitry could be deployed in several obvious ways," and gives example locations, including "between the dual-role port 50 and mux," which was "obvious because it is the first place a signal from a downstream USB product arrives."[2] *Id.*, ¶193. Because PO has no response, it pretends the "third obvious location" (*i.e.*, in the bridge), was the only location.[3]

PO's disingenuous approach is exposed by Dr. Houh's POPR testimony where he admitted "a POSITA would understand that the location of the signal detection circuit was a matter of design choice." EX2001, ¶116. Relying on "a

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[2] Aptiv admits another obvious location: "[a POSITA] would understand that [host/device detection] is performed by the USB routing switch." EX1072, 597.

[3] PO's strained read would obviate Petitioner's discussion of using discrete, commercially available bridge, mux, and hub components.

POSITA's knowledge," Dr. Houh testified "[a]s a practical matter, it would be easy for a POSITA" to place the detection circuit "elsewhere while still performing the claimed method." *Id*. PO's head-in-the-sand approach dooms its dead-end argument. Dr. Houh had no opinion about Petitioner's combination with the detection unit outside the bridge. EX1085, 256:20-257:22.

In an about face at deposition, Dr. Houh (incorrectly) asserted Mr. Welch's claim analysis relied exclusively on a detection unit in the bridge. EX1085, 247:17-22, 249:17-25, 254:6-14. This fails the red-face test, as shown by the Petition (and Mr. Welch's declaration) where the address the ***signal detection unit*** limitation. Pet., 56-58; Welch, ¶¶226-232. PO ignored Petitioner's disclosure at its own peril.

Petitioner rebuts PO's baseless dead-end argument (§IV.A.3), but the Board need not address it because PO failed to respond to Petitioner's proposal with the detection unit outside the bridge.

### 3. Locating the Detection Unit in the Bridge Works Fine

For two separate reasons, a POSITA would readily understand Petitioner's third alternative detection unit location (in the bridge) would work just fine.

#### *a. PO Misunderstands the Combination*

PO fundamentally misunderstands Petitioner's combination. Welch Reply, ¶¶39-43. PO (incorrectly) assumes that co-locating the detection unit and bridge

changes detection unit operation. That assumption is unwarranted. After noting the detection unit could be in the bridge, Mr. Welch states "the detection unit must connect to the downstream port to detect the mode, as shown in Chang II [Fig. 5]" (Welch, ¶193), which shows the detection unit (even though part of Chang II's "bridge") directly connected to the downstream port ("second connection interface 12").

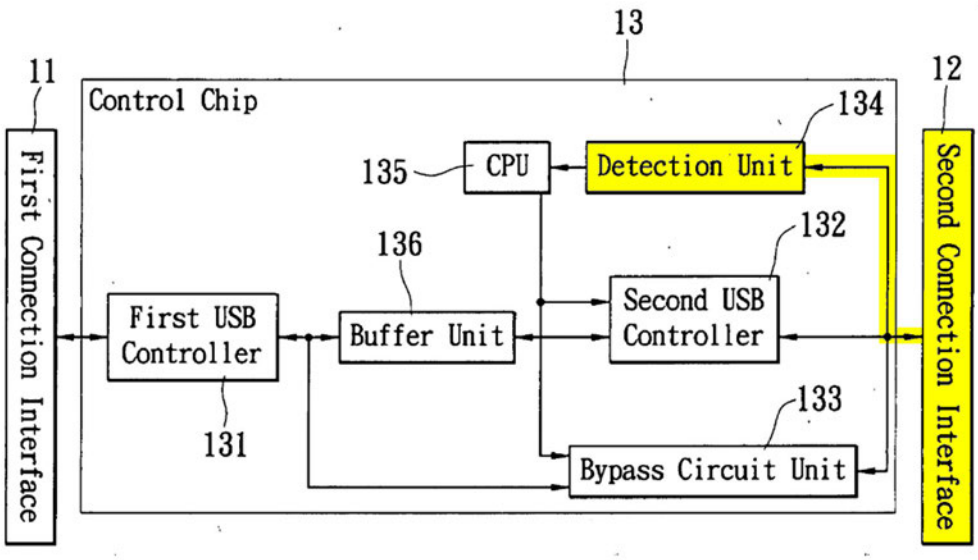


FIG. 5

EX1015, Fig. 5 (annotated). Similarly, in Petitioner's combination, the detection unit (even when located in Chang's bridge 52) receives and processes USB signals directly from the downstream port, *not signals coming through the multiplexer*. Welch, ¶¶192-193; Welch Reply, ¶41. In other words, the detection unit operates the same regardless of whether it is inside/outside the bridge (*i.e.*, the functionality does not change, only the placement). Accordingly, the detection unit can sense

mode changes at any time (regardless of mux state) and no "dead-end" problem exists. *Id*.

