UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMPHENOL CORP.,
Petitioner

v.

CREDO TECHNOLOGY GROUP LTD.,
Patent Owner

Case IPR2025-00835
Patent 10,877,233

PATENT OWNER'S PRELIMINARY RESPONSE

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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
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EX-2015	Exhibit A-12, 233 Patent Invalidity Chart (Gorecki617), 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-2016	Bert Reiser & Ruthie Wu, Why the International Trade Commission is such an appealing forum for patent disputes," *Reuters* (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	Non-Final Office Action Dated September 9, 2020 issued in Application No. 16/541,094
EX-2019	U.S. Pat. No. 9,337,993 (“Lugthart993”)
EX-2020	U.S. Pat. No. 7,401,985 (“Aronson985”)
EX-2021	U.S. Pat. No. 4,763,305 (“Kuo”)
EX-2022	U.S. Publication No. 2015/0163952 (“Rossman”)
EX-2023	U.S. Pat. No.8,452,829 (“Huang”)

I. INTRODUCTION

Patent Owner, Credo Technology Group Ltd. ("Credo"), respectfully submits this Preliminary Response in opposition to the Petition for *inter partes review* filed by Amphenol Corp. ("Amphenol" or "Petitioner"), which challenges all claims of U.S. Patent No. 10,877,233 (the "'233 Patent"). Petitioner relies upon a combination of Lugthart706 and Goreki617 in challenging independent claims 1, 8, and 15 of the '233 Patent.

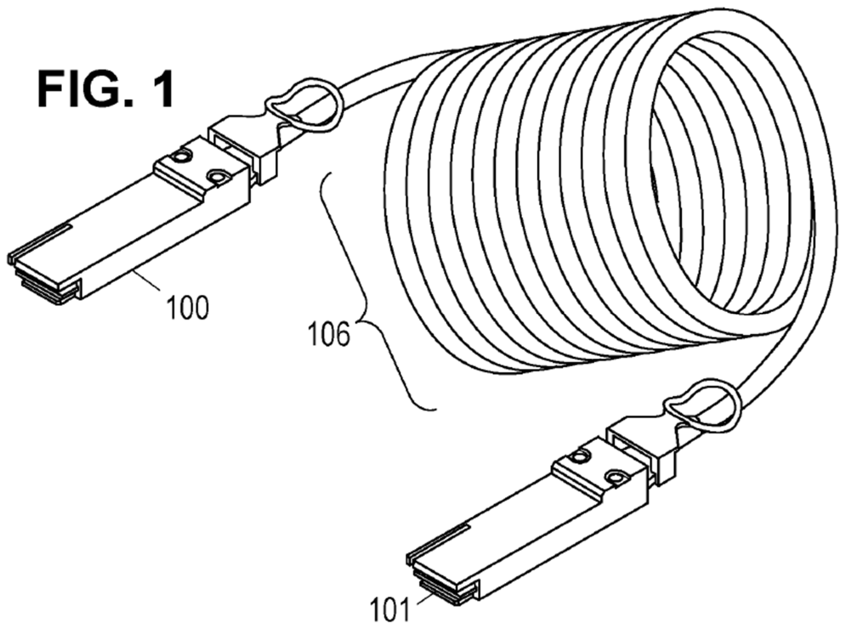
The Board should deny the Petition because the asserted ground of unpatentability fails to establish that the challenged claims are obvious. Specifically, the proposed combination of references is fundamentally flawed and suffers from multiple deficiencies.

