

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner

v.

NETLIST, INC.,
Patent Owner

Case PGR2025-00071
U.S. Patent No. 12,308,087

PATENT OWNER'S RESPONSE UNDER 37 C.F.R. § 42.220

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PATENT OWNER'S UPDATED EXHIBIT LIST

Exhibit No.	Description
2001	Joint Development and License Agreement, November 12, 2015
2002	Stock Purchase Warrant, November 18, 2015
2003	Senior Secured Convertible Promissory Note, November 18, 2015
2004	Security Agreement by and between Netlist, Inc. and SVIC No. 28 New Technology Business Investment L.L.P., November 18, 2015
2005	Samsung Venture Investment Corporation website, available at https://www.samsungventure.co.kr/english/jsp/company/company.jsp (last accessed October 12, 2025)
2006	Recorded Assignment and IP Security Agreement, Reel No. 037150, Frame No. 0897, November 20, 2015
2007	Release of Assignment, Reel No. 065629, Frame No. 0330, November 20, 2023
2008	Redacted First Amended Complaint for Breach of Contract and Declaratory Relief, <i>Netlist Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 8:20-cv-00993-JAK (C.D. Cal.), August 31, 2020
2009	Judgment, <i>Netlist Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 8:20-cv-00993-JAK (C.D. Cal.), April 7, 2025
2010	Median time to trial statistics for the International Trade Commission, Docket Navigator report generated October 6, 2025)
2011	Consolidation Order, <i>Netlist Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 2:25-cv-00557 (E.D. Tex.), June 26, 2025
2012	Docket Control Order, <i>Netlist Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 2:25-cv-00557 (E.D. Tex.), July 25, 2025
2013	First Amended Complaint, <i>Netlist Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 2:25-cv-00557 (E.D. Tex.), July 8, 2025

Exhibit No.	Description
2014	Verdict Form, <i>Netlist, Inc. v. Samsung Electronics Co. et al.</i> , Case No. 2:21-cv-00463-JRG (E.D. Tex.), April 21, 2023
2015	Complaint, <i>In the Matter of Certain Dynamic Random Access Memory (DRAM) Devices, Products Containing the Same, and Components Thereof</i> , Investigation No. 337-TA-3854 (I.T.C.), September 29, 2025
2016	Samsung Defendants' P.R. 3-3 Invalidity Contentions, <i>Netlist Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 2:25-cv-00557 (E.D. Tex.), September 24, 2025
2017	Verdict Form, <i>Netlist, Inc. v. Samsung Electronics Co. et al.</i> , Case No. 2:22-cv-00293-JRG (E.D. Tex.), November 22, 2024
2018	List of Patent Trial and Appeal Board proceedings filed by Samsung Electronics Co., Ltd. against Netlist, Inc.'s Patents, Docket Navigator, generated November 3, 2025
2019	Notice of Proposed Rulemaking, 90 Fed. Reg. 48,335 (Oct. 17, 2025)
2020	Excerpts from PTAB 2025 Intelligence Report, Patexia, Inc.
2021	Ramkumar, A., "Trump Takes Aim at Chip Makers With New Plan to Throttle Imports," <i>The Wall Street Journal</i> , September 26, 2025, accessible at https://www.wsj.com/economy/trade/trump-chip-tariffs-exemptions-90fa2ab3 (last accessed September 26, 2025)
2022	Netlist, Inc. Form 8-K, United States Securities and Exchange Commission, November 12, 2015
2023	"Netlist and SK hynix Enter into Strategic Agreements for Patents, Technology and Product Supply," Netlist Press Release, April 5, 2021

Exhibit No.	Description
2024	Comparison of Claim 1 of U.S. Patent No. 12,308,087 with Claim 1 of U.S. Patent No. 8,787,060 and Claim 1 of U.S. Patent No. 9,318,160
2025	Written Decision on Registration, Korean Patent Application No. 10-2017-0113355, mailed March 24, 2022
2026	U.S. Patent No. 10,026,724 to Kim et al., issued July 17, 2018
2027	Opening Brief for Appellant Netlist, Inc., <i>Netlist, Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 24-2240 (Fed. Cir.), February 4, 2025
2028	Joint Appendix Volume II of II, <i>Netlist, Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 24-2240 (Fed. Cir.), May 28, 2025
2029	Morris, A., “IPBC Global 2025: Acting USPTO Director says IPR use needs to change,” <i>IAM</i> , June 10, 2025, accessible at https://www.iam-media.com/article/ipbc-global-2025-acting-uspto-director-says-ipr-use-needs-change (last accessed June 16, 2025)
2030	“Precedential designation of <i>Corning Optical Communications RF, LLC v. PPC Broadband Inc.</i> , IPR2014-00440, Paper 68 (PTAB Aug. 18, 2015) (except for § II.E.1),” United States Patent and Trademark Office Memorandum, October 28, 2025
2031	Public Redated Version of Complaint for Declaratory Judgment of Non-Infringement, <i>Samsung Electronics Co., Ltd. et al. v. Netlist, Inc.</i> , Case No. 1:25-cv-00626-JLH (D. Del.), May 20, 2025
2032	Public Redated Version of Proposed First Amended Complaint for Declaratory Judgment of Non-Infringement, <i>Samsung Electronics Co., Ltd. et al. v. Netlist, Inc.</i> , Case No. 1:25-cv-00626-JLH (D. Del.), July 29, 2025

Exhibit No.	Description
2033	Defendants Samsung Semiconductor, Inc. and Samsung Electronics America, Inc.’s Motion to Dismiss for Improper Venue, <i>Netlist, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , Case No. 2:25-cv-00557-JRG (E.D. Tex.), November 24, 2025
2034	Plaintiff’s Corporate Disclosure Statement, <i>Samsung Electronics Co., Ltd. et al. v. Netlist, Inc.</i> , Case No. 1:25-cv-00626-JLH (D. Del.), May 20, 2025
2035	List of Patent Trial and Appeal Board proceedings listing Samsung Electronics America, Inc. as Petitioner, Docket Navigator, generated December 3, 2025
2036	Redline Comparison of Independent Claim 1 and Independent Claims 9, 13, 20, 23, and 24 of U.S. Patent No. 12,308,087
2037	Word Counts of Petitions in IPR2025-01402 and PGR2025-00071, including image annotations
2038	Final Judgment, <i>Netlist, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , Case No. 2:21-cv-00463-JRG (E.D. Tex.), August 11, 2023
2039	Trial Transcript, Volume 3, <i>Netlist, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , Case No. 2:21-cv-00463-JRG (E.D. Tex.), April 18, 2023
2040	Judgment under Federal Circuit Rule 36, <i>Samsung Elecs. Co., Ltd. v. Netlist, Inc.</i> , Appeal No. 23-2133 (Fed. Cir.), March 5, 2025
2041	Judgment under Federal Circuit Rule 36, <i>Samsung Electronics Co., Ltd. v. Netlist, Inc.</i> , Appeal No. 25-1378 (Fed. Cir.), December 9, 2025
2042	Netlist’s Petition for the Director to Suspend the Rules and Deny the Request for Reexamination Under 35 U.S.C. §§ 303(a) and 325(d), <i>Ex Parte</i> Reexamination Control No. 90/015,449, filed October 17, 2025

Exhibit No.	Description
2043	Complaint, <i>Netlist, Inc. v. Samsung Elecs. Co., Ltd. et al.</i> , Case No. 2:25-cv-00748-JRG (E.D. Tex.), July 28, 2025
2044	Complaint, <i>Samsung Elecs. Co., Ltd. et al. v. Netlist, Inc.</i> , Case No. 1:25-cv-01371-JLH (D. Del.), November 11, 2025
2045	Commission Determination, <i>In the Matter of Certain Unmanned Aerial Vehicles and Components Thereof</i> , Investigation No. 337-TA-1133 (I.T.C.), September 8, 2020
2046	Samsung's Certificate of Interest, <i>Netlist, Inc. v. Samsung Electronics Co., Ltd.</i> , Appeal No. 24-2203 (Fed. Cir.), August 27, 2024
2047	Company Profile, Avnet, Inc., accessible at https://s23.q4cdn.com/291570380/files/doc_downloads/factsheet/2020/Avnet-Fact-Sheet.pdf (last accessed December 22, 2025)
2048	"Samsung Authorized Distributor Avnet Americas," Avnet, Inc., accessible at https://www.avnet.com/americas/manufacturers/m/samsung/ (last accessed December 22, 2025)
2049-2054	<i>Intentionally Left Blank</i>
2055	Declaration of Richard M. Bemben (<i>served not filed</i>)
2056	Declaration of Noel Whitley (<i>served not filed</i>)
2057	Declaration of Marc F. Feinstein, <i>Netlist Inc. v. Samsung Electronics Co., Ltd.</i> , Case No. 8:20-cv-00993-WLH-ADS (C.D. Cal.), February 14, 2022 (<i>served not filed</i>)
2058	Declaration of Michael C. Brogioli in Support of Patent Owner's Response
2059	<i>Curriculum Vitae</i> of Michael C. Brogioli
2060	Transcript of the Deposition of Andrew Wolfe, Ph.D., May 22, 2026

Exhibit No.	Description
2061	Declaration of David Kennedy (HIGHLY CONFIDENTIAL – OUTSIDE COUNSEL EYES’ ONLY)
2062	<i>Curriculum Vitae</i> of David Kennedy
2063	Excerpts of Strategic Product Supply and License Agreement between Netlist, Inc. and SK hynix Inc.
2064	High Bandwidth Memory Company List, Mordor Intelligence, accessible at https://www.mordorintelligence.com/industry-reports/high-bandwidth-memory-market/companies
2065-2067	<i>Intentionally Left Blank</i>
2068	Memorandum Opinion and Order, <i>Netlist, Inc. v. SK hynix Inc. et al.</i> , Case No. 6:20-cv-00525 (W.D. Tex., Feb. 2, 2021), ECF No. 30
2069-2072	<i>Intentionally Left Blank</i>
2073	“Global DRAM and HBM Market Share: Quarterly,” Counterpoint Technology Market Research, March 28, 2026
2074	<i>Intentionally Left Blank</i>
2075	Netlist, Inc. Form 10-K for the Fiscal Year Ended December 30, 2017
2076	“Netlist’s (NLST) CEO Chuck Hong on Q4 2015 Results - Earnings Call Transcript,” Seeking Alpha, February 29, 2016, accessible at https://seekingalpha.com/article/3942336-netlists-nlst-ceo-chuck-hong-on-q4-2015-results-earnings-call-transcript
2077	“Netlist’s (NLST) CEO Chuck Hong on Q3 2016 Results - Earnings Call Transcript,” Seeking Alpha, November 14, 2016, accessible at https://seekingalpha.com/article/4023357-netlists-nlst-ceo-chuck-hong-on-q3-2016-results-earnings-call-transcript

Exhibit No.	Description
2078	Order Re: Motions For Summary Judgment And Related Applications, Netlist Inc. v. Samsung Electronics Co., Ltd., Case No. 8:20-cv-00993 (C.D. Cal., Oct. 14, 2021), ECF No. 186
2079	Udick, S., “Patent Law and the Emigration of Innovation,” Washington Law Review, 94(1):119-170 (March 1, 2019)
2080	Email from Kenny Han to JB Kim, May 18, 2015 (CONFIDENTIAL – PROTECTIVE ORDER MATERIAL)
2081	Technology Partnership and IP Cooperation Agreement – Term Sheet (Preliminary Outline), May 18, 2015 (CONFIDENTIAL – PROTECTIVE ORDER MATERIAL)
2082	David Kennedy - Patent 100, Intellectual Asset Management, accessible at https://www.iam-media.com/rankings/patent-1000/profile/person/david-kennedy
2083	<i>Intentionally Left Blank</i>
2084	“What is DRAM?”, Lenovo, accessible at https://www.lenovo.com/us/en/glossary/what-is-dram/
2085	“Introduction to Memory Chips: DRAM, NAND & NOR Flash,” Heisener Electronics, January 23, 2026 accessible at https://www.heisener.com/TechnologyDetail/Introduction-to-Memory-Chips-DRAM-NAND-NOR-Flash
2086	“Samsung,” Britannica Money, last updated May 26, 2026, accessible at https://www.britannica.com/money/Samsung-Electronics
2087	Matei, M., “Samsung beats Intel in the semiconductor market for the first time in years,” SamMobile, April 14, 2022, accessible at https://www.sammobile.com/news/samsung-beats-intel-semiconductor-market-first-time-in-years/

Exhibit No.	Description
2088	“Global DRAM Market Hits Record High,” BusinessKorea, May 27, 2026, accessible at https://www.businesskorea.co.kr/news/articleView.html?idxno=270184
2089	<i>Intentionally Left Blank</i>
2090	“Netlist’s (NLST) CEO Chuck Hong on Q4 2016 Results - Earnings Call Transcript,” Seeking Alpha, March 29, 2017, accessible at https://seekingalpha.com/article/4058995-netlists-nlst-ceo-chuck-hong-on-q4-2016-results-earnings-call-transcript
2091	“Netlist’s (NLST) CEO Chuck Hong on Q1 2017 Results - Earnings Call Transcript,” Seeking Alpha, May 16, 2017, accessible at https://seekingalpha.com/article/4073920-netlists-nlst-ceo-chuck-hong-on-q1-2017-results-earnings-call-transcript
2092	“Netlist’s (NLST) CEO Chuck Hong on Q2 2017 Results - Earnings Call Transcript,” Seeking Alpha, August 10, 2017, accessible at https://seekingalpha.com/article/4097767-netlists-nlst-ceo-chuck-hong-on-q2-2017-results-earnings-call-transcript
2093	Netlist Sales Data (HIGHLY CONFIDENTIAL – OUTSIDE COUNSEL EYES’ ONLY – PROTECTIVE ORDER MATERIAL)
2094	Email from Raymond Jiang to Neal Knuth, June 9, 2017 (CONFIDENTIAL – PROTECTIVE ORDER MATERIAL)
2095	“Gartner Says Worldwide Semiconductor Revenue Declined 11.9% in 2019,” Gartner Newsroom, January 14, 2020, accessible at https://www.gartner.com/en/newsroom/press-releases/2020-01-14-gartner-says-worldwide-semiconductor-revenue-declined-11-point-9-percent-in-2019

Exhibit No.	Description
2096	“Global NAND Flash Revenue Fell by 24.3% QoQ for 3Q23 as Suppliers Made Large Price Concessions That in Turn Impacted Their Results, Says TrendForce,” TrendForce Press Center, November 23, 2022, accessible at https://www.trendforce.com/presscenter/news/20221123-11467.html
2097	Shen, J., “Global DRAM sales to fall 18% in 2022, says IC Insights,” DigiTimes Asia, November 23, 2022, accessible at https://www.digitimes.com/news/a20221123VL200/dram.html
2098	Micron Investor Day 2022 Presentation, May 12, 2022, accessible at https://web.archive.org/web/20220821204814/https://investors.micron.com/static-files/8d23a61f-0c3d-46bf-81a1-c466525afd82
2099	“DRAM Market Anticipated to SurpassUSD 221.67 Billion by 2030, with aCAGR of 9.2% - Report by MarketResearch Future (MRFR),” GlobeNewswire, May 9, 2022, accessible at https://www.globenewswire.com/en/news-release/2022/05/09/2438836/0/en/DRAM-Market-Anticipated-to-Surpass-USD-221-67-Billion-by-2030-with-a-CAGR-of-9-2-Report-by-Market-Research-Future-MRFR.html
2100	“3D NAND Flash Memory Market is Projected to Reach \$78.42 Billion by 2030 – Allied Market Research,” Allied Market Research, 2022, accessible at https://www.alliedmarketresearch.com/press-release/3D-NAND-flash-memory-market.html
2101	Coughlin, T., “Digital Storage And Memory Projections For 2026, Part 2,” Forbes, accessible at https://www.forbes.com/sites/tomcoughlin/2026/01/02/digital-storage-and-memory-projections-for-2026-part-2/

Exhibit No.	Description
2102	“Gartner Forecasts Worldwide Semiconductor Revenue to Exceed \$1.3 Trillion in 2026,” Gartner Newsroom, April 8, 2026, accessible at https://www.gartner.com/en/newsroom/press-releases/2026-04-08-gartner-forecasts-worldwide-semiconductor-revenue-to-exceed-us-dollars-one-point-3-trillion-in-2026
2103	“NAND Flash Memory and DRAM Market Size, Share, Growth, and Industry Analysis, By Type (NAND Flash Memory,DRAM), By Application Smartphone,PC,SSD,Digital TV,Others), Regional Insights and Forecast to 2035,” Industry Research, last updated April 6, 2026, accessible at https://www.industryresearch.biz/market-reports/nand-flash-memory-and-dram-market-104109
2104	“Understanding Incremental Cost: Definition, Calculation & Business Impact,” Investopedia, last updated May 20, 2026, accessible at https://www.investopedia.com/terms/i/incrementalcost.asp
2105	“Working capital: What is it and why is it important?”, Bank of America, March 6, 2025, accessible at https://business.bankofamerica.com/en/resources/what-is-working-capital
2106	Fernando, J., “Working Capital: Formula, Components, and Limitations,” Investopedia, last updated February 21, 2026, accessible at https://www.investopedia.com/terms/w/workingcapital.asp
2107	Netlist, Inc. Form 10-K for the Fiscal Year Ended December 29, 2018
2108	Netlist, Inc. Form 10-K for the Fiscal Year Ended December 28, 2019
2109	Netlist, Inc. Form 10-K for the Fiscal Year Ended January 1, 2022

Exhibit No.	Description
2110	Lee, S., “As iPhone 8 looms, firms scramble to lock up memory chip supply,” Reuters, June 20, 2017, accessible at https://www.reuters.com/article/us-tech-chips-analysis-idUSKBN19B39S/
2111	“3Q16 Quarterly Earnings,” Samsung, October 27, 2016
2112	Netlist, Inc. Form 10-K for the Fiscal Year Ended December 27, 2014
2113	Netlist, Inc. Form 8-K, April 5, 2021
2114	Netlist Form 10-Q for the Quarterly Period Ended April 2, 2022
2115	Netlist Form 10-Q for the Quarterly Period Ended October 1, 2022
2116	Netlist, Inc. Report, Roth Capital Partners, April 8, 2021
2117	Netlist, Inc. Report, Craig-Hallum Capital Group LLC, April 8, 2021
2118	Netlist, Inc. Form 10-K for the Fiscal Year Ended January 2, 2016
2119	Netlist, Inc. Form 10-K for the Fiscal Year Ended December 31, 2016
2120	Netlist, Inc. Form 10-K for the Fiscal Year Ended December 30, 2017
2121	Netlist Form 10-Q for the Quarterly Period Ended October 1, 2022
2122	U.S. Patent No. 8,497,712 to Nguyen et al., issued July 30, 2013
2123	Zhang, et al., “A Built-In-Test Circuit for Functional Verification & PVT Variations Monitoring of CMOS RF Circuits,” ISSC 2006, Dublin Institute of Technology, June 28-30, 2006, pp. 217-222

