

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Marvell Semiconductor, Inc.,

Petitioner,

v.

Credo Technology Group Ltd.,

Patent Owner.

IPR2025-01220

U.S. Patent No. 11,032,111

**PETITIONER’S OPPOSITION TO PATENT OWNER’S REQUEST FOR
DISCRETIONARY DENIAL OF INSTITUTION**

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EXHIBIT LIST

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1002	Certified Prosecution History for the '111 patent ("Prosecution History")
1003	Declaration of Michael S. Chen
1004	U.S. Patent App. Pub. No. 2019/0288881 to Berke et al. ("Berke")
1005	U.S. Patent No. 8,516,238 to Cornelius, et al. ("Cornelius")
1006	U.S. Patent No. 10,715,357 to Ran ("Ran")
1007	U.S. Prov. App. Serial No. 62/722,517 ("Ran Provisional")
1008	Excerpts from Stauffer, High Speed Serdes Devices and Applications ("Stauffer")
1009	U.S. Patent App. Pub. No. 2014/0237301 to Mejia et al. ("Mejia")
1010	PCI Express Base Specification Revision 3.0 (Nov. 10, 2010)
1011	Serial ATA Revision Specification 3.1 (July 18, 2011)
1012	Excerpts of IEEE 802.3-2015 Standard
1013	Declaration of June Munford re: Stauffer
1014	Library of Congress Certification for Stauffer
1015	Internet Archive Declaration of Mina Ching re: Stauffer
1016	Declaration of Liliana Nunez re: Stauffer
1017	U.S. Patent App. Pub. No. 2013/0223506 to Kolze
1018	U.S. Patent App. Pub. No. 2010/0232493 to Thirumoorthy
1019	U.S. Patent App. Pub. No. 2013/0201316 to Binder et al.
1020	U.S. Patent No. 5,648,972 to Gharakhanian
1021	U.S. Prov. App. Serial No. 63467_62723701 ('111 Patent Provisional)
1022	Excerpts from Gasca, et al., CMOS Continuous-Time Adaptive Equalizers for High-Speed Serial Links
1023	U.S. Patent No. 7,233,617 to Gorecki
1024	U.S. Patent App. Pub. No. 2003/0035497 to Gorecki et al.
1025	TE Connectivity, SFP+ High Speed Copper Cable Assemblies
1026	Cisco, Cisco 40GBASE QSFP Modules Data Sheet
1027	Wang & Bovik, Mean Squared Error: Love It or Leave It?
1028	U.S. Patent No. 8,665,941 to Eliaz
1029	U.S. Patent No. 8,600,039 to Chen et al.
1030	U.S. Patent No. 5,392,315 to Laud
1031	IAM – "IPBC Global 2025: Acting USPTO Director says IPR use

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1032	Credo “About” Webpage, https://credosemi.com/about-credo/
1033	In re Certain Active Electrical Cables and Components Thereof, Inv. No. 337-TA-1446, Document Details of EDIS No. 859233, Order Granting Non-Party Marvell Semiconductor Inc.’s Motion to Disqualify Fish & Richardson P.C. (Aug. 11, 2025)
1034	<i>In re Certain Active Electrical Cables and Components Thereof</i> , Inv. No. 337-TA-1446, Notice of Institution (Apr. 14, 2025)
1035	<i>In re Certain Active Electrical Cables and Components Thereof</i> , Inv. No. 337-TA-1446, Notice of Ground Rules (Apr. 18, 2025)
1036	Non-Party Marvell Semiconductor, Inc.’s Motion to Disqualify, 337-TA-1446, Ex. 8 (public version)
1037	LinkedIn profile of Credo President and CEO William (“Bill”) Brennan, https://www.linkedin.com/in/bill-brennan-a291367a/
1038	LinkedIn profile of Credo CTO Lawrence Cheng, https://www.linkedin.com/in/lawrence-cheng-9b721831/
1039	LinkedIn profile of Credo Chief Research and Development Officer Haoli Qian, https://www.linkedin.com/in/haoli-qian-1a50628/
1040	LinkedIn profile of Credo Vice President of Analog Engineering Arshan Aga, https://www.linkedin.com/in/arshan-aga-5b573a91/
1041	“Shutdown Slowdown: What It Means for Patent Enforcement at the ITC,” October 1, 2025, https://www.fr.com/insights/thought-leadership/blogs/shutdown-slowdown-what-it-means-for-patent-enforcement-at-the-its/
1042	<i>Certain Active Electrical Cables and Components Thereof</i> , ITC Investigation 337-TA-1446, Amended Exhibit 39 to Complaint, Credo’s Infringement Claim Chart Showing Molex’s Infringement of the ’111 Patent
1043	<i>Certain Active Electrical Cables and Components Thereof</i> , ITC Investigation 337-TA-1446, Amended Exhibit 42 to Complaint, Credo’s Infringement Claim Chart Showing TE Connectivity’s Infringement of the ’111 Patent
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1045	Executive Order 14179, “Removing Barriers to American