### *b. PO Ignores Basic USB Operation and Reset*

Even if the detection unit performed host/device detection on USB signals from the mux as PO incorrectly assumes (instead of directly from the downstream port), a POSITA would understand the combination still works, provided the mux reverts to a default state (*viz.*, routing to the bridge) when a mode change occurs. Welch Reply, ¶¶44-57. To begin, Dr. Houh admitted Petitioner's combination could switch from a host-to-host connection to a host-to-device connection. EX1085, 262:23-263:13. The only dispute is whether it could switch back. It most certainly can, as described below.

The concept of default/initialization/reset is very well-known in electronics generally, and in the USB context. Welch Reply, ¶¶6-10; EX1103, 18-20; EX1018, §§7.1.7.3, 7.1.7.5 ("After [reset], the device will be in the Default state."), Fig. 9.1 (state diagram); EX1085, 269:19-270:4. As with other USB systems, a POSITA would understand a default/initialization state exists in Petitioner's combination when powering up. Welch Reply, ¶¶45, 56. Indeed, Dr. Houh admitted the USB signals in Petitioner's combination "initially go[] into the bridge." EX1084, 197:20-198:3. No "dead-end" exists if the combination returns to that initial/default/reset state when a mode switch occurs. Welch Reply, ¶¶52-

57.

Fundamental USB concepts of "Attachment" and "Removal" come in to play here. EX1018, §§4.6.1, 4.6.2, 9.2.1 (discussing "Attachment," "Removal," and "Dynamic Attachment and Removal"); Welch Reply, ¶¶11-17, 50-52, 57. Attachment and Removal are the USB terms for opening/closing a data connection. *Id*. Dr. Houh confirmed a "POSITA would certainly have been aware of this at the time the challenged claims were invented." EX2001, ¶¶108-109. Notably, "a host and device can disconnect electrically without having to physically disconnect plug and receptacle." Welch, ¶58; *id.*, ¶85. Dr. Houh confirmed this too.[4] EX1085, 296:1-12, EX1084, 203:14-20.

Per USB requirements, an existing connection is closed (but not necessarily unplugged) before a new connection is established (Attachment). EX1018, §§4.6.1, 4.6.2, 9.2.1; Welch Reply, ¶¶12-14, 17. Thus, when switching modes, the downstream USB product first closes its existing connection by sending an SE0 signal which the receiving port "may treat…as a reset." EX1018, §§7.1.7.5, 7.1.7.3; Welch Reply, ¶¶9-10, 16. Using this existing "reset" information, the mux would revert to its initial/reset/default state to route incoming signals to the

[4] PO's product documentation shows the same. *E.g.*, EX2023, 89.

bridge's detection unit for host/device determination.[5] *Id*., ¶¶48, 52-55.

This could be easily accomplished by, *e.g.*, the upstream host sending a signal that would be logically "ORed" (*e.g.*, using the well-known OR gate) to reset the mux select line(s) to route to the bridge. Welch Reply, ¶54 (discussing additional alternatives). Again, PO's product documentation confirms a default connection state. EX2022, 11 ("initial connection"); EX2023, 88 ("default datapath"). The Challenged Patent presumes (but does not explain) similar operation because it was well-known. EX1011, 6:32-34 (the "detection" process is "not explained here in detail").

One further point bears noting—PO conjures its argument only by implicitly contending Petitioner bodily incorporated Chang II into Chang's bridge 52.[6] POR, 13 ("Chang's bridge 52 (Chang II's bridge device 1)"); EX1085, 297:3-13, 298:14-

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[5] This disposes of PO's argument of "retaining an out-of-date…when a new [USB product] is connected." POR, 43. It also disposes with PO's §VII.E.2 argument that "Chang II's control chip 13 cannot re-execute [the detection] process unless and until the [downstream USB port is] reconnected." POR, 43.

