

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMPHENOL CORP.,
Petitioner

v.

CREDO TECHNOLOGY GROUP LTD.,
Patent Owner

Case IPR2025-00699
Patent 11,032,111

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	PERSON OF ORDINARY SKILL IN THE ART	3
III.	CLAIM CONSTRUCTION	4
IV.	STANDARD FOR GRANTING <i>INTER PARTES</i> REVIEW	5
V.	SUMMARY OF THE '111 PATENT	7
VI.	OVERVIEW OF THE CITED REFERENCES	12
	A. Lugthart-706	12
	B. Das Sharma	17
	C. Mezer	19
VII.	PETITIONER FAILS TO ESTABLISH A REASONABLE LIKELIHOOD OF PREVAILING ON ANY CHALLENGED CLAIM	21
	A. Lugthart-706-Das Sharma-Mezer fail to disclose or suggest “adaptive pre-equalization” and “pre-equalizer coefficients” associated with the adaptive pre-equalization	23
	B. Lugthart-706-Das Sharma-Mezer fail to render obvious the “set of registers” and the Petition failed to explain why a POSITA would have been motivated to incorporate Das-Sharma’s registers into Lugthart- 706’s system with a reasonable expectation of success	34
	C. Dr. Min’s testimony should be entitled to little weight and fails to explain why the proposed combination renders obvious “each of the multiple registers corresponding to a different channel model.”	41
VIII.	CONCLUSION	44

LIST OF EXHIBITS

- EX-2001 Order No. 6: Setting Procedural Schedule, *In the Matter of Certain Active Electrical Cables and Components Thereof*, Inv. No. 337-TA-1446, issued May 19, 2025
- EX-2002 September 1, 2023 Letter re Credo Technology Group, Ltd.’s Intellectual Property
- EX-2003 USPTO, “FAQs for Interim Processes for PTAB Workload Management,” *available at* <https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management>
- EX-2004 “Credo Introduces PAM4 DSP for High Performance Data Centers and Enterprise Networks,” March 17, 2021, <https://credosemi.com/credo-introduces-pam4-dsp-for-high-performance-data-centers-and-enterprise-networks/>
- EX-2005 “AEC Applications,” <https://credosemi.com/products/hiwire-aec/applications/>
- EX-2006 “Credo Introduces 800G HiWire ZeroFlap AECs to Support AI Backend Networks,” October 10, 2024, *available at* https://s205.q4cdn.com/511065572/files/doc_news/2024/10/credo-introduces-800g-hiwire-zeroflap-aecs-to-support-ai-backend-networks.pdf
- EX-2007 Respondents’ Initial Invalidity Contentions, *In the Matter of Certain Active Electrical Cables and Components Thereof*, Inv. No. 337-TA-1446, served June 26, 2025
- EX-2008 Exhibit C-1, 111 Patent Invalidity Chart (Lugthart414), Respondents’ Initial Invalidity Contentions, *In the Matter of Certain Active Electrical Cables and Components Thereof*, Inv. No. 337-TA-1446, served June 26, 2025
- EX-2009 Exhibit C-2, 111 Patent Invalidity Chart (Lugthart431), Respondents’ Initial Invalidity Contentions, *In the Matter of*

Certain Active Electrical Cables and Components Thereof, Inv.
No. 337-TA-1446, served June 26, 2025

EX-2010	Exhibit C-12, 111 Patent Invalidity Chart (Das Sharma, Mezer), Respondents' Initial Invalidity Contentions, <i>In the Matter of Certain Active Electrical Cables and Components Thereof</i> , Inv. No. 337-TA-1446, served June 26, 2025
EX-2011	RESERVED
EX-2012	RESERVED
EX-2013	U.S. Pat. No. 10,148,414 ("Lugthart414")
EX-2014	RESERVED
EX-2015	RESERVED
EX-2016	Bert Reiser & Ruthie Wu, Why the International Trade Commission is such an appealing forum for patent disputes," <i>Reuters</i> (June 11, 2025), https://www.reuters.com/legal/legalindustry/why-international-trade-commission-is-such-an-appealing-forum-patent-disputes-2025-06-11/
EX-2017	United States International Trade Commission, Section 337 Statistics: Average Length of Investigations, Updated 4/11/2025, https://www.usitc.gov/intellectual_property/337_statistics_average_length_investigations.htm
EX-2018	RESERVED
EX-2019	U.S. Pat. No. 9,337,993 ("Lugthart993")
EX-2020-2022	RESERVED

EX-2023	Declaration of Dr. Tim Williams
EX-2024-2025	RESERVED
EX-2026	TI Glossary, Texas Instruments (Dec., 2013) (“TI Glossary”)

I. INTRODUCTION

Amphenol Inc. (“Amphenol” or “Petitioner”)’s Petition for review of claims 1-19 of U.S. Patent No. 11,032,111 Patent (“’111 Patent”) should be denied for several reasons. The Petition fails to demonstrate a reasonable likelihood that any challenged claim will be found unpatentable at least because [1] the asserted references fail to disclose or render obvious each feature of independent claims 1, 8, 11, and 16; [2] a POSITA would not have combined the references, as alleged by the Petition; and [3] the Petition fails to explain that a POSITA would have had a reasonable expectation of success in combining the asserted references in the manner alleged by the Petition. EX-2023, ¶¶37-98.

In particular, the asserted references, considered individually or in the asserted combinations, do not render obvious: [1] pre-equalization and pre-equalizer coefficients; [2] multiple registers used in the transmitter, irrespective of channel models; and [3] registers that each corresponds to a different channel model or stores coefficients used to determine a performance characteristic. EX1001, claims 1, 8, 11, 16. More specifically, the asserted references, considered individually or in the asserted combinations, do not render obvious the following features:

[1] “each of the multiple registers corresponding to a different channel model” (independent claim 1);

[2] “updating the initial pre-equalizer coefficient values during a training phase” (independent claim 1);

[3] “using the updated pre-equalizer coefficient values to convey a transmit data stream” (independent claim 1);

[4] “pre-equalize a corresponding serial symbol stream being transmitted to a port transceiver” (independent claims 8, 11, and 16);

[5] “each of multiple registers containing a set of initial coefficients values corresponding to a different channel model” (independent claims 8 and 16);
and

[6] “each register containing a set of pre-coefficient values for which the port transceiver determines a performance characteristic” (independent claim 11).

EX1001, 15:15-16:51; EX-2023, ¶¶58, 37-98.

Given these failures, the Petition fails to establish a reasonable likelihood that Petitioner will prevail in demonstrating the unpatentability of any of the challenged claims. Accordingly, institution should be denied. Moreover, while the Board need not reach the merits given that the circumstances warrant discretionary denial under Section 314(a), as detailed in Patent Owner’s previously filed discretionary denial brief, the Petition independently fails on the merits as well.

II. PERSON OF ORDINARY SKILL IN THE ART

A person having ordinary skill in the art (“POSITA”) as of August 28, 2018 would have had an undergraduate degree in electrical engineering or electrical and computer engineering, or equivalent knowledge, training, or experience, with at least three years of experience working in high speed data communication. A higher level of education may substitute for less experience, and *vice versa*.

In contrast, Petitioner asserts that “a person having ordinary skill in the art (“POSA”) would have had a Bachelor of Science in electrical or computer engineering with at least three years of experience in digital communication system design” and “[a] higher level of education may substitute for less experience.” Pet. 21 (10).¹

The scope of experience in Patent Owner’s definition—specifically in high-speed data communication—is more relevant to the subject matter of the ’111 Patent than the focus on digital communication system design, proposed by Petitioner. *See* MPEP § 2141.03 (providing factors to consider in determining the level of ordinary skill in the art). In particular, as discussed *infra* in Section V, the

¹ The first number refers to the actual page number of the PDF, while the number in parentheses refers to the page number as stamped in the petition.

'111 Patent addresses signal degradation and equalization challenges in high-speed data communications, including chip-to-module communications link and pluggable module transceiver—which require specialized expertise in both analog and digital signal processing, as well as channel modeling for high-frequency transmission. *See infra*, V. In addition, the '111 Patent discloses advanced techniques such as adaptive pre-equalization with selectable preset coefficient registers, updating of coefficient values during a training phase, and optimization of transmit characteristics based on receiver feedback—reflecting a high level of technical sophistication specific to high-speed communication systems. *See id.* These challenges and solutions are pertinent to high speed data communication, whereas Petitioner's POSITA definition is (mis)directed to whether a communication system is digital.

Accordingly, Patent Owner's definition should be adopted for purposes of evaluating the prior art and the validity of claims of the '111 patent.

III. CLAIM CONSTRUCTION

All claim terms in this proceeding are to be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. §42.100. No claim construction is necessary to deny institution. Patent Owner's arguments for denial do not hinge on the outcome of an actual controversy about any claim construction. *See Wellman, Inc. v. Eastman Chem.*

Co., 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed to the extent necessary to resolve the controversy.”). As detailed below, the defects in the Petition are readily identifiable without defining any specific claim term. Patent Owner reserves the right to construe any claim features should the Board indicate that it may benefit from a construction.