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1046	Office Management and Budget (OMB) Memorandum M-25-21 “Accelerating Federal Use of AI through Innovation, Governance, and Public Trust” (Apr. 3, 2025)
1047	Statement from U.S. Secretary of Commerce Howard Lutnick (Jun. 3, 2025)
1048	<i>In re Certain Active Electrical Cables and Components Thereof</i> , Inv. No. 337-TA-3814, Amended Complaint (Mar. 18, 2025)
1049	Memorandum to All PTAB Judges on Interim Processes from Coke Morgan Stewart (Mar. 26, 2025)
2001	In re Certain Active Electrical Cables and Components Thereof, Inv. No. 337-TA-3814, Complaint (Mar. 13, 2025)
2002	“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/
2003	“AEC Applications,” https://credosemi.com/products/hiwire-aec/applications/
2004	“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
2005	“CREDO Receives Cabling Installation & Maintenance Innovators 2019 Gold Award for HiWire™ Active Electrical Cables (AEC),” October 1, 2019, https://credosemi.com/news/credo-receives-cabling-installation-maintenance-innovators-2019-gold-award-for-hiwire-active-electrical-cables-aec/
2006	“Credo Files AEC Patent Infringement Complaint Against Amphenol, Molex, TE Connectivity, and Volex with United States International Trade Commission,” March 13, 2025, https://investors.credosemi.com/news-events/news/news-details/2025/Credo-Files-AEC-Patent-Infringement-Complaint-Against-Amphenol-Molex-TE-Connectivity-and-Volex-with-United-States-International-Trade-Commission/default.aspx
2007	Order No. 12 Granting Marvell’s Motion to Disqualify Fish, 337-TA-1446, public version

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2008	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/
2009	Order No. 19 Granting Motion to Amend Procedural Schedule, 337-TA-1446
2010	Respondents' Initial Invalidity Contentions, In the Matter of Certain Active Electrical Cables and Components Thereof, Inv. No. 337-TA-1446, served June 26, 2025
2011	Exhibit C-12, 111 Patent Invalidity Chart to the ITC Respondents' Initial Invalidity Contentions, In the Matter of Certain Active Electrical Cables and Components Thereof, Inv. No. 337-TA-1446, served June 26, 2025
2012	Exhibit C-3, 111 Patent Invalidity Chart to the ITC Respondents' Initial Invalidity Contentions, In the Matter of Certain Active Electrical Cables and Components Thereof, Inv. No. 337-TA-1446, served June 26, 2025
2013	Exhibit C-11, 111 Patent Invalidity Chart to the ITC Respondents' Initial Invalidity Contentions, In the Matter of Certain Active Electrical Cables and Components Thereof, Inv. No. 337-TA-1446, served June 26, 2025
2014	USPTO, "FAQs for Interim Processes for PTAB Workload Management," available at https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management

I. Introduction

Patent Owner Credo's request for discretionary denial is rife with inaccuracies and should be rejected. Petitioner Marvell is the true innovator in the field of active electrical cables (AECs), with early patents disclosing the technology. Years later, Credo actively recruited Marvell employees and began developing AEC products. Now, Credo falsely claims to have invented AECs and related technical advancements that were, in fact, pioneered by Marvell.

As the result of a clear and material examiner error, the '111 patent issued in 2021. During prosecution, the Examiner failed to search for or meaningfully compare the claims against pertinent prior art, and identified claim limitations as allowable subject matter even though they were well-known in the art. Credo did not assert the '111 patent until March 2025 when Credo launched its litigation campaign against Marvell's customers in district courts and the ITC. Marvell is not a party in any co-pending litigation involving the '111 patent.