[6] PO seeks to capitalize on Chang II's generic reference to its entire device (including CPU, control chip, detection unit, memory, buffer unit, etc.) as a "bridge device." The Board should reject PO's sleight of hand.

15 ("Chang's bridge 52, which is Chang II's bridging device 1"), 299:19-300:2. Petitioner did no such thing—instead it merely applied Chang II's ***teachings*** (*e.g.* dual-role port and alternative host/device paths) to Chang. *E.g.,* Pet., 3; *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). While Petitioner did not bodily incorporate Chang II Fig. 6, a POSITA would have understood (or at least found obvious) that a USB product switching modes without being unplugged triggers the same USB Removal/Attachment protocols (and concomitant host/device detection process) as a newly plugged-in product. Welch Reply, ¶¶51-52; EX1085, 345:18-22.

### B. The Petition Does Not Rely on "Conclusory Statements And Unspecific Expert Testimony"

PO argues the Petition relies on "[c]onclusory [s]tatements" and "[u]nspecific [e]xpert [t]estimony" for ***routing logic circuit***. POR, §VII.D (37-39). PO makes a substantially similar argument in §VII.B.1, contending Petitioner's mux explanation is too "limited and nonspecific" to support obviousness. *Id*., 19-22. In other words, PO contends a POSITA could not perform host/device detection and route a mux accordingly. PO's argument fails.

*First*, PO employs a double standard requiring more of the prior art than the patent teaches. *In re Paulsen*, 30 F.3d 1475, 1481 n.9 (Fed. Cir. 1994). Petitioner provided more detail than the '643 patent about host/device detection and mux operation and routing. *Compare* EX1011, Fig. 4 *with* Pet., §§III.B, III.B.1-2,

VII.A.1, VII.A.2.d-f and Welch, §§VI.B, VI.B.1-2, IX, XIV.A.1.d-f. Petitioner's detailed analysis distinguishes PO's cases. Moreover, *Arendi* concerned "common sense," not POSITA knowledge. *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016) (sole issue whether "Board misused 'common sense' to…supply a missing limitation"). And *Google* affirmatively supports Petitioner. *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337 (Fed. Cir. 2020) (obviousness analysis "***necessarily depends on such artisan's knowledge***.").

PO contends "[a POSITA's knowledge] does not include the specific knowledge of how to use [] generic switching components to modify Chang and Chang II" to route a USB signal. POR, 22. But mux operation is straightforward and well within a POSITA's knowledge and skillset. Welch, §VI.B.2. There is nothing magical about using such components to route USB signals, especially considering the numerous commercial parts available for that very purpose. *Id.*; EX1059. An engineer unable to perform this straightforward task (*e.g.*, assigning select line "0" or "1" for a given scenario) would soon be unemployed.

*Second*, the prior art discloses numerous host/device detection schemes were well-known. *E.g.*, EX1025, 7:30-52 ("passively monitor the signaling," "actively drive [] signaling onto the USB interface after connection," "mode selection [based on] the USB connection," "utiliz[ing] [OTG] ID pin," "[e]xternal hardware," "internal hardware such as an internal ROM or fuse bit," or "embedded software

that uses a value programmed into boot ROM"). Notably, Dr. Houh did not consider Castleberry (EX1025). EX1084, 151:3-23. And mux/crossbar datasheets themselves show how to configure the select line(s). *E.g.*, EX1060, 1; EX1068, 1-2 (showing routing and truth table). Moreover, PO's expert testified "[t]he exact components used to enact the routing switch…[are not] particularly material to the invention so long as the routing operation is achieved. ***Thus, the use of various switches, logic gates, control lines, port identifiers, etc. is a design choice left to the POSITA***." EX2001, ¶103.

*Third*, the Board preliminarily rejected PO's argument. ID, 35-36. Nothing has changed. Indeed, PO's expert admitted:

> USB hosts and devices generate different signals depending on whether they are operating in host or device mode.…[T]hese signals are received by a hub and used to determine how the different devices should be managed. ***A POSITA would certainly have been aware of this at the time the challenged claims were invented***.

EX2001, ¶109; *id*., ¶120 ("a POSITA could select a desired [detection circuit] and expect it to work with a given routing switch"); EX2019, ¶¶137-138.