II. SUMMARY OF THE '233 PATENT

A. The Active Electrical Cable

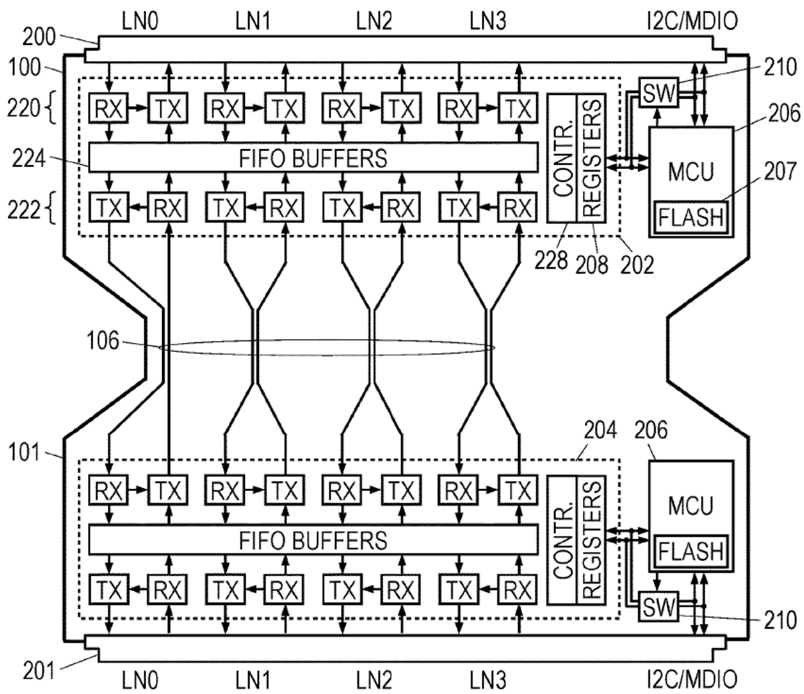
The '233 Patent is directed to an active electrical cable (AEC) including transceiver devices provided within its connectors and configured to employ preset equalization. EX-1001, Abstract. For example, as illustrated in FIG. 1 (below), the cable includes end connectors 100 and 101 that are electrically connected via electrical conductors 106. *Id.*, 3:31-41.

FIG. 1



The end connectors 100 and 101 include powered data recovery and remodulation ("DRR") devices 202 and 204, respectively, which perform clock and data recovery ("CDR") and re-modulation of data streams. Ex-1001, 3:49-62, FIG. 3A (below). For example, the DRR devices 202 and 204 include receiver ("RX") and transmitter ("TX") sets 220, 222. *Id*. The end connectors 100 and 101 further include plugs 200 and 201 to communicate data streams with host devices. *Id*. 4:46-66, FIGS. 3A, 3B.

FIG. 3A



Each end connector 100 and 101 further includes micro-controller unit (MCU) 206 that configures the operation of the DRR device using values pre-stored in nonvolatile memory (e.g., Flash memory 207). *Id*., 4:65-5:15. Specifically, at power-on of the cable, the MCU device 206 loads equalization parameters from Flash memory 207 into the DRR device's configuration registers 208.

B. The Challenged Claims

Petitioner challenges all twenty claims of the '233 Patent, including independent claims 1, 8, and 15. The innovative techniques described above are embodied in each of the challenged claims, which require, among other elements, first and second DRR devices providing pre-equalization of the electrical transit signals using transmit filter coefficient values stored in nonvolatile memories.

For example, these limitations are recited in claim 1, which provides:

1. A cable that comprises:

a first data recovery and re-modulation (DRR) device that exchanges inbound and outbound multi-lane data streams with a first host interface port via a first end connector plug;

a second DRR device that exchanges inbound and outbound multi-lane data streams with a second host interface port via a second end connector plug; and

electrical conductors connecting the first and second DRR devices to convey electrical transit signals therebetween,

the first DRR device converting between said electrical transit signals and said inbound and outbound multilane data streams for the first host interface port, and

the second DRR device converting between said electrical transit signals and said inbound and outbound multilane data streams for the second host interface port,

the first and second DRR devices providing pre-equalization of the electrical transit signals using transmit filter coefficient values stored in nonvolatile memories.

III. PERSON OF ORDINARY SKILL IN THE ART

A person having ordinary skill in the art ("POSITA") as of the priority date of the '233 Patent 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. A higher level of education may substitute for less experience." Pet. 9.

The scope of experience in the Patent Owner's definition—specifically in high-speed data communication—is more relevant to the subject matter of the '233 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 above in II, the '233 Patent addresses signal degradation and equalization challenges in high-speed Ethernet transmission through active electrical cables—problems that require deep understanding of both analog and digital signal processing. In addition, the '233 Patent involves advanced concepts such as pre-equalization, nonvolatile memory-stored filter coefficients, and multi-lane signal remodulation—indicating a high level of technical sophistication in high-speed data communication.

Accordingly, the Patent Owner's definition should be adopted for purposes of evaluating the prior art and the validity of claims of the '233 Patent.

IV. 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.

V. 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). Petitioners bear 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.")