Exhibit No.	Description
2124	Majzoub, et al., “PVT Variation Impact on Voltage Island Formation in MPSoC Design,” 10th Int’l Symposium on Quality Electronic Design, March 16-18, 2009, pp. 814-819
2125	Gopal, et al., “Ultra Low-Supply Voltage Reference Generator with Low Sensitivity to PVT Variations,” 5th Asia Symposium on Quality Electronic Design, August 26-28, 2013, pp. 18-21
2126	Miyashita, et al., “A Phase Noise Minimization of CMOS VCOs over Wide Tuning Range and Large PVT Variations,” Proceedings of the IEEE 2005 Custom Integrated Circuits Conference, 2005, September 21, 2005, pp. 583-586
2127	Docket Sheet, <i>Netlist, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , Case No. 2:25-cv-00557-JRG (E.D. Tex.)
2128	Docket Sheet, <i>Netlist Inc v. Micron Technology, Inc. et al.</i> , Case No. 2-25-cv-00558 (E.D. Tex)
2129	Email from Michel A. Pearson titled “Stipulation re: PGR2025-00071 (U.S. Patent No. 12,308,087); IPR2025-01431 (U.S. Patent No. 10,025,731); and PGR2026-00001, IPR2026-00018 (U.S. Patent No. 12,373,366)” (March 3, 2026)
2130	Samsung Electronics Co., Ltd. and Its Subsidiaries, Consolidated Financial Statements, Dec. 31, 2025 and 2024 – KPMG Samjong Accounting Corp., accessible at https://images.samsung.com/is/content/samsung/assets/global/ir/docs/2025_con_quarter04_all.pdf
2131	Amended Adopted Procedural Schedule, Certain Dynamic Random Access Memory (DRAM) Devices, Products Containing the Same, and Components Thereof, Inv. No. 337-TA-1472 (ITC), Feb. 6, 2026

Exhibit No.	Description
2132	Redacted Version of Samsung Respondents' Second Supplemental Objections and Responses to Complainant Netlist's First Set of Interrogatories (Nos. 1-38), Certain Dynamic Random Access Memory (DRAM) Devices, Products Containing the Same, and Components Thereof, Inv. No. 337-TA-1472 (ITC), March 25, 2026
2133	Transcript of the Deposition of Andrew Wolfe, Ph.D. in IPR2025-01431, May 15, 2026
2134	"Reduce the risk of claims with indemnification clauses in contracts," Thomson Reuters, October 20, 2024, accessible at https://legal.thomsonreuters.com/en/insights/articles/indemnification-clauses-in-commercial-contracts
2135	"Understanding Manufacturing Contracts: A Guide," https://www.hyperstart.com/blog/manufacturing-contracts/
2136	"South Korea's National Pension Fund's Stock Holdings Surge by ₩78 Trillion (approximately \$52.7B) in Q1, Driven by Samsung and SK Hynix," BigGo Finance, April 8, 2026, accessible at https://finance.biggo.com/news/DShTb50BNZYCTTDvKdNe
2137	National Pension Fund Report 2024, National Pension Service of the Republic of Korea, September 2025, available at https://www.nps.or.kr/eng/main.do (under "Annual Report" link)
2138	Exemplary Samsung Semiconductor, Inc. Invoice
2139	Butts, D., "SK Hynix posts record first-quarter profit, in line with estimates as memory prices climb," CNBC, April 22, 2026, accessible at https://www.cnbc.com/2026/04/23/sk-hynix-earnings-ai-memory-shortage-hbm-demand.html
2140	"SK hynix's US Sales Make Up Over 70% in Q1 on Rising AI Demand," The Korea Herald, May 16, 2025, accessible at https://www.koreaherald.com/article/10488669

Exhibit No.	Description
2141	Sung-mi, A., “SK Hynix Racks Up 70% of Sales in US on AI Chip Boom,” The Korea Herald, August 17, 2025, accessible at https://www.koreaherald.com/article/10555331
2142	“SK hynix Starts Mass-Production of High-Speed DRAM, ‘HBM2E’,” SK hynix Newsroom, July 2, 2020, accessible at https://news.skhynix.com/sk-hynix-starts-mass-production-of-high-speed-dram-hbm2e/
2143	“SK hynix Announces Development of HBM3 DRAM,” SK hynix Newsroom, October 20, 2021, accessible at https://news.skhynix.com/sk-hynix-announces-development-of-hbm3-dram/
2144	“SK hynix to Supply Industry’s First HBM3 DRAM to NVIDIA,” SK hynix Newsroom, June 8, 2022, accessible at https://news.skhynix.com/sk-hynix-to-supply-industrys-first-hbm3-dram-to-nvidia/
2145	“SK hynix Completes World-First HBM4 Development,” SK hynix Newsroom, September 12, 2025, accessible at https://news.skhynix.com/sk-hynix-completes-worlds-first-hbm4-development-and-readies-mass-production/
2146	Redline Comparison of U.S. Patent Application No. 13/288,850 to U.S. Patent Application No. 14/337,168
2147	Redline Comparison of U.S. Patent Application No. 13/288,850 to U.S. Patent Application No. 15/095,288
2148	Redline Comparison of U.S. Patent Application No. 13/288,850 to U.S. Patent Application No. 15/602,099
2149	Redline Comparison of U.S. Patent Application No. 13/288,850 to U.S. Patent Application No. 16/412,308
2150	Redline Comparison of U.S. Patent Application No. 13/288,850 to U.S. Patent Application No. 17/157,903

Exhibit No.	Description
2151	Redline Comparison of U.S. Patent Application No. 13/288,850 to U.S. Patent Application No. 17/694,649

I. INTRODUCTION

This PGR of claims 1-23¹ of U.S. Patent No. 12,308,087 (“the ’087 patent”) should be terminated. *First*, the Petition fails to name two real parties in interest (RPIs): Samsung Electronics America, Inc. (SEA) and Avnet, Inc., both of which have preexisting, established relationships with Petitioner and have a clear interest in and would benefit from this PGR. Indeed, both parties represented to an Article III court that they have standing and a present stake in the ’087 patent dispute. *Second*, the ’087 patent is not PGR-eligible because all claims have written description support in the pre-AIA priority document. *Third*, Samsung advances inconsistent claim constructions across parallel proceedings, which is prohibited under current Office policy.

Samsung also fails to prove the challenged claims were obviousness. *First*, the combinations fail to show key claim elements. *Second*, secondary considerations confirm that the ’087 patent claims are not obvious. Two of the three most dominant players in the relevant market took a license to the ’087 patent and its family members but Samsung’s Petition simply ignores this highly relevant fact. The patentability of the challenged claims should be confirmed.

¹ Claims 24-28 have been disclaimed. Paper 15.

II. THE '087 PATENT

A. Summary

The '087 patent discloses and claims an innovative arrangement of stacked dies and interconnects. *See* EX1001, 1:32-35, 2:36-60. Conventional DRAM packages often consist of a single silicon chip (or “die”) housed in a plastic or ceramic package. To increase the capacity of individual memory devices, memory makers began “stacking” multiple dies in a single DRAM package where each DRAM interfaces with an external device (such as a host) through external connections such as long, dangling wires along the peripheral of the DRAM circuit. *See* EX1001, 1:46-2:24. But the high electrical load resulting from such external connections negatively affected performance. EX1001, 2:25-32.

The '087 patent's background section describes an existing memory package of Figure 1A, which shows memory package 100 with control die 130 and three array dies 110. EX1001, 1:46-60. Control die 130 has driver 134, which drives data signals from control die 130 to each array die via interconnect 142, and driver 140, which drives command and address signals to each array die. EX1001, 1:51-58.

The '087 patent explains that “a load exists on each of the drivers 134, 140 ... by virtue of the drivers being in electrical communication with the corresponding die interconnects and the corresponding circuitry of the array dies.” EX1001, 2:25-28. It further explains that “to drive a signal along a die

interconnect, a driver typically must be large enough to overcome the load on the driver” and that “a larger driver not only consumes more space on the control die, but also consumes more power.” EX1001, 2:28-32.

The '087 patent discloses reducing driver size and power consumption “by increasing the number of die interconnects and reducing the number of array dies that are in electrical communication with each die interconnect.” EX1001, 4:2-7. Figure 2 depicts an example showing memory package 200 with control die 230 and four array dies 210a–210d. EX1001, 4:62-63. Control die 230 is connected to array dies 210a and 210b by die interconnect 220a, as shown by the darkened circles. EX1001, 5:7-53. Die interconnect 220b connects control die 230 to array dies 210c and 210d, as shown by the darkened circles, but die interconnect 220b is not electrically connected to array dies 210a and 210b, as shown by the unfilled circles. EX1001, 5:61-6:8. The '087 patent explains, “Examples of die interconnects include, but are not limited to, through-silicon vias (TSV), conducting rods, wire bonds, and pins.” EX1001, 5:35-37.

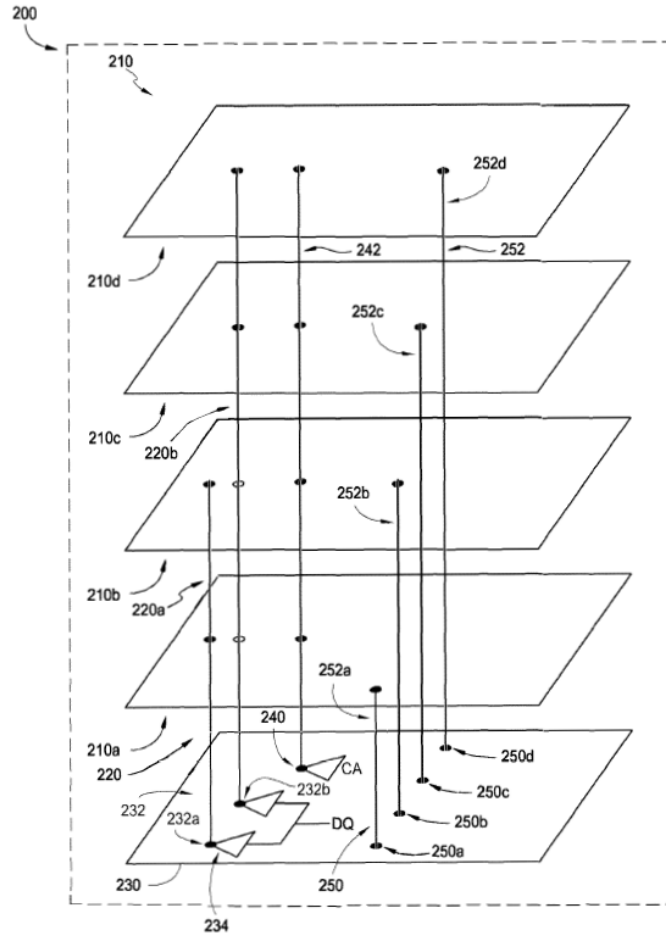


FIG. 2

EX1001, FIG. 2.

B. Level of Skill in the Art

A POSA would have had a Bachelor's degree in Electrical Engineering, Computer Science, or Computer Engineering, or a related field, and at least two years of experience in the design, development, or testing of computer memory systems. Additional training can substitute for education or research experience, and vice versa. EX2058, ¶42.

C. Claim Construction

Netlist applies the plain and ordinary meaning to the claim terms.

III. SAMSUNG’S PETITION FAILS TO NAME ALL RPIS.

This proceeding should be terminated because the Petition fails to name all real parties in interest (RPIS). “A petition filed under section 321 may be considered *only if* ... the petition identifies all real parties in interest.” 35 U.S.C. § 322(a)(2) (emphasis added); *see also* 37 C.F.R. §§ 42.8(b)(1), 42.204. A petition that fails to name all RPIS cannot be considered. *Corning Optical Commc’ns RF, LLC v. PPC Broadband, Inc.*, IPR2014-00440, Paper 68 at 23-24 (PTAB Aug. 18, 2015) (precedential except § II.E.1); EX2030, 1. “Where a party files an incomplete petition, no filing date will be accorded and the Office will dismiss the request if the deficiency in the petition is not corrected [before] the expiration of the statutory deadline in which to file a petition for post-grant review.” 37 C.F.R. § 42.206(b); 35 U.S.C. § 322; *Corning*, Paper 68 at 24-25; *Yangtze Memory Techs. Co., Ltd. v. Micron Tech., Inc.*, IPR2025-00098, Paper 38 at 6 (PTAB Jan. 15, 2026) (informative) (“*YMTC*”) (“Petitioner’s failure to provide clarity as to its actual identity is fatal to its petitions.”).

The Petition names Petitioner Samsung Electronics Co., Ltd. (“SEC”) and Samsung Semiconductor, Inc. (“SSI”) as the only real parties-in-interest. Pet., 1. However, Samsung Electronics America, Inc. (“SEA”) and Avnet, Inc. (“Avnet”)

are both additional RPIs that should have been identified in the Petition. Although both SEA and Avnet are RPIs, the panel need only find that one is an unnamed RPI to terminate this proceeding.

Samsung cannot now correct its RPI listing at this late stage. Adding a new RPI requires according the Petition a new filing date. *See Corning*, Paper 68 at 23-25; *Curium US LLC v. Universität Heidelberg*, IPR2025-01582, Paper 11 at 3 (Squires Feb. 25, 2026) (informative) (“*Curium*”) (“Petitioner’s amendment of its RPI disclosures results in according the Petition a new filing date.”). But the statutory deadline for filing a PGR petition challenging the ’087 patent has expired, and a new filing date cannot be accorded. *See* 35 U.S.C. § 321(c); 37 C.F.R. § 42.206(b). Further, the PGR cannot be converted into an IPR, and even if the Office were inclined to do so, it would be impossible here because SEC, SEA, and SSI are now time-barred under 35 U.S.C. § 315(b) from filing an IPR challenging the ’087 patent.

A. Relevant Litigation History

In May 2025, Netlist filed suits asserting the ’087 patent against SEC, SEA, and SSI (25-cv-00557) and Micron (25-cv-00558) in EDTX. EX2127, 1; EX2128, 1. In July 2025, Netlist amended its Samsung complaint to add Samsung’s customer Avnet as a defendant. EX2013. In May 2025, the same three Samsung entities (SEC, SEA, and SSI) filed a complaint in the District of Delaware (DDE)

for declaratory judgment of non-infringement of the '087 patent and in July 2025 filed a proposed amended complaint adding Avnet as a fourth DJ plaintiff.² EX2031, EX2032.

In September 2025, Netlist filed an ITC complaint against the three Samsung entities (SEC, SEA, and SSI) and certain of its customers asserting six patents, including the '087 patent. EX2015. In the ITC, the three Samsung entities jointly filed a stipulation that “for any proceedings above [(including this PGR)] that are instituted by the PTAB ... Samsung will not pursue an invalidity defense in the ITC or any district court action.” EX2129. With this stipulation, the three Samsung entities jointly chose the PTAB as the preferred forum to challenge validity, confirming they are acting in concert.

Further, SEA (along with SEC and SSI) once held a license to parent patents of the '087 patent (U.S. 8,787,060 and U.S. 9,318,160), DD Brief, 2-4; EX2031, 8 (¶¶28-29); was found to willfully infringe those parent patents, EX2038, 1-2; and is a co-appellant in Samsung’s appeal of that judgment, EX2046, 2.

B. Legal Standards

“Determining whether a non-party is a ‘real party in interest’ ... takes into account both equitable and practical considerations, with an eye toward

² Samsung filed the Petition in this IPR on August 29, 2025.

determining whether the non-party is a clear beneficiary that has a preexisting, established relationship with the petitioner.” *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1351 (Fed. Cir. 2018) (“*AIT*”). “[A] patent owner must produce some evidence that tends to show that a particular third party should be named a real party in interest.” *Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1244 (Fed. Cir. 2018). But after the RPI issue is placed in dispute, the petitioner has the burden “to bring forth evidence or arguments demonstrating that it named all RPIs.” *YMTC*, Paper 38 at 8 (citing *Worlds*, 903 F.3d at 1242). Indeed, Petitioner “bear[s] the burden of persuasion” to show that it has named all RPIs. *Worlds*, 903 F.3d at 1242; *Tianma Microelectronics Co., Ltd. v. LG Display Co., Ltd.*, IPR2025-01579, Paper 12 at 9-10 (Squires Mar. 18, 2026) (precedential).

RPI has an “expansive formulation.” *AIT*, 897 F.3d at 1351. Whether an unnamed party is an RPI “is a highly fact-dependent question,” which may be shown through “direct or circumstantial” evidence. *Corning*, Paper 68 at 14-15; *Taylor v. Sturgell*, 553 U.S. 880 (2008). “[A] nonparty to an IPR [or PGR] can be a real party in interest even without entering into an express or implied agreement with the petitioner to file an IPR [or PGR] petition.” *AIT*, 897 F.3d at 1354; *RPX Corp. v. Applications in Internet Time, LLC*, IPR2015-01750, Paper 128 at 25 (PTAB Oct. 2, 2020) (precedential) (“*RPX*”). Board precedent and guidance identifies several factors to be considered in determining whether an unnamed

party is an RPI, including: (i) nature of the entity filing the petition (i.e., petitioner's business model); (ii) petitioner's explanation of its own interest in the PGR; (iii) whether petitioner takes the unnamed party's interest into account when determining whether to file the petition; (iv) relationship between the petitioner and the unnamed party; (v) unnamed party's relationship to the petition itself; (vi) unnamed party's "interest in" and "benefit from" the PGR; (vii) whether petitioner can be said to be representing that interest; (viii) whether the unnamed party desired review of the patent; (ix) degree to which the unnamed party "exercised or could have exercised control over" the petition; and (x) whether the unnamed party funds, directs, or controls the petition. *See RPX*, Paper 128 at 10-11; *Corning*, Paper 68 at 14-16; PTAB Trial Practice Guide ("TPG")³, § D.1. "[A]t a general level, the 'real party-in-interest' is the party that desires review of the patent." TPG, § D.1.

C. SEA is an unnamed RPI.⁴

A "non-party to an IPR [or PGR] can be a real party in interest even without

³ <https://www.uspto.gov/patents/ptab/trial-practice-guide>

⁴ On May 28, 2026, the panel authorized Netlist to file a Motion for Additional Discovery related to RPI issues. *See* EX3105. This motion was filed June 5, 2026. Paper 30. Should the Board grant Netlist's motion, Netlist reserves

entering into an express or implied agreement with the petitioner to file an IPR [or PGR] petition.” *AIT*, 897 F.3d at 1354; *RPX*, Paper 128 at 25. The RPI factors demonstrate that SEA is an unnamed RPI to this proceeding.

**1. SEA “has a preexisting, established relationship with”
Petitioner SEC and RPI SSI.**

“[W]hen it comes to evaluating the relationship between a party bringing a suit and a non-party, the common law seeks to ascertain who, from a ‘practical and equitable’ standpoint, will benefit from the redress that the chosen tribunal might provide.” *AIT*, 897 F.3d at 1349. This analysis is done “with an eye toward determining whether the non-party is a clear beneficiary that has a preexisting, established relationship with the petitioner.” *Id.* at 1351; *RPX*, Paper 128 at 20-21.

SEA admittedly has a preexisting, established relationship with both Petitioner SEC and named RPI SSI. SSI is a wholly-owned subsidiary of SEA, which is a wholly-owned subsidiary of SEC (SEC→SEA→SSI). EX2034, 1; EX2046, 2; EX2130, 17 (consolidated financial statement for “Samsung Electronics Co., Ltd. and its subsidiaries”). SEA’s relationship with SEC is far greater than that of the party who the Director found to be unnamed RPI in *Aylo Freesites Ltd. v. Dish Techs. LLC*, IPR2024-00940, Paper 75 (Squires Feb. 3,

the right to address any evidence produced in its PO Sur-reply or to request authorization to file a Motion to Terminate.

2026) (“*Aylo*”). There, the Director de-instituted review because the petition failed to name a mere “services affiliate of Petitioner and co-defendant in parallel district court litigation.” *Aylo*, 2. SEA, by contrast, is a corporate entity in the middle of petitioner SEC and RPI SSI (SEC→SEA→SSI).

Further, this relationship is specifically tied to Samsung’s validity challenge of the ’087 patent. Indeed, Netlist alleges that SEA and SSI, “collectively with SEC, operate[] the Device Solutions division, which is involved in the design, manufacture, use, offering for sale and/or sales of” products that infringe the ’087 patent. EX2013, 2-3 (¶¶4-5).

2. SEA has a clear “interest in” and would “benefit from” this PGR, and desires review of the ’087 patent.

“[T]he focus of the real-party-in-interest inquiry is on the patentability of the claims challenged in the [PGR] petition, bearing in mind who will benefit from having those claims canceled or invalidated.” *AIT*, 897 F.3d at 1348; *RPX*, Paper 128 at 23. The Board must consider whether SEA “has an interest in and will benefit from” this PGR. *AIT*, 897 F.3d at 1353; *RPX*, Paper 128 at 15. SEA would plainly benefit from review and invalidation of the ’087 patent.