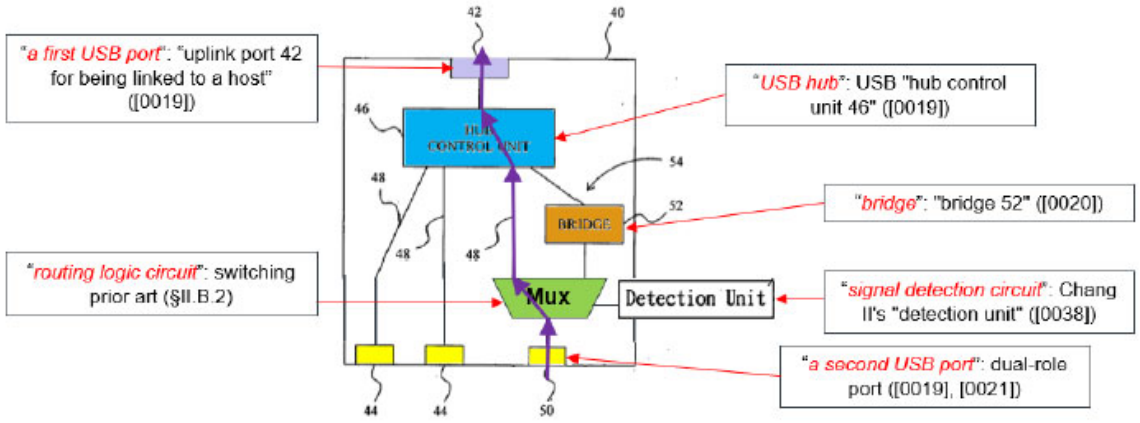
### C. Patent Owner's Additional Arguments are Meritless

***Claims 1, 5, and 10 (POR, §VII.C.1)***. PO largely rehashes its "dead-end" argument (addressed *supra* §IV.A). POR, 31-33. Contrary to the whole premise of PO's "dead-end" argument, PO tacitly acknowledges Petitioner disclosed

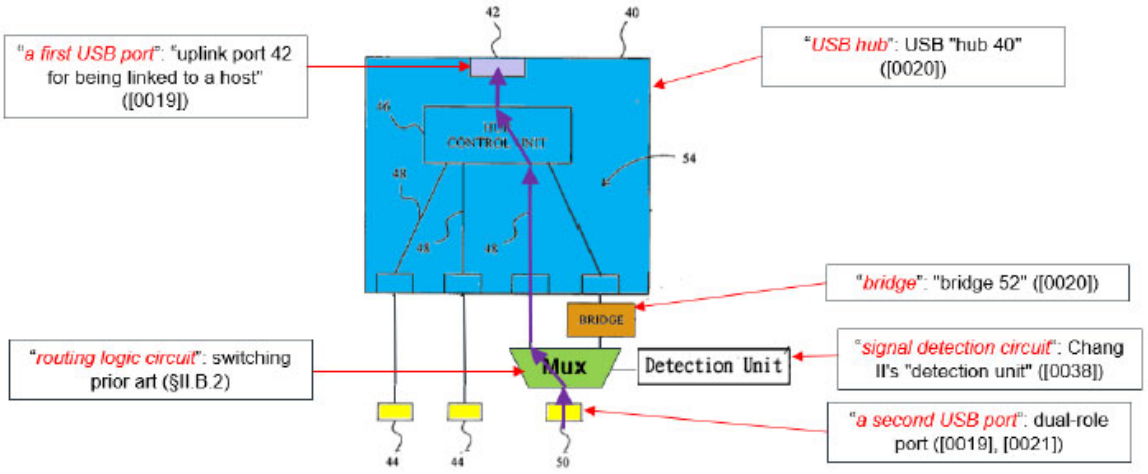
multiple locations for the detection unit, including "proximate to or integrated with the multiplexer." *Id*., 33. Because this guts PO's dead-end argument (as explained above), PO make an additional baseless argument—that such an arrangement "fail[s] to meet the claim requirement of 'bypassing the USB bridge'" because "Chang II's detection unit is part of the bridge." POR, 33. This argument is circular and makes no sense. It also improperly relies on the false premise that Petitioner bodily incorporated Chang II.

Element 1[e][i] requires a host-to-device path that ***bypass[es] the USB bridge***. The Petition illustrates this path for the Mux Embodiments using purple arrows.

