

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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MICRON TECHNOLOGY, INC.,  
Petitioner  
v.

YANGTZE MEMORY TECHNOLOGIES COMPANY, LTD.,  
Patent Owner

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Case No.: IPR2025-00228  
U.S. Patent No. 11,101,276

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**PETITIONER'S OPPOSITION TO PATENT OWNER'S BRIEF ON  
DISCRETIONARY DENIAL**

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## LISTING OF EXHIBITS

| Exhibit | Description                                                                                                                                                       |
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| 1001    | U.S. Patent No. 11,101,276 to Zhu et al. (“the ’276 patent”)                                                                                                      |
| 1002    | File History of U.S. Patent No. 11,101,276 (“the ’276 FH”)                                                                                                        |
| 1003    | Declaration of Dr. Sanjay Banerjee (“Banerjee”)                                                                                                                   |
| 1004    | <i>Curriculum Vitae</i> of Dr. Sanjay Banerjee                                                                                                                    |
| 1005    | U.S. Patent Publication No. 2012/0070944A1 (“Kim”)                                                                                                                |
| 1006    | U.S. Patent Publication No. 2019/0067306A1 (“Fang”)                                                                                                               |
| 1007    | U.S. Patent Publication No. 2017/0062470A1 (“Han”)                                                                                                                |
| 1008    | U.S. Patent Publication No. 2017/0294384A1 (“Chen”)                                                                                                               |
| 1009    | U.S. Patent Publication No. 2018/0330985A1 (“Yu”)                                                                                                                 |
| 1010    | Aritome, “NAND Flash Memory Technologies” (2016)                                                                                                                  |
| 1011    | Silvagni, “3D NAND Flash Based on Planar Cells,” Computers 2017                                                                                                   |
| 1012    | Micheloni et al., “Inside Solid State Drives (SSDs)” (2nd Ed. 2018)                                                                                               |
| 1013    | U.S. Patent Publication No. 2017/0117222A1 to Kim et al.                                                                                                          |
| 1014    | Chang and Sze, “ULSI Technology” (1996)                                                                                                                           |
| 1015    | Orlowski et al., <i>Si, SiGe, Ge, and III-V Semiconductor Nanomembranes and Nanowires Enabled by SiGe Epitaxy</i> , ECS Transactions Vo. 33, No. 6 (2010), 777-89 |
| 1016    | U.S. Patent No. 9,728,547 (“Ohsaki”)                                                                                                                              |
| 1017    | U.S. Patent Publication No. 2017/0148677A1 (“Shin”)                                                                                                               |
| 1018    | U.S. Patent No. 10,672,711 to Zhu et al. (“the ’711 patent”)                                                                                                      |

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| 1019    | Excerpt from YMTC’s Exemplary Infringement Claim Chart for U.S. Patent No. 11,101,276 (Ex. H-1 to Disclosure of YMTC II Asserted Claims and Infringement Contentions, dated October 2, 2024) (“YMTC2 Infringement Contentions, Ex. H-1”) [PROTECTIVE ORDER MATERIAL – FILED UNDER SEAL] |
| 1020    | Korean Patent Publication No. KR10-2013-0015120 (“Lee”) with machine translation                                                                                                                                                                                                        |
| 1021    | Wolf S., et al., “Silicon Processing for the VLSI Era, Volume 1 – Process Technology, Chapter 15, Multilevel Interconnects for ULSI” (2nd Ed. 2000)                                                                                                                                     |
| 1022    | CN Patent Publication No. 107658309 A with certified translation (Priority application to the ’276 patent)                                                                                                                                                                              |
| 1023    | Wang, et al., “Low DC-Bias Silicon Nitride Anisotropic Etching,” Journal of Vacuum Science & Technology B, Vol. 33, Issue 6 (Sept. 10, 2015)                                                                                                                                            |
| 1024    | U.S. Patent Publication No. 2014/0284661A1 (“Williams”)                                                                                                                                                                                                                                 |
| 1025    | Shamiryan D., et al., “Selective Removal of High-K Gate Dielectrics,” Chemical Engineering Communications (2009)                                                                                                                                                                        |
| 1026    | Morel, et al., “Tungsten metal gate etching in Cl <sub>2</sub> /O <sub>2</sub> inductively coupled high density plasmas,” Journal of Vacuum Science and Technology B (Nov. 3, 2008)                                                                                                     |
| 1027    | Kim, et al., “Dry Etching of High-k Dielectric Thin Films in HBr/Ar Plasma,” Journal of the Korean Physical Society, Vol. 54, No. 2, pp. 934-38 (February 2009)                                                                                                                         |
| 1028    | U.S. Patent No. 10,297,543 to Park et al.                                                                                                                                                                                                                                               |
| 1029    | Minute Order (case schedule), Dkt. No. 141, dated September 18, 2024 in <i>Yangtze Memory Technologies Company, Ltd. v. Micron Technology, Inc. and Micron Consumer Products Group, LLC</i> , Case No. 3:23-cv-05792-RFL                                                                |