Credo's discretionary denial arguments are also unavailing because: (1) "settled expectations" cannot attach to the '111 patent, which issued four years ago; (2) Marvell is not a party to any parallel litigation, therefore *Fintiv* does not apply; and (3) even if *Fintiv* applied, the *Fintiv* factors favor institution because the Petition challenges all claims, the ITC will address only a subset, a timely final decision is likely, and Marvell acted diligently.

Credo's contradictory positions across related IPRs further undermine its arguments: for the '233 patent, Credo argues for denial because it is no longer asserted in the ITC; but for the '252 and '111 patents, Credo argues for denial because they are asserted in the ITC.

II. Background

Marvell and its subsidiaries are the true innovators behind active electrical cables ("AECs"), which incorporate active components into transceiver assemblies at each end of an electrical cable. This innovation extends range and provides high-speed connectivity in data centers. For example, Marvell's wholly-owned subsidiaries ClariPhy and Inphi filed for patents on technologies necessary for AECs starting by at least 2014. *See, e.g.*, U.S. Patent 9,882,706 ("Lugthart").

Years later, in 2018-2019, Credo filed for patents directed to the use of equalization in AECs. Since then, Credo has claimed to have invented the AEC, taking credit for Marvell's advancements. Ex-1032 (Credo website) ("Credo invented the Active Electrical Cable (AEC)"); Ex-2001, 10 ("Credo is the original pioneer in active electrical cables ('AEC')"); Request, 1.

Credo also systematically and strategically recruited Marvell employees, underscoring Credo's reliance on Marvell's expertise and institutional knowledge, rather than its own technical innovation. For example, Credo's President and CEO (Ex-1037), Credo's Head of Research and Development (Ex-1039), numerous

former Marvell/Inphi engineers (Ex-1038, Ex-1040), and Credo's General Counsel (formerly Marvell's General Counsel) (Ex-1036), all came from Marvell/Inphi.

Marvell initiated this IPR to resolve critical issues that impact the marketplace. Certainty regarding the validity of the '111 patent is essential to providing clarity to customers, partners, and industry decision-makers. Uncertainty over these claims would stall investment and development in AI infrastructure, leaving buyers and innovators hesitant to move forward. Prompt resolution in this already-pending IPR will provide a faster and more efficient path to clarity than protracted, additional litigation. For these reasons and as detailed in Section IV below, Board review is necessary to rectify these errors and ensure only valid, truly innovative claims remain in force.

III. The *Fintiv* Factors Do Not Favor Discretionary Denial

A. Credo's *Fintiv* Analysis Ignores That Marvell Is Not A Party To Any Parallel Proceeding

Credo's *Fintiv* analysis ignores that Marvell is not a party to any parallel litigation. The Office consistently rejects discretionary denial where the petitioner is not involved in related proceedings, even if they have business ties to named defendants. *See Google v. Mullen*, IPR2025-00124, Paper No. 14 at 11, 41 (PTAB May 12, 2025), Paper No. 8, 31-32 (Feb. 14, 2025) (*Fintiv* factor 5 neutral where the petitioner was a non-defendant but submitted declarations, produced documents,

and shared counsel with the defendant; IPR instituted); *Charter Communications v. Adaptive Spectrum*, IPR2025-00088, Paper No. 14 at 13 (PTAB Nov. 8, 2024), Paper 10 at 4 (Apr. 2, 2025) (factor 5 weighs against discretionary denial where at least one petitioner was not a party to the parallel litigation, even if obligated to indemnify a defendant).

Credo's reliance on *Docker Inc. v. Intellectual Ventures II LLC* is misplaced. IPR2025-00840, Paper 9, at 2 (Sept. 19, 2025). That case involved a much older patent (12 years) and overlapping post-grant proceedings—none of which apply here. The '111 patent is just over four years old and does not overlap with post-grant proceedings. Here, the underlying facts instead point to substantial examiner error and the necessity of PTAB review to ensure sound patentability determinations—precisely what Congress intended the IPR process to address.

Marvell is exercising its statutory right to file an IPR because, although Credo did not name Marvell directly in litigation, its actions are effectively aimed at Marvell's technology and business interests. Credo has initiated suits exclusively against Marvell's customers, specifically asserting claims based on Marvell's retimer chips as the accused products. Ex-1042, 000003, 000005-6, 0000012; Ex-1043, 000005-8, 000013, 000015.