IV. STANDARD FOR GRANTING *INTER PARTES* REVIEW

The Board may grant a petition for *inter partes* review only where “the information presented in the petition ... shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. §314(a); 37 C.F.R. §42.108(c). A Petitioner bears the burden of showing that this statutory threshold has been met. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,756 (Aug. 14, 2012). Critically, Petitioners must fulfill this burden based on “information presented in the petition” (35 U.S.C. §314(a)), and the law forbids Petitioners from subsequently adding theories/arguments that should have been part of their initial Petition. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (citing to 35 U.S.C. § 312) (“It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’”); *see also* *Cuozzo Speed Techs., LLC v. Lee*, 136 S.Ct. 2131, 2154

(2016) (Alito, J. concurring in part and dissenting in part) (“Thus, if a petition fails to state its challenge with particularity—or if the Patent Office institutes review on claims or grounds not raised in the petition—the patent owner is forced to shoot into the dark. The potential for unfairness is obvious.”).

As such, the original Petition must establish a *prima facie* case of obviousness with regard to its proposed combinations of references. It is well settled that “rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Intn’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993 (Fed. Cir. 2017) (explaining that it is insufficient to allege “that a skilled artisan, once presented with the two references, would have understood that they could be combined.”)

As explained in more detail below, the Petition does not establish a reasonable likelihood that the Petitioner will prevail in demonstrating the unpatentability of any of the challenged claims at least because: [1] key claim features are missing from the Petition’s mappings, and [2] the Petition fails to establish a *prima facie* case of obviousness with regard to its proposed combinations of references.

V. SUMMARY OF THE '111 PATENT

The '111 Patent claims innovative, non-obvious improvements to serializer-deserializer (SerDes) communications, for example, using an “efficient adaptation interface for transmitter pre-equalizers” that enables “standards-suitable” data transmission over channels with varying “attenuation and dispersion.” EX-1001, 1:19-35; 1:39-2:16; EX-2023, ¶37.

The '111 Patent explains that “as demand continues for ever-higher data rates [for data communications], extensions to the standard must account for increased channel attenuation and dispersion even as the equalizers are forced to operate at faster symbol rates.” EX-1001, 1:19-35. Earlier techniques to address channel attenuation and dispersion “introduce[d] undesirable hardware complexity or cost.” EX1001, 1:31-35. To provide a low cost and effective solution to, in part, address channel attenuation and dispersion, the '111 Patent discloses “SerDes pre-equalizer having adaptable preset coefficient registers.” EX-1001, title. The systems and methods described in the '111 Patent provide, among other benefits, improvement in signal quality while also reducing or eliminating the need for receiver-side equalization, thereby enabling digital filtering with reduced bit width, and reducing power consumption in high-speed communications links, including chip-to-module (C2M) channels. EX-1001, 6:40-

54, 5:24-30; EX-2023, ¶38.

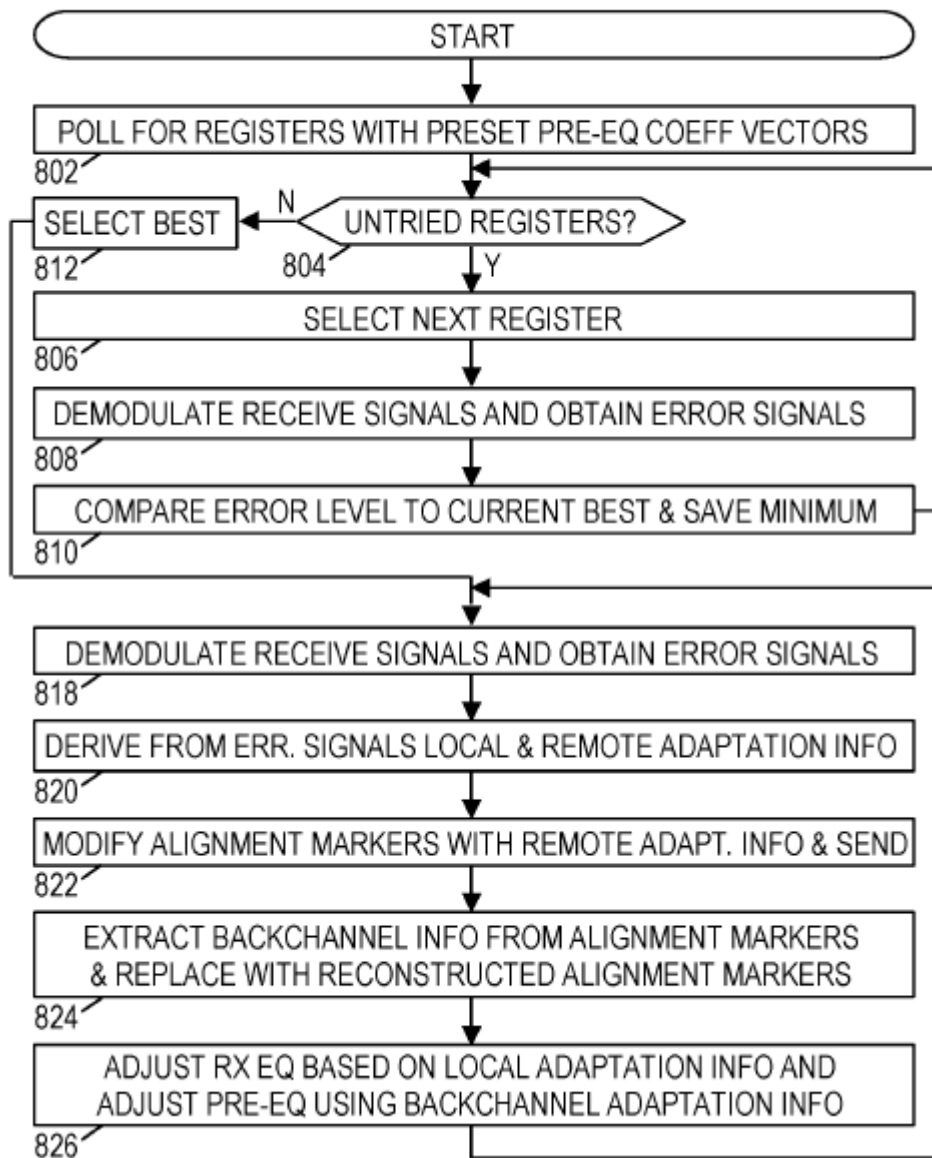
For instance, the inventors discovered that desirable performance characteristics, such as improved efficiency and signal integrity, could be achieved by (i) providing multiple registers in a transceiver controller, each storing a set of preset initial pre-equalizer coefficient values corresponding to different channel models, (ii) allowing for selection of optimal starting point set of coefficients, (iii) adaptive updating of such coefficients during a training phase, and (iv) application of the updated coefficients to pre-equalize transmitted data streams, while minimizing power consumption, hardware complexity, and noise. *See, e.g.*, EX-1001, 11:53-14:11; 14:12-15:3; 6:40-54; EX-2023, ¶39.

Further, the above-described adaptive pre-equalization process can be implemented in a pluggable module transceiver. *See, e.g.*, EX-1001, Abstract, 1:49-57, claims 8, 11, 16. Such pre-equalization can be applied to counteract expected loss and dispersion, which “generally requires knowledge of the channel.” EX-1001, 6:40-54; EX-2023, ¶40.

In an example depicted in FIG. 8 (reproduced below) of the ’111 Patent, “[a]s the link is first established, which may happen, e.g., during automated testing as part of the manufacturing process, when a module is inserted into a port, and/or when a cable connector is inserted into a module the training controller or link controller (hereafter, just “controller”) employs an auto-negotiation or back-

channel communication process in block 802 to determine whether the remote transmitter has a set of preset coefficient registers.” EX-1001, 14:12-20. “[T]he controller selects [a] first remaining untried register by instructing the remote transmitter to program the transmit pre-equalizer in each lane with the preset coefficient values from that register. The remote transmitter uses the pre-equalizers to transmit data, and in block 808 the receiver demodulates the multiple receive signals, e.g., with a DFE, to estimate or measure error signals (the difference between the equalized receive signals and an idealized receive signal). For training patterns, the idealized receive signal is known, whereas for transmitted data, the idealized receive signal may be estimated.” EX-1001, 14:22-30.

FIG. 8



EX-1001, FIG. 8.

Blocks 804-810 are repeated until the performance of each of the preset coefficients in each register have been evaluated. Then, in block 812, the best register is selected, with the remote transmitter being instructed to use those preset coefficients as a starting point for the next phase. The remote transmitter programs the pre-equalizer with the preset

coefficients from the selected register and transmits a training pattern and/or data. In block 818, the receiver demodulates the receive signals, again obtaining error signals. The demodulated data streams are later combined to form a multi-lane data stream carrying user data to a destination application. In block 820 the controller uses the error signals to derive adaptation information for the local receive equalizers and the remote transmit equalizers, using any applicable adaptation algorithm that may be found in the open literature.