VI. PETITIONER HAS NOT SHOWN A REASONABLE LIKELIHOOD THAT IT WOULD PREVAIL IN PROVING THE OBVIOUSNESS OF ANY CHALLENGED CLAIM

A. The Proposed Combination Introduces Redundancy and System-Level Interference That Undermine Obviousness

Petitioner's obviousness challenge relies on the active cable implementation disclosed in Lugthart706, asserting that Lugthart706's finite impulse response (FIR) filter 17 provides transmit pre-emphasis. Pet., 10-13. Petitioner states that Lugthart706 left the implementation details of transmit filters such as FIR 17 undisclosed and attempts to remedy this deficiency by relying on Gorecki617. *Id*. 15. However, Petitioner mischaracterizes Lugthart706, which includes a fast and adaptive channel negotiation process via a cable that enables its transceivers to self-calibrate within milliseconds to establish a high-speed communication link between electronic devices. Ex-1005, 47:53-64, 29:21-28.

As such, Petitioner's proposed combination of Gorecki617 with Lugthart706 introduces significant functional overlap and system-level incompatibilities that undermine any rationale for the proposed modification. In particular, integrating Gorecki617's EEPROM-based storage method into Lugthart706's cable architecture either renders Lugthart706's channel negotiation process redundant or disrupts its operation entirely. As discussed below, a POSITA would have had no motivation to incorporate Gorecki617's slower, static memory approach into Lugthart706's dynamic cable system, and the POSITA would have recognized that doing so would not have yielded predictable results.

1. Lugthart706's Rapid Channel Negotiation Renders Gorecki617's EEPROM-Based Method Unnecessary and Redundant, Undermining Any Motivation to Combine.

As noted above, Petitioner contends that Lugthart706 fails to disclose how to set transmit filter coefficients and instead leaves such implementation details to a POSITA. Pet. 15. This assertion, however, overlooks the detailed disclosures in Lugthart706 regarding high-speed communication systems and adaptive calibration techniques. *See* Ex-1005, Abstract.

For example, Lugthart706 describes a method for negotiating a communication channel, *e.g.*, a cable between transceivers, the method comprising three distinct stages: (a) "a first stage of … exchanging information between the first and second transceiver over the communication channel in a reduced speed mode," (b) "a second stage of … adaptively acquiring one or more parameters associated with the communication channel," and (c) "a third stage of … entering a full functional mode in which information is exchanged between the first and second transceivers using multi-level modulation." *Id.*, 4:31-42. Lugthart706 further provides implementation details for these stages—also referred to as the start-up phase, full-speed training phase, and full functional training phase—and discloses that the entire channel negotiation process can be completed within "a few milliseconds (*e.g.*, 5-6 milliseconds)." *Id.*, 47:53-64; FIG. 15 (below).