SEA is a respondent in the ITC investigation and a co-defendant in the EDTX litigation. EX2015, 2 (¶5); EX2013, 1. As a named defendant in the EDTX litigation and in the ITC investigation, SEA faces the same infringement exposure as SEC and SSI. Invalidating the ’087 patent through this PGR would immediately

benefit SEA by eliminating liability and foreclosing injunctive relief in the parallel fora.

Critically, Samsung *itself* confirmed SEA's concrete interest in the '087 patent by naming SEA as a co-plaintiff in its DJ action against the '087 patent. EX2032, 1. In that complaint, Samsung affirmatively alleged that a "substantial, immediate, and real controversy" exists between Netlist and SEA regarding infringement of the '087 patent. EX2032, 41 (¶137); *see id.*, 5 (¶16). Having represented to an Article III court that SEA has standing and a present stake in the '087 patent dispute, Samsung cannot now credibly claim that SEA is only a peripheral entity with no RPI status in this PGR.

SEA's involvement in *three* co-pending litigations demonstrates it has a significant stake and would benefit from a favorable outcome here. *RPX*, Paper 128 at 24-25 ("[B]ecause of the pending litigation, the invalidation of the challenged patents would provide a benefit to [unnamed party]"). Indeed, even Samsung's own expert in this PGR, Dr. Wolfe, conceded that SEA could benefit if the challenge is successful. *See* EX2133,⁵ 103:4-105:2, 107:4-108:12.

⁵ Exhibit 2133 is the transcript of Dr. Wolfe's deposition in IPR2025-01431, involving the same parties as here. The '087 patent and U.S. Patent 10,025,731 (at issue in the IPR) are both involved in the related litigation, and share relevant facts.

What is more SEA (along with SEC and SSI) also once held a license to parent patents of the '087 patent (U.S. 8,787,060 and U.S. 9,318,160), DD Brief, 2-4; EX2031, 8 (¶¶28-29); was found to willfully infringe those parent patents, EX2038, 1-2; and is a co-appellant in Samsung's appeal of that judgment, EX2046, 2.

SEA's interest and participation in the litigation with Netlist is far greater than that of the party who the Board found to be unnamed RPI in *Aylo*. Here, SEA has affirmatively invoked standing in Delaware to participate in Samsung's DJ action. If the affiliate in *Aylo*—a mere “services affiliate of Petitioner and co-defendant in parallel district court litigation,” *Aylo*, 2—was an RPI, SEA necessarily is as well.

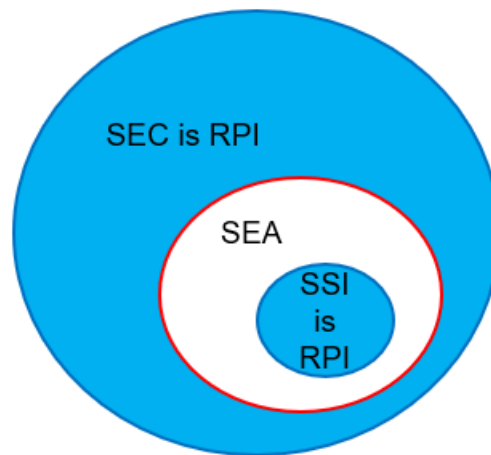
Further, SEA desires review of the '087 patent claims and, thus, has an interest in this PGR. Indeed, SEA has challenged the validity of the '087 patent claims in district court. *See* EX2016. And SEA's *Sotera* stipulation, EX2129, demonstrates that SEA desires review of the '087 patent, and has *affirmatively selected* the PTAB as its preferred forum.

3. SEC and SSI are representing SEA's interests.

The Board also must consider “whether, and under what circumstances, [Petitioner] takes a particular client's [or customer's] interests into account when determining whether to file IPR [or PGR] petitions.” *AIT*, 897 F.3d at 1353; *RPX*,

Paper 128 at 17. The Board must further consider whether SEC and SSI “can be said to be representing [SEA’s] interest” in filing this PGR. *AIT*, 897 F.3d at 1353; *RPX*, Paper 128 at 25. Again, the answer is yes. SEC (as parent) and SSI (as subsidiary) are plainly representing the interests of SEA.

All three entities are accused of infringing the ’087 patent. And this PGR represents the interests of all three—in particular, the interest in avoiding liability for infringement by attempting to invalidate the asserted patent. *See RPX*, Paper 128 at 27. In these circumstances it is nonsensical that both parent SEC and subsidiary SSI would be RPIs, but SEA—sandwiched in the middle as shown below—would not be.



Samsung’s decision to name SEA as a co-plaintiff in its DJ action further demonstrates that SEC (as the parent company) is representing SEA’s interest in challenging the validity of the ’087 patent in this PGR.

Significantly, nowhere in its pre-institution argument does SEC provide any

evidence, or even a clear statement, that it is *not* representing SEA’s interest in avoiding liability for infringement by challenging the validity of the ’087 patent in this PGR. *See Sun Pharm. Indus., Inc. v. Biofrontera Inc.*, PGR2026-00021, Paper 12 at 2-3 (Squires May 26, 2026) (denying institution due to unnamed RPI; determining a parent with 100% ownership of subsidiary has *ability* to control proceeding and it was Petitioner’s burden to show otherwise).

4. There is apparent collaboration between SEC, SEA, and SSI in defending against the ’087 patent, suggesting both that the parties are working in concert and that SEA had control (or the opportunity to control) this PGR.

Another “common consideration [in determining whether a non-party is an RPI] is whether the non-party exercised or could have exercised control over a party’s participation in a proceeding.” TPG, § D.1. Even if SEC, SEA, and SSI “did not directly discuss filing an IPR [or PGR], the discussions of litigation are naturally tied to possible defenses, of which an IPR [or PGR] challenge is one.” *RPX*, Paper 128 at 30 (explaining that “[s]uch communications need not expressly involve a request by [unnamed RPI] Salesforce for [petitioner] RPX to file an IPR petition,” and that “[t]he discussion of pending litigation by [patent owner] AIT against Salesforce ... [would] weigh[] in favor of finding that Salesforce was an interested party.”).

First, the parties’ joint stipulation in the ITC to forgo any invalidity challenge there in favor of this PTAB challenge, provides substantial evidence of

collaboration between all three entities in defending against the '087 patent.

And the asserted grounds in the PGR include the very same combinations (Keeth, Shaeffer, and/or Riho '364 (Riho2)) that SEC, SEA, and SSI jointly present in their invalidity contentions in the EDTX litigation. EX2016, 33-34, 56-180. This suggests a coordinated strategy between SEC, SEA, and SSI for challenging the validity of the '087 patent in defense of Netlist's infringement claims. *See Volkswagen Grp. of Am., Inc. v. Arigna Tech. Ltd.*, IPR2021-01263, Paper 16 at 15-16 (PTAB Jan. 21, 2022). At minimum, as a co-defendant in the EDTX litigation, SEA *could have exercised control* over the development of these invalidity positions presented in the Petition. *Sun Pharm.*, PGR2026-00021, Paper 12 at 2-3 (only the *ability* to control proceeding, such as via a 100% parent/subsidiary relationship—as opposed to *actual* control—is required to be considered an RPI).

5. SEC's business model and reasons for filing Petition.

The Board must also consider the nature of Petitioner and Petitioner's own interest in the PGR. *AIT*, 897 F.3d at 1353-54; *RPX*, Paper 128 at 10. These factors do not affect the analysis here. SEC's business model does not implicate the factors discussed in *AIT* or *RPX*, which focused on RPX's status as membership organization whose purpose is to "protect its members from the threat of patent litigation." *RPX*, Paper 128 at 11-15. And SEC's own reasons for filing a PGR do

not undermine SEA's status as an RPI. *AIT*, 897 F.3d at 1347 (noting that Congress did not intend for there to be only one interested party per case "even where the petitioning party might separately have its own interest in initiating an IPR" or PGR); *id.* at 1353 (RPI inquiry "is not an either-or proposition.").

6. Samsung's venue arguments in the EDTX litigation are irrelevant to the RPI question here.

Samsung's motion to dismiss SSI and SEA from the EDTX case for alleged improper venue, *see* EX2033,⁶ does not change the RPI analysis. The issues of whether venue is proper in EDTX and whether SEA is an RPI to this proceeding are different legal and factual analyses. *See* 28 U.S.C. § 1400(b); *AIT*, 897 F.3d at 1351. The RPI analysis is not limited to a specific district court venue, such as EDTX. And thus, even if venue is not properly sited for a given defendant, it does not follow that the defendant fails to qualify as an RPI.

SEA is a perfect example. In its motion to dismiss, Samsung raises three arguments: (1) neither SSI nor SEA resides in Texas, (2) SSI has no regular and

⁶ In pre-institution briefing, Samsung accuses Netlist of concealing declarations Samsung used to support its EDTX venue motion. POPR Reply (Paper 16), 2. But Netlist submitted the motion itself, which contains the same alleged facts, *see* EX2033, 3-4, which are irrelevant here because venue and RPI turn on different legal tests, POPR, 12-14.

established place of business in EDTX, and (3) Netlist fails to plausibly allege an act of infringement by SEA in EDTX. EX2033, 6-11. Even if Samsung were to prevail on *all* three arguments, which it should not, SEA is still an RPI here.

Arguments (1) and (2) are geographically limited to Texas (and thus have no bearing on the RPI inquiry); argument (3) is limited to *SEA*'s alleged non-infringement. Even if SEA does not infringe in EDTX, which Netlist does not concede, Samsung's argument does not extend to SEC and SSI. Because SEA has preexisting, established relationships with both, the RPI inquiry is still at issue in light of the EDTX case against SEC and SSI. And, if there were any doubt, the Delaware DJ action and the ITC case confirm that SEA is an unnamed RPI.

Finally, Samsung is the leading petitioner in AIA challenges and has named SEA as an RPI on close to 800 petitions. EX2020, 48; EX2035. Samsung knew or should have known the requirement for naming all RPIs and has no excuse for failing to do so here. For these reasons, SEA is an unnamed RPI to this proceeding and, therefore, the proceeding should be terminated.

D. Avnet is an unnamed RPI.

The RPI factors demonstrate that Avnet also is an unnamed RPI to this proceeding.

1. Avnet “has a preexisting, established relationship with the petitioner” SEC and RPI SSI.

Avnet indisputably has a preexisting, established relationship with Petitioner

SEC and RPI SSI. *AIT*, 897 F.3d at 1351. Indeed, Samsung has acknowledged that Avnet is Samsung’s customer. EX2032, 2. But more than that, Avnet is a distributor of Samsung’s memory products, EX2047, EX2048, and, as such, is a co-defendant in the EDTX litigation, EX2013, 1.

2. Avnet has a clear “interest in” and would “benefit from” this PGR, and desires review of the ’087 patent.

Avnet is a defendant in the EDTX litigation. EX2013, 1. And in the Delaware DJ action—again, where the plaintiffs had control over the parties to name—Avnet certified *collectively* with Samsung that it has an “immediate, real, and justiciable controversy” as to whether it infringes the ’087 patent and made no attempt to establish its own, separate reasons for standing. EX2032, 5. Avnet has a clear “interest in” and “benefit from” this PGR (avoiding liability for alleged infringement). *RPX*, Paper 128 at 24-25.

3. SEC and SSI are representing Avnet’s interests.

Petitioner, as Avnet’s supplier, is representing Avnet’s interest. At minimum, Samsung’s attempt to shield its customer from infringement liability in the EDTX litigation at least “strongly suggest[s] that [petitioner] filed the Petition, at least in part, on [Avnet’s] behalf.” *See Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00651, Paper 148 at 8-9 (PTAB Jan. 24, 2019) (precedential).

4. Ongoing discovery may further show Avnet's opportunity to control these proceedings.

Discovery is ongoing. Netlist is seeking additional discovery regarding, among other things, indemnification and manufacturing/supply agreements between SEC and Avnet related to the accused products. *See* EX3105; Paper 30. Indemnity or defense obligations for SEC on behalf of Avnet included in these agreements would tend to show Avnet's opportunity to control this proceeding, at least sufficient to put Samsung's identification of RPIs in dispute and shift the burden to Samsung to show that Avnet is not an RPI. *See Worlds*, 903 F.3d at 1246.

5. SEC's business model and reasons for filing Petition.

SEC's business model and its own interest in the PGR does not affect the analysis here. *See* Section III.C.5.

* * *

For these reasons, Avnet is an unnamed RPI to this proceeding and, therefore, the proceeding should be terminated.

E. Samsung cannot correct its RPI listing without creating a statutory time-bar.

Even if SEC were to now attempt to correct its RPI listing, it is too late. If SEC were to update its mandatory notices to include SEA as an RPI, a new filing date must be accorded to the Petition. *See Corning*, Paper 68 at 23-25; *Curium*, Paper 11 at 3. But the statutory deadline for filing a PGR petition challenging the

'087 patent has expired, and a new filing date cannot be accorded. *See* 35 U.S.C. § 321(c); 37 C.F.R. § 42.206(b).

And the PGR cannot be converted into an IPR. *See Sun Pharm*, PGR2026-00021, Paper 12 at 3-4 (“There is no statutory provision or rule for converting a PGR into an IPR.”). In any event, even if the Office were inclined to do so, it would be impossible here because SEC, SEA, and SSI are now time-barred under 35 U.S.C. § 315(b) from filing an IPR challenging the '087 patent. They were each served with a complaint alleging infringement of the '087 patent on May 23, 2025. *See* EX2127, 1 (Dkt. Nos. 3, 4, 5).

IV. THE '087 PATENT IS NOT PGR-ELIGIBLE BECAUSE THE CLAIMS HAVE WRITTEN DESCRIPTION SUPPORT.

Samsung contends that the '087 patent is PGR-eligible because the claims allegedly lack written description support in the pre-AIA priority application.⁷ Pet., 4 (relying only on contentions in Ground 1 as support for PGR eligibility).

Samsung bears the burden of proving by a preponderance of the evidence that the '087 patent is PGR-eligible. *Collegium Pharm., Inc. v. Purdue Pharma L.P.*, PGR2018-00048, Paper 58 at 15 (PTAB Nov. 19, 2021), *aff'd*, 86 F.4th 1338 (Fed. Cir. 2023); *see also Concert Pharms., Inc. v. Incyte Corp.*, PGR2017-00034, Paper

⁷ Samsung does not allege (and Netlist does not concede) that any intermediate version of the claims lacked written description support.

9 at 7-10, 13 (PTAB Jan. 11, 2018) (denying institution where petitioner did not meet its burden to show PGR-eligibility based on lack of written description in priority application). Samsung has not met that burden here.

Samsung's contentions that the claims lack written description support fail. Simply because the claims are long and detailed does *not* mean they lack support. Samsung's arguments take an overly restrictive view of both the written description requirement and the claim language, ignoring that a "patent specification is directed to one of ordinary skill in the art," *Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 866 (Fed. Cir. 1993), and that written description support is analyzed from the perspective of that POSA, *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc) (emphasis added).

Because Samsung has not shown any of the claims lack written description support, Samsung also has not shown the claims are PGR-eligible and this proceeding should be terminated. *Collegium Pharm.*, PGR2018-00048, Paper 58 at 15.

A. Samsung's general contentions regarding the lack of disclosure of the specifically claimed embodiments are legally and factually flawed.

1. Samsung misstates the law.

Samsung's argument that the claims lack written description because "there is no disclosure of the *specific combination* of *all* the limitations required by each

independent claim” misstates the law. Pet., 14. “The written description requirement *does not require the applicant to describe exactly the subject matter claimed.*” *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 208 F.3d 989, 997 (2000) (cleaned up, emphasis added). Rather, “the test for sufficiency [of written description] is whether the disclosure of the [earlier] application relied upon *reasonably conveys to those skilled in the art* that the inventor had possession of the claimed subject matter” as of that earlier filing date. *Ariad Pharms.*, 598 F.3d at 1351 (emphasis added). The “level of detail required to satisfy the written description requirement *varies* depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology.” *Id.* (emphasis added); *see also Capon v. Eshhar*, 418 F.3d 1349, 1357-58 (Fed. Cir. 2005) (“The ‘written description’ requirement must be applied in the context of the particular invention and the state of the knowledge As each field evolves, the balance also evolves between what is known and what is added by each inventive contribution.”).

Here, the specification provides the requisite description to reasonably convey to a POSA that the inventors were in possession of the claimed inventions. EX2058, ¶¶61-63 & Appendix A.

2. The '087 patent describes alternative features and explicitly links the disclosed embodiments.

Samsung argues “[a] patent owner cannot show written description support

by picking and choosing claim elements from different embodiments that are never linked together in the specification.” Pet., 13 (quoting *Flash-Control, LLC v. Intel Corp.*, No. 20-2141, 2021 WL 2944592, at *4 (Fed. Cir. July 14, 2021) (nonprecedential)). But the support for the ’087 claims does not come from disparate unlinked embodiments. Rather, the specification describes alternative features that may (or may not) be included in the disclosed memory packages, and explicitly links the disclosed embodiments. EX2058, ¶¶64-72.

Support for the claims is provided in the discussion of Figures 2 and 3, each of which illustrates an exemplary memory package; Figure 4, which illustrates an exemplary driver structure; and Figure 8 which illustrates an exemplary memory module. EX1001,⁸ 3:31-39, 49-51; *see* EX2058, Appendix A (chart demonstrating written description support). The specification explicitly recognizes that “some or all of the embodiments described above with respect to the memory package 200 [of Figure 2] may be applicable to the memory package 300 [of Figure 3].

⁸ For convenience, citations in the written description discussion are to the as-published ’087 patent specification, which was not amended during prosecution, *see* EX1002. As demonstrated in Exhibits 2146-2151, each of the as-filed specifications throughout the priority chain includes substantially the same disclosure.

However, for ease of illustration and to simplify discussion, certain elements are omitted in FIG. 3 Nevertheless, it should be understood that the memory package 300 can include the same or similar elements as described above with respect to the memory package 200.” EX1001, 9:65-10:9; *see also* EX2060, 43:17-45:8 (Dr. Wolfe acknowledging the specification indicates the features of Figure 2 can be used with the embodiment of Figure 3).

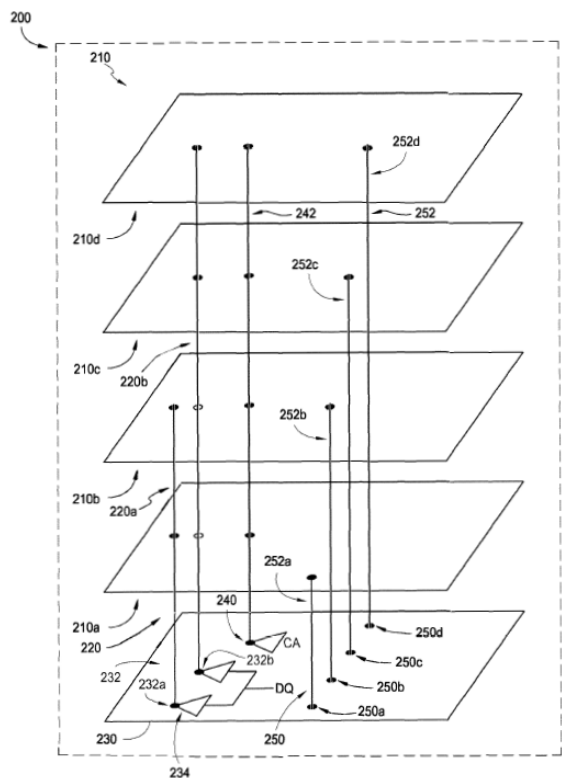


FIG. 2

EX1001, FIG. 2.