EX-1001, 14:36-51.

In block 822, the remote adaptation information is communicated to the remote transmitter. ... In block 824, the back-channel information from the remote transmitter is obtained, optionally by extracting the contents of the backchannel information field from the received (modified) alignment markers, yielding adaptation information for the local pre-equalizer. The modified alignment markers are then replaced with reconstructed sets of grouped PCS alignment markers. In block 826, the local adaptation information and the backchannel information are used to adjust the receive equalizers (CTLE, DFE, and FFE if any) and the local transmit pre-equalizer.

EX-1001, 14:57-15:3.

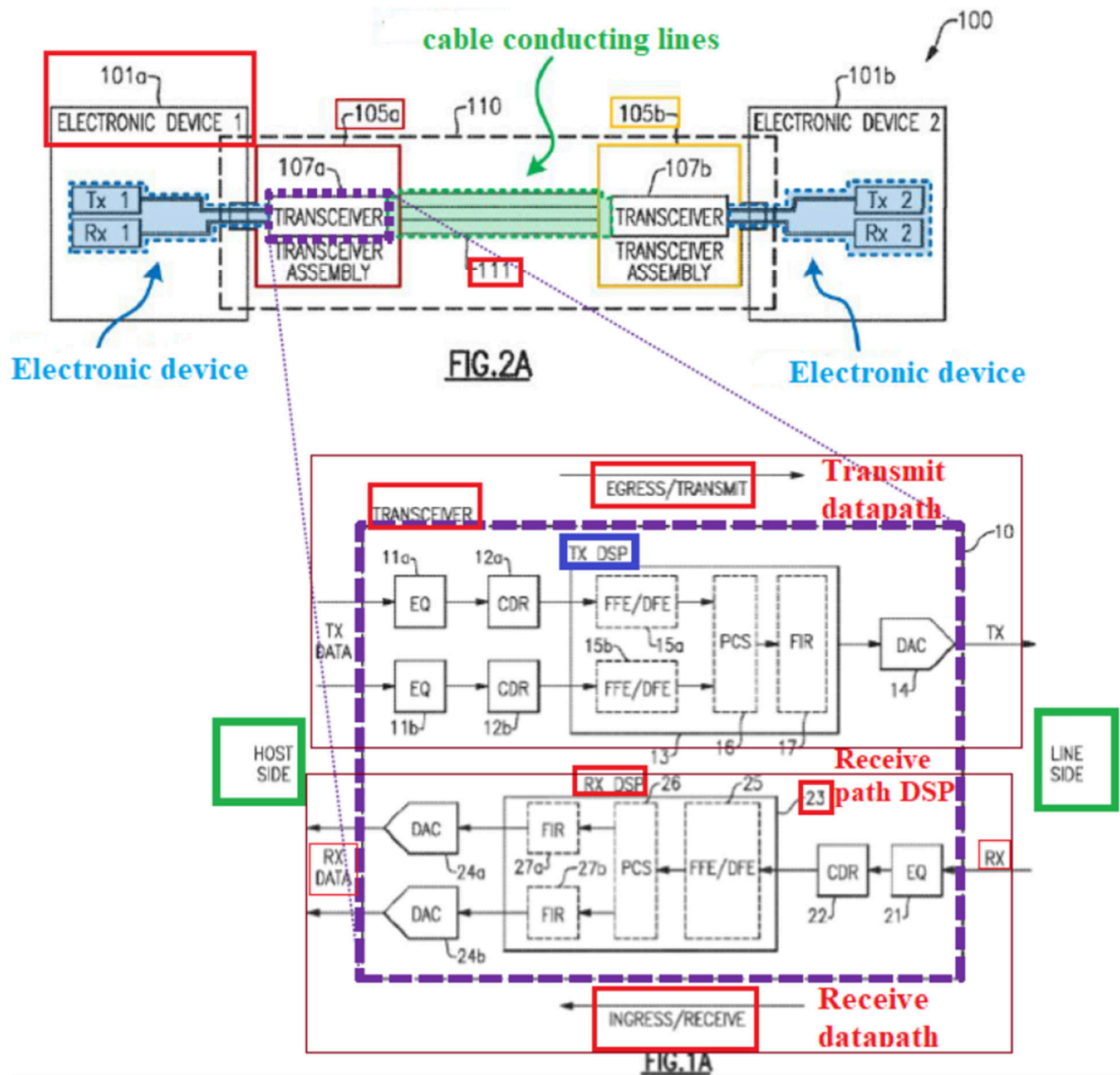
Independent claim 1 is directed to a SerDes communications method; independent claims 8 and 11 are directed to a chip-to-module communications link comprising a port connector that couples a port transceiver to a pluggable module transceiver; and independent claim 16 is directed to a pluggable module

transceiver.

VI. OVERVIEW OF THE CITED REFERENCES

A. Lugthart-706

Lugthart-706 describes a transceiver system that interfaces between a host electronic device (e.g., electronic device 101a) and a line-side medium such as copper cable lines (e.g., cable conducting lines 111). EX-1005, FIGS. 1A, 2A (reproduced below, annotated), 16:9-20 (“electrical conducting lines 111 . . . can transport electrical signals between the first electronic device 101a and the second electronic device 101b . . . The conducting lines 111 can include metal (e.g., copper) conductors”); EX-2023, ¶41.



EX-1005, FIGS. 1A, 2A (annotated).

To maintain signal integrity over the cable conducting lines 111, Lugthart-706 specifically provides a transceiver structure (e.g., transceiver 107a) that compensates for signal degradation. EX-1005, 6:41-45 (“[t]he performance of communication systems is limited . . . by factors including intersymbol interference (ISI) and other characteristics . . . associated with the cable including

loss, noise, dispersion and non-linear response”), 15:5-20 ([i]ntegrating transceivers into a cable can achieve a wide variety of advantages . . . an active cable [having integrated transceiver(s)] can permit communication over longer distance . . . with a thinner cable . . . using an active cable [having integrated transceiver(s)] can decrease jitter, noise, and/or ISI relative to a configuration using a passive cable . . . In such configurations, the conductive lines 111 may be formed”); EX-2023, ¶42.

As illustrated in FIGS. 1A and 2A above, the transceiver architecture is divided into two directional paths—a transmit path (“EGRESS/TRANSMIT”) and a receive path (“INGRESS/RECEIVE”)—each of which comprises respective components including equalizers (EQ), finite impulse response (FIR) filters, digital signal processors (DSPs), clock and data recovery (CDR) circuits. EX-1005, FIGS. 1A, 2A; EX-2023, ¶43.

Lugthart-706’s EGRESS/TRANSMIT” and “INGRESS/RECEIVE” (e.g., in FIGS. 1A and 2A) indicate the direction of signal flow relative to the host device 101a and the cable conducting lines 111. EX-1005, FIGS. 1A, 2A. For example, a signal travels from a host device (e.g., 101a) through a transceiver module, and to the cable lines 111 on the EGRESS/TRANSMIT side. A signal travels from the cable lines 111 through a transceiver module, and to a host device on the INGRESS/RECEIVE side. EX-1005, FIGS. 1A, 2A; EX-2023, ¶44.

In Lugthart-706's transmit path, the EGRESS components of the transceiver 107a apply signal shaping techniques, including "digitally re-timing, conditioning, and multiplexing the differential signals," and "transmit[] the multiplexed signal as a multi-level modulated signal (e.g., PAM-4)" over the cable conducting lines 111. EX-1005, 6:41-45, 15:5-20, 15:64-16:3. Specifically, pre-equalization is applied to compensate for high-frequency loss and anticipated losses in the cable conducting lines 111 before the signal traverses the cable conducting lines 111. EX-1005, 6:41-45, 15:5-20, EX-2023, ¶45.

In Lugthart-706's receive path, the INGRESS components receive signals from the cable conducting lines 111. These signals have undergone signal degradation in the cable conducting lines 111, which may be recovered, demultiplexed, and converted into a desired format before delivery to the host device 101a. EX-1005, 6:41-45 & 15:5-20 (describing the loss characteristics of the cable lines and attributing signal degradation primarily to those lines, and further describing how integration of transceivers into a cable can address such degradation), 9:10-12 ("The receive path equalizer 21 can be used to provide signal equalization to compensate for transmission line losses on the line side"), 9:65-10:2 ("[t]he receive path DSP 23 can be used to process (for example, filter or otherwise recover and condition) data recovered by the receive path CDR circuit

22, and to deserialize the data”); 22:60-23:6² (“The DSP 23 can . . . condition and de-multiplex the digital data signal to a plurality of de-multiplexed signal at a lower bit-rate . . . DSP 23 can . . . include one or more FIR filters and de-mapper to determine the signal components for the de-multiplexed data signal according to the desired modulation format”); EX-2023, ¶46.