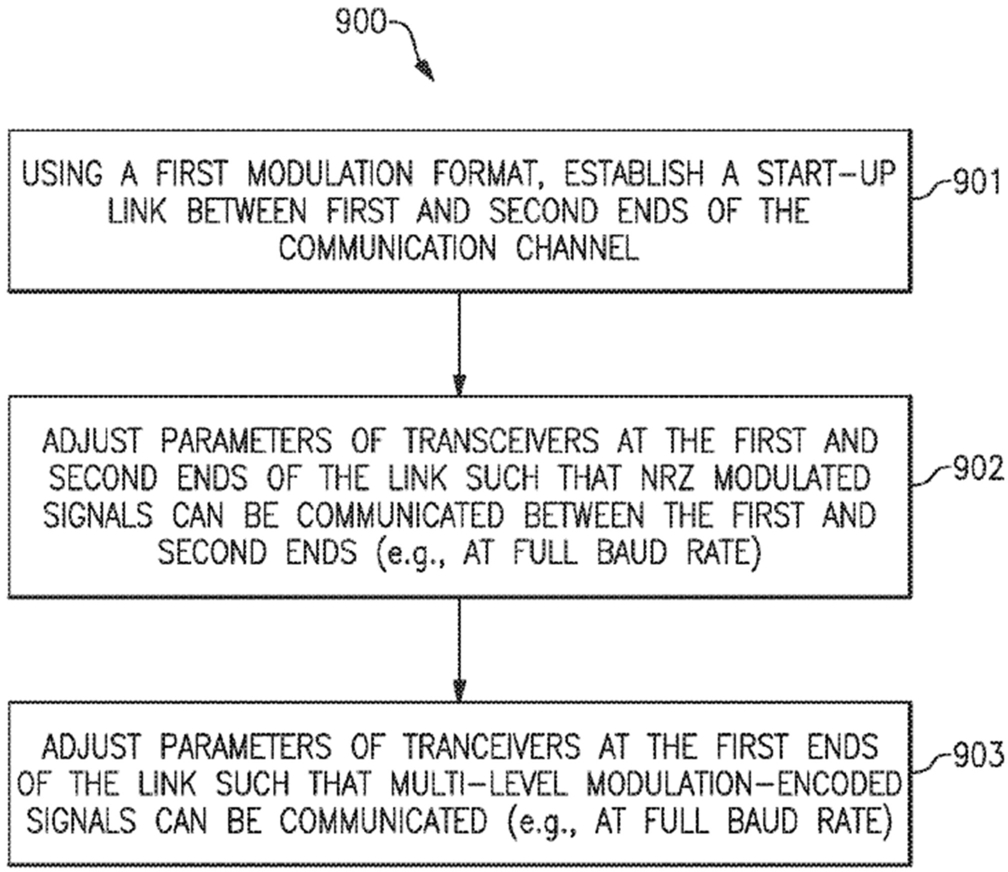


FIG.15

Importantly, Lugthart706 explains that during this process over the cable, "the parameters of the components in the transceivers connected to the first and second electronic devices are adjusted," including parameters such as "operating parameters for the equalizers, etc.," such as FIR 17, which Petitioner alleges as providing the claimed pre-equalization with transmitter filter coefficients. *Id*., 49:1-19. Thus, contrary to the Petitioner's contention, Lugthart706 is not silent on how to implement or configure transmit filters for equalization. Rather, Lugthart706 expressly discloses a rapid calibration process for determining parameters of transceivers such as "an integrated continuous time linear equalizer (CTLE), output pre-emphasis, [and] self-adaptive digital equalization." *Id*., 29:21-28. These disclosures demonstrate that Lugthart706 provides a POSITA with sufficient implementation guidance, including for setting coefficients of transmit filter FIR 17, and that Lugthart706 does not rely on a POSITA to fill in the alleged gaps in its transmitter setting. With sufficient implementation details in Lugthart706, a POSITA would not have been motivated to seek additional implementation guidance from other references—particularly not from Gorecki617, a decade-older reference directed to a fundamentally different system.[1] Indeed, Lugthart706 does not describe or suggest storing filter coefficients in memory or retrieving such coefficients from memory as part of its calibration process.

In addition, Petitioner asserts that a POSITA "would have understood that 'performance of high-speed digital communications' could be enhanced by using transmit filter coefficient values stored in nonvolatile memories." Pet. 16. Specifically, Petitioner relies on Gorecki617 for the proposition that storing and loading equalization parameters—including transmit filter coefficients—from ROM, PROM, EPROM, EEPROM, or similar nonvolatile memory would enhance system performance. *Id*. However, Gorecki617 does not support this assertion. Rather, Gorecki617 is largely silent on any technical benefits of storing pre-set tap coefficients in memory. Gorecki617 merely states that "the coefficients of the tap(s) and/or the pulse durations of the tap(s) may be stored or in, for example an

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[1] Lugthart706 was granted on January 30, 2018, while Gorecki617 was granted on June 19, 2007. In the field of high-speed digital communications, a decade represents a substantial period of technological advancement, during which architectures, design methodologies, and performance expectations can evolve dramatically.

SRAM, DRAM, ROM or EEPROM," allowing the transmitter to access the memory "to retrieve the necessary information during start-up/power-up, initialization or re-initialization." Ex-1006, 7:28-33.

