

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LENOVO (UNITED STATES) INC., DELL TECHNOLOGIES INC.,
DELL INC., AND HP INC.,

Petitioners,

v.

UNIVERSAL CONNECTIVITY TECHNOLOGIES INC.,

Patent Owner.

Case IPR2024-01482
U.S. Patent No. 7,856,520

**PATENT OWNER'S PRELIMINARY RESPONSE
TO THE PETITION**

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2002	Civil Minutes, <i>Universal Connectivity Technologies Inc. v. HP Inc.</i> , No. 4:24-cv-04097-YGR (N.D. Cal. Nov. 4, 2024)
2003	Order, <i>Universal Connectivity Technologies Inc. v. Dell Inc.</i> , No. 1:23-cv-01506-RP (W.D. Tex. Dec. 12, 2024)
2004	Defendant's Invalidity and Eligibility Contentions, <i>Universal Connectivity Technologies Inc. v. Lenovo Group Limited</i> , No. 2:23-cv-00449-JRG (E.D. Tex. July 24, 2024)
2005	Defendants Dell Technologies Inc. and Dell Inc.'s Preliminary Invalidity Contentions, <i>Universal Connectivity Technologies Inc. v. Dell Inc.</i> , No. 1:23-cv-01506-RP (W.D. Tex. July 24, 2024)
2006	HP's Invalidity Contentions, <i>Universal Connectivity Technologies Inc. v. HP Inc.</i> , No. 4:24-cv-04097-YGR (N.D. Cal. Dec. 5, 2024)
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2008	Memorandum Opinion and Order, <i>Universal Connectivity Technologies Inc. v. Lenovo Group Limited</i> , No. 2:23-cv-00449-JRG (E.D. Tex. Oct. 17, 2024)
2009	Order, <i>Universal Connectivity Technologies Inc. v. Lenovo Group Limited</i> , No. 2:23-cv-00449-JRG (E.D. Tex. Oct. 2, 2024)

I. INTRODUCTION

Petitioners have failed to show a reasonable likelihood of success in demonstrating that any of the challenged claims of U.S. Patent Number 7,856,520 are obvious over the cited prior art. As an initial matter, the Board should exercise its discretion to deny institution under *Fintiv*. No stay has been requested in the underlying Eastern District of Texas litigation (the “LGL Case”) and trial is set to begin in early November 2025—nearly five months before the Board will enter its final written decision. Petitioners will have their day in court to make these same invalidity arguments to the jury. To conserve time and resources, the Board should exercise its discretion and deny institution under *Fintiv*.

In the alternative, the Board should deny institution on the merits because the Petitioners have not demonstrated a reasonable likelihood that they will prevail with respect to at least one of the claims challenged in the Petition.

The ’520 Patent describes and claims a communication mechanism that allows for the communication between a “standard protocol” device and a “modified protocol” device. The “standard protocol” bears the characteristic of having multiple control signaling channels. The

specification describes the “standard protocol” as the High-Definition Multimedia Interface (HDMI), along with its CEC (Consumer Electronics Control) and DDC (Display Data Channel) control busses. EX1001 at 3:3-22. The “modified protocol” device bears the characteristic of communication over a single bidirectional control bus through which the commands for the multiple control signaling channels of the “standard protocol,” e.g., HDMI CEC and DDC control signaling, can be communicated. *Id.* at 2:41-54. The specification describes the “modified protocol” as the Universal Serial Bus (USB) Protocol. *Id.* at 54-67. The specification further describes that, in order for control signaling of the “standard protocol” to be effectuated from a “modified protocol” device to a “standard protocol” device, the “standard protocol” control signals must be converted into a packet stream, along with proper identifiers to delineate between each of the multiple “standard protocol” control signaling mechanisms, to be transmitted on the single bidirectional control bus by the “modified protocol” device. *Id.* at 1:56-2:2.

The Petition relies on two prior art references— U.S. Pat. Appl. No. 2006/0095596 (EX1005, “Yung”) and the HDMI Specification Version 1.3 (EX1006, “HDMI 1.3”) — for all independent claims (Ground 1). Neither

Yung alone nor Yung in view of HDMI 1.3 meet all the limitations of the challenged claims. More specifically, Yung and HDMI 1.3 describe only “standard protocol” HDMI where transmitting and receiving “control signals” occurs on the separate HDMI control busses, i.e., CEC control signals on the CEC bus and DDC control signals on the DDC bus. Consequently, neither Yung alone nor Yung in view of HDMI 1.3 teach “converting one or more control signals for a standard protocol to one or more data packets, each of the one or more control signals representing one of a plurality of different types of control signals” (*see, e.g.*, claim limitation [1(e)]) such that the “generated data packets” can be “transmit[ed] ... from the first device to the second device via the first control bus” (*see, e.g.*, claim limitation [1(f)]), “the first control bus being a bi-directional, single-line bus” (*see, e.g.*, claim limitation [1(a)]).

In addition, because Yung and HDMI 1.3 disclose only the “standard protocol” of HDMI, neither reference satisfies the “modified protocol” requirement of the claims. At most, HDMI 1.3 adds the Type C receptacle to the disclosure of Yung. *See* Petition at 36-42. As the Petition acknowledges, “[w]hile the HDMI-C connector uses the same 19 pin types as HDMI-A, the HDMI-C connector uses a different pin layout

and a smaller form factor designed for mobile devices.” *Id.* at 37; *see also id.* at 40 (“HDMI-C uses a smaller form factor than HDMI-A to support mobile devices”). HDMI-A and HDMI-C support separate CEC and DDC busses, *see id.* at 38-39, and, consequently, do not satisfy the requirement, for example, that “the transmitting device is a mobile device utilizing a modified protocol” (*see, e.g.,* claim limitations [1(g)]). that “transmit[s] the generated data packets ... via the first control bus” (*see, e.g.,* claim limitations [1(f)]).

Accordingly, the Board should deny institution of the ’520 Petition.