B. Factors 2 and 3 Weigh Against Discretionary Denial Because Marvell Filed Expeditiously

Fintiv factors 2 (timing) and 3 (investment in the parallel proceeding) strongly favor institution. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, at 5-6. The ITC Investigation’s target date is currently scheduled for December 17, 2026—just 58 days before the final written decision (FWD) deadline (February 13, 2027)—far closer than in *Credo*’s cited cases. Ex-2009.

The ITC case has already experienced delays and is likely to be postponed further. The ITC schedule has already shifted out two months due to Complainant’s counsel disqualification. Ex-1033. Additionally, as a result of the recent government shutdown, there have already been significant delays at the ITC. Ex-1041. The ITC schedule is therefore likely to change in light of disruptions and postponed deadlines caused by the shutdown since October 1, 2025.

Marvell filed this IPR promptly. Marvell filed its petition within two months of receiving a subpoena, and promptly after resolving counsel disqualification in the parallel ITC investigation. Marvell has never been sued on this patent, and its actions are consistent with Board precedent for diligence. *See Fintiv*, Paper 11, at 11 (petitioner filing “the petition expeditiously” weighs “against exercising the authority to deny institution”); *Savant Technologies v. Feit Electric*, IPR2025-00260, Paper 16, at 3 (Dir. June 12, 2025) (IPR instituted; petitioner filed “less than three months” after district court case); *Nikon v. Optimum Imaging Techs.*, IPR2024-01373, Paper 17, at 18-19 (Apr. 23, 2025)

(three-month interval); *Hanwha Sols. v. Maxeon Solar*, IPR2024-01198, Paper 17, at 32-34 (PTAB Feb. 26, 2025) (“expeditiously” filed “fewer than four months”).

Further, Credo’s cited cases are readily distinguishable. In *Caihong Display Devices v. Corning*, discretionary denial was granted due to “strong settled expectations” after the patent had been in force for 14 years—unlike the current four-year-old ’111 patent. IPR2025-00439, Paper 18, at 2 (Dir. July 10, 2025). In *Arashi Visionus LLC v. GoPro Inc.*, the petitioner was the ITC respondent and substantial ITC investment had occurred, whereas here Marvell is not a party to any parallel proceeding. IPR2025-00017, Paper 11 (Apr. 28, 2025).

C. Factors 1 and 4: The ITC Will Not Resolve All Patentability Disputes—Minimal Overlap Exists

Fintiv factors 1 (stay in parallel proceeding) and 4 (issue overlap with parallel proceeding) weigh against discretionary denial due to minimal overlap between this IPR and the ITC investigation. *Fintiv*, Paper 11, at 5-6. This Petition challenges all nineteen claims of the ’111 patent; the ITC will adjudicate at most a narrowed subset. *Fintiv*, Paper 11, at 9. Although Credo asserts that all nineteen claims of the ’111 patent are being challenged using the same references in both proceedings, this assertion is misleading and does not reflect practical realities before the ITC. Request, 13. ITC practice routinely reduces the number of

asserted claims prior to hearing, and recent investigations before ALJ Elliot have resolved far fewer claims at trial than those originally asserted.

In this investigation, the ITC began with 53 claims across three Credo patents, but ALJ Elliot’s Ground Rules require a final case-narrowing disclosure capped by a “Maximum Scope.” Ex-1034; Ex-1035, 000014-15. Credo is already narrowing its case at the ITC. Ex-1044 (listing a maximum scope of 50 claims across three patents). Consistent with ITC practice, complainants typically reduce to a handful of claims per patent before trial:

Inv. No. (337-TA-)	Number Patents	Number Claims Instituted	Number Claims at Hearing	Percent Reduction	Claims / Patent at Hearing
1400	6	74	14	82%	2.3
1396	2	28	11	61%	5.5
1389	2	29	6	79%	3.0
1380	5	102	19	81%	3.8
1376	5	51	7	86%	1.4
1370	3	17	15	12%	5.0
1350	3	15	13	13%	4.3
1346	1	13	11	15%	11.0
1330	4	50	39	22%	9.8
1318	5	36	13	64%	2.6
Average	3.6	41.5	14.8	64%	4.1

ALJ Elliot’s last ten investigations resolved an average of 4.1 claims per patent claims at hearing—far fewer than the nineteen currently asserted by Credo for the ’111 patent. It is virtually certain this Petition will address more claims than the ITC ultimately decides for the ’111 patent, strongly weighing against discretionary denial. *See POSCO v. ArcelorMittal*, IPR2024-01377, Paper 11, at 15-16 (Mar. 18, 2025) (factor 4 “weighs heavily against discretionary denial” where Petition “addresses 16 more claims” than the ITC).