Moreover, Petitioner fails to explain how Lugthart706's channel negotiation would operate in combination with Gorecki617's EEPROM-based approach. For example, to the extent Petitioner suggests replacing Lugthart706's channel negotiation with Gorecki617's EEPROM-based approach, such a modification would undermine Lugthart706's core advantage: fast, adaptive calibration of its active cable. *See Medtronic, Inc. v. Teleflex Innovations S.A.R.L*, No. 2021-2359, 13 (Fed. Cir. Jun. 5, 2023) (*citing Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1061, 1067-69 (Fed. Cir. Feb. 9, 2018), "vacating Board decision that failed to consider whether modifying prior art reference would undermine its goal, shared with the challenged claims, of constructing stable all-terrain vehicles"). A POSITA would have recognized that EEPROM access times are not compatible with Lugthart706's millisecond-scale startup requirements. For example, Kuo (U.S. Patent No. 4,763,305; Ex-2021) describes that, "in the case of EEPROMs, a typical read time might be 100 nanoseconds (ns), whereas a typical write time (erase time plus program time) might be 3 milliseconds (ms). This is over four orders of magnitude longer to write than to read. The 3 ms write time is required for each byte that is to be programmed. Consequently, the write time becomes even greater if a large number of bytes are to be programmed. Included in the time to write is the time to erase and to program." Ex-2021, 1:35-58. In view of this well-known limitation of EEPROMs, a POSITA would recognize that the multistage channel negotiation process described in Lugthart706 would involve communicating a substantial number of bytes and would be significantly delayed if implemented using Gorecki617's EEPROM-based approach. *See id*. ("[the] rate is limited by the device characteristics"). The inherent latency of EEPROM operations would undermine the fast, adaptive calibration that is central to Lugthart706's design. *See Medtronic, Inc. v. Teleflex Innovations*, 13 ("it was error for the Board to ignore evidence that a proposed modification would interfere with a reference's stated purpose.").

Conversely, if it is contended that Gorecki617's method is merely added to Lugthart706's existing calibration process, it would be redundant with Lugthart706's calibration process. In particular, adding an additional nonvolatile memory-based calibration step would only delay startup time and increase cable cost without offering any clear technical benefit. Thus, a POSITA would have no reason to supplement a fast, automatic calibration mechanism with a slower, static memory-based approach that offers no clear benefit.

For example, Huang (U.S. Patent No. 8,452,829; Ex-2023) describes that, "[b]ecause the properties of the differential channel can be influenced by external factors, such as environmental factors like temperature and humidity, predetermined values for the various function parameters in the FIR filter may become invalid during operation of the differential channel for high-speed data communication." Ex-2023, 1:6-24. Huang further describes that, "[i]n high-speed data communications…, real-time continuous optimization of the TX FIR filter settings is preferred to maintain adequate equalization of the TX output signal in the presence of variations in temperature and humidity." *Id*., 1:24-37. In view of this well-known limitation of pre-setting FIR filter values, a POSITA would have recognized that cables are subject to such environmental influences and, therefore, would not have been motivated to modify Lugthart706's adaptive calibration process for active cables in view of Gorecki617's static method, which relies on predetermined filter values that are stored in memory and may become invalid during operation. As Huang notes, "the pre-set TX FIR filter settings will likely become invalid, thereby requiring adjustment of the TX FIR filter settings during system operation." *See id*.

For at least these reasons, whether Gorecki617's static method is proposed as a replacement for or a supplement to Lugthart706's adaptive calibration process, there is no articulated rationale or technical motivation for a POSITA to make such a modification.

2. Combining Static EEPROM Storage with Dynamic Calibration Introduces Unpredictable System Behavior

Even assuming, *arguendo*, that a POSITA would have been motivated to combine Gorecki617 with Lugthart706, the result would not have yielded predictable or reliable outcomes. Gorecki617's EEPROM-based storage is designed for static systems, where filter coefficients are pre-determined. Ex-1006, 7:50-53. In contrast, Lugthart706's channel negotiation is dynamic and responsive to real-time channel conditions. Integrating a static memory mechanism into this dynamic framework introduces uncertainty about how the alleged system would handle conflicts between stored coefficients and real-time calibration data, and how the alleged system would store and use either the stored coefficients or the real-time calibration data for providing "pre-equalization using transmit filter coefficient values stored in nonvolatile memories," as required by claim 1.

For instance, the timing mismatch between Gorecki617's EEPROM access and Lugthart706's rapid startup requirements raises serious concerns about system operability. *See* Ex-2021, 1:35-58. Specifically, Lugthart706 describes that transceivers are configured to execute "an automated negotiation process with the corresponding transceiver on the other end of the link in order to establish a successful link," where the negotiation process "involve[s] a number of incremental steps beginning with rudimentary, low speed communication, and culminating in a fully functional data transmission mode," to thereby establish a high-speed communication link within a few milliseconds. Ex-1005, 47:46-64. If Gorecki617's EEPROM operations delay any of the incremental steps of this automated calibration process due to the inherent latency of EEPROM operations, the proposed system may fail to initialize properly or meet performance specifications such as establishing a high-speed communication link within a few milliseconds. *See id*. Moreover, if the proposed combination is interpreted to merely allow Lugthart706's negotiation process to operate concurrently with EEPROM access, it could result in conflicting coefficient sets, leading to unpredictable system behavior. Petitioner provides no technical explanation or evidence addressing how these timing and integration challenges would be resolved, nor any explanation as to why a POSITA would reasonably expect the combination to function reliably under such conditions.