II. OVERVIEW

A. The ’520 Patent

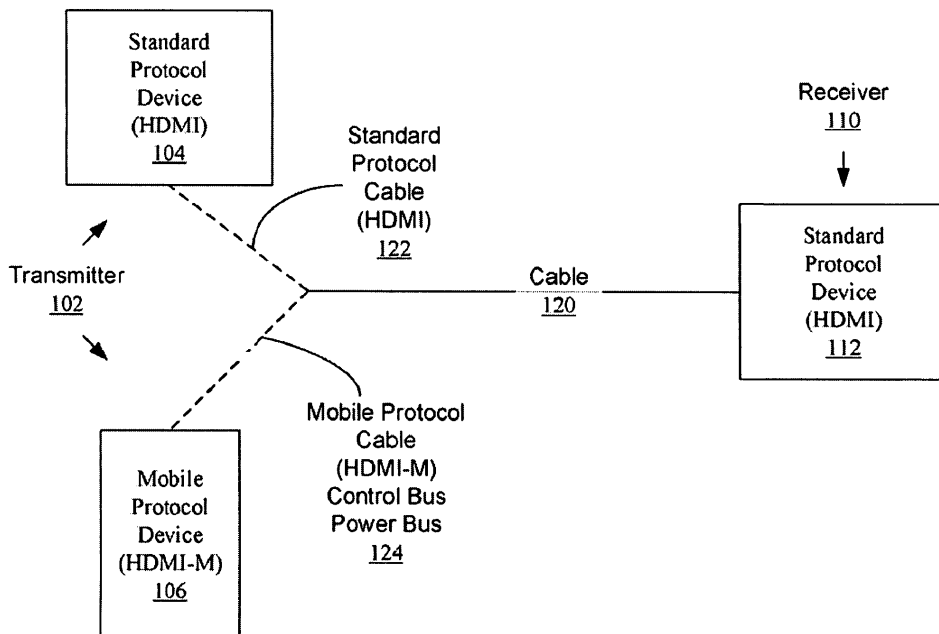
The ’520 Patent describes the HDMI protocol as an exemplary “standard protocol” for communications between devices: “[T]he transmitter may be a first type of transmitting device, shown as a standard protocol device 104, such as a HDMI transmitting device,” EX1001, 6:33-35. In the HDMI protocol, control signals can be transmitted two different ways: (1) via the DDC (Display Data Channel); or (2) via the CEC (Consumer Electronics Control). “DDC is used for configuration and status exchange between a single source (a ‘source’

being a device providing HDMI output) and a single ‘sink’ (a sink being a device receiving an HDMI input).” EX1001, 3:12-15. “CEC is an optional protocol that provides high-level control functions between all of the various audiovisual products in a user’s environment.” EX1001, 3:15-17.

The ’520 Patent also describes that, in certain devices such as portable or handheld devices, the size constraints may make implementation of the “standard protocol,” e.g., HDMI, difficult. *See* EX1001, 1:40-45 (“[T]he use of any interface may be affected by physical size of devices. For example, media devices may be portable or handheld. The use of an interface designed for a standard device may be difficult for smaller devices. In addition, there is physical limit on how many connections may be reasonably added to a smaller device.”). To address the size limitations of smaller devices, while also allowing the smaller devices to communicate using the “standard protocol,” the ’520 Patent describes that “a mobile device utilizes a modified protocol to allow connection with other devices, which may utilize a standard protocol.” EX1001, 2:43-45.

The ’520 Patent describes the Universal Serial Bus (“USB”) as an exemplary “modified protocol,” over which “standard protocol,” e.g.,

HDMI, communications can occur, thereby allowing a connection to devices that utilize the “standard protocol.” *See* EX1001, 2:61-67 (“[A] mobile device utilizing a modified protocol ... may include the use of USB (Universal Serial Bus) protocol data, utilizing USB-OTG (USB On-The-Go, a standard for portable devices that allows dual-mode operation in which a device may be connected to a personal computer or to another portable device).”); 2:56-59 (“[A] mobile device containing high-definition video data and related commands may be connected to a standard HDMI device (such as, for example, a television monitor).”); *see also id.*, Fig. 1:



More specifically, to establish a connection between a “modified protocol” mobile device and a “standard protocol” device, the ’520 Patent describes “the merging of multiple control signals on to a single bus, where such control signals would have utilized multiple buses under the standard protocol.” EX1001, 2:45-49; *see also id.*, 8:64 (With respect to Fig. 6, the “modified protocol” mobile device includes “***a single-bit control channel 640.***”) (emphasis added). “[T]he single-bit control channel is a bi-directional channel that is operated at an increased speed to include merged control data from both a transmitter and a receiver.” EX1001, 8:65-67.

The ’520 Patent refers to the “merging” process as a “translation layer.” *See* EX1001, 3:6-11; *see also id.*, 3:47-50, 9:31-34, 9:55-59. As an example, where a “modified protocol,” e.g., USB, device is transmitting to a “standard protocol,” e.g., HDMI, device, the “modified protocol” device must “convert” the HDMI CEC or DDC control signals to USB protocol “control signal packets.” As the ’520 Patent describes it, “[f]or HDMI, ***the control bus provides a bridge to the DDC I2C interface and a bridge to the CEC interface, and is expandable to other future protocols.***” EX1001, 6:49-55 (emphasis added).

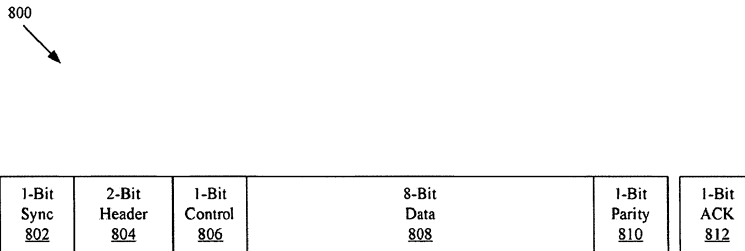
The '520 Patent describes the “translation layer” as the “multiplexing” of multiple “standard protocol” control signals over the single control bus of the “modified protocol.” See EX1001, 7:25-26, (“[M]ultiple control signals are **multiplexed** onto the control bus 210.”) (emphasis added); see also *id.*, 8:35-37 (“The CBUS is utilized to transport multiple different types of control signals between the transmitter 410 and the receiver 430, the control signals being multiplexed together for transmission.”). As part of this “multiplexing” process, the '520 Patent describes that the “control signals” of the “regular control protocol” are “convert[ed] ... into data packet[s] for transmission.” EX1001, Fig. 2 (step 214); see also *id.*, 7:29-34 (“[T]he control signals are converted from bytes of data to data packets that identify the type of data within each packet. In one particular example, HDMI control signals are multiplexed together on the control bus on a byte by byte basis. ***For example, CEC, DDC, and private channel instructions are multiplexed together on the control bus.***”) (emphasis added), 3:34-47 (“[S]tandard control commands and data are converted into data packets for transmission on the single bit control bus, with the data packets identifying the types of commands and data being transmitted.”).

The '520 Patent describes the mechanism for multiplexing of the multiple “standard protocol” control signals over the single control bus of the “modified protocol” in more detail with respect to Figures 8 and 9. Figure 8, and its accompanying description, detail an embodiment for the basic construction of the data packets that contain the “standard protocol” control signals:

If there is a control signal [of the standard protocol] to be transmitted 212, the signal is converted into a data packet for transmission. In an embodiment, the data packet may be a data packet as shown in FIG. 8. The data packet is then transmitted from the transmitter to the receiver over the single-bit control bus 216. The process may continue as long as the transmitter has control signals to transmit, with the process then stopping 218.

For the receiver, one or more data packets containing command data may be received on the single-bit control bus 220. The receiver will read the header of each received data packet and determine the control type 222, and will handle each command as required under the standard protocol 224, such as, for example, HDMI.

EX1001, 7:34-47.



EX1001, Fig. 8.