Credo’s argument that Marvell relies on the same prior art and invalidity arguments as those asserted in the ITC case is misplaced. Request, 12-15. Critically, Marvell is not a respondent in the ITC, cannot control what art or claims are raised by the respondents, and is entitled to rely on its own prior art. That the Respondents chose to include Marvell art only demonstrates what Credo cannot ignore – that Marvell is the true innovator in this space, and that while Credo’s patents are invalid, Marvell’s patents are valid and infringed by Credo. Factor 4 requires the Board to assess the actual “claims, grounds, arguments, and evidence presented in the parallel proceeding,” not hypothetical overlap. *Fintiv*, Paper 11, at 12; *Samsung Electronics v. SiOnyx*, IPR2024-01431, Paper 21, at 16 (Apr. 10, 2025) (factor 4 weighs against discretionary denial where the ITC will not adjudicate invalidity of claims challenged in petition); *see also Samsung*

Electronics v. Dynamics, IPR2020-00504, Paper 16, at 9 (Oct. 13, 2020) (factor 4 does not support denial where non-overlapping claims remain in the IPR).

D. Factor 6: Other Circumstances Favor Institution

Fintiv factor 6 considers “[o]ther circumstances that impact the Board’s exercise of discretion, including the merits.” *Fintiv*, Paper 11, at 5-6. Here, the proceeding is distinguished by clear examiner error, strong merits, urgent public interest—including AI infrastructure and national security—and the absence of Marvell from the ITC case. These considerations make IPR institution both efficient and necessary to ensure proper review.

IV. Institution is Warranted Due to Material Examiner Error and the Strong Technical Merits of the Petition

A. The Examiner Materially Erred by Overlooking Pertinent Prior Art and Identifying Limitations Well Known in the Art as Allowable Subject Matter

The application for the ’111 patent was allowed after two Office Actions. In the non-final Office Action dated July 9, 2020, the Examiner rejected original claims 1, 6-10, and 17-19 as being obvious under §103 in view of combinations of Kolze (Ex-1017), Thirumoorthy (Ex-1018), and Binder (Ex-1019). Ex-1002, 000331-345. The Examiner indicated that claims 2-5, 11-16, and 20 recited allowable subject matter, without any explanation. *Id.*, 000340.

In response, the Applicant did not dispute the Examiner’s rejection under §103. Ex-1002, 000370-375. Instead, the Applicant sought to overcome the

Office Action based on purportedly allowable subject matter in original claims 2, 14, and 20, which each recited “wherein each of the multiple registers corresponds to a different channel model.” Ex-1002, 000038-39. The Applicant amended claim 2 into independent form and amended independent claims 9 and 19 to purportedly incorporate the limitations of claims 14 and 20, respectively. *Id.*, 000371-375.

Additionally, original claim 11 recited “wherein the port transceiver iteratively selects different ones of the multiple registers and determines a performance characteristic for each.” Ex-1002, 000038-39. While the Applicant represented to the Office that claim 11 “has been amended into independent form” (*Id.*, 000375), the Applicant deleted “iteratively selects different ones of the multiple registers” from claim 11:

11. ~~The communications link of claim 10, wherein~~ A chip-to-module communications link that comprises a port connector coupling a port transceiver to a pluggable module transceiver, the pluggable module transceiver including:
one or more transmit filters to each pre-equalize a corresponding serial symbol stream being transmitted to the port transceiver; and
a controller having multiple registers, each of the multiple registers containing a set of initial coefficient values for which ~~the port transceiver iteratively selects different ones of the multiple registers and~~ determines a performance characteristic for each,
the controller using one of the registers selected by the port transceiver to specify the initial coefficient values for the one or more transmit filters.

Ex-1002, 000372.