Accordingly, the proposed combination fails to meet the *KSR* requirement that known elements, when combined, must yield predictable results. *KSR*, 550 U.S., 416. The Petition therefore does not establish obviousness under 35 U.S.C. § 103.

B. Gorecki617's Backplane-Based Techniques Are Incompatible with Lugthart706's Active Cable Architecture

As discussed above in VI.A, Petitioner acknowledges that Lugthart706 does not disclose how transmit filter coefficients of FIR 17 are determined, and attempts to remedy this deficiency by relying on Gorecki617. Specifically, Petitioner asserts that "a POSA would have had reasons to configure the transmit filters of Lugthart-706 based on Gorecki-617's approach of using coefficients stored in non-volatile memory." *Id*., 15. However, Petitioner makes this conclusive assertion without a sufficient rationale for combining these references. As discussed below, the proposed combination improperly merges fundamentally distinct technologies—active cable systems and backplane-focused implementations—without articulating a reasoned basis or motivation for doing so.

1. Lugthart706 and Gorecki617 Address Fundamentally Distinct Technologies, Undermining Any Motivation to Combine

Lugthart706 describes "an active cable including actively powered componentry for improving performance of the cable 110," where "the cable 110 110 … includes one or more conductive lines 111 as well as first and second transceiver assemblies 105a, 105b positioned at either end of the conductive lines 111." Ex-1005, 14:29-34, Fig. 2A (below).

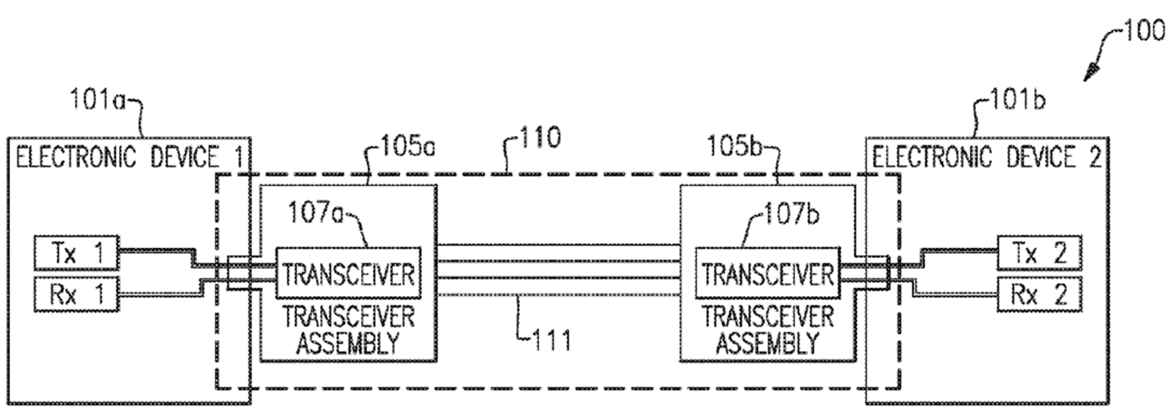

FIG.2A

Lugthart706 also describes "a passive cable 115," in which "active componentry including the transceivers 107a, 107b is situated externally to the cable 115." Ex-1005, 14:60-65, Fig. 2B (below). In this passive cable configuration, host electronic devices 101a and 101b—external to the cable 115—contain first transceiver assembly 105a and second transceiver assembly 105b. *Id*.