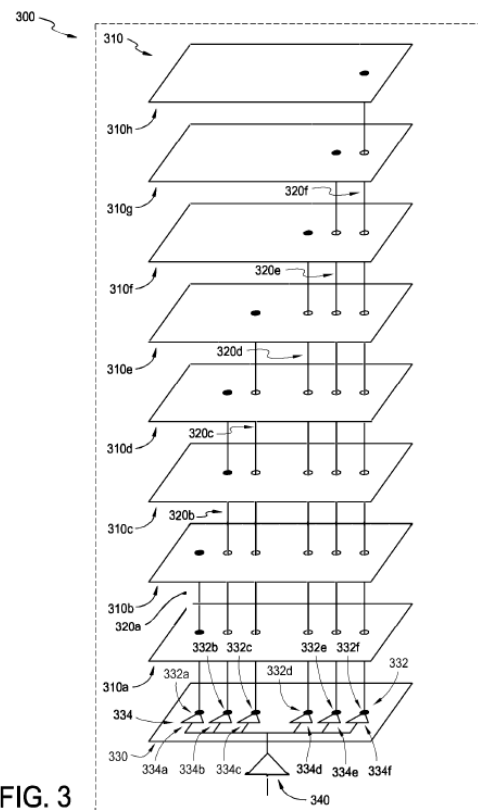


FIG. 3

EX1001, FIG. 3.

Likewise, the specification connects the exemplary driver structure 400 of Figure 4 to the control die 230, 330 of Figures 2 and 3, respectively. *See* EX1001, 15:8-20. In particular, the specification describes that “the control die 230 [of

Figure 2] may include the driver structure 400 in place of the combination of drivers 232a and 232b. Similarly, ... the control die 330 [of Figure 3] may include a structure similar to the driver structure 400 in place of the drivers 334.” *Id.*, 15:13-18; *see also* EX2060, 45:13-18 (Dr. Wolfe acknowledging the specification indicates the driver structure of Figure 4 can be used with the embodiments of Figures 2 and 3).

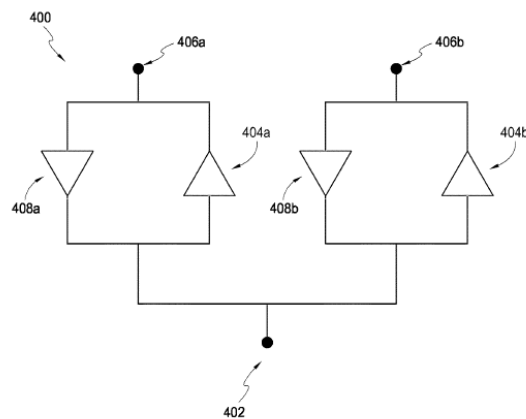


FIG. 4

EX1001, FIG. 4.

And discussing Figure 8, the specification describes that “[i]n certain embodiments, the control dies 822 can include some or all of the embodiments described above with respect to the control dies 230 and 330 [of Figures 2 and 3, respectively]. Moreover, in certain embodiments, the memory packages 820 can include some or all of the embodiments described above with respect to the memory package 200 and 300,” thus explicitly connecting the disclosure of Figure 8 to that of Figures 2 and 3. EX1001, 21:7-13; *see also* EX2060, 46:1-20 (Dr.

Wolfe acknowledging the specification indicates the control dies 822 of Figure 8 can include embodiments described with respect to the control dies of Figures 2 and 3).

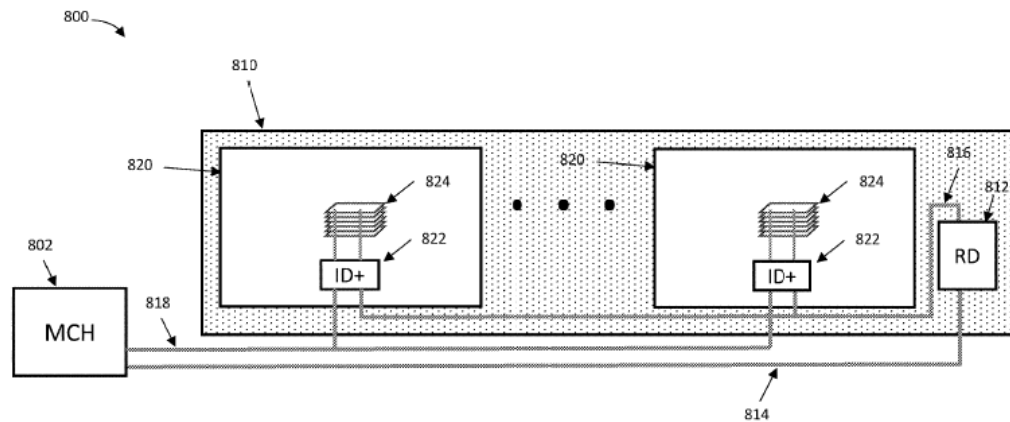


FIG. 8

EX1001, FIG. 8.

Based on the disclosure in the specification a POSA would have understood that the embodiments described are not disparate unlinked embodiments. Instead, the different figures illustrate alternatives, and a POSA would also have readily recognized how to select amongst these various disclosed alternatives to achieve the desired product. EX2058, ¶¶70-71. Each of the '087 claims simply recites one specific combination of these disclosed alternative features. *Id.* This is entirely appropriate. *Union Oil*, 208 F.3d at 997 (holding that there was sufficient written description support where a POSA would have known to combine the disclosed elements “to achieve a desired product” even without specific disclosure of the claimed embodiments); *Erfindergemeinschaft UroPep GbR v. Eli Lilly & Co.*, 276

F. Supp. 3d 629, 655-656 (E.D. Tex. 2017), *aff'd*, 739 F. App'x 643 (Fed. Cir. 2018) (“It is enough that the disclosure specifically identifies, *among other various options*, the use of [the claimed option].” (emphasis added)).

As Judge Bryson observed, while sitting by designation in EDTX, “[i]t is common for patentees to disclose a range of possible embodiments ... [A] patentee need not indicate that one embodiment is ‘of special interest’ in order to claim it ... A patentee is free to selectively claim one particular embodiment without running afoul of the written description requirement.” *Erfindergemeinschaft*, 276 F. Supp. 3d at 656. In *Erfindergemeinschaft*, the court found that disclosure of methods of treatment using one of a list of inhibitors to treat one of a list of conditions was not too broad to support a claim regarding the use of a specific inhibitor to treat a specific condition, even though the disclosure did not expressly identify this particular narrowed embodiment. *Id.* at 654-657. The '087 patent presents a similar situation, disclosing a list of options and claiming a particular embodiment selected therefrom.

And, unlike *Flash-Control*, which Samsung relies on to support its “picking and choosing” argument, the '087 patent explicitly teaches that various combinations of the disclosed features may be implemented by a POSA. In addition to the specific linking disclosure identified above, the specification further recognizes that “*various equivalent modifications [of the specific disclosed*

embodiment] are possible within the scope of the invention, as those skilled in the relevant art will recognize,” that “[t]he elements and acts of the various embodiments described above can be combined to provide further embodiments,” and that the described “embodiments have been presented by way of example only, and are not intended to limit the scope of the disclosure. Indeed, the novel methods and systems described herein may be embodied in a variety of other forms.”

EX1001, 22:63-23:2 (emphasis added), 23:13-17, 23:31-36.

Contrary to Samsung’s implication otherwise, the ’087 patent does not include “different embodiments that are never linked together in the specification,” Pet., 13, but rather describes alternative features of explicitly linked embodiments.

3. Samsung’s argument that there are over 100 million possible combinations of features is divorced from the reality of how a POSA would consider the disclosure.

Samsung’s argument that “the ’087 Patent refers to various possibilities that could be combined in over *100 million* different ways” is a poorly contrived attempt to cast doubt on the claims’ written description support. Pet., 19-23; *see* EX2058, ¶¶73-78. Neither the length of the claims nor the fact that the specification discloses known examples for implementing the claim elements demonstrates a lack of support. It is common practice for patent disclosures to include example implementations and alternatives, e.g., to satisfy the enablement requirement.

Rows A and B of Samsung’s chart, Pet., 20, merely identify known examples of memory dies and interconnects. EX2058, ¶74; *see also* EX2060, 33:10-34:15 (confirming a POSA was familiar with each category of memory in row A), 34:16-35:20 (confirming a POSA was familiar with the types of interconnects in row B). The patent’s disclosure of these examples does not suddenly create some sort of large genus from which a POSA would not be able to determine the scope of the inventor’s disclosure. Rather, a POSA would have simply recognized that certain aspects of the disclosed invention (e.g., die stacking and die interconnect configuration) were applicable to any of these types of memory and could use known interconnects. *Id.* Removing just these two “features” from Samsung’s calculation reduces the number of “possibilities” down to just over 3%⁹ of the Petition’s alleged “over 100 million” possible combinations.¹⁰

Row D does not even identify alternatives but rather typical signals that may be used in memory such DRAM. Pet., 20; EX2058, ¶75. For example, data,

⁹ $2 \times 64 \times 6,561 \times 2 \times 2 = 3,359,232$.

¹⁰ Patent Owner does not concede that the other characterizations of features in Petitioner’s chart are accurate or a fair characterization. But it is sufficient to look at only the first two rows to make the point here.

address, and command signals are not alternative implementations; they are known signals that are transmitted in a DRAM device. *Id.*; *see also* EX2060, 37:12-20 (confirming the same). And row E merely lists interconnects that can carry those signals. Pet., 21; EX2058, ¶75; EX2060, 37:21-38:12 (confirming the same).

At bottom, Samsung’s calculation is a transparent attempt to generate a large genus from which the alleged “extraordinarily specific combination of features” is selected. Pet., 19-23. But many these so-called “possibilities” are basic design choices and implementation options. EX2058, ¶76. Indeed, Dr. Wolfe acknowledged that selecting appropriate features for a desired application “depend[s] on the details of the situation” and “on what the problem is and what the analysis is and what the objectives are.” EX2060, 36:5-19. In response to the question: “And would a person of ordinary skill in the art been able to analyze the problem in order to achieve the objective?”, he further acknowledged, “For some problems, yes.” EX2060, 36:20-37:1. It is well within a POSA’s skill to select appropriate combinations, including those recited in the ’087 claims, *based on the options disclosed in the specification* and the desired results. EX2058, ¶¶77-78; *see Union Oil*, 208 F.3d at 997; *Inphi Corp.*, 805 F.3d at 1355-57.

4. Samsung’s “laundry list” case law is inapposite because it focuses on the unpredictable chemical and biological arts.

Citing *Fujikawa*, Samsung contends that “[a] patent that provides ‘a “laundry list” disclosure’ does not provide adequate written description of every

possible combination because ‘such a disclosure would not “reasonably lead” those skilled in the art to any particular species.’” Pet., 12-13. In all of Samsung’s cited cases, however, the claims are directed to the unpredictable chemical and biological arts where the disclosures at issue included, for example, large numbers of possible combinations of various chemical components.

Here, on the other hand, the claims are directed to a DRAM memory package—in the field of electronics. The specification describes alternatives for certain aspects of a memory package (e.g., using either bi-directional or unidirectional interconnects for different signals, EX1001, 14:40-51, as discussed below) but explicitly identifies that these “can be combined to provide further embodiments” and that “various equivalent modifications are possible within the scope of the invention, as those skilled in the relevant art will recognize.” EX1001, 22:65-23:2, 23:15-17.

The disclosure here “reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter.” *Ariad Pharms.*, 598 F.3d at 1351. Indeed, unlike the claims in Samsung’s cited cases, a POSA would have readily recognized how to select amongst the various disclosed alternatives in the specification order to achieve the desired results. EX2058, ¶¶61-78; *see Union Oil*, 208 F.3d at 997; *Inphi Corp. v. Netlist, Inc.*, 805 F.3d 1350, 1355-57 (Fed. Cir. 2015).

B. Samsung's contentions regarding specific limitations also fail.

Samsung also contends there is no written description support for specific limitations. Pet., 23-36. These arguments likewise fail. In general, they take an impermissibly narrow view of the disclosure that is divorced from how a skilled artisan would have understood the '087 patent's teachings. EX2058, ¶79.

According to Samsung, the skilled artisan was an accomplished engineer who had experience with DRAM memory technologies and was familiar with essentially anything relevant to the '087 patent. *See* Pet., 10-11.

As explained below, there is sufficient written description support for the limitations identified by Samsung. Netlist focuses on claim 1 for purposes of the discussion herein. But a similar analysis would apply to the other identified claims. EX2058, ¶80. Indeed, Samsung addresses the claims together in the written description analysis and does not identify any differences between the various claims that would affect the analysis.¹¹

¹¹ Because it is Samsung's burden to show lack of support, both for PGR-eligibility and for the asserted written description ground, Netlist does not specifically address limitations not identified in the Petition. *Collegium Pharm.*, PGR2018-00048, Paper 58 at 15. However, as Dr. Brogioli testifies, there is written description support throughout the priority chain for each claim of the '087

1. The disclosure supports “unidirectional interconnects/conduits for conducting signals down the stack.”¹²

Claim element [1.1] recites:

wherein the die interconnects further include first unidirectional interconnects configured to conduct signals from one or more DRAM dies of the stacked DRAM dies to the control die and not configured to conduct any signal from the control die to any of the stacked DRAM dies;

EX1001, 24:62-67. Samsung is incorrect that the “claimed unidirectional interconnect/conduit for conducting signals only *down* the stack is not disclosed in the specification.”¹³ Pet., 24; EX2058, ¶¶81-88.

The specification’s disclosure regarding at least Figures 2 and 3, which are expressly linked, supports the claimed unidirectional interconnects. EX2058, ¶¶83-

patent. EX2058, ¶¶61-63.

¹² The quoted text in the headings in subsections IV.B.1-5 are Samsung’s characterizations of the claim elements, not the actual claim language. Netlist does not concede that Samsung’s characterizations are accurate.

¹³ Samsung concedes that the specification supports unidirectional interconnects that transmit signals “up” the stack, which is correct. Pet., 24; EX1001, 9:9-36, 14:40-51.

84; *see* EX1001, 9:65-10:9 (linking Figures 2 and 3); EX2060, 43:17-45:8. The specification expressly discloses a unidirectional interconnect for conducting signals “down the stack”: “In certain embodiments *where one or more of the die interconnects 320 are not bi-directional*, the memory package 300 may include *additional die interconnects (not shown)* that are in electrical communication with the one or more additional conduits or drivers and that are configured *to enable a signal from the array dies 310 to be transmitted to the one or more additional conduits or drivers.*” EX1001, 14:40-51 (emphasis added). According to Samsung, this disclosure is insufficient because it does not support additional bidirectional data interconnects. Pet., 26. But the specification expressly discloses that bidirectional data interconnects may also be included in the memory package. EX2058, ¶¶86-87.

To start, the specification discloses that “*one or more of the die interconnects 320 are configured to be bi-directional*, thereby enabling a signal to be driven to the array dies 310 via the die interconnect 320, and to enable a signal received from the array dies 310 along the same die interconnect 320 to be transmitted to a corresponding conduit 332 of the control die 330.” EX1001, 14:33-40 (emphasis added). It further discloses that the signal can be (but is not limited to) a “data signal.” EX1001, 10:48-54. These disclosures provide support for element [1.1]’s requirement that “the die interconnects further include ...

unidirectional interconnects.” But if that is not enough, the specification also discloses: (1) with respect to Figure 2, data interconnects that may be “bi-directional,” EX1001, 9:7-10; *see* Pet., 25; and (2) that the memory package 300 of Figure 3 may include elements of the memory package 200 of Figure 2, EX1001, 9:65-10:9. A POSA would have understood that bidirectional data interconnects (of package 200) is one such element that could be included in package 300. EX2058, ¶87. The specification thus supports a DRAM package having one or more bidirectional data interconnects and one or more unidirectional (non-data) interconnects. *Id.*

For these reasons, there is written description support for claim element [1.1].

2. The disclosure supports “unidirectional first/second/fourth/sixth/eighth etc. signals.”

Claim elements [1.p.1] recites:

wherein the control die is configured to, in response to the first set of C/A signals, receive first signals associated with the memory read operation from a DRAM die of the stacked DRAM dies via the first unidirectional interconnects,

EX1001, 25:20-24. Claim element [1.p.2] recites:

in response to the second set of C/A signals, drive second signals associated with the memory write operation to one or more DRAM

dies of the stacked DRAM dies via the second unidirectional interconnects.

EX1001, 25:24-28. According to Samsung, the “specification also fails to disclose ‘[first]/[second] signals,’ ... which are transferred via unidirectional interconnects/conduits (collectively the ‘Unidirectional Signals’).” Pet., 26. This is incorrect. EX2058, ¶¶89-93.

In [1.p.1] and [1.p.2], the “first signals” are “receive[d] ... via the first unidirectional interconnects” of claim element [1.l] and the “second signals” are “drive[n] ... via the second unidirectional interconnects” of claim element [1.m]. As discussed above, the specification discloses the first unidirectional interconnects of element [1.l], *see* Section IV.B.1, and Samsung does not contest that the specification discloses the second unidirectional interconnects, *see* Pet., 24; *see also* EX1001, 10:48-54 (describing different types of signals).

Samsung contends these “first” and “second” signals are additional “categor[ies] of signals,” that are not disclosed. Pet., 21. This ignores the realities of claim drafting. The claims use “first” and “second” here simply to distinguish elements of the claim. *The Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1373 (Fed. Cir. 2005) (determining “[t]he terms ‘first, second, and third’ are terms to distinguish different elements of the claim, not terms supplying a numerical limit” or otherwise limiting the claim). And Samsung’s argument regarding the

alleged “laundry list” of signals being insufficient to disclose claimed “signals,”
Pet., 27, fails for the reasons discussed in Section IV.A above.

3. The disclosure supports “multiple types of interconnects with selective electrical communication.”

Claim element [1.f] recites:

wherein a first C/A interconnect of the first C/A interconnects is in electrical communication with corresponding C/A ports on the first plurality of DRAM dies and not in electrical communication with any C/A port on any of the second plurality of DRAM dies;

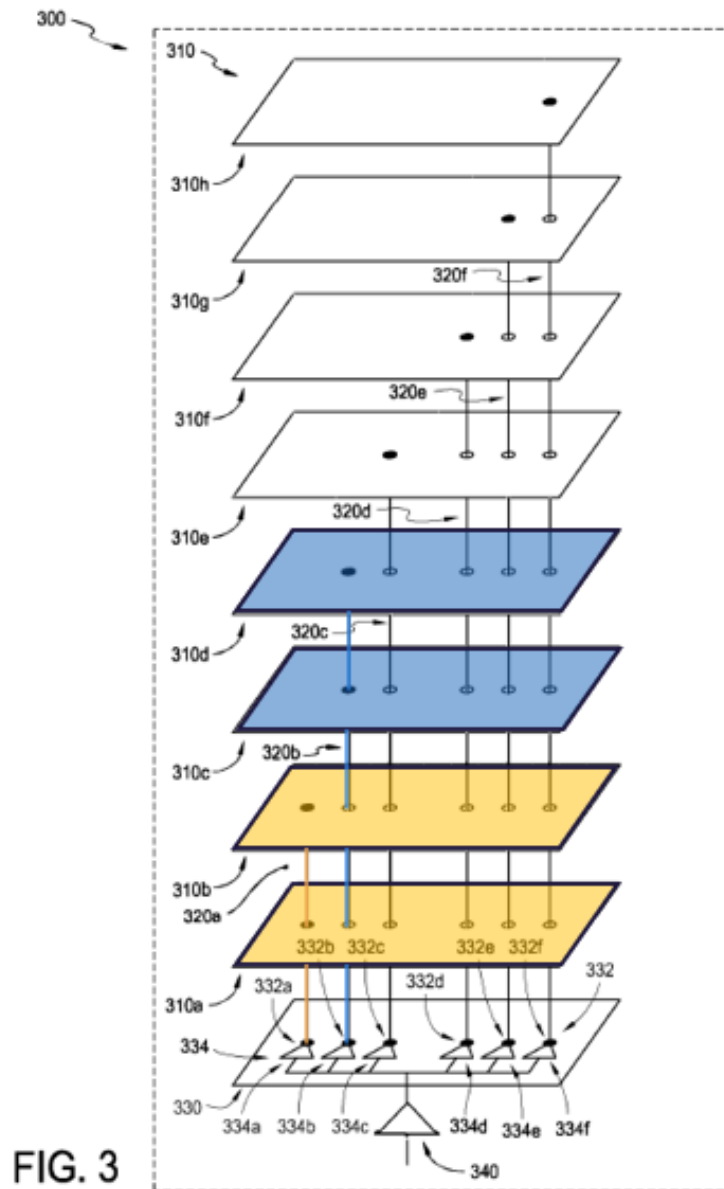
EX1001, 24:20-24. Claim element [1.h.1] recites:

wherein a first data interconnect of the first data interconnects is in electrical communication with corresponding data ports on the first plurality of DRAM dies and not in electrical communication with any data port on any of the second plurality of DRAM dies,

EX1001, 24:30-34. Claim elements [1.g] and [1.i] respectively recite similar limitations but for “a second C/A interconnect” and “a second data interconnect” in electrical communication with “the second plurality of DRAM dies” and not with “the first plurality of DRAM dies.” EX1001, 24:25-29, 24:46-50.