In the final Office Action dated February 4, 2021, the Examiner raised no further rejection to these independent claims. Ex-1002, 000389-396. Amended independent claims 2, 9, 11, and 19 were issued as independent claims 1, 8, 11, and 16 of the '111 patent, respectively.

Throughout the entire examination process, the Examiner's prior art search only identified the three prior art references cited in the first Office Action. Ex-1001, 000001-2. All other references identified on the face of the '111 patent were provided in an IDS filed by the Applicant. *Compare* Ex-1001, 000001-2 *with* Ex-1002, 000323-325. Never in the examination process did the Examiner compare the claims identified as reciting allowable subject matter with any prior art reference. Nor did the Examiner or the Applicant explain why the independent claims were non-obvious in view of the prior art. The Notice of Allowance did not include any explanation for allowance. Ex-1002, 000422-426.

The prosecution history demonstrates that the Examiner did not consider the state of the art. Claims of the '111 patent recite equalization techniques for serial communications. As Dr. Chen explains, “[h]igh-speed serial communications became popular and widespread in the 1990s” (Ex-1003, 000006-7), and pre-equalization had long been used for serial communications and taught in undergraduate courses for that purpose. Ex-1003, 000008; Ex-1008, 000020-24.

Though the '111 patent is directed to a common technique in a well-established field, the Examiner only identified three prior art references. The insufficiency of examination is further shown by the conclusory manner in which limitations were designated as allowable subject matter, with no comparison with prior art, consideration of obviousness theories, or elaboration of why claimed features were determined to be novel. The Examiner also did not appreciate the Applicant's misrepresentation that claim 11 was amended into independent form, given that a material limitation was deleted. Ex-1002, 000372, 000375.

As demonstrated in the Petition and explained below, the limitations that the Examiner deemed allowable were well known in the art. The Examiner materially erred by overlooking pertinent prior art that could have been uncovered by thorough search and consideration. *Hamilton Technologies v. Tehrani*, IPR2020-01199, Paper 6 at 21 (Jan. 6, 2021) (granting rehearing and instituting trial; finding that the Office materially erred in allowing claims while failing to consider the petition's references that were not before the examiner).

B. The Petition's Grounds Squarely Present and Address Prior Art and Arguments that the Examiner Overlooked

The Petition includes five grounds based on prior art references Berke, Cornelius, Ran, Stauffer, and Mejia, none of which were considered during

examination. These references show that the allowable subject matter identified by the Examiner was, in fact, indeed well-known and obvious in view of the art.

First, prior to the '111 patent, serial interfaces had applied the concept of using multiple registers that each correspond to a different channel model, which the Examiner indicated as allowable subject matter and the Applicant incorporated into independent claims 1, 9 and 16. Both Berke and Mejia teach storing multiple whitelisted pre-equalizer coefficients (or equalization presets) that are suitable to compensate for channel loss resulting from characteristics of different channel models. Pet. 24-25, 62. Using registers to select and specify pre-equalizer coefficients was well-known in the art and explicitly taught by Berke and Ran. Pet. 22, 60-61. For example, Berke teaches an addressable register design suitable for storing each set of pre-equalizer coefficients in a register (Pet. 22), in which case multiple registers and coefficients they store respectively correspond to different channel models. Pet. 26.

Second, the Petition demonstrates the concept of determining a performance characteristic for a set of initial coefficient values in each register in claim 11 was well known in the prior art. For example, Berke teaches selecting a whitelist set of pre-equalizer coefficient values and its corresponding register by determining their corresponding performance characteristics (e.g., eye height and eye width, bit error rate). Pet. 30, 39. In addition, Mejia teaches a preset search technique that

evaluates the performance characteristics (e.g., margin, gain, jitter, bit error rate) of the pre-equalizer coefficient values corresponding to each preset in order to select the best performing preset. Pet. 62, 79.

The Petition is strong in merit and directly remedies the material error of the Examiner. The Board should grant institution because correcting material error in examination is an effective use of the Board's resources.

C. The Petition Uses Focused Expert Testimony to Provide Context for Terms Used in Claims

Credo alleges that “Marvell relies on expert testimony to fill the gap in prior art disclosures” for limitation [1a]. Request, 19. As an initial matter, because “channel model” is recited in some challenged claims but not others (e.g., independent claim 11), the purported reliance on expert testimony for this limitation is not dispositive at the institution stage.