Figure 9, and its accompanying description, further detail the use of specific fields within the data packets:

FIG. 9 is an illustration of the header and control fields utilized in an embodiment of a control data packet. In a data packet carrying control data, such as the data packet 800 illustrated in FIG. 8, two bits of a header 910 may be utilized to indicate whether the data packet includes a DDC packet (header field '00'), a CEC packet (header field '01'), or private channel data for the control bus (header field '10'). In this illustration, header field '11' is reserved for future uses. Further, a bit of a control field 920 may be utilized to indicate that the data bits (such as data 808 illustrated in FIG. 8) represent translation layer data (control field '0') or a translation layer command (control field '1').

EX1001, 9:48-59.

910

Header Bits	
Header Field	Description
00	DDC packet
01	CEC packet
10	Private channel for control bus
11	Reserved

920

Control Field	
Control Field	Description
0	Following 8 bits are translation layer data
1	Following 8 bits are translation layer command

EX1001, Fig. 9.

B. Claim Construction

For purposes of *inter partes* review, disputed claim terms are construed to give them “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *See* 83 Fed. Reg. 51341 (Oct. 11, 2018) (adopting the standard of *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005)). The proper construction is considered in the context of, and must be consistent with, the specification—and the claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. *See, e.g., Phillips*, 415 F.3d at 1313.

Petitioners have proposed that no terms require construction. At this time, Patent Owner submits that the Board need not construe any

claim terms in determining whether or not to institute *inter partes* review.

C. Person of Ordinary Skill in the Art

A person of ordinary skill in the art of the subject matter of the '520 Patent would have the equivalent of a bachelor's degree in electrical engineering, computer engineering, computer science, or equivalent training and three years of work experience with data communications systems or interfaces, including at least some experience with serial or display data communications systems or interfaces. Additional education may compensate for lesser work experience, and vice versa.

D. Prior Art

1. Yung (EX1005)

Petitioners rely on Yung (EX1005) for both presented Grounds. Yung was purportedly filed on November 3, 2004 and published on May 4, 2006. EX1005, Cover. Yung is titled "Solution for Consumer Electronics Control." EX1005, Cover.

Yung generally describes "a command control unit" to be used in conjunction with the High-Definition Multimedia Interface (HDMI) standard, including the CEC (Consumer Electronics Control):

In one preferred embodiment, the devices 10 are compliant with both the HDMI standard and the CEC protocol, such as the system illustrated in FIG. 1B. HDMI system architecture is defined to consist of HDMI nodes interconnected by HDMI cables 11. An HDMI cable 11 and connectors carry four differential pairs that make up the data and clock channels. These channels are used to carry video, audio and auxiliary data. In addition, HDMI carries a display data channel (DDC). The DDC is used for configuration and status exchange between HDMI nodes. The optional CEC protocol provides high-level control functions between all of the CEC compliant nodes in the CEC network.

EX1005, [0027]; *see also id.*, [0008].

2. HDMI 1.3 (EX1006)

Petitioners also rely on a second reference, Version 1.3 of High-Definition Multimedia Interface (HDMI) standard, as part of their obviousness combinations under all Grounds. HDMI 1.3 indicates a document revision date of June 22, 2006. EX1006, at 3. “This document constitutes the specification for the High-Definition Multimedia Interface (HDMI), version 1.3.” EX1006, at 17.

III. THE *FINTIV* FACTORS WEIGH AGAINST INSTITUTION

The Board has discretion under 35 U.S.C. § 314(a) to deny institution of the requested *inter partes* review due to the advanced state of parallel district court litigation regarding the same issues. *See NHK Spring Co. v. Intrix-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB Sept.

12, 2018) (precedential, designated May 7, 2019). The Board has set forth six factors (known as the “Fintiv factors”) for determining whether discretionary denial is appropriate:

- whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
- proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
- investment in the parallel proceeding by the court and the parties;
- overlap between issues raised in the petition and in the parallel proceeding;
- whether the petitioner and the defendant in the parallel proceeding are the same party; and
- other circumstances that impact the Board’s exercise of discretion, including the merits.

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 5-6 (PTAB Mar. 20, 2020) (precedential, designated May 5, 2020) (“*Fintiv I*”); *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 7-8 (PTAB May 13, 2020) (decision denying institution of inter partes review) (“*Fintiv II*”). “These factors relate to whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.” *Fintiv I* at 6. In evaluating the factors, “the Board takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.*

As set forth below, all of the Fintiv factors weigh against institution. To avoid duplication of efforts, wasting resources, and potentially inconsistent decisions, the Board should deny institution.

A. Factor 1: No stay has been entered in the LGL Case and there is no evidence that a stay will be granted

There are presently four district court cases involving the '520 Patent: one pending in the Eastern District of Texas (*Universal Connectivity Technologies Inc. v. Lenovo Group Limited*, No. 2:23-cv-00449-JRG (the “LGL Case”)); one pending in Delaware (*Lenovo (United States) Inc. v. Universal Connectivity Technologies Inc.*, No. 1:24-cv-01126-RGA (the “Lenovo US Case”)¹; one pending in the Northern District of California (*Universal Connectivity Technologies Inc. v. HP Inc.*, No. 4:24-cv-04097-YGR (the “HP Case”))²; and one pending in the Western District of Texas (*Universal Connectivity Technologies Inc. v.*

¹ Lenovo US case is a declaratory judgment action filed by LGL’s wholly-owned, U.S.-based subsidiary Lenovo (United States) Inc., over a year after the LGL Case was filed. On December 2, 2024, UCT filed a Motion to Dismiss the Lenovo US Delaware action based on the first-to-file rule. See Case No. 1:24-cv-01126-RGA, Dkt. 10. Lenovo US filed its response on January 6, 2025, and UCT filed its reply on January 21, 2025.

² HP filed a motion to stay in the HP Case which was denied. See EX2002, Civil Minutes, HP Case, Dkt. No. 92.

Dell Inc., No. 1:23-cv-01506-RP (the “Dell Case”))³. Lenovo Group Limited (“LGL”), while not a Petitioner in the instant *inter partes* review request, is the parent of Petitioner Lenovo (United States) Inc. (“Lenovo US”) and has been identified as a real party-in-interest. *See* Petition at 1. The LGL Case is proceeding ahead of the other three cases, with a jury trial set to begin in November 2025. LGL has not filed a motion to stay in the LGL Case, nor is there any evidence to suggest a stay would be granted if such a motion was filed.

The LGL Case is not in its early stages. Jury selection is scheduled for later this year, on November 3, 2025. *See* EX2001, Docket Control Order, LGL Case, Dkt. 27 (June 12, 2024), at 1. This is “a deadline that cannot be changed without an acceptable showing of good cause. Good cause is not shown merely by indicating that the parties agree that the deadline should be changed.” *Id.* at 5. Fact discovery—including extensive third-party discovery—is ongoing. An institution decision on the ’520 IPR Petition is not due until April 2025. By that date, the parties will have substantially completed the claim construction process, with

³ Dell filed a motion to stay in the Dell Case which was granted. *See* EX2003, Order, Dell Case, Dkt. No. 69.

the *Markman* hearing scheduled for May 12, 2025. *See id.* at 4. A Final Written Decision would not be due until April 2026, five (5) months after trial is scheduled to begin. *See id.* at 1.