In the Figure 3 embodiment (annotated below), the claimed “first plurality of DRAM dies” correspond to dies 310a/b (shown in blue) and the claimed “second plurality of DRAM dies” correspond to dies 310c/d (shown in orange). EX2058, ¶96. As seen, die interconnect 320a (blue) is in electrical communication with only

dies 310a/b; die interconnect 320b (orange) is in electrical communication with only dies 310c/d. EX1001, 10:10-47; EX2058, ¶96.



EX1001, FIG. 3 (annotated).

Samsung contends the specification “fails to disclose the combination of at least two different types of interconnects ... where each type of interconnect is in

selective electrical communication with DRAM dies (or ports on those dies).” Pet., 31-32. In other words, Samsung faults Figure 3 as not including, for example, two interconnects 320a (to show the claimed “first C/A interconnect” and “first data interconnect”) and two interconnects 320b (to show the claimed “second C/A interconnect” and “second data interconnect”). This argument fails because it takes an impermissibly narrow view of the disclosure. EX2058, ¶¶94-104.

Figure 3 is “for ease of illustration and to simplify discussion,” and the specification states that “certain elements are omitted in FIG. 3.” EX1001, 10:3-5. A POSA would have understood that this figure illustrates generally how interconnects (for accessing a single port per DRAM die) are connected to the stacked dies. EX2058, ¶98. A POSA would have further understood that Figure 3 is not intended to illustrate how many different types of interconnects are included in the memory package. *Id.*

Indeed, contrary to Samsung’s contention, the specification makes it clear that the signal (conducted by Figure 3’s die interconnects) “can be a data signal, a command or address signal, a chip select signal, a supply voltage signal, or a ground voltage signal, to name a few.” EX1001, 10:48-50. Because more than one type of these signals are used to operate the DRAM dies, the specification makes clear that different types of die interconnects are included in the memory package and that each type of die interconnects can be configured as shown in Figure 3.

EX2058, ¶99. From this disclosure, a POSA would have immediately recognized that Figure 3 illustrates a single port and interconnect per DRAM die only for simplicity. *See* EX1001, 10:3-5; EX2058, ¶99. Indeed, the disclosure specifically recognizes “[e]ach of the array dies 310 may *include one or more ports* (not shown) that enable electrical communication between the circuitry of the array dies 310 and *one or more die interconnects 320*.” EX1001, 10:14-17 (emphasis added). And, as discussed above, the signal can be any of a number of signal types, including “*data signal*” or “*command or address signal*” as relevant here. EX1001, 10:48-50 (emphasis added).

Again, Samsung’s argument regarding the alleged “laundry list” of interconnects for different signals being insufficient, Pet., 27, fails for the reasons discussed in Section IV.A above.

Samsung further contends:

there is no disclosure of the unusual requirement in claims 1 and 9 that there are “first” and “second” “C/A interconnects” in selective electrical communication with ports of the DRAM dies, but both the “first set of C/A signals” and the “second set of C/A signals” are conducted on the “first C/A interconnects” (while other signals may be on the “second C/A interconnects”).

Pet., 32-33.

The relevant claim language at claim element [1.d] recites:

die interconnects including C/A interconnects and data interconnects,
the C/A interconnects including at least first C/A interconnects and
second C/A interconnects, the first C/A interconnects configured to
conduct the first set of C/A signals and the second set of C/A signals,

EX1001, 23:62-67. Samsung contends this is an “unusual requirement,” but completely ignores how memory typically operates. EX2058, ¶¶101-102; *see also* EX1001, 2:3-6 (describing typical read/write operations). Samsung takes an unreasonably narrow read of the claimed “first” and “second” “C/A interconnects” and “first set” and “second set” of “C/A signals.” The use of “first” and “second” in the claims does not mean the claimed “first” interconnects correspond to the “first” set of signals or that the “second” interconnects correspond to the “second” set of signals (i.e., there is nothing that requires the “second” signals to be conducted via the “second” interconnects). *See, e.g., The Gillette Co.*, 405 F.3d at 1373.

Rather, a POSA would have understood from the clear language of the claim that the “first” and “second” C/A signals are both conducted on the “first C/A interconnects,” and are respectively associated with read and write operations (see element [1.c.2]) for the first plurality of DRAM dies (see element [1.f]). EX2058, ¶103. This is consistent with typical memory operation, in which read and write operations occur at different times, and a DRAM die would receive C/A signals

associated with read *and* write operations (albeit at different times) in order to function as intended. *Id.* And, as Samsung correctly notes “other signals may be on the ‘second C/A interconnect,’” Pet., 33—these other signals (e.g., C/A signals associated with read and write operations for the second plurality of DRAM dies (see element [1.g])) are simply not recited in the open-ended claim 1. EX2058, ¶103.

4. The disclosure supports “‘C/A signals’ that ‘do not include any chip select signal.’”

Claim element [1.k.2] recites “wherein the one or more C/A signals do not include any chip select signal.” EX1001, 24:59-61. Samsung incorrectly contends the specification does not disclose this claim element, because “[t]he specification provides affirmative examples of using the chip select signals, not prohibitions against including any chip select signal.” Pet., 33 (citing EX1001, 15:31-40, 16:5-12); EX2058, ¶¶105-110.

As recited in claim element [1.k.1], which provides context for element [1.k.2], the “one or more C/A signals” are “received via one or more of the C/A terminals.” EX1001, 24:58-59. Samsung’s argument does not acknowledge this requirement. Instead, Samsung argues that because the ’087 patent provides examples of using chip select signals, it cannot teach that the “one or more C/A signals do not include any chip select signal.” Pet., 33-35. But the claim recites that the “one or more C/A signals” *that are “received via one or more of the C/A*

terminals” “do not include any chip select signal.” The specification describes embodiments where chip select signals are *generated by* the control die (as opposed to being *received by* the memory package at the C/A terminals). See EX1001, 9:61-64 (“In some embodiments, the control die 230 may determine the array die 210 to select based on, for example, an address signal. In such embodiments, *the control die may generate the chip select signals.*” (emphasis added)). In this embodiment, the C/A signals received via the C/A terminals (which transmit signals to the memory package) do not include any chip select signal, as required by claim 1. Instead, the C/A signals received via the C/A terminals are an address signal. EX1001, 9:61-63. The chip select signal is then generated by the control die. EX1001, 9:63-64. This chip select signal is generated internal to the memory package and thus is not included in the C/A signal “received via one or more of the C/A terminals.” EX2058, ¶¶107-108.

Additionally, the '087 claims are directed to a “DRAM package,” such as the memory package 820 on memory module 810 in Figure 8. EX1001, 21:13-14. The specification also teaches embodiments that use “data path control signals,” which are not chip-select signals. EX1001, 21:4-7. The data path control signals are generated by the register device and may be received by the DRAM package via dedicated signal lines instead of other C/A signals (which may or may not include the chip select signals). EX1001, 21:41-47, 21:63-22:5, 22:12-17. These

alternative embodiments also support the claimed feature. EX2058, ¶109.

Novartis explains that discussion of alternatives may provide support for a negative limitation. *Novartis Pharms. Corp. v. Accord Healthcare, Inc.*, 38 F.4th 1013, 1017 (Fed. Cir. 2022)); *see also Inphi*, 805 F.3d at 1356 (a disclosure does not need to explain the reason for choosing to exclude particular disclosed embodiments in a claim; it is enough that the specification includes “properly describe[ed] alternative features of the patented invention”). That is the case here.

5. The disclosure supports that “the control die does not include emulation logic” in dependent claim 6.

Claim element [6.c] recites:

wherein the control die does not include emulation logic that performs emulation causing two or more DRAM dies of the stacked DRAM dies to emulate a single DRAM die having a larger capacity than each of the two or more DRAM dies.

EX1001, 25:53-57. Samsung incorrectly argues “[t]he specification also fails to disclose a ‘control die’ that ‘does *not* include emulation logic.’” Pet., 35; EX2058, ¶¶111-114. A POSA would have known that “rank multiplication” is a type of “emulation logic.” *See, e.g.*, EX1091, ¶161 (Dr. Wolfe testifying that rank multiplication is an emulation technique); EX2058, ¶113; *see also* EX2060, 70:22-72:2 (Dr. Wolfe confirming that the ’087 specification describes “rank multiplication” and that a POSA would have understood this to be a way to

implement “emulation logic”). The specification explains that rank multiplication may be performed by the register device 812, which is outside of the DRAM package. EX1001, 22:18-21, FIG. 8. The specification also describes embodiments in which “the memory module 810 does not perform rank multiplication.” EX1001, 22:39-42; EX2058, ¶112.

C. Disclaimed claim 24 contains a clear drafting error that should be corrected via claim construction, resolving any written description or indefiniteness concerns.

Samsung contends that claim 24 (and its related dependent claims) both lacks written description support and is indefinite. Pet., 28-31. In reality, Samsung’s written description contention as to these claims is premised only on its indefiniteness arguments. *Id.* A claim that is indefinite does not break the priority chain, nor does it confer PGR-eligibility to a transition patent.¹⁴ Therefore, claim 24 does not confer PGR-eligibility to the ’087 patent.

In any event, disclaimed claim 24 contains a clear drafting error that should

¹⁴ In order to claim the benefit of an earlier filing date, the earlier filed application must disclose the invention “in the manner provided by section 112(a) (other than the requirement to disclose the best mode).” 35 U.S.C. § 120. The priority chain is *not* broken by a claim that is merely *indefinite*, as there is no requirement in 35 U.S.C. § 120 related to 112(b) (indefiniteness).

be corrected via claim construction. According to Samsung, the claimed “fifth” and “sixth,” signals are “self-conflicting,” and the “eighth” signals are “associated with two different operations.” *Id.* For example, Samsung argues:

The specification does not disclose any self-conflicting signals, like the “fifth signals,” that are associated with a *write* operation (i.e., going *up*), but sent *down* from the array die to the control die, and that contradiction also renders the claims indefinite.

Pet., 28.

Looking at the parallelism of claim elements 24.m to 24.p, it is apparent the issues identified by Samsung are the result of a clear drafting error, EX2058, ¶¶115-120, which should be judicially corrected by claim construction as shown by the edits highlighted in yellow below:

24.o.1	in response to the third set of C/A signals , a second subset of the first conduits is configured to drive the third set of C/A signals to a second subset of the first die interconnects, a second subset of the second conduits is configured to receive fifth signals associated with the <u>second third</u> set of C/A signals via a second subset of the second die interconnects and to drive the fifth signals to the interface; and
24.o.2	a second subset of the third conduits is configured to receive one or more sixth signals associated with the <u>second third</u> set of C/A signals from a second subset of the third die interconnect and drive the one or more sixth signals to the interface;

24.p.1	in response to the fourth set of C/A signals , the second subset of the first conduits is configured to drive the fourth set of C/A signals to the second subset of the first die interconnects, the second subset of the second conduits is configured to receive seventh signals associated with the fourth set of C/A signals from the interface and to drive the seventh signals to the second subset of the second die interconnects; and
24.p.2	a second subset of the fourth conduits is configured to receive one or more eighth signals associated with the <u>second fourth</u> set of C/A signals from the interface and to drive the one or more eight signals to a second subset of the fourth die interconnect;

The Federal Circuit “has repeatedly held that judicial correction of errors in patents is proper in narrow circumstances.” *See Canatex Completion Sols., Inc. v. Wellmatics, LLC*, 159 F.4th 39, 45-46 (Fed. Cir. 2025). Although, the “standard for judicial correction is a demanding one,” *id.*, that standard is met here.

First, “the error must be evident from the face of the patent, ... i.e., obvious, as determined *from the point of view of one skilled in the art.*” *Id.* (internal quotations omitted, emphasis added). Here, a POSA would have immediately recognized the drafting error present in claim 24, as identified and corrected above. EX2058, ¶¶117-118. Indeed, Samsung itself recognizes the clear error, asserting that claim 24 has “contradictory and nonsensical requirements.” Pet., 28; EX1003, ¶¶122-125 (Dr. Wolfe explaining the same); *see also* EX2060, 55:5-17 (Dr. Wolfe

acknowledging a POSA would have understood the claim as written “doesn’t make any sense”), 114:11-13 (Dr. Wolfe acknowledging “even if [the claims] lack written description we can still understand the claims”).

Second, “[c]orrection is appropriate only if (1) correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.” *Canatex*, 159 F.4th at 46 (internal quotations omitted); *see also Ultimax Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1353 (Fed. Cir. 2009) (confirming these “determinations must be made from the point of view of one skilled in the art”). Here, the specific correction is not subject to reasonable debate. It is clear that the claim was intended to have been drafted with the parallel structure, as identified and shown in corrected form above. EX2058, ¶119. And unlike *Chef America*, cited by Samsung, nothing in the specification or prosecution history here suggests otherwise. *See* Pet., 14 (citing *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004)). Issued claim 24 was added as application claim 25 on December 11, 2024. EX1002, 764-766. Application claim 27, which depends from application claim 25 and was added at the same time, confirms that the claimed “fifth signals” and “sixth signals” are associated with the “*third* set of C/A signals” and that the claimed “seventh signals” and “eighth signals” are associated with the “*fourth* set of C/A

signals.” EX1002, 767.

Third, the court in *Canatex* noted that they “have ruled that a district court may correct obvious minor typographical and clerical errors in patents ... [but] have not stated that element as a necessary requirement.” *Canatex*, 159 F.4th at 46 (internal quotations omitted). In any event, the correction here qualifies as an obvious minor clerical error, as illustrated above.

Thus, judicial correction is appropriate here. Indeed, such correction “is merely giving to [the claim] the meaning which was intended by the applicant and understood by the examiner.” *I.T.S. Rubber Co. v. Essex Rubber Co.*, 272 U.S. 429, 442 (1926). Samsung does not contend there are any written description or indefiniteness problems with claim 24 as properly construed, beyond those already discussed above with respect to claim 1. Thus, claim 24 does not confer PGR-eligibility to the '087 patent.

V. SAMSUNG PRESENTS INCONSISTENT CLAIM CONSTRUCTIONS.

This PGR should be terminated because Samsung presents inconsistent claim constructions in this PGR and the co-pending ITC investigation. Samsung insists it has not presented any claim constructions in either forum. EX3104. But the facts tell a different story.

At the ITC, the parties had to exchange terms for construction on 2/13/2026, EX2131, Attachment A, before this PGR was instituted on 2/18/2026. Samsung’s

non-infringement contentions were due after PGR institution on 3/25/2026. *Id.* To circumvent the Director’s developing policy, Samsung did not present terms for *Markman* at the ITC (pre-institution) but then attempted to shoehorn claim constructions into its subsequent non-infringement contentions (post-institution). Netlist respectfully requests this issue be presented to the Director.

A. Elements 1.k.1 and 1.k.2

Elements 1.k.1 and 1.k.2 recite:

[1.k.1] wherein the control die further includes control logic configurable to control respective states of the first and second conduits in response to one or more C/A signals received via one or more of the C/A terminals, [1.k.2] wherein the one or more C/A signals do not include any chip select signal.

Seeking to avoid infringement at the ITC, Samsung argued in its March 25 contentions (filed after institution of this PGR): “This limitation requires that the C/A signals (not including a chip select signal) select between the first and second conduit.” EX2132, 109. But seeking invalidity at the Board, Samsung argues the opposite. Specifically, during his May 22 deposition, Dr. Wolfe was asked whether this limitation requires that the C/A signals select between the first and second conduit. He answered: “No, only to control their respective state, not to select between.” EX2060, 79:16-80:3. Dr. Wolfe’s testimony is consistent with Samsung’s invalidity theory for element 1.k.2 that “data can be transmitted from

the ‘*first data terminal*’ through both ‘*first and second conduits*.’ Pet., 94. In other words, the C/A signals need not “select between” the conduits.

When Netlist raised this inconsistency with the Director, Samsung amended its ITC contentions and alleged that its non-infringement argument was based on Netlist’s construction of elements 1.k.1 and 1.k.2. *See* EX3107. But Samsung’s attempt to reframe its ITC contentions still runs afoul of the Director’s policy, which rejects Samsung’s wait-and-see approach. *Revvo Techs., Inc. v. Cerebrum Sensor Techs., Inc.*, IPR2025-00632, Paper 36 at 4 (PTAB Jan. 26, 2026) (“*Revvo II*”) (“Petitioner’s explanation here amounts to nothing more than an assertion that a petitioner should be permitted to raise different claim constructions in the two forums when there is a chance that the district court will reject that petitioner’s preferred construction. My precedential decision does not provide for conditional future outcomes, and while petitioner would no doubt like to ‘wait and see,’ we cannot and will not.”).

B. No “chip select signal” (element 1.k.2)

Samsung presented another inconsistent construction regarding the negative limitation: “wherein the one or more C/A signals *do not include any chip select signal*.” In the Petition, Samsung did not construe “chip select signal” and suggests that a stack identification (SID) signal is not a chip select signal (and thus satisfies element 1.k.2) based on its interpretation of Netlist’s position. Pet., 11-12, 94.

Subsequently, at the ITC, Samsung presented a broad construction of this negative limitation, “Chip select signals enable or select array dies for data transfer. See ’087 Patent at 16:5-12,” and argued that it does not infringe because SIDs are chip select signals (and thus satisfy the negative limitation). EX2132, 110.

Samsung is again taking the wait-and-see approach—presenting different theories based on different constructions in different forums—that the Director rejected in *Revvo II*. Dr. Wolfe confirmed as much during cross-examination:

Q Is SID a chip select signal?

A In my opinion I generally think that it is. But my understanding is that Netlist has asserted that it’s not. *So I was simply explaining here that if in fact Netlist is correct that ID signals are not chip select signals, then Keith has an analogous signal disclosed.*

EX2060, 76:10-17.

C. “unidirectional interconnect” (elements 1./ and 1.m)

Samsung advances inconsistent implicit constructions of “unidirectional interconnect.” Arguing invalidity at the PTAB, Samsung asserts that the term is broad enough to encompass unidirectional signals. Pet., 43 (arguing a POSA would implement Shaeffer’s “*signaling protocols*” in Keeth), 51 (arguing a POSA would implement Shaeffer’s “unidirectional *signal*” or “unidirectional strobe *signals*” in Keeth), 51-52 (“implementing Shaeffer’s *signaling protocols* in the memory stack of Keeth”), 97 (“a POSITA would have implemented Shaeffer’s TRS/EDC

signaling in Keeth’s die interconnects”; “Shaeffer discloses TRS/EDC *Signal* 130 is conducted via interface 118 *unidirectionally*”; “*Unidirectional signals* from memory dies to a controller, like TRS/EDC, were also well known in the art”), 99 (“a write strobe *signal*, is conducted via interface 118 unidirectionally”).