Accordingly, the receive path applies post-equalization and processing—including EQ 21 and RX DSP 23—to correct distortion and convert the signal into the desired format after signal degradation has occurred during transmission over cable lines (conducting lines 111). EX-1005, 9:10-12, 9:65-10:2, 22:60-23:6; EX-2023, ¶47.

Lugthart-706 generally fails to provide details of signal processing for communications to and from the host device 101a, particularly on the INGRESS/receiver side. For instance, while Lugthart-706 describes compensating for loss in the cable conducting lines 111 (EX-1005, 6:41-45, 15:5-20), Lugthart-706 provides no description of pre-equalization and adaptive equalization

² While Patent Owner does not concede that the descriptions of FIGS. 4A and 4B are compatible with FIG. 2A, Patent Owner relies on those descriptions to the extent that the Petition has used them in support of its rationale.

performed by the receive-side DSP 23 (including FIR filters 27a-27b). Lugthart-706 also does not disclose that DSP 23 possesses channel information between the host device 101a and DSP 23. EX-1001, 6:40-54. In fact, Lugthart-706 is entirely silent on any communication between the host device 101a and DSP 23 that involves the training and comparison of signals necessary for adapting equalization coefficients. Pet., 29 (18); EX-2023, ¶48.

Indeed, the Petition implicitly concedes Lugthart-706's failure to disclose adaptive pre-equalization between the host device 101a and DSP 23 (or FIR filters 27a-27b therein) by relying on Das Sharma. Pet., 32 (21); EX-2023, ¶49.

B. Das Sharma

Das Sharma “provides a mechanism to reduce the time for link [peripheral component interconnect express (PCIe) link] training and equalization and increase its reliability.” EX-1006, [0082]. “Specifically, a link training and equalization procedure . . . may utilize a software application which executes an algorithm which generates a set of coefficients for a transmission logic or receiver logic settings.” EX-1006, [0082]; EX-2023, ¶50.

Das Sharma describes a PCIe link training and equalization process in which “full swing (FS) value and low frequency (LF) value associated with a device [PCIe endpoint or root complex device]” are stored in “configuration and status register,” and subsequently read by a software application which uses those FS and

LF values to “generate a set of coefficients.” EX-1006, [0082], [0083]; EX-2023, ¶51.

Das Shama describes that the set of coefficients are stored within registers of the endpoint or root complex devices (e.g., devices 550, 560 of FIG. 5 (reproduced below, annotated)). In particular, “a set of default coefficients [are] located within registers of the transmitter or receiver components (e.g., provided by manufacturer) of the devices 550, 560.” EX-1006, [0078], FIG. 5 (reproduced below, annotated); EX-2023, ¶52.

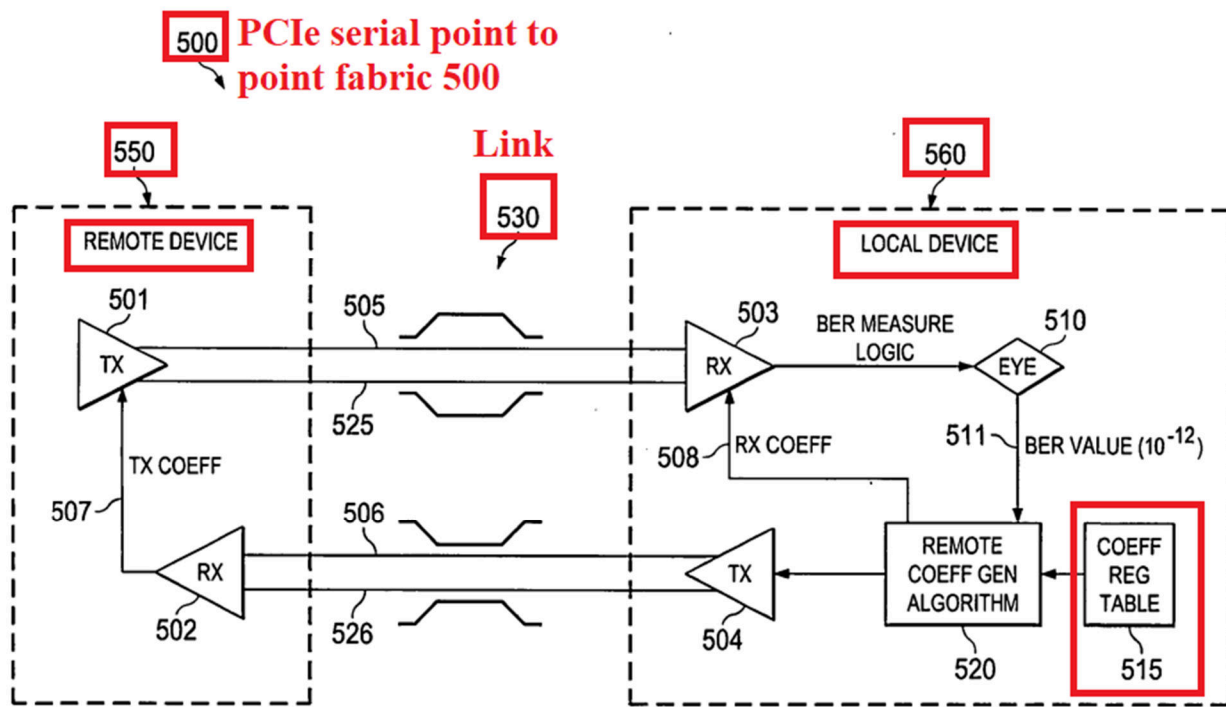


FIG. 5

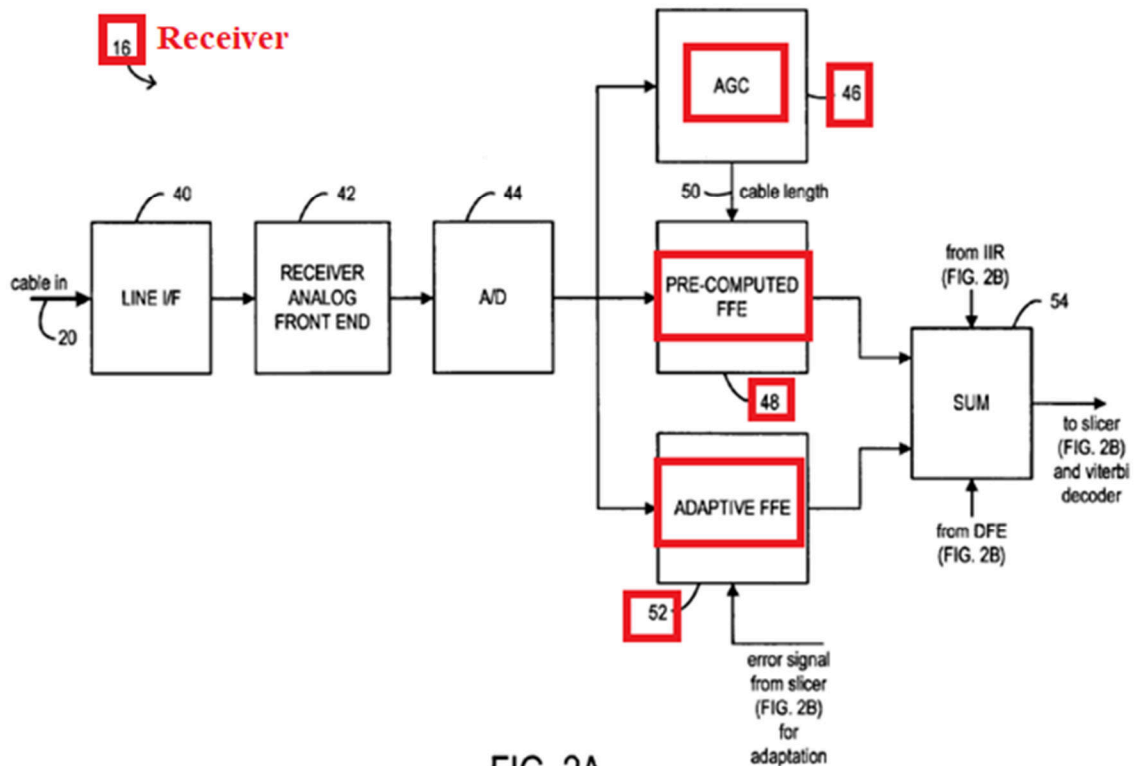
EX-1006, FIG. 5 (annotated).

As can be appreciated from the foregoing, Das Sharma's register-based coefficient storage is architecturally tied to PCIe endpoint or root complex devices. However, nothing in Das Sharma suggests that its register-based system and associated software would have been applied to any component outside the PCIe endpoint and root complex devices. EX-2023, ¶53.

Further, Das Sharma fails to disclose or suggest (i) performing adaptive equalization techniques on a pluggable module transceiver over channel(s) between a host device and the pluggable module transceiver, and (ii) storing coefficients for adaptive pre-equalization within such pluggable module transceiver. EX-2023, ¶54.