It is unlikely that a stay would be granted in the LGL Case at this time. *Trover Group, Inc. v. Dedicated Micros USA*, No. 2:13-cv-1047-WCB, 2015 WL 1069179, at *6 (E.D. Tex. Mar. 11, 2015) (Bryson, J.) (“This Court’s survey of cases from the Eastern District of Texas shows that when the PTAB has not yet acted on a petition for inter partes review, the courts have uniformly denied motions for a stay.”); *see also Samsung Elecs. Co. Ltd. v. Evolved Wireless LLC*, IPR2021-00950, Paper 10 at 10-11 (PTAB Nov. 29, 2021) (“*Evolved*”) (finding this factor weighed in favor of denial and denying institution where patent owner showed a stay was unlikely based on the advanced stage of the case and the court’s past decisions denying stays); *Samsung Elecs. Co. Ltd. v. Clear Imaging Research, LLC*, IPR2020-0152, Paper 12 at 12-13 (PTAB Mar. 3, 2021) (denying institution because, in part, Judge Gilstrap deemed unlikely to stay a case in similar circumstances).

The Eastern District of Texas is likely to find that a stay in this situation would unduly prejudice UCT, disfavoring a stay. *See, e.g.,*

MyPort, Inc. v. Samsung Electronics Co., Ltd., et al., No. 2:22-cv-00114-JRG, Dkt. No. 73 (E.D. Tex. June 12, 2023) at 4 (Noting that patent owner has an interest in the timely enforcement of its patent rights and that granting a stay could delay the case by nearly two years where the PTAB decision is not due until over two months after jury trial is set to begin.). The district court is also likely to find that the stage of litigation disfavors a stay. As noted above, by the date an institution decision is due in this proceeding, the parties will have substantially completed claim construction in the district court litigation and, as further evidenced by the docket sheet, a substantial amount of work and financial resources have been invested in the district court case. Under similar circumstances, the district court has found that the stage of litigation disfavors a stay. *Id.* at 5.

Moreover, because LGL has asserted multiple invalidity theories and there are other defendants who are asserting invalidity defenses, a stay in the district court would be unlikely to simplify the issues. As district courts have recognized, when a party has raised multiple invalidity theories that will not go before the PTAB, a stay would leave

in limbo these invalidity theories that will not go before the Board, weighing against a stay. *Id.* at 5-6.

As explained by the Board, a stay of the district court litigation pending resolution of the PTAB proceedings “allays concerns about inefficiency and duplication of efforts.” *Fintiv I* at 6; *Fintiv II* at 12. But here, the district court in the LGL case has not stayed the pending litigation, nor is there any evidence that a stay will be granted. Allowing this IPR to proceed simultaneously with the district court litigation in the LGL case would be wasteful and inefficient.⁴ This factor weighs against institution.

B. Factor 2: The proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision.

“If a district court’s trial date is earlier than the Board’s projected statutory deadline for a final written decision, the Board generally has

⁴ While the HP case and the Dell case do not have a matching schedule to the LGL case, the resources expended in the LGL case are nonetheless wasteful and inefficient as all the Petitioners have taken a predominantly common approach with respect to prior art invalidity in their respective invalidity contentions for the ’520 Patent. *Compare* EX2004, Invalidity Contentions, LGL Case, at 126-148, *with* EX2005, Invalidity Contentions, Dell Case, at 125-147, *with* EX2006, Invalidity Contentions, HP Case, at 102-120.

weighed this fact in favor of exercising discretion to deny institution.” *T-Mobile USA, Inc., et al., v. Wireless Alliance*, IPR2024-00608, Paper 16 (PTAB Sept. 3, 2024) (exercising discretion to deny institution of *inter partes* review). The ’520 Petition was filed on October 1, 2024, a decision whether to institute is expected approximately on April 29, 2025, and, if instituted, the statutory deadline for a final written decision is April 29, 2026, which can be extended to October 29, 2026, for good cause or in the case of joinder. 37 C.F.R. § 42.100.

Jury selection in the LGL Case is scheduled to begin on November 3, 2025. *See* EX2001, at 1. This is “a deadline that cannot be changed without an acceptable showing of good cause. Good cause is not shown merely by indicating that the parties agree that the deadline should be changed.” *Id.*, at 5.

Even if the Board disregards the scheduled trial date, an analysis of the current median time-to-trial statistics still weighs against institution.⁵ *See* EX2007, U.S. District Courts—Federal Court

⁵ “The Guidance Memo provides that the parties may also present the most recent statistics on median time-to-trial for civil actions in the relevant district court.” *T-Mobile*, IPR2024-00608, Paper 16 at 13 (citing the June 21, 2022 Memorandum “Interim Procedure for Discretionary

Management Statistics—Profiles—During the 12-Month Periods Ending September 30, 2019 through 2024. The most recent statistics, for a 12-month period ending September 30, 2024, show a median time-to-trial in the Eastern District of Texas of 21.9 months. *Id.* at 35. Accordingly, the projected trial date for purposes of *Fintiv* in accordance with Director’s June 21, 2022 Memorandum on Discretionary Denials would be around December 28, 2025—close to the scheduled trial date and more than four months before the expected timing of a Final Written Decision if proceedings are instituted. The Board recently found that this weighed in favor of exercising discretionary denial where the underlying litigation was also in the Eastern District of Texas and the projected trial date was prior to the date when the final written decision would be due. *See, e.g., T-Mobile*, IPR2024-00608, Paper 16 at 13 (“Because the district court would address issues relating to the validity of the ’662 patent in a trial that, by any measure, would occur many months before we would issue a final written decision, we weigh the second *Fintiv* factor as favoring discretionary denial.”).

Denials in AIA Post Grant Proceedings with Parallel District Court Litigation”).

Accordingly, this factor weighs against institution.

C. Factor 3: The parties and the courts have made a substantial investment in the parallel proceeding.

This factor relates to the “amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision.” *Fintiv I* at 9 (emphasis added). For example, “if, at the time of the institution decision, the district court has issued substantive orders related to the patent at issue in the petition,” this factor favors denial. *Id.* at 9-10. Claim construction orders entered by the district court likewise “indicate that the court and parties have invested sufficient time in the parallel proceeding to favor denial.” *Id.* at 10.

As discussed above, fact discovery between the parties is ongoing in the LGL Case. In addition, UCT has conducted extensive third-party discovery from LGL’s suppliers. By the date the institution decision is due, the parties will have substantially completed the claim construction process with the *Markman* hearing scheduled for May 12, 2025. *See* EX2001, at 4. As shown in the district court docket sheet, the courts and the parties have made a substantial investment in the LGL Case to date: the parties have already briefed, and the Court has denied, LGL’s Motion

to Dismiss (*see* EX2008, Memorandum Opinion and Order, LGL Case, Dkt. No. 47) and the parties have already briefed, and the Court has granted, UCT's Motion to Compel (*see* EX2009, Order, LGL Case, Dkt. No. 44).