At the ITC, however, Samsung interprets “unidirectional interconnect” to not encompass unidirectional signals, alleging it does not infringe because “[t]he ‘evidence’ that Netlist cites in its claim chart merely refers to signals that are unidirectional.” EX2132, 107.

VI. THE CLAIMS ARE VALID AND NON-OBVIOUS

Samsung presents two Grounds of unpatentability alleging claims 1-28 of the ’087 patent would have been obvious based on (1) the combination of Keeth and Shaeffer and (2) the combination of Keeth, Shaeffer, and Riho2. Claims 24-28 have been disclaimed, and thus only claims 1-23 are at issue in this proceeding. Both Grounds fail; they do not teach or render obvious all the claim elements, and secondary considerations (including Samsung’s own licensing activities) confirm that the claims were non-obvious.

A. Keeth does not disclose or render obvious element 1.j.

Keeth does not disclose or render obvious element 1.j, which recites: “wherein a first conduit of the first data conduits is coupled between the first data interconnect and a first data terminal of the data terminals, and a second conduit of

the second data conduits is coupled between the second data interconnect and the first data terminal.” Dependent claim 18 and independent claims 20 and 23 recite the same/similar element. Accordingly, Samsung’s failure to prove this element is taught demonstrates that claims 1-8, 18, and 20-23 are non-obvious.

1. Element 1.j

All agree Figure 4 of the ’087 patent, annotated and reproduced below, provides support for element 1.j.¹⁵ EX1003, ¶¶133, 137 (discussing Figure 4 and describing element 1.j as “a fork-in-the-road configuration”); *see* Pet., 93-94 (same). As shown, the “first data terminal” (red) exchanges data signals with an external device, such as a memory controller. EX1001, 23:52-55 (“the DRAM package ... is further configured to receive or output data signals via the data terminals”). A control die (light blue) is “coupled between the terminals and the stacked DRAM dies,” which would be above the control die in the annotated figure. EX1001, 24:9-10. The control die includes the “first data conduit” (green) and the “second data conduit” (dark blue). EX1001, 24:10-11 (“the control die including conduits, the conduits including ... data conduits”); EX2058, ¶¶123-124.

¹⁵ Element 1.j does not require drivers 404a-b and 408a-b of Figure 4.

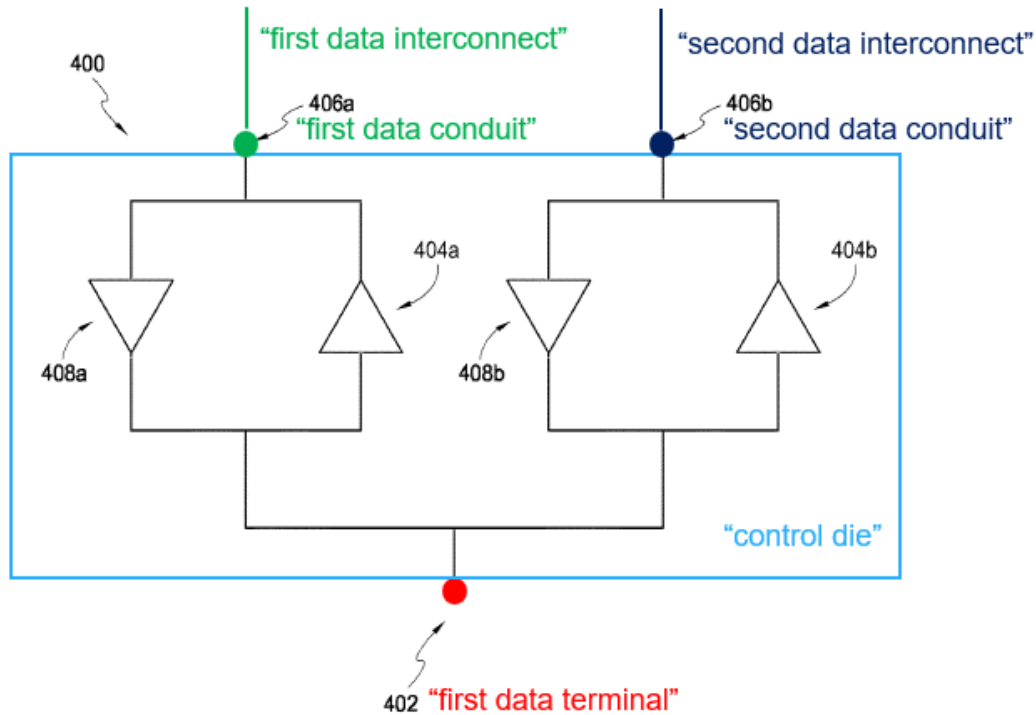


FIG. 4

EX1001, FIG. 4 (annotated).

As shown above, the “first data conduit” (green) is coupled between the “first data interconnect” (also green) and the “first data terminal” (red). Similarly, the “second data conduit” (dark blue) is coupled between the “second data interconnect” (also dark blue) and the “first data terminal” (red). EX2058, ¶124.

2. Samsung’s contentions

Samsung relies on Keeth to address element 1.j. Pet., 90-92. Before addressing Samsung’s contentions for element 1.j, it is instructive to review Samsung’s mapping of Keeth to related claim elements. Samsung maps Keeth’s interface die (e.g., 110 of Figure 1; 510 of Figure 5) to the claimed “control die.”

Pet., 75. Samsung argues Keeth's vault control circuit on the interface die (e.g., 212 of Figure 2) includes the claimed "data conduits." Pet., 77; *see also* Pet., 80. That is, Keeth does not actually describe or show data conduits; rather, Samsung alleges they are included in the vault control circuit.

Turning to element 1.j, Samsung does not assert that Keeth discloses this element. *See* Pet., 90-92. Instead, Samsung proposes modifying Keeth to couple first and second data conduits (which, again, Keeth does not describe or show) to the same input/output data terminal. Pet., 91. According to Samsung, the result would be that Keeth's "even and odd dies share I/O data pins to improve bandwidth." *Id.* Samsung alleges that Keeth's teachings in column 1 of sharing "input/output data pins" and in columns 4 and 5 of concurrently accessing multiple dice would have motivated a POSA to make the modification. *Id.*

Samsung's argument fails on multiple levels. First, Samsung's attempt to link Keeth's teachings in column 1 with those in columns 4-5 mischaracterizes Keeth. Keeth teaches that (1) the "memory partitions" of the same "vault" may share the vertical conductive paths that connect to the interface die and (2) the odd and even dice are in different vaults. Keeth never suggests that different vaults share one of the I/O pins that the interface die uses to exchange data with an external device. Second, a POSA would not have made the proposed modification because it would reduce—not improve—the bandwidth of Keeth's memory

package, which is contrary to Keeth's express teachings. EX2058, ¶¶125-127.

3. Samsung mischaracterizes Keeth.

Keeth does not suggest that any of the conductive paths that carry data between the dice stack and the interface die are coupled to the same data terminal (or I/O pin) of the interface die that is used to exchange data with an external device (e.g., memory controller). EX2058, ¶128. Samsung's statement that Keeth at 1:65-2:10 teaches "the stacked DRAM dies 'may share ... input/output data pins' on the interface die to improve bandwidth" is wrong.

Keeth teaches that "each memory die in a dice stack may be divided into partitions" that are "vertically aligned across multiple dice in the stack" to form a "vault." EX1047, 1:65-2:6. Keeth then explains, "The *partitions of a vault may share* address and command control connections (e.g., TSVs) and *input/output data pins* among other connections, and each partition may have a different chip select line to prevent data contention." EX1047, 2:6-10.

Keeth depicts this in Figure 2, which shows four dice (220-223) each having four memory partitions (e.g., 204). EX1047, 3:44-54. Figure 2 also shows four vaults (e.g., 206), each having four memory partitions (one from each dice) and a vault control circuit 212 that are vertically stacked. *Id.* The memory partitions in a vault share vertical communicative paths 208 that couple each memory partition of the vault to the vault control circuit (e.g., 212). *Id.* In Figure 2 of Keeth, any data

terminal used to exchange data with an external device (e.g., memory controller) would be located at the bottom of interface die 210. *See* EX1047, FIG. 3 (showing interface die 310 and bumps 312); EX2058, ¶130. Nowhere does Keeth suggest that two of the communicative paths 208 (in the same vault or in other vaults) are coupled to a share an I/O pin that the interface die 210 uses to exchange data with an external device. EX2058, ¶130.

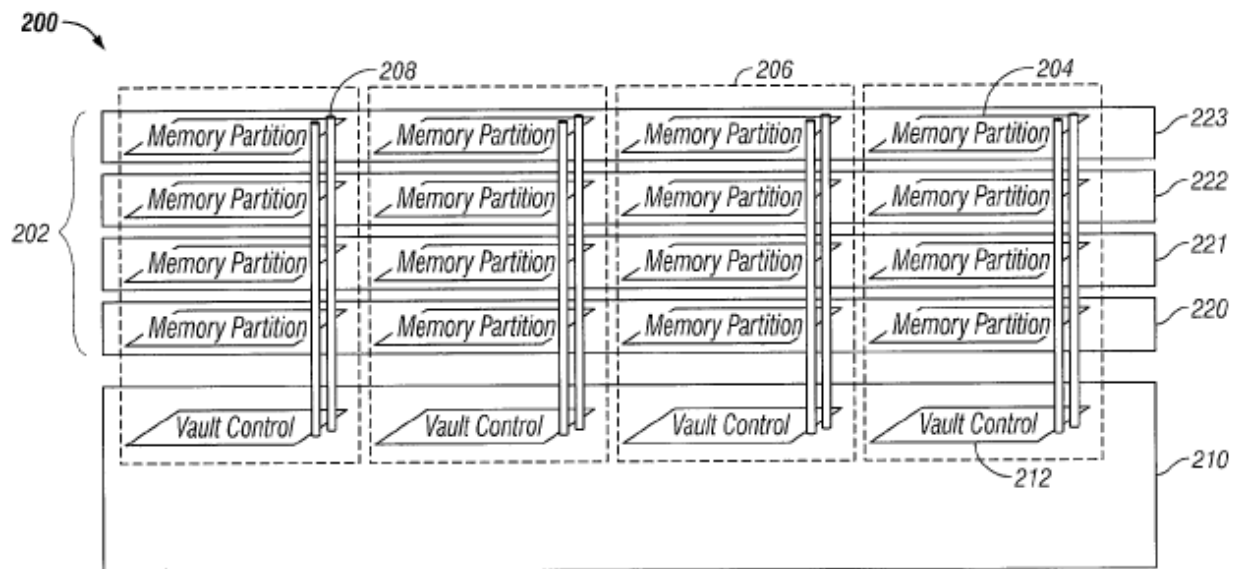


FIG. 2

EX1047, FIG. 2.

Samsung’s suggestion that Keeth’s odd and even dice would share I/O pins is also wrong and mischaracterizes Keeth’s teachings. EX2058, ¶131. In Figure 5, Keeth discloses a memory package that incorporates “partition interleaving” of a “dice stack 502 [that] includes four dice 520, 521, 522, and 523.” EX1047, 5:24-30. Keeth explains that the “[a]lternating dice in the stack 502 may be part of

separate vaults,” for example, the first and third dice are part of a first vault; the second and fourth dice are part of a second vault. EX1047, 6:11-16.

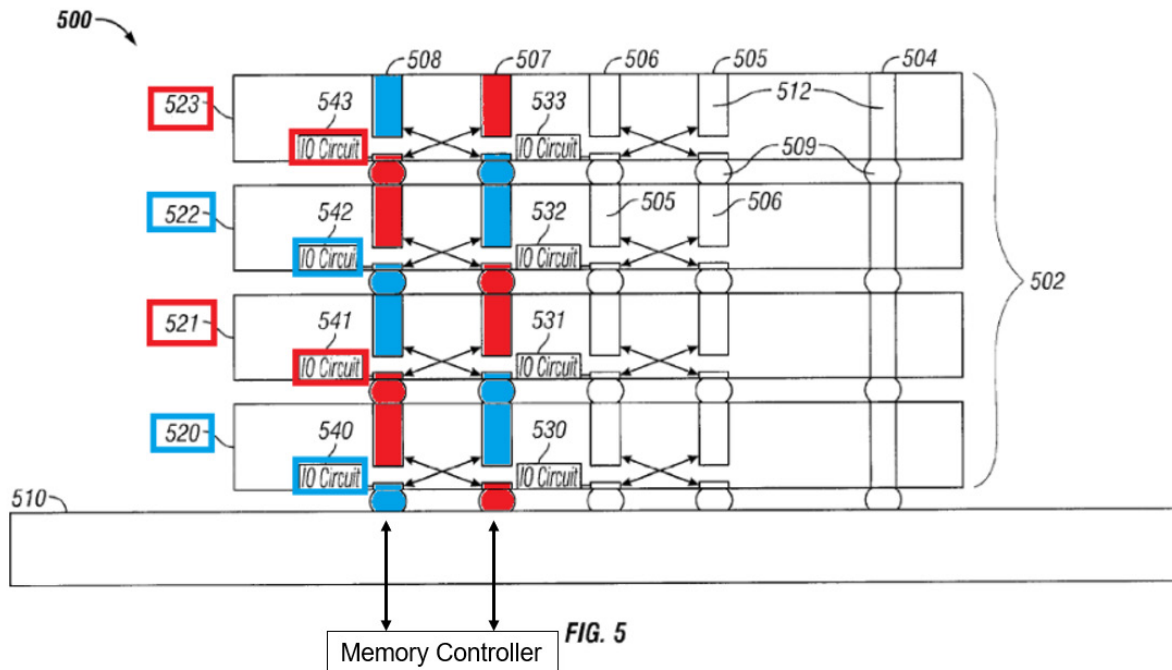
Accordingly, Keeth’s teaching (in column 1) about the memory partitions within the *same vault* sharing communicative paths in no way suggests that the even and odd dice in *different vaults* would share one of the I/O pins that the interface die uses to exchange data with an external device. EX2058, ¶132. These mischaracterizations of Keeth form the basis of Samsung’s proposed modification, which the Board should reject.

4. Modifying Keeth as proposed would reduce—not improve—the bandwidth of the memory package.

The Board should also reject Samsung’s proposed modification because it would reduce—not improve—the bandwidth of Keeth’s memory package. Indeed, such a reduction in bandwidth is contrary to Keeth’s express teachings directed to improving bandwidth. EX2058, ¶133.

The annotated version of Figure 5 below depicts Keeth’s disclosed operation. EX1047, 6:11-29. Keeth’s first and third dice 520 and 522 (odd dice, first vault) along with their respective I/O circuits 540 and 542 are shown in blue. Keeth’s second and fourth dice 521 and 523 (even dice, second vault) along with their respect I/O circuits 541 and 543 are shown in red. Keeth explains that “this construction allows the interface die 520 to concurrently access the first and second vaults.” EX1047, 6:16-19; *see also* EX1047, 5:63-67 (“increasing

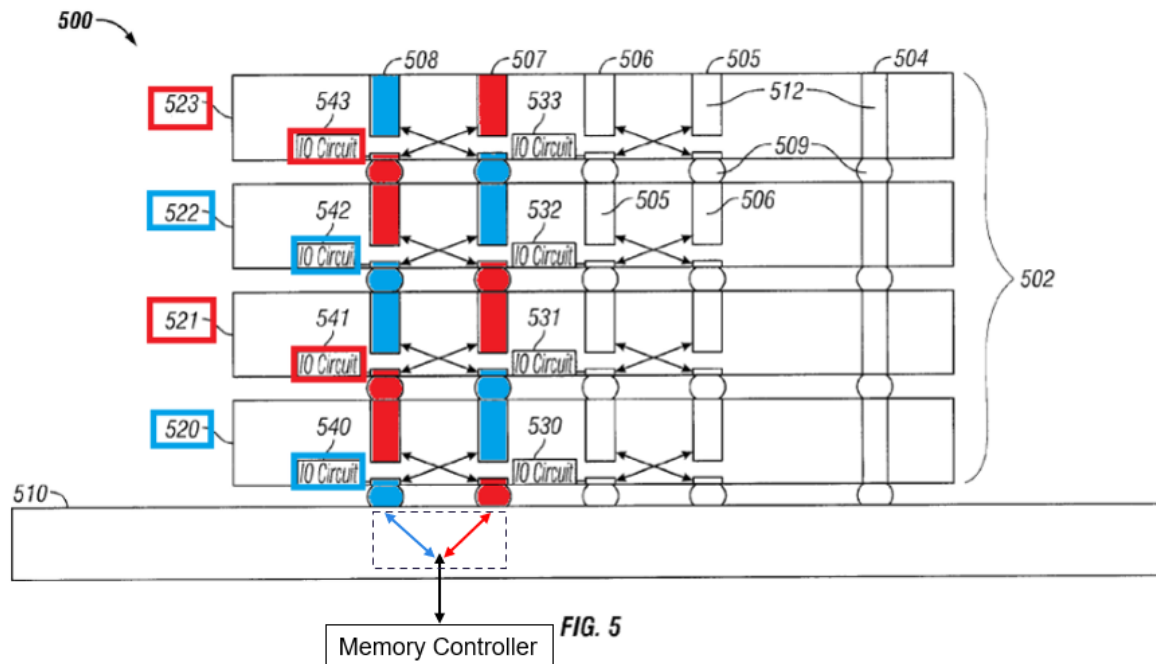
bandwidth”). For example, interface die 510 can access dice 520 in the first vault and dice 521 in the second vault concurrently, when allows interface die 520 to concurrently provide data from both vaults to an external memory controller via separate I/O pins, increasing the memory package’s bandwidth. EX2058, ¶134.



EX1047, FIG. 5 (annotated to show Keeth’s operation).

The second annotated version of Figure 5 of Keeth below shows Samsung’s proposed modification. EX2058, ¶135. As shown in the dotted black box, Samsung proposes coupling conduits of the odd and even dies (e.g., 520 and 521) to the same I/O data pin, which Samsung alleges would “improve bandwidth.” Pet., 91. That is wrong. As shown below, this arrangement permits only one of the vaults (odd or even) to use the I/O pin to exchange data with the memory controller, thus creating a bottleneck at the I/O pin. EX2058, ¶135. Indeed Dr. Wolfe admits that

the “fork-in-the-road configuration” means “only one read driver and one corresponding chip can be selected to drive read data at a time to the output terminal.” EX1003, ¶137; *see also* Pet., 94 (arguing the “‘conduits’ need to be selectively controlled to prevent data collisions through the ‘first data terminal’”).



EX1047, FIG. 5 (annotated to show Samsung’s proposed modification).

Samsung’s proposed modification reduces the bandwidth of Keeth’s memory package. Because this result is contrary to Keeth’s express teachings, a POSA would not have pursued this modification. EX2058, ¶136.

Samsung suggests another modification to Keeth: adding “parallel-to-serial and serial-to-parallel converters” to implement “down rate-conversion.” Pet., 92. But Samsung provides no explanation how this additional modification would have been implemented in Keeth. And regardless, because this additional modification

would result in the same reduction in bandwidth that is contrary to Keeth's goals, a POSA would not have made this additional modification. EX2058, ¶137.

B. The Keeth-Shaeffer combination does not disclose or render obvious elements 1.k.1 and 1.k.2.

The combination of Keeth and Shaeffer does not disclose or render obvious elements 1.k.1 and 1.k.2, which recite:

[1.k.1] wherein the control die further includes control logic configurable to control respective states of the first and second conduits in response to one or more C/A signals received via one or more of the C/A terminals, [1.k.2] wherein the one or more C/A signals do not include any chip select signal.