C. Mezer

Mezer describes a receiver-side equalization technique in which a pre-computed equalizer characteristic is selected based on a determined physical channel characteristic, such as cable length. EX-1007, FIG. 2A (reproduced below, annotated), 2:12-50; EX-2023, ¶55.



EX-1007, FIG. 2A (annotated).

The receiver 16 “includes an automatic gain control (AGC) circuit (or block) 46 which is coupled to the analog-to-digital converter 44 to receive the stream of digital samples output by the analog-to-digital converter 44,” in which the AGC circuit 46 “may determine a characteristic of the communication channel 20 such as an approximate length of the cable which constitutes the communication channel 20.” EX-1007, 2:12-20. “Also included in the receiver 16 is a pre-computed feed forward equalizer (FFE) block 48. The pre-computed FFE block 48

is coupled to the analog-to-digital converter 44 to receive the stream of digital samples output by the analog-to-digital converter 44.” EX-1007, 2:21-25. “The adaptive FFE 52 may operate in accordance with conventional principles and may, together with the pre-computed FFE block 48 and other components described below, operate to equalize the incoming signals.” EX-1007, 2:47-50; EX-2023, ¶56.

Mezer fails to disclose or suggest transmitter-side pre-equalization or storing pre-equalizer coefficients for different channel models. Mezer’s disclosure is limited to receiver-side equalization. EX-2023, ¶57.

VII. PETITIONER FAILS TO ESTABLISH A REASONABLE LIKELIHOOD OF PREVAILING ON ANY CHALLENGED CLAIM

The Petition presents a single obviousness ground based on the combination of Lugthart-706-Das Sharma-Mezer. Pet., 2. But the Petition suffers from significant and fatal flaws. In particular and for the reasons explained in more detail below, the Petition fails to demonstrate that the Lugthart-706-Das Sharma-Mezer combination renders obvious several claimed features including:

[1] “each of the multiple registers corresponding to a different channel model” (independent claim 1);

[2] “updating the initial pre-equalizer coefficient values during a training phase” (independent claim 1);

[3] “using the updated pre-equalizer coefficient values to convey a transmit data stream” (independent claim 1);

[4] “pre-equalize a corresponding serial symbol stream being transmitted to a port transceiver” (independent claims 8, 11, and 16);

[5] “each of multiple registers containing a set of initial coefficients values corresponding to a different channel model” (independent claims 8 and 16);
and

[6] “each register containing a set of pre-coefficient values for which the port transceiver determines a performance characteristic” (independent claim 11).

EX1001, 15:15-16:51; EX-2023, ¶58.

Moreover, “obviousness requires a suggestion of *all limitations in a claim*,” and the Petition’s challenge fails. *CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (*citing In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974)). Petition’s background references, which are not part of the Grounds, do not cure the deficiencies in the applied art with respect to the above-noted deficiencies.

Finally, the Petition also fails to establish that a POSITA would have been motivated to combine the asserted references—[1] Lugthart-706 with Das Sharma and [2] Mezer with the alleged Lugthart-706-Das Sharma combination—with a

reasonable expectation of success. *See infra*, Section VII.A-VII.C.

A. Lugthart-706-Das Sharma-Mezer fail to disclose or suggest “adaptive pre-equalization” and “pre-equalizer coefficients” associated with the adaptive pre-equalization

Overview

The Lugthart-706-Das Sharma-Mezer combination improperly relies on the assumption that Lugthart-706 discloses adaptive pre-equalization and corresponding pre-equalizer coefficients in Lugthart-706’s receive datapath components, such as the FIR filters 27a/27b and RX DSP 23. Pet., 31-32 (20-21)³, 50-59 (39-48) (describing mappings for claim 1 elements based on the combination’s adaptive pre-equalization, citing to Petition’s combination section “VI.D”), 77-78 (66-67) (describing mappings for claim 8 (e.g., [8b]) based on the combination’s adaptive pre-equalization), 80-81 (69-70) (describing that mappings for features related to pre-equalization and associated coefficients of claim 11 are identical to those of claim 8), 85 (74) (describing that mappings for claim 16 are nearly identical to those of claim 8).

However, as explained below, none of the cited references disclose or

³ The first number refers to the actual page number of the PDF, while the number in parentheses refers to the page number as stamped in the petition.

suggest adaptive pre-equalization in a receive datapath, as alleged by the Petition.

EX-2023, ¶¶59-75.

First, the Petition fails to show that Lugthart-706 discloses or suggests adaptive pre-equalization and associated pre-equalization coefficients.

Independent claim 1⁴ recites several features related to adaptive pre-equalization including:

- [1] “selecting one of multiple registers to specify initial pre-equalizer coefficient values”;
- [2] “updating the initial pre-equalizer coefficient values during a training phase”; and
- [3] “using the updated pre-equalizer coefficient values to convey a transmit data stream.”

EX-1001, claim 1.

The Petition describes adaptive pre-equalization (pre-EQ) as follows:

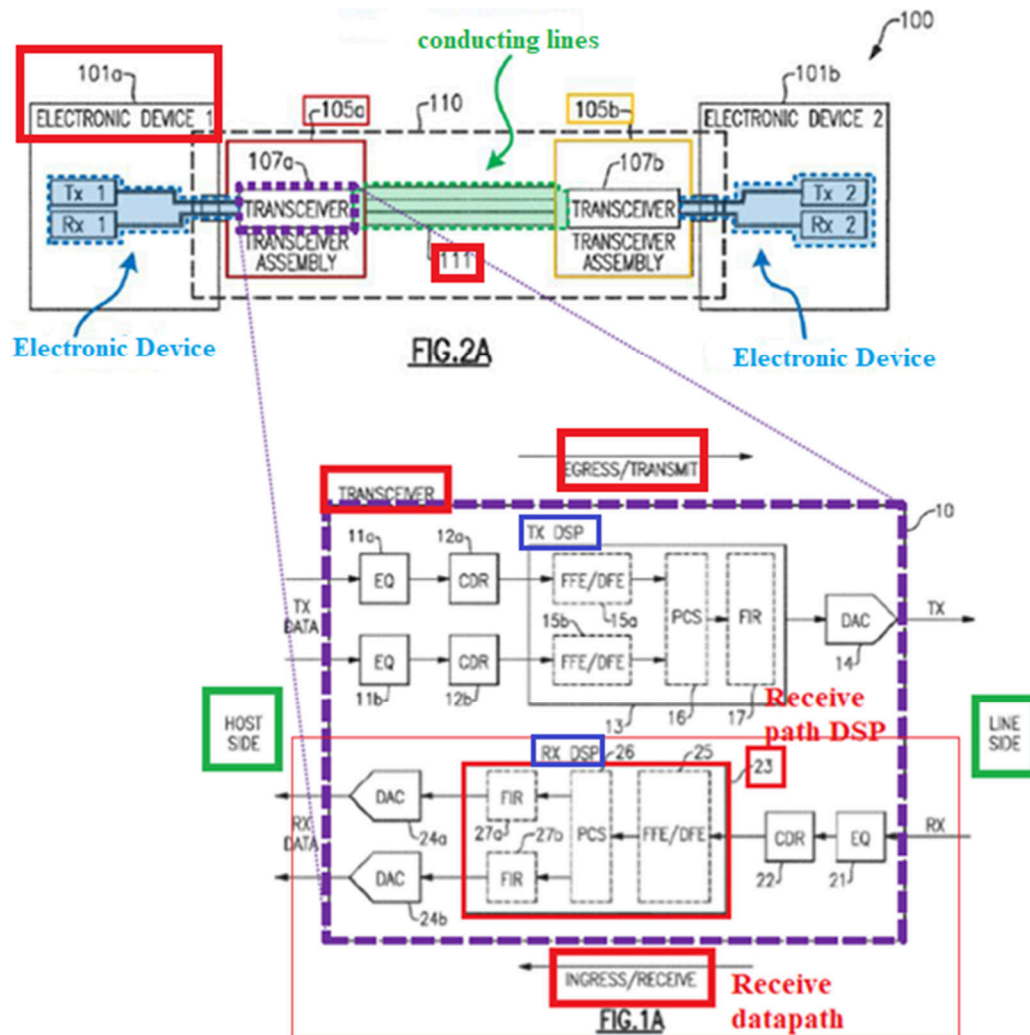
“a well-known process whereby **(1) training signal(s) are transmitted** to the receiver from the transmitter, **(2) the receiver compares** the received signal(s) to the known good training signal(s) and determines

⁴ The Petition identifies claim 1 as “representative” among all claims. Pet., 19 (8).

an error, **(3) the equalization coefficients are adapted (i.e., modified),**
in the receiver or the transmitter, **to reduce the error, (4) this**
continues iteratively until the received signal has an acceptable
error such as, e.g., a target bit error rate ('BER'), and **(5) the adapted**
coefficients are adopted for use in equalizing signals transmitted
over the channel from the transmitter to the receiver.”