**Chang (Hub 46)**




**Chang (Hub 40)**




Pet., 68 (EX1014, Fig. 3 (modified and annotated)). The Board should reject PO's argument because the Mux Implementations host-to-device connections plainly ***bypass[]*** the bridge.

***Claims 2, 7, and 13 (POR, §VII.C.2)***. PO implicitly construes ***infotainment system*** to require "real-time" data transfer, "streaming" services, and "mapping, video, and screen mirroring functionality" (POR, 34), but cites permissive "such

as" and "may" specification language. EX1011, 1:57-62. PO's "isochronous" argument (POR, 35) fails as the Challenged Patent says nothing about this. Regardless, the USB standard discloses isochronous transfer and renders it obvious in 2013. EX1018, §§4.7.4, 5.6. Moreover, Dr. Houh admitted "automotive companies [commonly] use USB" (EX2001, ¶37) and "USB was a known method for connecting a mobile phone to a vehicle's infotainment system" (*id*., ¶52), which defeats PO's arguments.

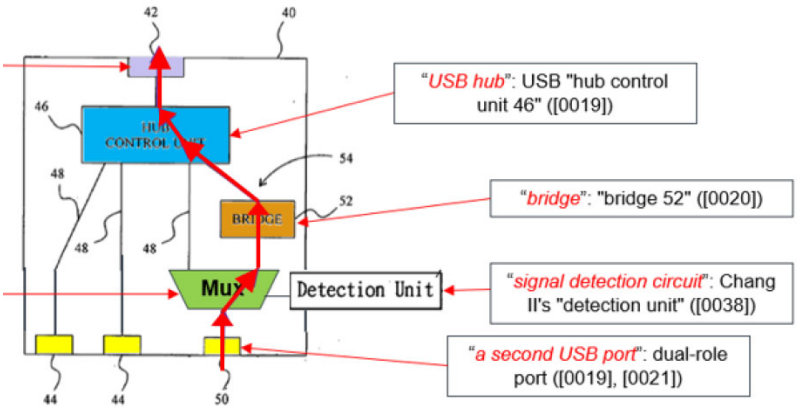
***Claims 3-4, 8-9, and 14-15 (POR, §VII.C.3)***. PO first rehashes its dead-end argument (addressed *supra* §IV.A.). Next, PO argues "the multiplexer cannot include the signal detection circuit because it would fail to meet the limitation of the parent claims that routing the USB signals bypasses the bridge (which includes detection unit 134)." POR, 36-37. But this is the same "bypass" argument PO made for claims 1, 5, and 10 and fails for the same reasons discussed two paragraphs above. Moreover, Dr. Houh admitted "a POSITA would understand that the location of the signal detection circuit was a matter of design choice. Because of the functional relationship between the signal detection circuit and the routing switch, it would be natural to implement a routing switch that includes the signal detection circuit." EX2001, ¶116; *id.*, ¶121 ("no reason to think that known detection circuits could not be included in a routing switch."); EX1072, 597.

### D. PO's Motivation to Combine Attack Fails

PO raises several challenges to Petitioner's motivation to modify Chang. POR, §VII.E. Two (§§VII.E.1 and VII.E.4) merely reprise PO's dead-end argument addressed *supra* §IV.A. PO also argues hindsight because Mr. Welch read the patent before the prior art. POR, 40. Experts routinely do this to determine their comfortable level/qualifications in the patented subject matter and has nothing to do with hindsight. Moreover, PO's expert follows the same approach PO criticizes. EX1084, 28:12-29:23.

In §VII.E.3, PO contends Petitioner's "combination is wasteful and inefficient" because it "adds duplicative switching components." POR, 44-45. But Chang has no "switching components" so there is nothing "duplicative" about adding a mux. PO's argument again relies on the false premise of replacing Chang's bridge 52 with Chang II. But Petitioner "appl[ied] Chang II's teachings and [POSITA's knowledge]" to Chang, not bodily incorporation. Pet., 3; *id.*, 57. Petitioner routinely identified ***Chang's bridge 52*** as the ***bridge***.

**Chang (Hub 46)**




Pet., 61 (partial).

PO contends Petitioner's modification "introduces additional ports (44, 50) to Chang's USB hub." POR, 46. But the figure above shows three ports instead of Chang's original four, thus *reducing* port count and costs. EX1025, 1:36-43. The same is true of the hub 40 embodiment. Pet., 49-51 (discussing "flexibility in port placement").