Note that "the first and second conduits" of element 1.k.1 are the conduits that were introduced in element 1.j above. The "one or more C/A signals received via one or more of the C/A terminals" are received from a device that is external to the DRAM package, such as a memory controller. EX1001, 23:52-55 ("the DRAM package is configured to receive C/A signals via the C/A terminals"); EX2060, 60:7-61:15; EX2058, ¶¶138-139.

Dependent claim 18 and independent claims 20 and 23 recite the same element. Accordingly, Samsung's failure to prove this element is taught demonstrates that claims 1-8, 18, and 20-23 are non-obvious.

The combination of Keeth and Shaeffer fails to disclose or renders obvious "one or more C/A signals" that "do not include any chip select signal." Samsung

first argues (i) that Netlist contends that a stack identification (SID) signal is not a “chip select signal” and (ii) because Keeth’s ID information is allegedly an SID, Keeth’s ID information satisfies element 1.k.2. Pet., 94 (“Netlist contends limitation [1.k.2] is satisfied by stack ID (SID) information, EX1089, 70-71, which Keeth also teaches, EX1047, 3:5-8, 3:21-38 (‘ID information ... for control circuit ... to reference each die’).”).

This argument fails for two reasons. First, Samsung takes the opposite position in the parallel ITC investigation. EX2132, 110. There, Samsung presents a claim construction of “chip select signal” (which it did not present in this PGR): “Chip select signals enable or select array dies for data transfer. *See* ’087 Patent at 16:5-12.” *Id.* Samsung then asserts that “[i]n the context of HBM, SID signals are chip select signals, because they enable TSV drivers to drive data to particular, selected DRAM dies.” *Id.* Again, the Director rejected Samsung’s wait-and-see approach in *Revvo II*. *See* Section V.A.

Second, even if Keeth’s ID information is an SID, Keeth does not teach that the ID information is received in “one or more” of the claimed “C/A signals” that are received from a device that is external to the memory package. Keeth’s only discussion of the ID information is in 3:5-8 and 3:21-38. *See* Pet., 94 (citing same). In 3:5-8, Keeth merely discloses that the conductive paths of the dice stack may communicate the ID information: “The conductive paths 106 may communicate

(e.g., transfer) information such as data, address, control, ID information, among other information.” EX1047, 3:5-8. And in 3:21-38, Keeth explains that “control circuit 130 of interface die 110” may (i) “be configured to assign ID information during initialization of the stack 102” and (ii) “operate to retain the assigned ID information after the initialization of the stack 102, such as in order for control circuit 130 to reference each die 120 through 123 by the ID information.” EX1047, 3:26-33. But Keeth does not teach or suggest that the ID information is received via one more C/A terminals and used to control respective states of first and second data conduits. EX2058, ¶¶141-142.

As Keeth discloses, the control circuit 130 that assigns and retains the ID information is part of the interface die 110, as shown in annotated Figure 1 below. EX1047, 3:27. Keeth does not suggest that a C/A terminal on the interface die 110 receives the ID information. EX2058, ¶143.

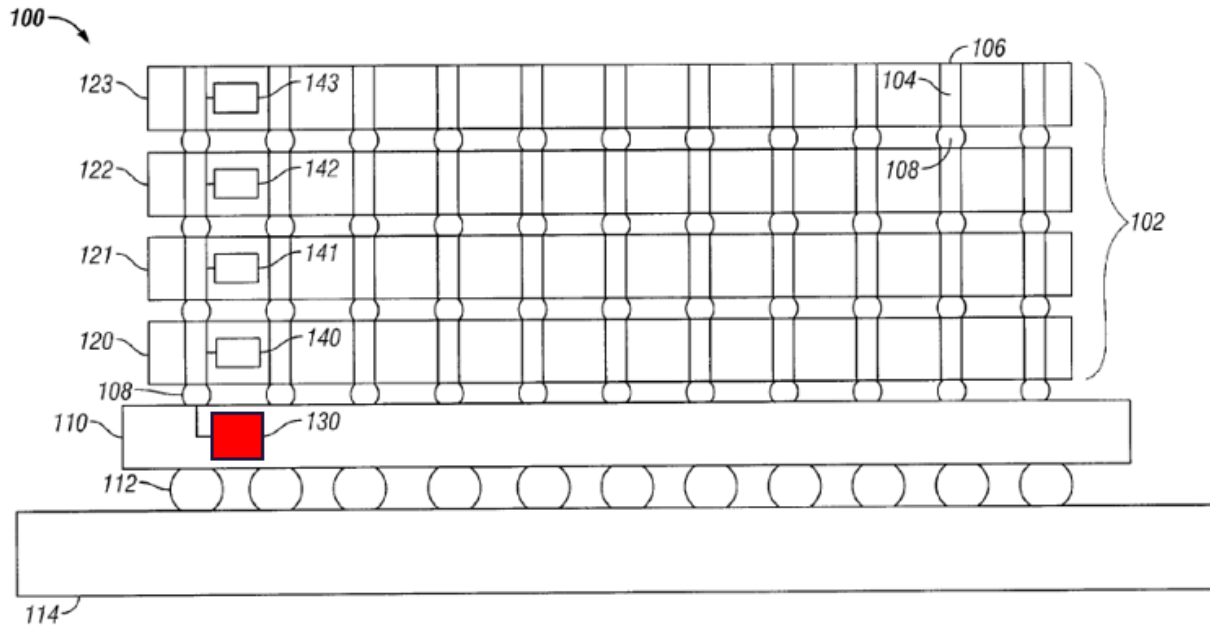


FIG. 1

EX1047, FIG. 1 (annotated).

Taking a different tack, Samsung next argues that implementing Shaeffer’s “timing preamble” or “TRS signal burst” in Keeth’s memory package satisfies element 1.k.2. Pet., 94. But neither describes a C/A signal that DRAM package receives via a C/A terminal from an external device. EX2058, ¶144; *see* EX2060, 60:7-61:15 (testifying that the C/A signal comes from “[s]omething outside of the claim structure” like a “processor” or “memory controller”).

Shaeffer uses “the terms ‘timing reference signal (TRS)’, ‘calibration preamble’ and ‘preamble’ ... interchangeably.” EX1048, 3:9-11. And Shaeffer mentions “TRS signal burst” only once to refer to a TRS signal having a certain burst length. EX1048, 10:7-12; EX2058, ¶145. Shaeffer teaches that the preamble (or TRS) is transmitted from the memory ranks to the memory controller. *See, e.g.,*

EX1048, 2:64-3:1 (the “TRS ... is conveyed from the memory device, to the memory controller” via the same “signaling resource” as the EDC), 4:23-26 (“transmitting a timing reference signal (TRS) from the rank to the memory controller”), 5:60-67, FIG. 1A (showing EDC signal transmitted from memory ranks to memory controller), FIG. 3 (showing preamble sent from memory rank to memory controller ahead of read data).

Samsung alleges that one of Shaeffer’s memory ranks is akin to one of Keeth’s dice, which Netlist does not agree is correct. *See* Pet., 69. But applying Samsung’s theory, Shaeffer’s preamble (or TRS) would be transmitted from one of Keeth’s dice to the interface dice and then to an external device (e.g., memory controller). EX2058, ¶146. Indeed, that is exactly what Samsung proposes to address the claimed “first unidirectional interconnects.” Pet., 95-98 (alleging a POSA would implement Shaeffer’s TRS in Keeth’s interleaved interconnects to send the TRS from the DRAM dies to the control die). This does not satisfy the claim elements, which require the C/A signal to be received by the DRAM package from “[s]omething outside of the claim structure.” EX2060, 60:7-61:15.

Next, Samsung and Dr. Wolfe present a cursory and unsupported theory that Keeth at 2:6-10 suggests C/A signals for write operations that do not include any chip select signal. But here Keeth teaches only that “each partition [of a vault] may have a different chip select *line* to prevent data contention.” EX1047, 2:6-10

(emphasis added). This teaching does not even mention C/A signals, let alone a C/A signal that does not include a chip select signal, and thus Samsung's argument fails. EX2058, ¶¶147-148. Indeed, Samsung's theory is pure hindsight: the '087 patent teaches that the control die may determine which DRAM die to select based on an address signal, and then the control die may generate chip select signals. EX1001, 9:61-64. Samsung plainly used this teaching as a roadmap for its unsupported theory, which the Board should reject.

Finally, element 1.k.1 requires that the “control logic configurable to control respective states of the first and second conduits in response to one or more C/A signals received via one or more of the C/A terminals....” Samsung has not shown that any of the signals that they rely on (e.g., Keeth's ID information, Shaeffer's preamble) are used by Keeth's vault control circuit to control the state of two data conduits (which again Keeth does not show) that are coupled to a data terminal. EX2058, ¶149.

C. The Keeth-Shaeffer combination does not disclose or render obvious unidirectional interconnects (elements 1./and 1.m).

The Keeth-Shaeffer combination fails to disclose or render obvious the “unidirectional interconnects” recited in the independent claims. Samsung's failure to prove this element demonstrates that claims 1-23 are non-obvious.

Element 1.d.1 introduces “die interconnects” and element 1.d.3 requires that “each of *the* die interconnects includ[es] one or more through silicon vias (TSVs).”

EX1001, 23:62-63, 24:3-8 (emphasis added); *see* Pet., xvi (claim listing). Elements 1.*l* and 1.*m* further require that “*the* die interconnects” of elements 1.d.1 and 1.d.3 include first and second “unidirectional interconnects,” respectively:

[1.*l*] “wherein *the* die interconnects further include *first unidirectional interconnects* configured to conduct signals from one or more DRAM dies of the stacked DRAM dies to the control die and not configured to conduct any signal from the control die to any of the stacked DRAM dies”

[1.*m*] “wherein *the* die interconnects further include *second unidirectional interconnects* configured to conduct signals from the control die to one or more DRAM dies of the stacked DRAM dies and not configured conduct any signal from any of the stacked DRAM dies to the control die”

1. Samsung’s obviousness theory relies on Keeth’s “interleaving interconnects.”

Samsung’s obviousness theory proposes modifying Keeth’s “interleaving interconnects” to be unidirectional. Pet., 43, 53, 95-100; EX1003, ¶¶176, 194, 248. Specifically, it alleges “a POSITA would have been motivated to look for advantageous signaling protocols—such as those in Shaeffer—that can be used in Keeth’s memory vaults and *interleaving* connections.” Pet., 43 (emphasis added); EX1003, ¶176. Samsung then proposes that implementing specific allegedly unidirectional signals or protocols disclosed by Shaeffer in Keeth’s interleaving interconnects satisfies the “unidirectional interconnects” elements. Pet., 97

(referring to analysis at “pp.38-52”), 99 (same). Indeed, in suggesting a further modification, Samsung explains that the “conductive paths in the stack of the Keeth-Shaeffer combination” are the “*interleaving* conductive paths.” Pet., 53; EX1003, ¶194.

Dr. Wolfe confirmed that Samsung’s theory for the “unidirectional interconnects” requires modifying Keeth’s interleaving interconnects. Addressing the claimed “first unidirectional interconnects,” he opined: “As discussed above, it would have been obvious to a Skilled Artisan *to implement Shaeffer’s signaling protocol*, including its TRS/EDC signaling, *in Keeth’s memory stack using its interleaving die interconnects* between the interface die and the memory dice, e.g., in order to achieve independent control and increase bandwidth.” EX1003, ¶248.

Samsung’s arguments regarding element 1.d.3 further demonstrate that its obviousness theory relies on modifying Keeth’s interleaving interconnects. Pet., 73-74. Element 1.d.3 requires that “each of the die interconnects” includes one or more TSVs. EX1001, 24:3-8. Samsung alleges that the interleaving interconnects shown in Figures 5-7 of Keeth include the required TSVs. Pet., 73-74. Dr. Wolfe did not address element 1.d.3. *See* EX2060, 27:3-9.

Accordingly, Samsung’s arguments that the Keeth-Shaeffer combination teaches the “unidirectional interconnects” elements relies on modifying Keeth’s interleaving interconnects. But Samsung overlooks that Keeth expressly discloses

that its interleaving interconnects are *bidirectional*.

2. Keeth's interleaving interconnects are bidirectional and a POSA would not have modified them to be unidirectional.

Keeth's interleaving interconnects are bidirectional. Keeth discloses interleaving interconnects in the embodiments shown in Figures 5 and 7. EX1047, 5:24-38, 6:63-7:36, FIGS. 5 (505-508), 7 (705-708). Figure 5 and 7 use double-headed arrows to show that the interleaving interconnects are bidirectional. *Id.* Keeth explains, "The arrows illustrate communicative paths crossing over at each die 520 through 523 that may be implemented using conventional metal and via layers available within the DRAM." EX1047, 5:54-57. And Keeth's interleaving interconnects are connected to input/output (I/O) circuits (e.g., 540-543 of Figure 5) for *bidirectional communication*. EX1047, 5:39-62, 7:4-20; *see also* EX1047, 3:21-26 (teaching that non-interleaving interconnects shown in Figure 1 are used to communicate "to and from" dice 120-123, and thus are bidirectional). EX2058, ¶¶155-156.

It is well settled that patent drawings can be relied on for what they clearly show. *See In re Mraz*, 455 F.2d 1069, 1072 (CCPA 1972) ("Patent drawings are not working drawings. However, we did not mean that things patent drawings show clearly are to be disregarded." (citation omitted) (emphasis omitted)); *Krippelz v. Ford Motor Co.*, 667 F.3d 1261, 1269 (Fed. Cir. 2012) ("There is no question that a person of ordinary skill, reviewing these figures, would understand

them to show mounting the lamp adjacent to the side window.”). Figures 5 and 7 of Keeth clearly show the interleaving interconnects are bidirectional, which Keeth’s textual description (e.g., discussing the I/O circuitry connected to the interconnects) supports and confirms. EX2058, ¶157.

Samsung agrees. It annotated Figure 5 of Keeth, reproduced below, to show a first conductive path 507 in red and a second conductive path 508 in blue. Pet., 67. As shown by the double-headed arrows in Figure 5 of Keeth and confirmed by Samsung’s own annotations in red and blue, Keeth’s interleaving conductive paths are expressly depicted as bi-directional. EX1047, FIG. 5; Pet., 67.

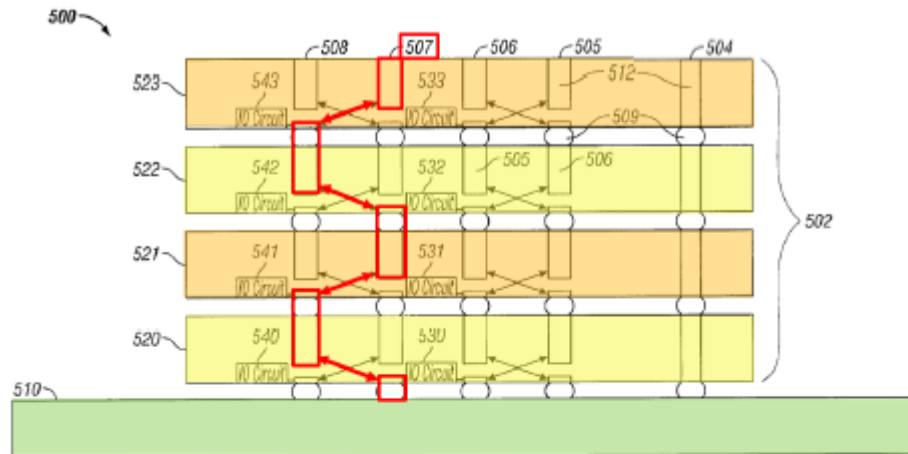


FIG. 5

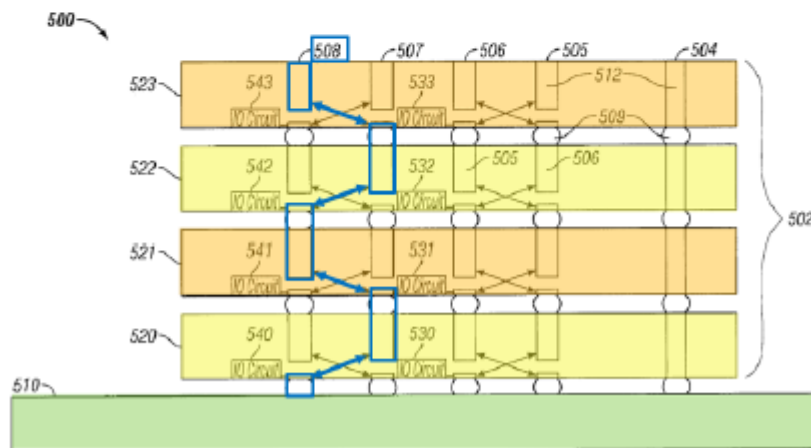


FIG. 5

Pet., 67 (annotating Figure 5 of Keeth, EX1047).

Samsung even confirmed in its pre-institution briefing that patent drawings often convey and should be relied on for teaching “simple concept[s].” Paper 11, 14. There, it argued the Office erred during examination by failing to consider Shaeffer because “a unidirectional interconnect is another example of a simple concept easier to find in a figure (e.g., an arrow pointing in one direction) than with keywords.” *Id.* The same is true of Keeth’s arrows pointing in two directions.

Turning to the “unidirectional interconnects” recited in elements 1.*l* and 1.*m*, Samsung posits that it would have been obvious to implement Shaeffer’s interface for transmitting certain signals in Keeth’s die interconnects. Pet., 95-100. Namely, for element 1.*l*, Samsung alleges that “a POSITA would have implemented Shaeffer’s TRS/EDC signaling in Keeth’s die interconnects.” Pet., 97. And for element 1.*m*, Samsung alleges that a POSITA would have implemented Shaeffer’s Data Clock 122 signaling in Keeth’s die interconnects. Pet., 99-100.

Samsung’s arguments thus fail because they fail to account for the fact that Keeth’s interleaving interconnects are bidirectional. Additionally, a POSA would not have made Samsung’s modification because it is contrary to Keeth’s express disclosure. Finally, a POSA would not reasonably expect success in making the modification.

a. Keeth teaches away or at least discourages the proposed combination.

Keeth’s express disclosures, including that the interleaving interconnects are bidirectional, teach away or at least would have discouraged a POSA from Samsung’s proposed modification. *See Arctic Cat v. Bombardier Recreational Products*, 876 F.3d 1350, 1363 (Fed. Cir. 2017) (even where “evidence may not rise to the level of teaching away,” it may suggest “reasons that a skilled artisan would be discouraged from pursuing such a combination.”).

Keeth expresses a desire to reduce die size while maintaining or improving

bandwidth. EX1047, 2:11-33. Keeth explains that concurrent communication with multiple partitions “requires a greater number of connections and dedicated circuitry at each die and at corresponding control circuits of the interface die.” EX1047, 2:20-23. Keeth’s solution of bidirectional, interleaving interconnects enables the desired concurrent communication while limiting the number of interconnects and corresponding circuitry, thus reducing die size. EX2047, 2:41-46 (“In many embodiments, interleaving connections (e.g., TSVs) permits a reduction in die size. Alternating connecting conductive paths to I/O logic circuitry along partitions of a vault can reduce dedicated circuitry and die space required for additional circuitry on the die.”), 4:13-16 (“By interleaving the connections, a vault control circuit may concurrently communicate with (e.g., access and send data to) multiple partitions in the vault and thereby improve bandwidth.”). EX2058, ¶162.

A POSA would have understood that replacing one of Keeth’s bidirectional interconnects would require two unidirectional interconnects (one for each direction) in order maintain bidirectional communication. EX2058, ¶163. This would increase the number of required interconnects and accompanying control circuitry and thus increase die size. *Id.* Keeth’s teachings of using bidirectional interconnects and reducing die size is contrary to and would have led a POSA away from Samsung’s proposal to modify Keeth’s bidirectional interleaving interconnects into unidirectional interconnects. *Id.* Notably, neither Samsung nor

Dr. Wolfe provides any explanation why a POSA would have modified Keeth's bi-directional die interconnects to be unidirectional. *See* Pet., 95-100; EX1003, ¶¶245-254.