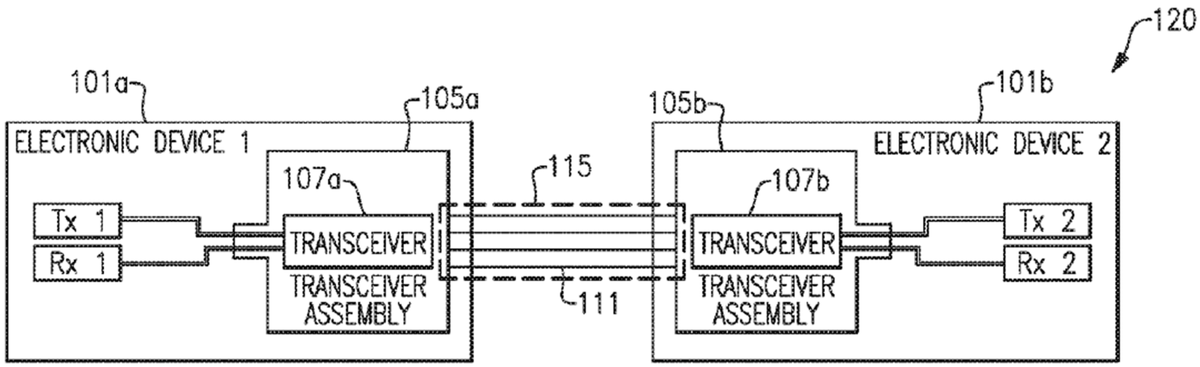

FIG.2B

Lugthart706 expressly distinguishes its active cable configurations from passive cable configurations, such as those used in "backplane applications." Ex-1005, 15:5-13. It explains that active cables offer technical advantages, including support for longer distances, thinner cables, and reduced jitter, noise, and inter-symbol interference (ISI). *See id.* In contrast, passive cable configurations—such as those used in backplanes environments—are described as cost-saving alternatives. *Id*.

Gorecki617, on the other hand, mainly describes backplane implementations—the very type of system that Lugthart706 distinguishes from active cable configurations. To be clear, Gorecki617 briefly mentions "an equalizer for communications systems implemented in wired type environments, for example microstrip, stripline, printed circuit board (e.g., a backplane) and cable." Ex-1006, 1:11-16. However, this passing reference to "cable" in Gorecki617 is generic and unsupported by any specific implementation or technical discussion.

Gorecki617 does not describe an active cable system that includes embedded equalization circuitry. Instead, the specification, claims, and figures of Gorecki617 are overwhelmingly directed to backplane implementations. Gorecki617 is silent on the architectural distinctions and signal integrity challenges unique to active cable systems relative to backplane environments. For example, Gorecki617 merely states that "communications channel 300 … may be, for example, constructed using one or more cables, wires, traces or the like, or may be part of a backplane, or may be a wireless communications medium through which the signal passes from transmitter 100 to receiver 200." Ex-1006, 19:61-66; FIG. 3 (below). With this broad language and the simple block diagram, Gorecki617 does not particularly contemplate the embedded, actively powered transceiver assemblies in an active cable architecture.

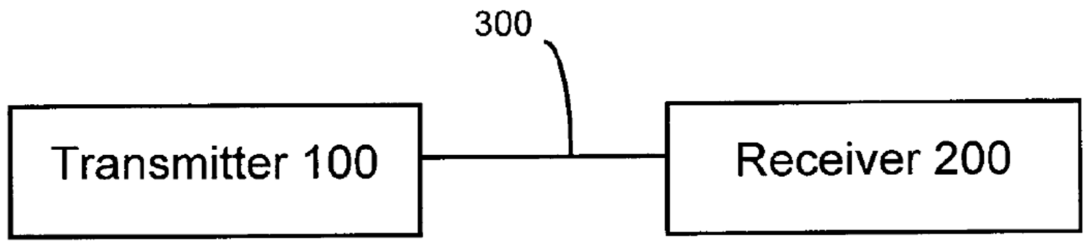

FIGURE 3

Backplane applications have signal integrity challenges and system architectures that differ significantly from those addressed by active cable solutions. For example, backplanes typically involve fixed, short-distance interconnects within a chassis, and do not require the same level of embedded equalization or adaptive signal processing found in active cable systems. *See* Ex-1005, 15:5-13. This distinction is further supported by Rossman et. al. (US 2015/0163952; Ex-2022), which describes "large printed circuit boards, known as backplanes," and notes that as these boards grow in size, "the signal integrity inherently degrades as the signals travel further along the entire channel." Ex-2022, ¶[0003]. Rossman also mentions that when electrical connections are made using cable assemblies, "there may not be a need for the backplane circuit board," and that "[e]limination of the backplane circuit board may reduce the cost of the system." *Id.*