Pet., 29 (18).

The Petition asserts that **adaptive pre-EQ** is performed on a **receive datapath** of Lugthart-706's transceiver 10, “**to compensate for transmission [line] losses . . . on the host side,**” referring to Figures 1A and 2A of Lugthart-706 below. Pet., 24-28 (13-17), 31 (20), 49 (38), 52-53 (41-42); EX-1005, FIGS. 1A, 2A (reproduced below, annotated); EX-2023, ¶60.



EX-1005, FIGS. 1A, 2A.

More specifically, the Petition contends that “[a]lthough from the host’s perspective DSP 23 [digital signal processor] is on the ‘INGRESS/RECEIVE’ path . . . DSP 23—including FIR [finite impulse response] filters 27a/27b—provides pre-equalization for the signal (‘RX DATA’) that transceiver 10 transmits to the host transceiver.” Pet., 51 (40). The Petition contends that Lugthart-706’s transceiver performs “output pre-emphasis. . . to compensate for the transmission [line] losses . . . on the host side,” and appears to equate output pre-emphasis to the

claimed pre-equalization. Pet., 52-53 (41-42); EX-2023, ¶61.

Petitioner mischaracterizes Lugthart-706. In direct contrast to the Petition’s assertions, Lugthart-706 explains that “[t]he receive path equalizer 21 [and RX DSP 23] can be used to provide signal equalization to **compensate for transmission line losses on the line side,**” as opposed to the host side, as the Petition alleges. EX-1005, 9:10-15, FIGS. 1A, 2A. Lugthart-706’s TX (transmitter) equalization components perform pre-EQ to compensate for losses *on the cable conducting lines 111* and RX (receiver) equalization components perform post-EQ to recover losses of the received data that has already undergone degradation due to channel effects *at the conducting lines 111*. See *supra* IV.A. As such, Lugthart-706’s RX DSP 23 performs **post**-equalization processing on the signal received from the cable conducting lines 111. Lugthart-706 does not teach that RX DSP 23 performs **pre**-equalization for a signal to be transmitted to a host device. See *supra* IV.A; see also EX-1005, 9:65-10:2 (“The receive path DSP 23 can be used to process (for example, filter or otherwise recover and condition) data recovered by the receive path CDR circuit 22, and to deserialize the data.”); EX-2023, ¶62.

Setting aside Petition’s mischaracterization of Lugthart-706, a review of Lugthart-706’s disclosure reveals that Lugthart-706 necessarily fails to disclose the claimed features, as alleged by the Petition, for the following reasons. EX-2023,

¶¶63-68.

First, Lugthart-706 mentions “host-side losses” in the context of **EGRESS/TRANSMIT signal path, not the INGRESS/RECEIVE signal path.** In the EGRESS/TRANSMIT signal path, “the first and second transmit path equalizers 11a and 11b can be used to provide signal equalization to **compensate for transmission line losses on the host side.**” EX-1005, 9:10-15. As such, the Petition relies on the description of “host-side losses” to describe losses to the signal *received from* the host on the EGRESS/TRANSMIT signal path and applies this description to the INGRESS/RECEIVE signal path (which ultimately yields a signal *transmitted to* the host) in an attempt to cure the lack of pertinent disclosure in Lugthart-706. EX-2023, ¶64.

Second, Lugthart-706 mentions “training phase” but does not associate training with DSP 23/FIR filters 27a/27b on the alleged receive datapath. Rather, this “training phase” is generally directed to “establishing a high-speed communication link between a first electronic device [101a] and a second electronic device [101b]”, i.e., over the cable communication links, not for communications between the DSP 23 and the host device 101a. EX-1005, 47:55-64. Indeed none of the cited portions of Lugthart-706 (EX-1005, 48:64-49:19) that the Petition relies on to assert that “operating parameters for the equalizers” are “adjusted” pertain to the DSP 23/FIR filters 27a/27b. EX-2023, ¶65.

As noted above in the overview Lugthart-706, Lugthart-706 provides very few details on communications with a host device. Therefore it's no surprise that there is no disclosure in Lugthart-706 of: (i) pre-equalization on RX DSP 23; (ii) signal degradation in the signal pathway from the DSP 23 (including FIR filters 27a/27b) to the host side; (iii) adaptive pre-equalization between host "electronic device 101a" and "transceiver 107a"; (iv) coefficient adaptation for use between host "electronic device 101a" and "transceiver 107a"; and/or (v) process involving "electronic device 101a" "compar[ing] the received signal(s) to the known good training signal(s) and determin[ing] an error," as the Petition itself describes adaptive pre-equalization (Pet., 29 (18)). The Petition then makes unsupported conclusion, which cannot withstand scrutiny. EX-2023, ¶¶66-68.

Ultimately, the Petition fails to show that Lugthart-706 discloses or suggests performing pre-equalization and associated pre-equalization coefficients on Lugthart-706's receive datapath components, including:

- [1] "updating the initial pre-equalizer coefficient values during a training phase" (independent claim 1);
- [2] "using the updated pre-equalizer coefficient values to convey a transmit data stream" (independent claim 1); and
- [3] "pre-equalize a corresponding serial symbol stream being transmitted to a port transceiver" (independent claims 8, 11, and 16). EX-2023, ¶¶69.

Second, Das Sharma does not cure Lugthart-706's deficiencies of adaptive pre-equalization and associated coefficients.

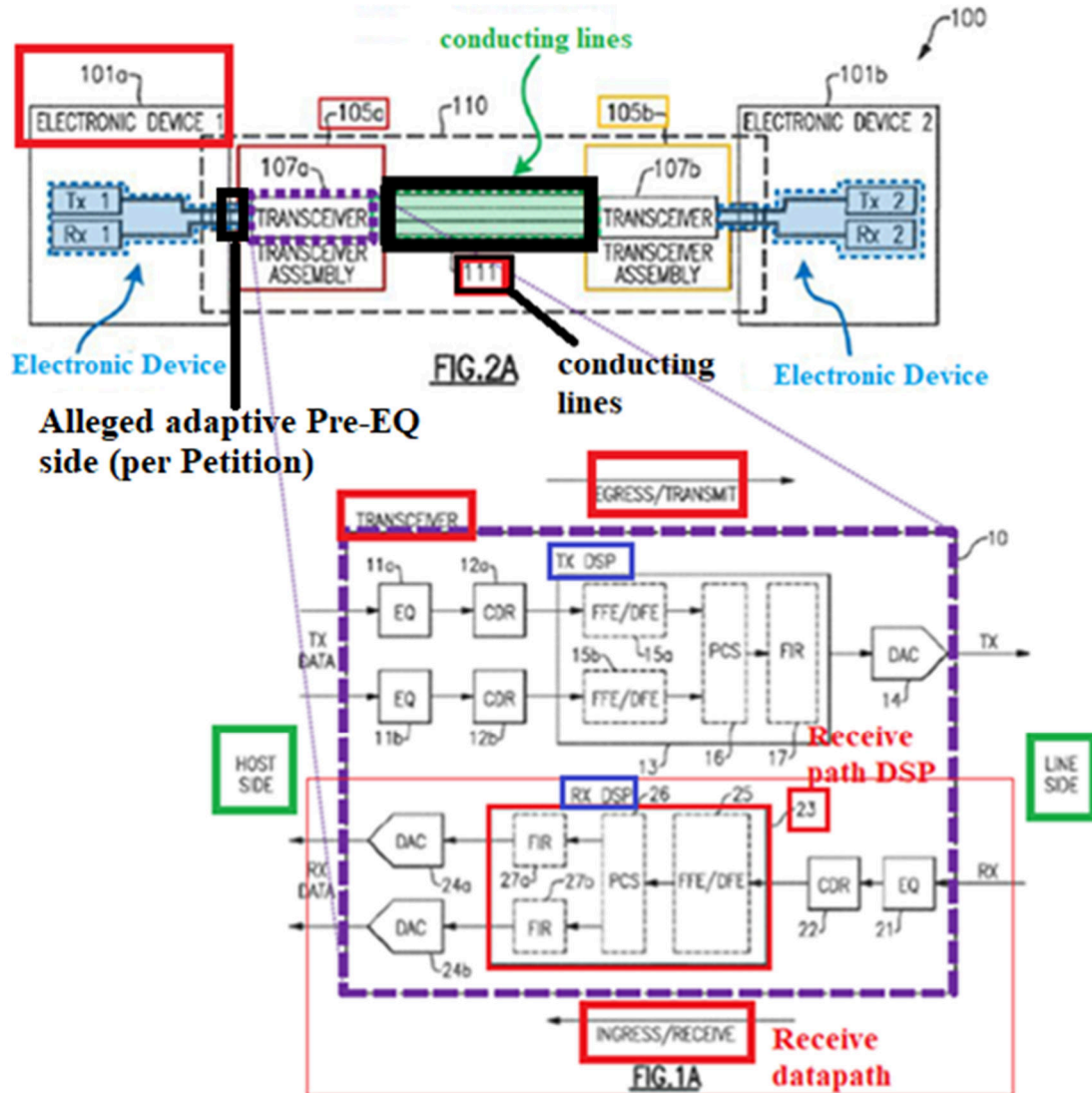
The Petition asserts that “to the extent Lugthart-706 is read to not expressly disclose using adaptive pre-equalization to adjust pre-equalization coefficients for FIR filters 27a/27b of RX DSP 23 in Lugthart-706's transceiver assembly, Das Sharma would have motivated a POSA to have implemented Lugthart-706 in that manner.” Pet., 32. However, as explained below, the Petition fails to establish a clear motivation to combine the two references and resorts to hindsight bias in an attempt to reach the claimed features. EX-2023, ¶¶70-76.