Keeth also discloses transmitting unidirectional signals using the bidirectional interconnects. EX1047, 6:4-10; EX2058, ¶164. So even if a POSA modified Keeth to implement Shaeffer's unidirectional signals (e.g., the preamble or a strobe), which Netlist does not concede, there is no evidence that a POSA would have sent those signals on unidirectional interconnects. Rather, a POSA would have understood they would be sent on Keeth's bidirectional interconnects. EX2058, ¶164.

b. No reasonable expectation of success.

“[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’” *Arctic Cat*, 876 F.3d at 1360-61. Samsung fails to prove the requisite reasonable expectation of success to modify Keeth's bidirectional interconnects. It provides only a single, cursory sentence to address this requirement: “Lastly, as evidenced by these prior art references, including industry standards, implementing Shaeffer's signaling protocols in the memory stack of Keeth was well within the level of skill at the time and a POSITA would have a reasonable expectation of success in making the combination.” Pet., 51-52.

Samsung’s cursory allegation is insufficient to satisfy its burden, particularly considering Keeth’s express teachings about reducing die size while maintaining or improving bandwidth. EX1047, 2:11-33; EX2058, ¶¶165-166.

D. Secondary considerations confirm the claims are non-obvious.

“[E]vidence of secondary considerations may often be the most probative and cogent evidence in the record.” *Apple Inc. v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034, 1052-53 (Fed. Cir. 2016) (en banc) (quoting *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-59 (Fed. Cir. 1983)). Evidence of secondary considerations “must be considered in every case where present,” *Apple*, 839 F.3d at 1048, and may be “crucial in avoiding the trap of hindsight ...,” *Leo Pharm. Prods., Ltd. v. Rea.*, 726 F.3d 1346, 1358 (Fed. Cir. 2013).

Licensing is an important secondary consideration weighing on obviousness. *Ancora Techs., Inc. v. Roku, Inc.*, 140 F.4th 1351, 1360 (Fed. Cir. 2025). “Actual licenses to the patented technology are highly probative ... because such actual licenses most clearly reflect the economic value of the patented technology in the marketplace.” *Ancora*, 140 F.4th at 1362. Here, the two most dominant players in the HBM market and the broader DRAM market—Samsung and SK hynix—took a license to the ’087 patent family (Samsung) or the ’087 patent itself (SK hynix). EX2073, 2-3; EX2064, 2-3. Samsung fails to address these license agreements that it indisputably knew about before its Petition. *See generally* Pet. These licensing

activities demonstrate the substantial value of '087 patented technology.

1. Samsung's license of Netlist's patent portfolio proves the claims are valid and non-obvious.

a. Licensing activity between Netlist and Samsung

On November 12, 2015, Netlist and Samsung entered into a Joint Development and License Agreement ("JDLA") under which Netlist granted Samsung a license to its intellectual property, including patents (e.g., U.S. Patent No. 8,787,060 ("'060 patent"), the earliest non-provisional in the '087 family), continuations, and pending applications in the '087 family. EX2001, 1-2, 8. The JDLA enabled Samsung to use Netlist's technology to develop DRAM memory products that are critical to current high-performance computing and AI applications, such as DDR5 memory and high bandwidth memory (HBM).

Netlist and Samsung concurrently entered into an agreement for convertible note financing ("Purchase Agreement"), EX2001, 1, executed by Samsung's "venture investment arm": Samsung Venture Investment Corporation (SVIC). EX2005; EX2022, 2. The Purchase Agreement included sub-agreements: (1) a Stock Purchase Warrant; (2) a Senior Secured Convertible Promissory Note ("Promissory Note"); (3) a Security Agreement; and (4) an "Intellectual Property Security Agreement." EX2002; EX2003; EX2004; EX2006, 5-16.

Under the JDLA and these ancillary agreements, Samsung provided significant value to Netlist: (1) a \$15 million loan collateralized by Netlist's IP

portfolio, (2) \$8 million for engineering fees, and (3) an agreement to supply DRAM and other memory to Netlist (“supply agreement”). EX2003, 0001; EX2004, 2; EX2006, 0005, 0015-16. The Intellectual Property Security Agreement granted Samsung a security interest in Netlist’s patents and patent applications, including “divisions, continuations,” and “continuations-in-part.” EX2006, 0005; EX2004. The 78 individually identified assets spanned only 20 patent families and included two parents of the ’087 patent: the ’060 patent and U.S. Patent Application No. 14/337,168 (issued as the ’160 patent). EX2006, 0015-16; *see also* EX2031, ¶43 (Samsung alleging that it “hold[s] a paid-up, worldwide, non-exclusive license to Netlist’s patents, including the ’087 patent.”); EX2032, ¶56 (same). The agreement required that Netlist “[p]rotect, defend, and maintain the validity and enforceability” of the assets. EX2004, 8. Thus, Samsung recognized the importance and value of Netlist’s patents (and relied on their validity) by requiring them as loan collateral.

Samsung also agreed to pay Netlist \$8 million in non-refundable, non-recurring engineering (NRE) fees, and to “supply NAND and DRAM products to Netlist on Netlist’s request at a competitive price.” EX2001, 5-6. Samsung’s agreement to supply Netlist with these products represented immense value given supply uncertainty expected in the market. EX2061, ¶¶17-19, 24-44.

The technology partnership provided Samsung a license to and security

interest in Netlist’s IP portfolio, and provided significant value to Netlist for those rights.

b. Samsung’s licensing activities evidence that the challenged claims were not obvious.

Typically, “evidence of secondary considerations must have a ‘nexus’ to the claims.” *Ancora*, 140 F.4th at 1361 (quoting *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019)). But “[u]nlike products, which may incorporate numerous features beyond those claimed or described in a patent and therefore may require careful parsing to establish a nexus, *actual licenses to the subject patent do not demand the same, as they are, by their nature, directly tied to the patented technology.*” *Id.* at 1362 (emphasis added). That is because “actual licenses most clearly reflect the economic value of the patented technology in the marketplace.” *Ancora*, 140 F.4th at 1362 (quoting *LaserDynamics*, 694 F.3d at 79).

In *Ancora*, the Federal Circuit considered licenses taken by other parties to the subject patent as part of secondary indicia of non-obviousness. *Ancora*, 140 F.4th at 1362-64. The court instructed that “our case law does not require a parsing of specific claims for licenses.” *Id.* at 1363. Moreover, the court explained, a license to the patent “necessarily conveys a right to all of the challenged claims.” *Id.* “That other patents may have also been part of the license,” the court further noted, “does not detract from the nexus inquiry.” *Id.* at 1364. Therefore, the court found that the “evidence supports a nexus finding,” and that substantial weight

should be accorded to those licenses. *Id.* at 1363. The same principles apply to Samsung’s license to Netlist’s patent portfolio and strongly support the patentability of the challenged claims.

i. Samsung’s license to the ’087 patent’s technology should be accorded substantial weight.

Samsung licensed the ’060 patent as part of the JDLA, the earliest patent to issue in the ’087 patent family and disclosing the same technology. EX2001, 1-3, 8. Samsung further recognized the value of that technology, taking a license to all patents, “including originals or divisions, continuations, [and] continuations-in-part,” “having an effective first filing date on or prior to” November 12, 2020. *Id.* at 1-3. Under those terms, Samsung obtained a license to all ’087 patent family members while the agreement was valid. *Id.*; EX2031, ¶43; EX2032, ¶56.

Samsung’s voluntary participation in the JDLA further supports that substantial weight should be accorded to Samsung’s licensing activities. *See Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (“[L]icenses with companies under no apparent threat of litigation” more likely “reflect the value of the claimed invention”); *Fox Factory Inc. v. SRAM LLC*, IPR2017-00472, Paper 64 at 45). Samsung entered into the JDLA [REDACTED]

[REDACTED], which Samsung believed was [REDACTED] EX2080, 1 [REDACTED]

[REDACTED]

[REDACTED]. And [REDACTED]

[REDACTED]

[REDACTED]. EX2081, 1 [REDACTED].

Samsung’s recognition of the ’087 patent’s technology thus supports the patentability of the challenged claims. *Ancora*, 140 F.4th at 1362-64; *see also id.* at 1363 (recognizing “that which is disclosed could be the subject of a separate patent, such that a licensee might consider it prudent to take a license under both patents,” supports a finding of nexus); *Cirrus Logic, Inc. v. Greenthread, LLC*, IPR2024-00016, Paper 110 at 39-40 (PTAB Nov. 7, 2025) (finding nexus between a license to the patent application leading to the subject patent and the challenged claims); *Stratoflex*, 713 F.2d at 1539. Capitalizing on the ’087 patent’s technology, Samsung is now one of the top producers of HBM. EX2064, 1-2, EX2073, 3; *Stratoflex*, 713 F.2d at 1539 (“Recognition and acceptance of the patent by competitors who take licenses under it to avail themselves of the merits of the invention is evidence of nonobviousness.”).

ii. The value of the license agreement is strong secondary indicia of non-obviousness.

Samsung’s commitments to Netlist in return for patent licenses emphasize “the economic value of the patented technology in the marketplace.” *Ancora*, 140 F.4th at 1362. Those commitments included an agreement to “supply NAND and

DRAM products to Netlist on Netlist's request at a competitive price" during the term of the JDLA, \$8 million in non-recurring engineering (NRE) fees, and a collateralized loan in the amount of \$15 million. EX2001, 5-6; EX2002, 1; EX2004, 1. Samsung agreed that the collateral would include a security interest in and to all of Netlist's "patents, patent applications," and well as "divisions, continuations, ... and continuations-in-part of the same"—including those in the '087 patent family. EX2006, 0005, 0012-0016; EX2004, 1.

As Netlist's expert Mr. Kennedy testifies, Samsung's supply agreement provided value substantially above the monetary payments made to Netlist. EX2061, ¶¶24-44. The supply agreement provided Netlist steady supply of NAND and DRAM products at competitive pricing, even in times of supply uncertainty. EX2061, ¶¶24-26. As Netlist's employees noted in the year after signing the JDLA, "we continue to benefit from the unique access we have [] to certain Samsung products in the enterprise space," including "high-density DRAM modules," which allowed Netlist to reach "customers not previously accessible." EX2061, ¶26 (citing EX2076, 6; EX2077, 5-6).

From the first quarter of 2016 to the second quarter of 2017, Netlist's sales associated with purchase of Samsung products totaled approximately [REDACTED]. Netlist's [REDACTED]. [REDACTED]. EX2061, ¶¶27-28.

In 2017, Samsung breached its supply agreement. EX2009, 1; EX2078, 15. Had Samsung continued to honor its supply agreement, however, Netlist's profits over the next five years (through 2022) resulting from that agreement would have totaled approximately [REDACTED]. EX2061, ¶¶29-41. And expected profits through 2027 would have totaled almost [REDACTED]. *Id.*

These benefits conferred to Netlist came at substantial cost to Samsung. EX2061, ¶¶42-43. The supply agreement “unambiguously create[d] a *mandatory obligation* on Samsung to supply certain types of products to Netlist *on request*,” and “to fulfill Netlist’s requests for NAND and DRAM products *at a competitive price*”—regardless of the market demand or supply. EX2078, 7-8, 11 (emphasis added). Thus, Samsung was obligated to provide products to Netlist at a competitive price even in times of low supply or high demand, forgoing price increases and profit that it would have otherwise been able to achieve in the market. EX2061, ¶¶42-43.

Accordingly, the value conferred by Samsung to Netlist for its license in Netlist’s IP, including the ’087 patent family, amounted to at least \$23 million in monetary payments and [REDACTED] more in value resulting from Samsung’s supply agreement. As in *Ancora*, these benefits provided to Netlist in exchange for patent licenses demonstrate the value placed on Netlist’s patented technology and evidence the high “economic value of the patented technology in the marketplace.”

Ancora, 140 F.4th at 1362 (quoting *LaserDynamics*, 694 F.3d at 79).

2. SK hynix’s license of the ’087 patent supports the patentability of the challenged claims.

a. Background of licensing activity between Netlist and SK hynix

SK hynix’s license to Netlist’s patents further supports a non-obviousness finding. On April 5, 2021, Netlist and SK hynix entered into a licensing agreement under which Netlist granted SK hynix a license to its patent portfolio, including the ’087 patent. EX2063, 1-3, 5-6; EX2113, 2. Specifically, Netlist granted a term license to “any and all valid Patents owned or controlled by Netlist or any of its Subsidiaries at any time during the Term License Period.” EX2063, 1-2; EX2113, 2. Those licensed patents included the parents of the ’087 patent as well as the ’087 patent itself, which issued during the Term License Period. EX2063, 1-2; EX2113, 2; EX1001, Cover (45). In return for a license to the technology in the ’087 patent, among other patents in Netlist’s portfolio, SK hynix agreed to pay Netlist \$40,000,000—a number representing the high value SK hynix placed on Netlist’s patented technology. EX2063, 2.

SK hynix—like Samsung—also entered into a supply agreement in which it agreed to “supply, or cause its Subsidiaries to supply, OEM-grade ... DRAM and NAND wafers, components, and finished products, as well as associated technical support, to Netlist.” EX2063, 2; EX2113, 2. The supply agreement “entitle[d]

Netlist to purchase up to \$600,000,000 of SK hynix memory products during the term” of the agreement (five years). EX2113, 2. After announcement of this supply agreement, analysts commented that they saw “considerable value to the supply agreement to [Netlist], both supporting its current/future products for years,” and expected “re-sales revenues to ramp up over the next few quarters and boost existing re-sale revenue” due to the supply agreement. EX2061, ¶¶45-49 (citing EX2116, 1; EX2117, 1).

The value placed by SK hynix on licensing the '087 patent technology is further confirmed by SK hynix's success. SK hynix is “the world's leading supplier of high-bandwidth memory, or HBM, used in AI data centers.” EX2139, 3; *see also* EX2064, 1-3 (showing SK hynix as one of the top five HBM companies). In the first quarter of FY 2025 alone, SK hynix reported revenue of \$9.1 billion in the United States, with much of that revenue attributable to HBM and other DRAM-based memory used for AI applications. EX2015, 28; EX2140, 1 (SK hynix's “US sales accounted for over 70 percent of its total revenue in the first quarter [of 2025] on rising *demand for premium high bandwidth memory chips* ...”) (emphasis added). That number more than doubled in the next quarter of FY 2025, “boosted by *surging demand for AI-critical high-bandwidth memory chips*.” EX2141, 1 (emphasis added). SK hynix further reported record earnings in the first quarter of 2026, again attributing those earnings to “surging demand for HBM”

fueled by “booming artificial intelligence demand,” demonstrating the value SK hynix placed on Netlist’s patented technology. EX2139, 2-3.

Under these facts, SK hynix’s decision to take a license to Netlist’s patent portfolio—including the ’087 patent—strongly supports a non-obvious finding.

b. SK hynix’s license strongly evidences that the challenged claims were not obvious.

Similar to *Ancora*, SK hynix—the leading supplier of HBM—took a direct license to the ’087 patent and its family members. EX2063, 1-3, 5-6; *Stratoflex*, 713 F.2d at 1539. Moreover, SK hynix’s significant \$40,000,000 payment for the licenses, along with its commitment to supply Netlist with DRAM and NAND products, emphasize “the economic value of the patented technology in the marketplace,” *Ancora*, 140 F.4th at 1362, as confirmed by the massive revenues generated through SK hynix’s HBM sales. EX2140, 1; EX2141, 1; EX2139, 2-3. These facts indisputably demonstrate the industry’s desire for access to the ’87 patent’s technology.

The license agreement was reached as years-long litigation between the parties settled, including litigation in the Western District of Texas set for trial a mere two months after the license agreement was reached. *See* EX2068, 17. As in *Ancora*, SK hynix’s payment of \$40,000,000 to Netlist and commitment to supply DRAM and NAND components far exceeds the cost of typical patent litigation—and, more importantly, the remaining litigation costs—underscoring the value of

the license to SK hynix. EX2061, ¶¶47-49; EX2079, 119 (in 2019, “the cost to litigate a patent in the United States average[d] about \$3.5 million”); *Ancora*, 140 F.4th at 1363 (“[C]lear evidence that substantial license fees were paid for licenses to a specific patent late in a litigation should be given the significance that their magnitude deserves.”) (internal citations omitted).

SK hynix’s press releases also emphasize the weight of the license agreement. For example, less than a year prior to taking a license to Netlist’s patent, SK hynix announced mass production of its HBM2E, touting its “high-speed, high-capacity, and low-power characteristics.” EX2142, 1. Six months after taking a license to the ’087 patent family, SK hynix announced development of the next-generation HBM3, which SK hynix “expected to help consolidate the company’s leadership in the market.” EX2143, 1; *see also* EX2023 (discussing the license agreement between Netlist and SK hynix). That market leadership continued with their announcement of HBM3 mass production in June 2022 (EX2144, 1), and completion of HBM4 development in September 2025 (EX2145, 1), four months after issuance of the ’087 patent.

Thus—beyond the license itself—these press releases demonstrate the value of the ’087 patent’s technology, outlining SK hynix’s success in HBM development and production through the entire term of the license. *Impax Lab’s Inc. v. Lannett Holdings Inc.*, 893 F.3d 1372, 1377, 1381 (Fed. Cir. 2018) (finding

that licensee’s press release provided “corroborating evidence showing a nexus between the patents at issue and the licensing” and “supported a showing of nonobviousness”). The Board should, therefore, accord substantial weight to SK hynix’s licensing activity in its obviousness analysis.

Samsung knew of both SK hynix’s and its own licensing activities with Netlist. EX2039, 689:10-24; EX2060, 106:1-19 (Samsung’s expert testifying that he was aware of “[t]he portfolio license that Samsung had with Netlist,” including “earlier patents in the same patent family as the ’087 patent.”). Yet, Samsung and its expert wholly ignore this evidence in its Petition. EX2060, 108:19-21 (“I did not consider any licenses that weren’t in the record at the time that I filed my application, or my declaration.”). As in *Ancora*, the Board should accord substantial weight to these licenses in its obviousness analysis and find the challenged claims patentable.

E. Samsung’s challenge to certain claim elements is based solely on unsupported attorney argument.

Dr. Wolfe addresses only a subset of the claim elements in his Declaration. EX1003, ¶203. Instead of addressing all elements, he refers to Exhibit 1093, which is 202-page, unsigned “claim chart” for Grounds 3 and 4. *Id.* The Board should give no weight to Exhibit 1093. Rule 42.53(a) requires that “[u]ncompelled direct testimony must be submitted in the form of an affidavit.” 37 C.F.R. § 42.53(a). Exhibit 1093 is not in the form of an affidavit or declaration, it lacks a perjury

statement, and it is unsigned. Therefore, it is not evidence in the form of sworn testimony that could support Samsung’s obviousness challenges. Thus, Samsung’s challenge to certain claim elements is based solely on attorney argument—which “is not evidence.” *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017).

VII. CONCLUSION

The Board should find the challenged claims not unpatentable.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT (37 C.F.R. § 42.24(d))

1. This Patent Owner Response complies with the type-volume limitation of 18,700 words, comprising 18,692 words, excluding the parts exempted by 37 C.F.R. § 42.24(a)(1).
2. This Patent Owner Response complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2016 in 14-point Times New Roman font.

Respectfully submitted,

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Date: June 8, 2026

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

I certify that the above-captioned **PATENT OWNER RESPONSE**
UNDER 37 C.F.R. § 42.220 and Exhibits 2058-2059, 2061-2064, 2068, 2073,
2075-2082, 2084-2088, 2090-2126, 2128, 2130-2133, and 2139-2151, were served
in their entireties on June 8, 2026, upon the following parties via electronic mail:

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