Integrating mux functionality into an ASIC adds *de minimus* cost. EX2021, 29:20-30:2; Welch, ¶¶96, 201-202; EX2043, ¶¶223, 274-277. Chang recognizes integration was known to "an [IC] designer." EX1014, [0022]. Chang II integrates substantially all components on "control chip 13" in Fig. 2. EX1015, [0023], [0034], Fig. 2. Hesse discloses a "crossbar switch" on the USB controller chip. EX1017, [0057]-[0059]. Using discrete mux/crossbar components would be obvious to try for rapid development/prototyping and fast time-to-market, even if marginally more expensive. Welch, ¶¶201-202; EX2021, 235:19-236:22

(discussing cost/benefit tradeoff).

More broadly, Mr. Welch did not ignore cost as PO suggests (POR, 47); rather, he did not perform a full-blown quantitative financial analysis, but did qualitatively speak to costs at deposition (EX2021, 236:5-22, 270:20-25, 271:11-272:12, 279:3-7, 285:24-286:7) and in his declaration (Welch, ¶¶74, 88, 152, 177, 202)).

### E. Patent Owner Raises No Separate/Independent Arguments for Ground 2

PO raises no unique arguments against Ground 2. POR, 48-49.

### F. Grounds 3-7 (§112 Arguments)

Petitioner maintains all its §112 arguments in Grounds 3-7, but focuses on Ground 5 here. PO argues ***signal detection circuit*** is not a means-plus-function term, but does not dispute the '643 specification discloses no corresponding structure. POR, 77-82. Thus, if the Board agrees (as it should) that ***signal detection circuit*** is a means-plus-function term, claims 1-9 are indefinite.

## V. PATENT OWNER'S SECONDARY CONSIDERATIONS FAIL

Even if Aptiv's allegations had merit, they would not overcome Petitioner's strong obviousness showing. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) ("secondary considerations…simply cannot overcome a strong *prima facie* case of obviousness.") (collecting cases). Dr. Houh rendered no opinion on this topic. EX1084, 55:11-22 ("I don't think I address that."), 54:6-10,

54:25-55:8, 55:24-56:5. Regardless, PO's secondary considerations fail for lack of nexus and on the merits.

### A. Patent Owner Fails to Establish Nexus

Secondary considerations require "a nexus between the merits of the claimed invention and the objective evidence." *Volvo Penta of the Ams., LLC v. Brunswick Corp.*, 81 F.4th 1202, 1210 (Fed. Cir. 2023). PO attempts to establish nexus through its dual-role-hub product, but fails. POR, 68-70. Aptiv only attempts to show nexus for claim 1, tacitly conceding no nexus exists for all other claims. *Id.*, 70. Even then, Aptiv improperly incorporates by reference Dr. Houh's claim chart/analysis for claim 1. *Id.*; EX2019, ¶¶154-156.

Even assuming no improper incorporation by reference, PO's expert only charted claim 1. *Id.* But Aptiv's dual-role hub plainly does not practice the claim, which requires ***a signal detection circuit*** (element 1[c]). Dr. Houh's entire analysis (citing a single document (EX2023, 90-93)) asserts it "describe[es] ***the port switch sequence***, whereby the dual role hub is able to detect whether a consumer USB device is operating in host or device mode." EX2019, ¶156 (element 1[c]). But this document refers to headend firmware, not a ***signal detection circuit***. EX2023, 90-93 (describing the "Boston firmware" and "device drivers running on the upstream host"). Dr. Houh admits ***signal detection circuit*** refers to a "class of circuits [] well-known to a POSITA" (EX2019, ¶138), and

firmware/drivers/software are not a "class of circuits." Because PO does not practice the '643 patent, there is no nexus. But no nexus exists for other reasons too.

Aptiv asserts its product establishes nexus because it satisfied "three automaker requirements: (1) single upstream connection, (2) CarPlay on all ports, and (3) persistent downstream connectivity on non-CarPlay ports." POR, 62; *id.*, 69-70 (similar). Thus, PO must show nexus to these requirements, but Microchip's substantial sales of CarPlay-enabled hubs with (1) *two upstream* connections or (2) non-persistence rebuts PO's nexus contention. EX1104. We analyze each further.