First, a POSITA would not have combined Lugthart-706 and Das Sharma in the manner alleged by the Petition to arrive at the claimed features. In particular, the Petition's rationale for the combination is because “Das Sharma teaches adaptive pre-equalization used in the same type of PCI Express protocol that Lugthart-706 describes.” Pet., 32 (21). The Petition, however, overlooks that the single mention of “PCI Express protocol” in Lugthart-706 pertains solely to the conducting lines 111 (*see* EX-1005, FIG. 1A), and fails to explain how Das Sharma's alleged adaptive pre-equalization process is relevant to—or would be applied in—the receive datapath's DSP 23 (including FIR filters 27a/27b) or datapath located between electronic device 101a and transceiver 107a. EX-1005, 16:33-36, FIGS. 1A, 2A (reproduced below, annotated); Pet., 32 (21). For

example, Lugthart-706's only disclosure relating to PCI express corresponds to the following:

The **conducting lines 111** can include one or more sets of paired lines . . . [which] include one or more sets of paired micro coaxial cables. However, other types of **conducting lines 111** are possible. For example, shielded or unshielded twisted pair cables can be used in addition to any other appropriate type of cables, such as those that **can support different data and video protocols** (e.g., Serial ATA, Infiniband, **PCI Express**, DisplayPort I/O protocols, gigabit Ethernet, etc).

EX-1005, 16:33-36; EX-2023, ¶72.



EX-1005, FIGS. 1A, 2A.

The Petition fails to explain how a disclosure related to a PCI Express protocol and any alleged adaptive pre-EQ being used over cable conducting lines 111 would apply to host-side communications that may not even involve similar cable conducting lines 111—particularly where, as Petition itself describes, “the pluggable module transceiver’s assembly is releasably plugged” into the electronic device 101a. Pet., 46 (35), 72 (61); EX-2023, ¶73.

Second, even if one were to consider the combination of Lugthart-706 and Das Sharma, the Petition does not sufficiently explain how a POSITA would have combined the two references to arrive at the claimed features. For instance, the Petition contends that “POSAs had multiple reasons to modify Lugthart-706 to make Lugthart-706’s pre-equalization process adaptive and to store the initial set of pre-equalization coefficients in a set of registers“ and that “adaptive pre-equalization’s benefits for improving data transmission performance were well-known.” Pet., 33-34 (22-23). But the Petition fails to explain how a POSITA/POSA would have modified Lugthart-706’s DSP 23 (including FIR filters 27a/27b) for adaptive equalization to communicate with a host device 101a. Indeed, even if one were to consider the alleged benefits noted by the Petition, the Petition fails to acknowledge or account for differences between the cable-side and host-side communications, e.g., that the initial set of pre-equalization coefficients for cable-side communications would have been different from the initial set of post-equalization coefficients for host-side communications, to the extent equalization occurs between DSP 23 and the host device 101a as alleged by the Petition. EX-2023, ¶¶74-75.

In sum, the Petition fails to satisfy its burden to provide a sufficient explanation as to why a POSITA would combine Lugthart-706 and Das Sharma to arrive at the claimed features. Indeed, without using the disclosure from the ’111

patent as hindsight guidance, the Petition fails to establish that a POSITA would have considered use of adaptive pre-EQ in the proposed combination. Pet., 31-34 (20-23) (describing the combination), 50-59 (39-48) (describing mappings for claim 1 elements based on the combination's adaptive pre-equalization), 77-78 (66-67) (describing mappings for claim 8 (e.g., [8b]) based on the combination's adaptive pre-equalization), 80-81 (69-70) (describing that mappings for features related to pre-equalization and associated coefficients of claim 11 are identical to those of claim 8), 85 (74) (describing that mapping of claim 16 are nearly identical to those of claim 8); EX-2023, ¶76.

B. Lugthart-706-Das Sharma-Mezer fail to render obvious the “set of registers” and the Petition failed to explain why a POSITA would have been motivated to incorporate Das-Sharma’s registers into Lugthart-706’s system with a reasonable expectation of success

Overview

The Petition asserts that “[i]f Lugthart-706 is not understood as describing an adaptive pre-equalization process, then POSAs had multiple reasons to modify Lugthart-706. . . to **store the initial set of pre-equalization coefficients in a set of registers.**” Petition, 33 (22). But, as discussed below, the Petition’s proposed combination fails to render obvious using “a set of registers” to store pre-equalization coefficients. EX-2023, ¶¶77-88.

The Petition fails to provide sufficient motivation rationale in incorporating Das Sharma's "set of registers" into Lugthart-706's system.

First, as described above, the only link that the Petition establishes between Lugthart-706 and Das Sharma is the "PCI express protocol," which is mentioned once in 57 pages of Lugthart-706. *See supra* VII.A; Pet., 32 (21), EX-1005, 16:33-36. The Petition fails to explain how that specific PCI express protocol is related to the "set of registers" for allegedly storing coefficients associated with FIR filters 27a/27b. EX-2023, ¶77.

Specifically, Lugthart-706's only disclosure relating to PCI express protocol for cable-side communication in conducting lines 111 is that "shielded or unshielded twisted pair **cables** can be used in addition to any other appropriate type of cables, such as those that **can support different data and video protocols** (e.g., Serial ATA, Infiniband, **PCI Express**, DisplayPort I/O protocols, gigabit Ethernet, etc.)" EX-1005, 16:33-36; EX-2023, ¶78.

The Petition does not explain why Lugthart-706's tangential disclosure of the PCI Express protocol would inspire a POSITA to turn to Das Sharma's "set of registers" for storing coefficients associated with FIR filters 27a/27b. Indeed, Lugthart-706's disclosure teaches *using cables that support protocols* such as the PCI Express protocol, but does not actually disclose using the PCI Express protocol in Lugthart-706's system. Indeed, the Petition does not explain why a POSITA would have implemented the PCI Express protocol in Lugthart-706, and

why, in such a purported version of Lugthart-706's system (which is not described in the Petition and which is described in the context of cable-side communications), a POSITA would have incorporated Das Sharma's set of registers to support host-side communications. EX-2023, ¶79.

Second, the Petition relies on Dr. Min's conclusory reasoning, which carries little weight without corroborating evidence, to assert that "storing default pre-equalization parameter values . . . was convenient and even essential" and "[s]toring default values also improves the cable assembly's boot-up speed." Petition, 32-33 (21-22). Here, Dr. Min's conclusory and unsupported testimony is entitled to little weight. *See* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight."); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 12 at 5 (PTAB Feb. 10, 2023) (finding that "the Board was correct in giving little weight to Petitioner's expert because the expert declaration merely offered conclusory assertions without underlying factual support"); *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) ("Lack of factual support for expert opinion to factual determinations, however, may render the testimony of little probative value in a validity determination." (*quoting Ashland Oil, Inc. v. Delta Resins and Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985))); *see also In re Ethicon, Inc.*, 844 F.3d 1344, 1348, 1352 (Fed. Cir. 2017) (concluding that the

Board properly gave “little weight” to conclusory expert testimony of objective indicia).

Third, the Petition asserts that “on-chip registers were a well-known storage medium that POSAs understood were desirable for storing coefficients in a digital signal processor (DSP) because values can be retrieved from registers more quickly than from other types of storage, which may require the specific address locations for access.” Petition, 23-24 (12-13)(*citing* Exp. Dec. (EX-1003), EX-1021, EX-1022). However, [1] the fact that “on-chip registers were well-known storage medium,” does not provide any motivation to combine Lugthart-706 and Das Sharma, and [2] the cited references (EX-1021, EX-1022) say nothing about storing coefficients and thus fail to show any association between (i) registers and (ii) coefficients in DSP; rather, they merely relate to generic efficiencies (“parallel and . . . immediate access” and “fewer clock cycles”) related to having an additional storage medium. The mere fact that certain features were generally known in the art does not establish a motivation to combine. *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882 (Fed. Cir. 2024) (“case involves nothing other than an assertion that because two coordinate systems were disclosed in a prior art reference and were therefore ‘known’ that satisfies the motivation to combine” and “that is an error as a matter of law. It does not suffice to simply be known. A reason for combining must exist”); EX-2023, ¶80.