Despite these fundamental differences between cable and backplane environments, Petitioner fails to explain why a POSITA would have been motivated to combine Lugthart706's active cable technology with Gorecki617's backplane-focused design. Notably, Lugthart706 suggests a passive cable configuration to lower cable cost, and Rossman suggests moving away from backplane architectures altogether to reduce system cost—further undermining any rationale for merging Gorecki617's decade-old backplane-based teachings with the active cable system of Lugthart706. *See* Ex-1005, 15:10-12; Ex-2022, ¶[0003]. In addition, Gorecki617 is silent on the use of a clock and data recovery circuit or a pluggable active cable module. These are features of Lugthart706's powered transceiver assemblies embedded within the cable itself. *See* Ex-1005, 7:65-8:7, 14:29–34, and 15:25-52. The Petition, however, offers no evidence that the problems addressed by Gorecki617 are relevant to the context of Lugthart706, nor does it identify any design incentive, market pressure, or common industry practice that would lead a POSITA to merge these disparate teachings. *KSR*, 550 U.S., 417.

Rather, Petitioner simply asserts that "[a] POSA would have recognized that Gorecki's coefficient storage and filter programming techniques could improve Lugthart-706's equalization circuitry in the same way that they improved Gorecki617's equalization circuitry." Pet. 17-18. Petitioner overlooks that Gorecki617's techniques were described mainly for a backplane environment and fails to explain how those techniques would be applicable or advantageous in the context of an active cable system—particularly given that Lugthart706 itself distinguishes between the two environments. Ex-1005, 15:5-13.

In the absence of a clear and reasoned explanation for the proposed combination, the Petition relies on impermissible hindsight reconstruction. Accordingly, the Petition fails to satisfy the threshold requirement under *KSR* for establishing a proper motivation to combine.

2. The Proposed Combination Would Not Yield Predictable Results Due to Fundamental System-Level Differences

Even assuming, *arguendo*, that a POSITA would have been motivated to combine Lugthart706 and Gorecki617, the Petition still fails to demonstrate that such a combination would have yielded predictable results. *KSR*, 550 U.S., 416.

Lugthart706 is directed to active cable systems that integrate transceiver assemblies and equalization circuitry within the cable itself. Ex-1005, 14:29-42. These systems are designed to address signal degradation over extended distances and through lossy transmission media. *Id*., 15:5-13. In contrast, as discussed above, Gorecki617 is mainly focused on backplane environments, which involve short, fixed interconnects within a chassis and do not require the same level of embedded signal processing or adaptive equalization. Ex-1006, Abstract; Claims 1, 11, and 22; 6:3-20, 15:1-14; FIG. 3.

Petitioner proposes applying Gorecki617's approach of storing filter coefficients in EEPROM to Lugthart706's active cable architecture. Pet., 15-18.

However, Gorecki617 provides no guidance on how its techniques—described mainly for a static, backplane-based system—could be adapted to the dynamic and spatially constrained environment of an active cable. While Gorecki617 briefly references "communications channel 300 … constructed using one or more cables, wires, traces or the like," Ex-1006, 19:60-65, its focus remains squarely on equalization circuitry within a backplane. The physical and operational differences between these systems introduce substantial uncertainty as to whether Gorecki617's decade-old methods would function as intended in the context of Lugthart706.

For example, Petitioner does not address how Gorecki617's filter coefficients would be stored in a distributed, cable-based system where the transceivers are embedded and potentially inaccessible after manufacture. Nor does it account for the thermal, electrical, and mechanical constraints unique to active cables. These implementation differences raise serious doubts about whether the proposed combination would operate predictably or even feasibly. Indeed, Gorecki617 teaches that "equalization circuitry and techniques have limited flexibility when implemented within a particular environment or an environment that varies over time [such as cable environments]. This may severely limit the usefulness of such equalization circuitry and techniques when implemented in environments that change dramatically over time." Ex-1006, 2:41-

46. Yet, Petitioner provides no technical rationale or supporting evidence to bridge these gaps. Instead, Petitioner relies on a conclusory assertion that Gorecki617's techniques "could improve" Lugthart706's equalization circuitry. Pet. 18.

Such speculative reasoning falls short of the requirement under *KSR* that a combination of known elements must yield predictable results. *KSR*, 550 U.S., 416. Accordingly, the Petition fails to establish that the proposed combination would have been obvious to a POSITA, and thus does not meet the legal standard for obviousness under 35 U.S.C. § 103.

VII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board deny institution of the Petition, and thus decline to institute *inter partes* review of any claim of the '233 Patent.

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 4,396, 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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