*First*, the Challenged Claims (all "comprising" claims) are silent regarding "single upstream connection." EX1011, cls. 1-15. Where PO wished to claim a single upstream connection, it did so. EX1001, cl. 14 (reciting ***a single USB data connection***). But the Challenged Claims lack this requirement and provide no nexus. Some automakers, like Honda, did "NOT want" a single upstream lane limitation. EX2006, 2. And Chang's hub provided a single upstream connection. Chang, Figs. 3-4; *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1364 (Fed. Cir. 2023); Welch, ¶¶349, 352, 355-356.

*Second*, the Challenged Claims do not require "CarPlay on all ports" for two simple reasons: (1) no Challenged Claim requires more than one downstream port; and (2) no Challenged Claim requires CarPlay at all. EX1005, cls. 1-15.

*Third*, "persistent downstream connectivity on non-CarPlay ports" has no bearing here where the Challenged Claims require only one downstream port. If anything, PO's reliance on this unclaimed concept shows *no* nexus. Even if the Challenged Claims required persistence (*i.e.*, host-to-host connection that does not affect other downstream devices) Chang's hub already provided that. Chang, Figs. 3-4; Welch, ¶¶349, 352, 355-356.

### B. Patent Owner's Secondary Considerations Individually Fail

Dr. Houh had no opinions on licensing, unexpected results/properties, commercial success, or awards. EX1085, 302:6-22, 303:4-304:25. For secondary considerations PO addresses, it focuses heavily on Apple CarPlay, which is irrelevant here. Neither the Challenged Patent nor Petitioner's prior art recites, references, or claims CarPlay. PO failed to submit the CarPlay specification, and neither party's POSITA definition refers to CarPlay. Dr. Houh lacks CarPlay experience and never saw the CarPlay specification. EX2001, ¶¶2-16, Appendix A; EX1085, 310:13-18.

***Long-felt need***. PO's long-felt need assertions are self-defeating. POR, 50-51. First, PO admits CarPlay was not announced until 2013 (POR, 50), mere months before the '643 patent's priority date (EX1011, 2). That is the opposite of "long-felt" need. PO attempts to move the date back to 2010 by referring to an Apple/BMW partnership for "iPod Out," which purportedly "laid the groundwork"

for CarPlay. EX2019, ¶141. Putting aside that Dr. Houh lacked personal knowledge of iPod Out or its requirements/specifications and cited only unauthenticated internet articles, similar articles show BMW offered iPod Out well-before 2013. *E.g.*, www.youtube.com/watch?v=JrM3PUNpP2U (2011 video, minute 3:45); www.youtube.com/watch?v=LsOGB2VwcAU (2012 video, minute 3:00). If iPod Out used/required a host-to-host connection (or persistence), BMW showed doing so was no problem. *Id*. And if iPod Out lacked host-to-host communication, it is irrelevant (*e.g.*, no nexus).

***Commercial Success***. PO asserts its dual-role hub achieved commercial success because it "satisf[ied] the three automaker requirements: (1) single upstream connection, (2) CarPlay on all ports, and (3) persistent downstream connectivity on non-CarPlay ports." POR, 62. As §V.A explains, the Challenged Claims require none of these, and Microchip's substantial unaccused hub sales indicate PO's sales were due to other factors. PO ignores other factors affecting sales such as Apple's brand name, lower pricing (EX2040, 233:4-12), marketing, etc. The impact of Apple's certification and brand name (as perhaps the most recognized company on the planet) cannot be ignored.

Significantly, PO benefited from a head start due to early, insider access to Apple's confidential CarPlay requirements through the Jaguar car company. *E.g.*, EX2003, 109:6-12, 157:6-15, 149:12-22 (CarPlay "not publicly known" and

"Apple is pretty secret"), 108:13-109:10-12 ("Jaguar was talking to Apple…start[ed] feeding us some of these requirements.").

***Industry Praise***. PO cites a single "Automotive News" award (from a non-USB body) touting CarPlay compatibility. POR, 62-64. The dozen-plus "winners" included "Cover Carving Technology for seats" and "Electronic oil pump." *See* www.autonews.com/awards/pace/2016/. PO self-nominated for the award (EX2036, ¶6) and hosted judges for "site tours" and "lunches" (EX2037, 2). PO's declarant (Mr. Dreon) cites inadmissible hearsay based on purported "conversations with the judges" regarding why Aptiv won. EX2036, ¶9. The PACE article mentions other reasons (*e.g.*, "lower cost"). www.autonews.com/awards/2016-winner-delphi-automotive-dual-role-hub. This is not "objective evidence" establishing nonobviousness.