Additionally, as described above, Das Sharma describes that the set of coefficients are stored within registers of the endpoint or root complex devices, but not within a digital signal processor (DSP) of a transceiver that is not part of the endpoint or root complex devices. *See supra* Section VI.B; EX-2023, ¶81.

That is, without hindsight guidance of the '111 patent, a POSITA would not have come across the idea of incorporating Das Sharma's "set of registers" to Lugthart-706's FIR filters 27a/27b to store coefficients for performing the alleged (but non-existent) adaptive pre-EQ process in the receive datapath and using the "RX [receiver] DSP [23]." EX-2023, ¶82. The Petition fails to show why a POSITA "would have"—not "could have"—"been motivated to make the combinations or modifications of prior art to arrive at the claimed invention."

Belden Inc. v. Berk-Tek LLC, 805 F.3d 1064, 1073 (Fed. Cir. 2015)

("[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention."); EX-2023, ¶82.

The Petition failed to show reasonable expectation of success in incorporating Das-Sharma's alleged registers into Lugthart-706's system.

The Petition fails to explain how Das-Shama's "set of registers" is incorporated into Lugthart-706's system. Instead, the Petition merely states that "[a] POSA further knew how to store initial and updated pre-equalization

coefficients in registers because Das Sharma taught this (EX-1006, [0075]-[0078]) and registers were a well-known storage medium for storing data in a digital signal processor like Lugthart-706's RX [receiver] DSP 23." Pet., 44 (33); EX-2023, ¶83.

In making this assertion, Petition's argument for a reasonable expectation of success with respect to incorporating Das Sharma's "set of registers" into Lugthart-706 is limited—if not entirely reduced—to the generic proposition that "registers were a well-known storage medium for storing data in a digital signal processor like Lugthart-706's RX DSP 23." Pet., 44 (33) (citing EX-1021 (Peddle), EX-1022 (Pickett)). This statement fails to address the specific challenges or rationale for modifying Lugthart-706 to incorporate register-based coefficient storage—let alone for implementing the alleged adaptive pre-EQ process. Simply asserting that "registers" were a "well-known storage medium" does not explain how such integration would occur, nor is it sufficient to establish a reasonable expectation of success. EX-2023, ¶84.

Further, the cited references EX-1021, EX-1022 allegedly disclose functionality of the register and generic features of the register, but does not relate in any aspect to Lugthart-706's receive path DSP 23 (including FIR filters 27a/27b). Petition, 35 (24), 44 (33) ("registers permit 'parallel and... immediate[]' access and allow 'data to be accessed, processed, and transferred more efficiently'"

and “operations by a processor on data stored in ‘registers... within the microprocessor’ requires fewer clock cycles than operations on data stored in off-chip memory like DRAM”); EX-2023, ¶85.

Importantly, while the Petition refers to Lugthart-706’s “transceiver 107a” as a SerDes module (e.g., “pluggable module transceiver 107a” (Pet., 23 (12))), the Petition fails to explain how Das Sharma’s “configuration and status register”—which are implemented within PCIe “root complex device 901” or PCIe “endpoint device 903,” and are not in pluggable SerDes modules—could be implemented in the alleged SerDes module in Lugthart-706 without substantial architectural redesign to incorporate such hardware registers and the associated software infrastructure. Petition 23 (12), 50 (39), 53-59 (42-48), 71-80 (60-69), 85(74); EX-1006, [0097], [0103]-[0106]; EX-2023, ¶86.

Additionally, as described above, Das Sharma describes that the set of coefficients are stored within registers of the endpoint or root complex devices, but not within a digital signal processor (DSP) of a transceiver that is not part of the endpoint or root complex devices. *See supra* Section VI.B; EX-2023, ¶87.

In fact, the Petition provides no explanation—technical or otherwise—as to how Das Sharma’s dedicated hardware-based registers could realistically be incorporated into Lugthart-706’s system, nor does Petition address the architectural redesign that such integration would require. With this omission, the Petition fails

to carry Petitioner's burden of establishing a reasonable expectation of success.

EX-2023, ¶88.

C. Dr. Min's testimony should be entitled to little weight and fails to explain why the proposed combination renders obvious "each of the multiple registers corresponding to a different channel model."

The Petition admits that Mezer's coefficients are not used for transmitter-side pre-equalization, as allegedly disclosed in Lugthart-706 and Das Sharma. Pet., 38 (27) ("Mezer's equalizer is on the receiver side of the communication channel rather than the transmitter side as in Lugthart-706 and Das Sharma, so Mezer's equalization is not pre-equalization as in Lugthart-706 and Das Sharma"); EX-2023, ¶89.

To address the difference and lack of compatibility of Mezer's teachings with Lugthart-706 and Das Sharma, the Petition relies on its expert's testimony for support. But Dr. Min merely provides conclusory statements that are not even supported by the Petitioner's own cited corroborating art.

For example, while admitting that Mezer's equalization "is not pre-equalization," the Petition relies on Dr. Min's testimony that "the 'equalizer characteristics' (coefficients) in Mezer's receiver side] are analogous to coefficients used in an adaptive pre-equalization process [of the transmitter side]," because POSAs understood that a 'feed-forward equalizer [of Mezer]' was a type

of equalizer that, like pre-equalization, improved communication by compensating for channel distortion.” Pet., 37 (26) & EX-1003 (Declaration of Dr. Min), ¶115 (citing Raghavan (EX-1008), 17:4-14). However, the cited portion of Raghavan does not disclose “improved communication,” but merely describes that “Complex Equalizer 513 can be either a linear equalizer [e.g., feed-forward equalizer] . . . or a decision feed-back equalizer⁵” with “adaptive” “coefficients of the equalizer transfer function”—**a receiver-side structure that says nothing about (i) pre-equalization or (ii) transmitter-side application.** EX-1008, 17:4-14.

Accordingly, Raghavan does not support the conclusory statement made by Dr. Min of the reasons a POSITA would have used Mezer’s equalization with Lugthart-706 and Das Sharma. ¶¶89-90.

Petitioner further relies on Dr. Min’s testimony that “POSAs understood that Mezer’s teachings [‘equalizer characteristics’ or ‘coefficients’] apply directly to Lugthart-706’s pre-equalization process” because: [1] the benefits of improved

⁵ Although the naming convention appears to be opposite between Mezer’s “*feed-forward* equalizer” and “decision *feedback* equalizer,” the “decision feedback equalizer” also refers to receiver side structure. EX-2023, ¶90 (citing EX-2026, 18).

efficiency and/or using less hardware when storing different initial equalization coefficients apply equally to pre-equalization performed on the transmitter side; and [2] “applying the same type of “lookup table” approach for initial pre-equalizer coefficients on the transmitter side was known [*citing* Gotman, Buchardt, Zerbe-835, Das Sharma].” Pet., 38-39 (27-28) (*citing* EX-1003 ¶¶117-119; EX-1007), 5:40-55; EX-2023, ¶91.

However, neither point supports the logical leap made by the Petition. Even assuming *arguendo* that Mezer describes benefits like improved efficiency and reduced hardware, those benefits arise solely in the context of receiver-side equalization. Dr. Min and the Petition assume that the same benefits are applicable to transmission-side equalization. Indeed, Mezer and other cited references provide no disclosure indicating that the same benefits are realized by transmitter-side adaptive pre-EQ. EX-2023, ¶92.

Likewise, the fact that transmitter-side “lookup tables” were merely “known” says nothing about applying Mezer’s receiver-side FFE at the alleged transmitter-side. The Petition simply stacks two unrelated facts and jumps to a conclusion without any technical or evidentiary bridge. *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882 (Fed. Cir. 2024) (“case involves nothing other than an assertion that because two coordinate systems were disclosed in a prior art reference and were therefore ‘known’ that satisfies the motivation to

combine” and “that is an error as a matter of law. It does not suffice to simply be known. A reason for combining must exist”); EX-2023, ¶¶93-94.

For at least the foregoing reasons, Dr. Min’s testimony should be entitled to little weight. *See* 37 C.F.R. § 42.65(a); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 12 at 5 (PTAB Feb. 10, 2023); *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000); *see also In re Ethicon, Inc.*, 844 F.3d 1344, 1348, 1352 (Fed. Cir. 2017).

VIII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board deny institution of Ground 1 of the Petition, and thus decline to institute *inter partes* review of any claim of the ’111 Patent. EX-2023, ¶97.

Respectfully submitted,

Date: August 12, 2025

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CERTIFICATION UNDER 37 C.F.R. §42.24(d)

Under the provisions of 37 C.F.R. §42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner's Preliminary Response to Petition totals 7,706 which is less than the 14,000 allowed under C.F.R. §42.24(b)(1).

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on August 12, 2025, a complete and entire copy of this Patent Owner's Preliminary Response and accompanying exhibits were provided by email to Petitioner by serving the correspondence email address of record as follows:

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