As explained above, both Berke and Mejia teach storing multiple whitelisted pre-equalizer coefficients (or equalization presets) that are suitable to compensate for channel loss resulting from characteristics of different channel models. Pet. 24-25, 62. Berke teaches various example channel characteristics, such as “insertion loss and other signal degradations” (Ex-1004, 000007), “impedance” (*id.*, ¶19), and receiver's “equalization settings” (*id.*, ¶16). Pet. 25. Mejia teaches example channel characteristics such as “channel insertion loss” (Ex-1009, 000010),

channel length (*id.*), and “equalization controls” from the receiver circuits (*id.*, ¶10). Pet. 63. Credo attempted to deny these teachings by arguing that the prior art does not recite the words “channel models” or “channel characteristics” verbatim. Request, 19-20. However, the application of prior art to claim language “is not an ‘ipsissimis verbis’ test.” *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990). Indeed, claim 2 of the ’111 patent recites that “different channel models” correspond to “different insertion loss ... characteristics” (Ex-1001, cl.2), and both Berke and Mejia teach insertion loss characteristics. Ex-1004, 000007; Ex-1009, 000010. Claim 3 recites that “different channel models presume,” thereby correspond to, “different types of receiver equalization” (Ex-1001, cl.3), another characteristic taught by Berke and Mejia. Ex-1004, 000007; Ex-1009, 000007.

Credo argues that the Petition relies on Dr. Chen’s testimony for teachings of “channel characteristics.” Request, 19. Not so. Dr. Chen merely refers to Berke’s teachings of a channel’s “insertion loss,” “impedance,” and receiver equalization settings as what they are—channel characteristics. Dr. Chen’s testimony provides contexts for Berke and Mejia’s teachings, including explaining how these characteristics impact channel performance and inform the selection of pre-equalizer coefficients that correspond to different channel models. Ex-1003, 000042-43, 000116. This is exactly the “focused testimony ... to provide helpful context” that the Office allows. Ex-2014, FAQ No. 22.

V. There Are No Settled Expectations That Warrant Denial Because the '111 Patent Issued Less Than Five Years Ago

Credo cannot claim “settled expectations” for the '111 patent, which issued approximately 4 years ago, on June 8, 2021. The Director’s decisions uniformly reject discretionary denial based on settled expectations for patents less than six years old. *Berkshire Hathaway Energy v. Birchtech*, IPR2025-00274, Paper 23, at 3 (Dir. July 2, 2025) (no “strong settled expectations” for 2019 and 2020 patents); *Cambridge Indus. USA v. Applied Optoelectronics*, IPR2025-00434, Paper 11, at 2-3 (Dir. June 26, 2025) (no settled expectations for 2019 and 2020 patents); *Webgroup Czech Republic v. Dish Technologies*, IPR2025-00467, Paper 14, at 2 (Dir. July 16, 2025) (no settled expectations for 2019 and 2021 patents); *Zhuhai CosMX Battery Co. v. Ningde Amperex Technology*, IPR2025-00385, Paper 9, at 2 (Dir. July 2, 2025) (no settled expectations for 2021 patent).

Credo’s argument that there is no “bright-line rule on when settled expectations become settled” is unavailing. Request, 16. PTAB precedent has established a settled expectations period of *at least six years* post-issuance.

Shenzhen Tuozhu Technology Co., Ltd. v. Stratasys, Inc., IPR2025-00438, Paper 10 at 2 (Jul. 17, 2025) (no “strong settled expectations” where patent was in force under five years); *Kahoot! AS v. Interstellar, Inc.*, IPR2025-00696, Paper 12 at 2 (Jul. 31, 2025) (“strong settled expectations” where patent was “in force *for over*

six years”) (emphasis added). Credo’s cited decision in *Dabico Airport Solutions Inc v. HydraFacial LLC* involved a patent that was “in force almost *eight years*.” IPR2025-00408, Paper 21 at 3 (June 18, 2025). The Director further recognized that 35 U.S.C. § 286, which specifies a six-year damages period, “align[ed] with other approaches to settled expectations and incentives.” *Id.* at 3; *see iRhythm Technologies v. Welch Allyn*, IPR2025-00363, Paper 10, at 3 (Dir. Jun. 6, 2025) (“settled” over 12 years); *see also Intel v. Proxense*, IPR2025-00327, Paper 12, at 2-3 (Dir. Jun. 26, 2025) (“settled” over 9 years). None of these authorities support “settled expectations” for the ’111 patent, which issued just over four years before the Petition was filed.