***Skepticism/Failure of Others/Copying***. Petitioner treats these secondary considerations jointly because PO's allegations are repetitive and involve the same factual underpinnings. POR, 55-60, 64-68. PO's storyline—that Microchip failed to develop a competing product and copied Aptiv—omits key information and presents a misleading narrative. REDACTED

PO focuses on six internal emails (EX2005-2010) where Microchip personnel (largely marketing and sales personnel) discuss product development issues and spins Microchip's lack of clarity regarding CarPlay requirements vis-à-vis the USB standards as a proxy for obviousness (POR, 55-59). But the fact that Microchip doubted Apple would certify a bridge-based solution has no bearing on obviousness. It simply reflects Microchip initially received different information. Further, the cited emails simply say Microchip's existing FlexConnect solution did not support USB persistence, not that it would be difficult to architect a solution that would. *See generally* EX2005-2010. In other words, Microchip simply proceeded with a bridgeless option (FlexConnect) based on its understanding of the requirements, not because it failed in designing a bridge-based system. Accordingly, the emails are not probative of nonobviousness.

Moreover, PO's insinuation Microchip copied Aptiv because it "obtained…and analyzed [an Aptiv product]" is baseless. POR, 67. The alleged activity was done in "July of 2016" as pre-suit investigation before suing Aptiv, ***after*** Microchip "finished [its] device and [was] making it available [for customer testing]." EX2040, 125:9-126:16.

Aptiv also ignores that obviousness is evaluated from the perspective of a ***hypothetical POSITA***, not a real person. *E.g.*, 35 U.S.C. §103; *McCoy v. Heal Sys., LLC*, 850 F. App'x 785, 788 (Fed. Cir. 2021). Apart from one individual, PO

fails to describe the education/qualifications/experience of any email authors. And for good reason—the majority (Mr. Kamps, Ebert, Perkins, Sroka, and Saenger) were in sales/marketing,[7] two individuals (Messrs. Behal and Canu) provided field support,[8] and another a "self-taught" Delphi staffer with "a little over a year" experience (EX2005, 1). Nor is it proper to substitute Microchip (the company) for a hypothetical POSITA to know all relevant prior art (*e.g.*, Chang and Chang II). *E.g., In re Carlson*, 983 F.2d 1032, 1037 (Fed. Cir. 1992).

Dr. Houh's copying testimony is not probative as he merely "review[ed] trial testimony" and relied on Microchip's pre-suit infringement analysis as evidence of copying. EX2019, ¶¶147-153; EX1085, 318:21-319:3.

Nor did Dr. Houh consider differences between Aptiv and Microchip's products (*e.g.*, Microchip's USB-to-ethernet bridging and lack of customized head-unit firmware) showing Microchip did ***not*** copy. *Compare* EX2022, 11 (Aptiv's "custom driver for the Bridge"), EX2023, 91 *with* EX1099, 2 ("No custom drivers are required"); *id*., 6 (ethernet bridge). Finally, PO's copying allegations are not entitled to weight simply because Microchip is a party.

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[7] *See* EX2006, 4; EX2007, 2; EX2008, 3; www.linkedin.com/in/stefansaenger.

[8] *See* EX2006, 3; EX2002, 291:16-18, 11:14-19; EX2007, 3.

## VI. CONCLUSION

Petitioner respectfully requests the Board enter a final written decision finding the Challenged Claims unpatentable.

Respectfully submitted,

Dated: January 17, 2025

*/Travis Jensen/*
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## CERTIFICATE OF WORD COUNT

The undersigned certifies that the foregoing Petitioner's Reply Brief with the word count limits set forth in 37 C.F.R. §42.24(a)(1)(i). Excluding the parts of the Petition exempted by 37 C.F.R. §42.24(a)(1), this Reply contains 5,578 words as determined using the word count feature in Microsoft Word, which was used to prepare this Reply.

Dated: January 17, 2025 By: */Travis Jensen/*

## CERTIFICATE OF SERVICE

The undersigned certifies that on January 17, 2025, a copy of the following was served in its entirety via electronic mail, upon the following attorneys of record for the Patent Owner:

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