Thus, the parties and the district court will have invested significant time and resources in the litigation by the time the Board reaches an institution decision in this matter. This favors discretionary denial. *Fintiv I* at 10; *Fintiv II* at 13-14 (finding that “the level of investment and effort already expended on claim construction and invalidity contentions” favored denial).

D. Factor 4: There is complete overlap between this IPR and the LGL Case

This factor looks at “whether all or some of the claims challenged in the petition are also at issue in district court,” and whether the “petition includes the same or substantially the same claims, grounds, arguments, and evidence” as the parallel district court case. *Fintiv I* at 12-13.

Here, Petitioners have challenged all of the asserted claims of the '520 Patent. And, LGL's Preliminary Invalidity Contentions in the

district court case identify the same Yung, HDMI 1.3 and Al-Alawi⁶ references asserted in the Petition as prior art that allegedly renders obvious the challenged claims (Grounds 1-2). *See* EX2004, Invalidity Contentions, LGL Case, at 127-128. Likewise, the other two Petitioners—HP and Dell—also identified the same Yung, HDMI 1.3 and Al-Alawi references in their invalidity contentions. *See* EX2005, Invalidity Contentions, Dell Case, at 102-104; EX2006, Invalidity Contentions, HP Case, at 126-127.

Thus, there is complete overlap with respect to the arguments and evidence presented here and in the district court litigation for all. That the district court case involves additional prior art references not asserted in this IPR is “not relevant to the question of the degree of overlap for this factor.” *Fintiv II* at 15. The fact that the Petition challenges additional claims does not warrant institution. *See, e.g., Next Caller Inc. v. TRUSTID, Inc.*, IPR2019- 00961, Paper 10 at 14 (PTAB Oct.

⁶ Al-Alawi, “Design of a Multicode Bi-Phase Encoder for Data Transmission,” is only proffered for dependent claims 2, 13, and 20, *see* Petition at 68-74, and does not impact the analysis of the independent claims set forth in this Patent Owner’s Preliminary Response.

16, 2019) (denying institution where the district court case involved only a subset of the challenged claims).

Notably, none of the Petitioners have stipulated to not pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition (*i.e.*, a Sotera stipulation). Had the Petitioners done so, that could mitigate concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB. *See Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18-19 (PTAB Dec. 1, 2020) (precedential as to § II.A). Those concerns are particularly relevant when, as here, the Petitioners are asserting the same prior art in the district court and the PTAB, guaranteeing duplicative efforts between the district court and the PTAB and potentially conflicting decisions.

In sum, this IPR and the district court case involve the same claims—which will be construed under the same *Phillips* standard—and the same prior art (and, as discussed below, the same parties), which raises substantial “concerns of inefficiency and the possibility of conflicting decisions.” *Fintiv I* at 12. This factor thus weighs in favor of a discretionary denial. *See Fintiv II* at 15; *NHK Spring* at 19–20.

E. Factor 5: The Petitioners and Real Parties-in-Interest are parties to the District Court Cases

There is no dispute that real party-in-interest LGL, parent of Lenovo US, is the defendant in the LGL Case. There is also no dispute that Lenovo US is the plaintiff in the Lenovo US Case, or that Dell and HP are defendants in the Dell Case and HP Case, respectively. “Because the petitioner and the defendant in the parallel proceeding are the same party, this factor weighs in favor of discretionary denial.” *Fintiv II* at 15.

F. Factor 6: Other circumstances that impact the Board’s exercise of discretion, including the merits.

The Board may consider other circumstances in the exercise of its discretion, including the merits of the case. *Fintiv I* at 14. However, “a full analysis of the merits is not necessary to evaluate this factor.” *Fintiv II* at 17. And, it is important to note that the compelling merits standard is a higher standard than the standard for institution set by statute. “A challenge can only ‘plainly lead to a conclusion that one or more claims are unpatentable’ if it is highly likely that the petitioner would prevail with respect to at least one challenged claim.” *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49 (PTAB Oct. 4, 2022) (precedential). Petitioners have not done so here, and, when considered

together with the five other *Fintiv* factors discussed above, this factor also favors discretionary denial.

As discussed in detail below, the Petition does not present a reasonable likelihood of invalidity under any ground or challenged claim, let alone compelling evidence of unpatentability, and factor 6 weighs against institution.⁷ All six *Fintiv* factors strongly favor discretionary denial, and the Petition should be denied on this basis alone.

IV. GROUNDS 1-2: INDEPENDENT CLAIMS 1, 12, AND 19 ARE NOT RENDERED OBVIOUS BY YUNG AND HDMI 1.3

Petitioners rely on the combination of Yung and HDMI for the independent claims (Ground 1) and, consequently, for all dependent claims (Grounds 1-2). As explained in more detail below, the independent claims reflect the “translation layer” mechanism described in the ’520 Patent, i.e., the “multiplexing” of multiple “standard protocol” control signals over the single control bus of the “modified protocol,” and requires that one of a plurality of control signals of the “standard protocol,” e.g., DDC (Display Data Channel) and CEC (Consumer Electronics Control) of HDMI, is converted to data packets for

⁷ The Petition is defective for other reasons as well, but a full discussion of the merits is not required in the Patent Owner’s Preliminary Response.

transmission on the single-line control bus of a “modified protocol,” e.g., USB. The combination of Yung with HDMI 1.3, each of which describes the separate and exclusive DDC and CEC control signaling mechanisms of HDMI, does not disclose this requirement of the independent claims.

A. Independent Claim 1

Independent claim 1 of the '520 Patent recites:

[1(pre)] A method comprising:

- [1(a)] coupling a first device to a second device, the first device being one of a transmitting device or a receiving device and the second device being the other of a transmitting device or a receiving device, coupling of the first and second devices including connecting a first control bus between the first device and the second device, the first control bus being a bi-directional, single-line bus;
- [1(b)] determining whether the first control bus is in use by the second device;
- [1(c)] if the first control bus is not in use by the second device, conducting arbitration for control of the first control bus; and
- [1(d)] if the first device obtains control of the first control bus through the arbitration for control of the first control bus, the first device becoming an initiator and the second device becoming a follower, then further comprising:
 - [1(e)] ***converting one or more control signals for a standard protocol to one or more data packets, each of the one or more control signals representing one of a plurality of different types of control signals***, each data packet including a plurality of bits to be transmitted; and
 - [1(f)] transmitting the generated data packets from the first device to the second device via the first control bus, and

[1(g)] wherein the receiving device is a device utilizing the standard protocol and the transmitting device is a mobile device utilizing a modified protocol, the modified protocol being a modification of the standard protocol that is not included in the standard protocol.

EX1001, 11:13-41 (emphasis added).

Independent claim 1 unambiguously reflects the “translation layer” mechanism described in the ’520 Patent for communication between a modified protocol” device and a “standard protocol” device over a single-bit control bus. First, claim limitation [1(a)] requires “coupling of a first device with a second device” that includes “connecting a first control bus between the first device and the second device, the first control bus being a bi-directional, single-line bus.” Claim limitation [1(f)] further restricts the “first device” to a “transmitting device [that] is a mobile device utilizing a modified protocol,” and the “second device” to a “receiving device [that] is a device utilizing the standard protocol.”