Further, Credo’s statement that it “has invested in, relied on, and commercialized the challenged patents for half a decade” is irrelevant to the settled expectation analysis. Request, 16. Credo has not cited any authority supporting the application of settled expectations in circumstances where the patent is less than six years old and the dispute involves direct industry competitors rather than non-practicing entities.

Moreover, Marvell is an active competitor in the AEC market and filed this Petition with diligence and before being sued for patent infringement, in line with Patent Office guidance favoring early PTAB review and before any litigation involving the ’111 patent. *See* Ex-1031 (“[W]e want to incentivize these early

[post-grant review] challenges . . . wait[ing] until . . . sued for infringement . . . is not what the AIA intended”).

VI. Inter Partes Review Is An Appropriate Use of the Board’s Resources in View Of Compelling National Security, Economic, and Public Interest Considerations

Credo asserts that the ’111 patent covers high-speed cables essential for artificial intelligence data centers (Request, 4-5), yet its litigation strategy against Marvell’s customers in the ITC and two district courts is aimed at suppressing competition among leading U.S. AEC suppliers—threatening artificial intelligence infrastructure essential to national security and economic growth. The imperative to support national security and economic interests far outweigh any argument for discretionary denial.

A. National Policy Demands Patent Review for AI Leadership

Executive Order 14179 calls for the U.S. to “sustain and enhance America’s global AI dominance” for economic competitiveness and national security. Ex-1045, 000001. OMB Memorandum M-25-21 instructs agencies to “remove barriers to innovation” and speed AI deployment. Ex-1046, 000001-2, 000005. The Commerce Department recognizes AI’s critical national security role and has committed to identifying vulnerabilities and threats to these systems. Ex-1047, 000001-2. The ’111 patent, as asserted, conflicts with these goals by hindering market access and innovation in central technologies needed for AI leadership.

B. The '111 Patent Targets Foundational AI Technologies

Credo asserts the '111 patent against AECs, which are a backbone of high-speed, energy-efficient data center connectivity. Ex-2001, ¶¶18-21, ¶42; Ex-1048 (accusing AECs); Ex-1044, 000001. It is undisputed that AECs are indispensable for scaling modern, AI-driven networks and offer substantial cost and power savings over alternatives. Request, 4-5; Ex-2001, ¶¶18-19; Ex-2003, 3; Ex-2004, 1-2. Credo's aggressive assertion threatens access to these critical technologies.

C. National Security and Economic Interests Strongly Favor Institution

The Director's March 26, 2025 memorandum confirms "[c]ompelling economic... or national security interests" weigh against discretionary denial. Ex-1049, 000002. PTAB review is essential to prevent unpatentable claims from bottlenecking economic progress and hampering AI infrastructure. *Cuozzo Speed Techs., L.L.C. v. Lee*, 579 U.S. 261, 279-80 (2016); *Thryv, Inc. v. Click-To-Call Techs., LP*, 590 U.S. 45, 54 (2020).

The '111 patent was asserted not only against Marvell's products but broadly across numerous companies building out the U.S. AEC industry—targeting components central to national AI infrastructure. Ex-2001, ¶2, ¶¶14-21. Credo's actions threaten to inflate costs and restrict access to crucial AECs.

The Director should deny the Request and the Board should review the petition on the merits, allowing the Office to fulfill its mandate to remove barriers to responsible AI deployment and to uphold U.S. technological leadership.

VII. Conclusion

Petitioner Marvell respectfully requests that Patent Owner's discretionary denial request be denied.

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This Petitioner's Opposition Brief to Patent Owner's Request for Discretionary Denial of Institution of *Inter Partes* Review complies with the limitation of 20 pages, as counted using the Microsoft Word software that was used to prepare this paper, in accordance with the Interim Director Discretionary Process III.C.iii.

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on November 13, 2025, true and correct copies of the Petitioner's Opposition Brief to Patent Owner's Request for Discretionary Denial of Institution of *Inter Partes* Review and Exhibits 1031-1049 were served in their entirety via email on all parties to this proceeding at the addresses indicated:

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