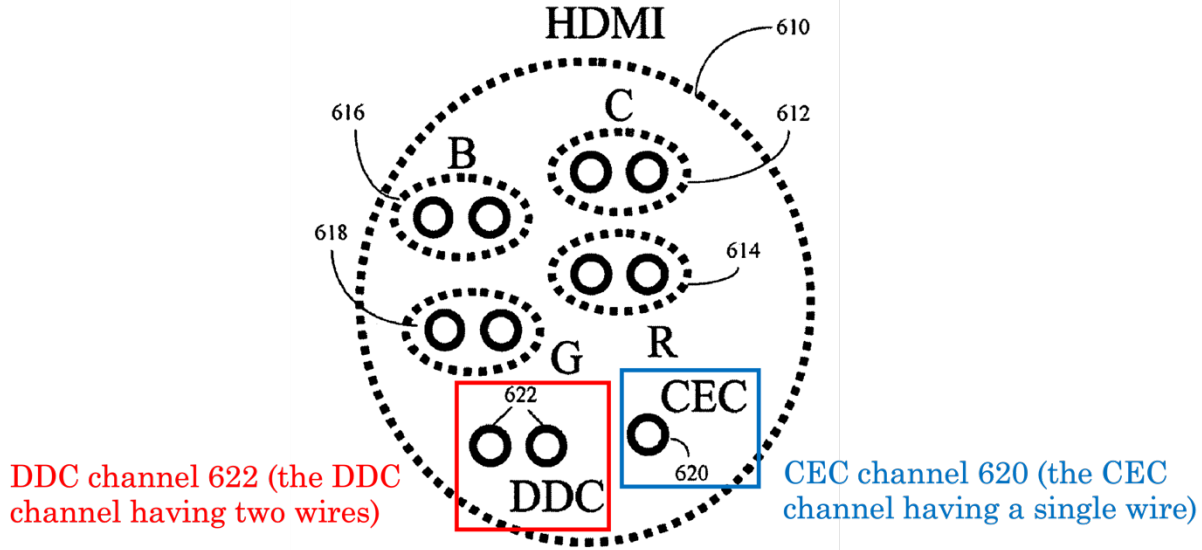
Second, claim limitation [1(e)] requires “converting one or more control signals for a standard protocol ... each of the one or more control signals representing one of a plurality of different types of control signals.” This limitation also requires “converting ... to one or more data packets.” Third, claim limitation [1(f)] requires the data packets

generated as a result of the “converting” step to be “transmit[ed] ... from the first device to the second device via the first control bus,” which is a bi-directional, single-line bus.

Yung in combination with HDMI 1.3 does not disclose each of these limitations. More specifically, the combination does not disclose that “each of the ... control signals represent[s] one of a plurality of different types of control signals” are “convert[ed] ... to one or more data packets” and “transmitt[ed] ... via the first control bus,” “a bi-directional, single-line bus.” As to the limitation of “each of the ... control signals representing one of a plurality of different types of control signals,” the Petition correctly acknowledges that the CEC commands and DDC commands of HDMI are “different types of control signals.” *See* Petition at 33-34 (citing ’520 Patent at 7:44-45, 9:23-27, 9:31-32, 9:48-54, Figs. 8-9). As discussed above, *see* Section II.A, these cited portions of the ’520 Patent describe how DDC commands and CEC commands, as well as private channel data, can be converted into data packets and transmitted on a single-bit control bus. *See also*, EX1001, 7:29-34 (“[T]he control signals are converted from bytes of data to data packets that identify the type of data within each packet. In one particular example, HDMI control

signals are multiplexed together on the control bus on a byte by byte basis. *For example, CEC, DDC, and private channel instructions are multiplexed together on the control bus.*”) (emphasis added).

The combination of Yung and HDMI 1.3 does not disclose how DDC commands and CEC commands can be converted into data packets and transmitted on a single-bit control bus. As shown in the ’520 Patent, in HDMI, the DDC and CEC each have their own busses and interconnects. See, e.g., EX1001, 8:55-58 (Referencing Fig. 6, reproduced below, “an HDMI cable 610 may include a clock channel, three data channels (Blue 616, Green 618, and Red 614), a DDC channel 622 (the DDC channel having two wires), and *a CEC channel 620 (the CEC channel having a single wire).*”) (emphasis added).

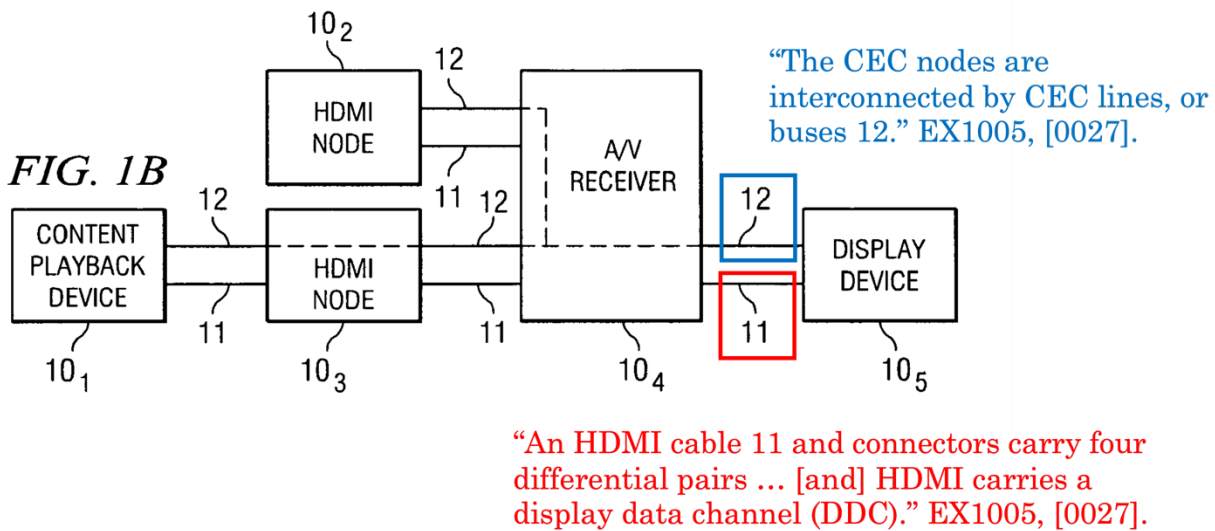


EX1001, Fig. 6 (excerpted and highlighted to show separate DDC and CEC channels); *see also id.*, Fig. 7:

PIN	HDMI-M Signal assignment	Standard HDMI Signal assignment
1	NC	TMDS Data2+
2	NC	TMDS Data2 Shield
3	NC	TMDS Data2-
4	NC	TMDS Data1+
5	NC	TMDS Data1 Shield
6	NC	TMDS Data1-
7	TMDS Data+	TMDS Data0+
8	TMDS Data Shield	TMDS Data0 Shield
9	TMDS Data-	TMDS Data0-
10	TMDS Clock+	TMDS Clock+
11	TMDS Clock Shield	TMDS Clock Shield
12	TMDS Clock-	TMDS Clock-
13	NC	CEC
14	5V power from RX	Reserved (NC)
15	USB Data+	DDC SCL
16	USB Data-	DDC SDA
17	GND	DDC/CEC GND
18	NC	+5V power from TX
19	Ctrl Bus	Hot Plug Detect

two wire DDC

Yung similarly shows that, in HDMI, the DDC and CEC each have their own busses and interconnects:



EX1005, Fig. 1B, [0027]; *see also* EX1006, at 27-29 (showing pin assignments for different connector types, each pin assignment with CEC pin and SCL/SDA pins for DDC). The Petition expressly acknowledges that the DDC bus and CEC bus in HDMI are separate and distinct. See Petition at 34 (“Yung discloses that, in addition to transmitting CEC commands over CEC bus 12, it also uses HDMI cable 11 and ‘HDMI carries a display data channel (DDC),’ which is used for transmitting control signals ‘for configuration and status exchange between HDMI nodes.’”), 50-51 (Yung’s HDMI standard (i.e., HDMI 1.0 or 1.1) requires these DDC signals and CEC signals be transmitted over ‘separate communication channels,’ i.e., the DDC bus and CEC bus, respectively.”)

Unlike the '520 Patent, the combination of Yung and HDMI 1.3 do not teach that the separate DDC signals and CEC signals are “convert[ed] to one or more data packets,” as required by claim limitation [1(e)], where the “generated data packets” are “transmitted” via the “bi-directional, single-line” “first control bus,” as required by claim limitation [1(f)]. The Petition fails to show that the combination of Yung and HDMI 1.3 discloses anything beyond DDC signals being transmitted on DDC two-wire bus and CEC signals being transmitted on the CEC bus. Indeed, with respect to claim limitation [1(f)], the Petition merely asserts the obvious, that “Yung discloses a ‘content playback device 101’ in Fig. 1B or other transmitting device that transmits commands in the form of CEC frames over the CEC control bus to a receiving device.” Petition at 34-35 (emphasis added). This does not show that “each of the ... control signals representing one of a plurality of different types of control signals” are “convert[ed] ... to one or more data packets” and “transmitt[ed] ... via the first control bus,” as claim 1 of the '520 Patent requires. Because Yung and HDMI 1.3 both teach CEC control signals using the CEC bus and DDC control signals using the DDC bus,

respectively, neither reference satisfies the limitations of claim 1 of the '520 Patent.

Additionally, as required by claim limitation [1(g)], “the transmitting device is a mobile device utilizing a modified protocol” and performs the step of “transmitting the generated data packets ... via the first control bus,” “a bi-directional, single-line bus” (as required by claim limitations [1(f)] and [1(a)], respectively). The Petition asserts that the “modified protocol” requirement is satisfied by the HDMI-C connector introduced in HDMI 1.3. *See* Petition at 36-42. However, the HDMI-C connector cannot satisfy the requirements of the “modified protocol” because it does not restrict the “transmitting device” to “transmitting the generated data packets ... via the first control bus,” “a bi-directional, single-line bus” (as required by claim limitations [1(f)] and [1(a)], respectively). At most, HDMI 1.3 and the HDMI-C connector, also referred to as the Type C receptacle, only disclose the “standard protocol” of HDMI. HDMI-C merely provides a cable variant to earlier versions of the HDMI specification. *See* Petition at 37 (“While the HDMI-C connector uses the same 19 pin types as HDMI-A, the HDMI-C connector uses a different pin layout and a smaller form factor designed for mobile

devices.”), 40 (“HDMI-C uses a smaller form factor than HDMI-A to support mobile devices”). HDMI-C, like the HDMI-A associated with the earlier versions of HDMI and Yung, only support separate CEC and DDC busses:

4.1.4 Connector Pin Assignments

Table 4-1 Type A Connector Pin Assignment

PIN	Signal Assignment	PIN	Signal Assignment
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2-	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1-
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0-	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock-
13	CEC	14	Reserved (N.C. on device)
15	SCL	16	SDA
17	DDC/CEC Ground	18	+5V Power
19	Hot Plug Detect		

single wire CEC

two wire DDC

Table 4-3 Type C Connector Pin Assignment

PIN	Signal Assignment
1	TMDS Data2 Shield
2	TMDS Data2+
3	TMDS Data2-
4	TMDS Data1 Shield
5	TMDS Data1+
6	TMDS Data1-
7	TMDS Data0 Shield
8	TMDS Data0+
9	TMDS Data0-
10	TMDS Clock Shield
11	TMDS Clock+
12	TMDS Clock-
13	DDC/CEC Ground
14	CEC
15	SCL
16	SDA
17	Reserved
18	+5V Power
19	Hot Plug Detect

single wire CEC

two wire DDC

EX1006, at 11 (showing HDMI-A pin assignments, highlighted to show separate DDC and CEC channels), 13 (showing HDMI-C pin assignments, highlighted to show separate DDC and CEC channels).

Consequently, neither Yung nor HDMI 1.3 satisfy the limitation that “the transmitting device is a mobile device utilizing a modified protocol” (*see, e.g.*, claim limitations [1(g)]). that performs the step of

“transmitting the generated data packets ... via the first control bus,” “a bi-directional, single-line bus” (as required by claim limitations [1(f)] and [1(a)], respectively).

For at least the foregoing reasons, Petitioner has failed to show that the combination of Yung and HDMI 1.3 satisfy independent claim 1 of the '520 Patent or any of its challenged dependent claims.

B. Independent Claim 12

Independent claim 12 of the '520 Patent recites:

[12(pre)] A transmitting device comprising:

[12(a)] a connection to a single first control bus, the first control bus being a bi-directional, single-line bus, wherein the transmitting device is operable for coupling with a receiving device via the first control bus;

[12(b)] *logic to convert each of one or more control signals into a data packet, each of the one or more control signals being one of a plurality of different types of control signals for a standard protocol*, each data packet including a plurality of bits to be transmitted;

[12(c)] a transmitter, the transmitter to transmit the data packets to the receiving device on the first control bus; and

[12(d)] logic to arbitrate use of the first control bus, the logic to arbitrate use being operable to: determine whether the control bus is in use by the receiving device, and

[12(e)] if the first control bus is not in use by the receiving device, conduct arbitration for control of the first control bus, and

[12(f)] wherein the receiving device is a device utilizing the standard protocol and the transmitting device is a mobile device utilizing a modified protocol, the modified protocol being a modification of the standard protocol that is not included in the standard protocol.

EX1001, 12:28-51 (emphasis added).

Independent claim 12 unambiguously reflects the “translation layer” mechanism described in the ’520 Patent for communication between a modified protocol” device and a “standard protocol” device over a single-bit control bus, as applied to a “transmitting device.” First, claim limitation [12(a)] requires the “transmitting device” to have “a connection to a single first control bus, the first control bus being a bi-directional, single-line bus.” Claim limitation [12(f)] further restricts the “transmitting device” to “a mobile device utilizing a modified protocol,” and the “receiving device” to “a device utilizing the standard protocol.”

Second, claim limitation [12(b)] requires “logic to convert each of one or more control signals ... each of the one or more control signals being one of a plurality of different types of control signals for a standard protocol.” This limitation also requires the “logic to convert ... into a data packet.” Third, claim limitation [12(c)] requires “a transmitter ... to

transmit the data packets to the receiving device on the first control bus,” which is a bi-directional, single-line bus.

For the same reasons as set forth above with respect to claim 1, Yung in combination with HDMI 1.3 does not disclose each of these limitations. More specifically, the combination does not disclose that “each of the one or more control signals being one of a plurality of different types of control signals for a standard protocol” are “convert[ed] ... into a data packet” and “transmitt[ed] ... on the first control bus,” “a bi-directional, single-line bus.” Indeed, the Petition does not present any new meaningful argument with respect to these limitations, only referencing back to the arguments presented for corresponding limitations in claim 1. For example, with respect to claim limitation [12(b)] (“logic to convert each of one or more control signals into a data packet, each of the one or more control signals being one of a plurality of different types of control signals for a standard protocol”), apart from addressing Yung’s disclosure of “logic” and “Patent Owner’s position that this limitation is not a means-plus-function limitation,” the Petition merely concludes that “Yung in view of HDMI 1.3 also renders obvious this limitation for the reasons set forth above for [1(e)].” Petition, at 57-

58. Similarly, with respect to claim limitation [12(c)] (“a transmitter, the transmitter to transmit the data packets to the receiving device on the first control bus”), apart from addressing Yung’s disclosure of a “content playback device” as a “transmitter,” the Petition merely concludes that “Yung discloses and/or renders obvious this element for the reasons set forth above for [1(f)].” Petition at 58.

Additionally, claim limitation [12(f)] recites “the transmitting device is a mobile device utilizing a modified protocol.” Claim limitation [12(c)] and [12(a)] further recite that this “modified protocol” transmitting device “transmit the data packets to the receiving device on the first control bus,” “the first control bus being a bi-directional, single-line bus.” With respect to claim limitation [12(f)], the Petition does not present any new argument and merely concludes that “Yung in view of HDMI 1.3’s HDMI-C protocol renders obvious this element for the reasons set forth above for [1(g)].” Petition at 60. For the same reasons as set forth above with respect to claim 1, Yung in combination with HDMI 1.3 does not disclose the “modified protocol” requirement of claim limitation [12(f)].

For at least the foregoing reasons, Petitioner has failed to show that the combination of Yung and HDMI 1.3 satisfy independent claim 12 of the '520 Patent or any of its challenged dependent claims.

C. Independent Claim 19

Independent claim 19 of the '520 Patent recites:

[19(pre)] A receiving device comprising:

[19(a)] a connection to a single first control bus, the first control bus being a bi-directional, single-line bus, wherein the receiving device is operable for coupling with a transmitting device via the first control bus;

[19(b)] *a receiver to receive one or more data packets on the first control bus, each of the one or more data packets representing one of a plurality of different types of control signals*;

[19(c)] logic to convert each of the one or more data packets into a control signal; and

[19(d)] logic to arbitrate use of the first control bus, the logic to arbitrate use being operable to: determine whether the control bus is in use by the transmitting device, and

[19(e)] if the first control bus is not in use by the transmitting device, conduct arbitration for control of the first control bus, and

[19(f)] wherein the receiving device is a device utilizing the standard protocol and the transmitting device is a mobile device utilizing a modified protocol, the modified protocol being a modification of the standard protocol that is not included in the standard protocol.

EX1001, 13:6-14:3 (emphasis added).

Independent claim 19 unambiguously reflects the “translation layer” mechanism described in the ’520 Patent for communication between a modified protocol” device and a “standard protocol” device over a single-bit control bus, as applied to a “receiving device.” First, claim limitation [19(a)] recites the “receiving device” to have “a connection to a single first control bus, the first control bus being a bi-directional, single-line bus.” Claim limitation [19(f)] further restricts the “receiving device” to “a device utilizing the standard protocol” and the “transmitting device” to “a mobile device utilizing a modified protocol.” Second, claim limitation [19(b)] recites “a receiver to receive one or more data packets ... each of the one or more data packets representing one of a plurality of different types of control signals.”

For the same reasons as set forth above with respect to claim 1, Yung in combination with HDMI 1.3 does not disclose each of these limitations. More specifically, the combination does not disclose that “a receiver to receive one or more data packets ... each of the one or more data packets representing one of a plurality of different types of control signals” and that “data packets” are “receive[d] ... on the first control bus,” “a bi-directional, single-line bus.” Indeed, the Petition does not

present any new meaningful argument with respect to these limitations, only referencing back to the arguments presented for corresponding limitations in claim 1. For example, with respect to claim limitation [19(b)] (“a receiver to receive one or more data packets on the first control bus, each of the one or more data packets representing one of a plurality of different types of control signals”), the Petition merely concludes that “Yung discloses and/or renders obvious this element, and, in addition, Yung in view of HDMI 1.3 also renders obvious this element for the reasons set forth above for [1(e)] and [1(f)].” Petition, at 63.

Additionally, claim limitation [19(f)] recites that “the transmitting device is a mobile device utilizing a modified protocol.” Claim limitation [19(a)] further recites that “the receiving device is operable for coupling with a transmitting device via the first control bus,” “the first control bus being a bi-directional, single-line bus.” With respect to claim limitation [19(f)], the Petition does not present any new argument and merely concludes that “Yung in view of HDMI 1.3’s HDMI-C protocol renders obvious this element for the reasons set forth above for [1(g)].” Petition, at 67. For the same reasons as set forth above with respect to claim 1,

Yung in combination with HDMI 1.3 does not disclose the “modified protocol” requirement of claim limitation [19(f)].

For at least the foregoing reasons, Petitioner has failed to show that the combination of Yung and HDMI 1.3 satisfy independent claim 19 of the '520 Patent or any of its challenged dependent claims.

V. CONCLUSION

As discussed *supra*, all of the *Fintiv* factors strongly favor discretionary denial, and the Petition should be denied for this reason alone. Alternatively, the Board should deny institution on the merits because the Petitioners have not demonstrated a reasonable likelihood that it will prevail with respect to any of the claims challenged in the Petition.

Date: January 29, 2025

Respectfully submitted,

/Brett Cooper/

Brett Cooper, Reg. No. 55,085
Lead counsel for Patent Owner

CERTIFICATION REGARDING WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Patent Owner certifies that there are no more than 8,353 words in the paper excluding the portions exempted under 37 C.F.R. § 42.24(a)(1).

Dated: January 29, 2025

/s/ Brett Cooper

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CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))

The undersigned hereby certifies that the above document was served on January 29, 2025, by filing this document through the Patent Trial and Appeal Case Tracking System as well as delivering a copy via electronic mail upon the following attorneys of record for the Petitioner:

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