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| 1030    | Combined Civil and Criminal Federal Court Management Statistics (December 31, 2023), available at <a href="https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_distcomparison1231.2023.pdf">https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_distcomparison1231.2023.pdf</a>                                            |
| 1031    | Plaintiff and Counterclaim Defendant Yangtze Memory Technologies Company, LTD.’s Disclosure of YMTC II Asserted Claims and Infringement Contentions, dated October 2, 2024 in <i>Yangtze Memory Technologies Company, Ltd. v. Micron Technology, Inc. and Micron Consumer Products Group, LLC</i> , Case No. 3:23-cv-05792-RFL                       |
| 1032    | Docket from <i>Yangtze Memory Technologies Company, Ltd. v. Micron Technology, Inc. and Micron Consumer Products Group, LLC</i> , Case No. 3:24-cv-04223-RFL which has been consolidated with Case No. 3:23-cv-05792-RFL                                                                                                                             |
| 1033    | Declaration of Jared Bobrow in Support of Petitioner’s Motion for Admission <i>Pro Hac Vice</i>                                                                                                                                                                                                                                                      |
| 1034    | Alex He, <i>Case Study: From Paper Tiger to Real Tiger? The Development of China’s Semiconductor Industry</i> , CENTRE FOR INT’L GOVERNANCE INNOVATION 14 (2021)                                                                                                                                                                                     |
| 1035    | State-Owned Assets Supervision and Administration Commission of the State Council (SASAC), <i>Definition of “State-Owned Enterprise”</i> (July 4, 2019) ( <a href="https://www.sasac.gov.cn/n2588040/n2590387/n9854212/c11647665/content.html">https://www.sasac.gov.cn/n2588040/n2590387/n9854212/c11647665/content.html</a> ) (“SASAC Definition”) |
| 1036    | Certified English Translation of Ex. 1035 (SASAC Definition)                                                                                                                                                                                                                                                                                         |
| 1037    | China’s State Council, <i>Notice of the State Council on Issuing “Made in China 2025”</i> (May 19, 2015) ( <a href="https://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm">https://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm</a> ) (“Made in China 2025”)                                                                      |
| 1038    | Certified English Translation of Ex. 1037 (Made in China 2025)                                                                                                                                                                                                                                                                                       |

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| 1039    | Karen M. Sutter, Cong. Rsch. Serv., R46767, <i>China's New Semiconductor Policies: Issues for Congress</i> (2021)                                                                                                                                                                                                                                                                  |
| 1040    | Liu Yuanchun et al., <i>Accelerating the Realization of High-Level Scientific and Technological Self-Reliance</i> , PEOPLE (July 15, 2024) ( <a href="http://paper.people.com.cn/zgjjzk/html/2024-07/15/nw.zgjjzk_20240715_1-05.htm">http://paper.people.com.cn/zgjjzk/html/2024-07/15/nw.zgjjzk_20240715_1-05.htm</a> ) (“People’s Paper Article”)                                |
| 1041    | Certified English Translation of Ex. 1040 ( <i>People’s Paper Article</i> )                                                                                                                                                                                                                                                                                                        |
| 1042    | YMTC, <i>Yangtze Memory Technologies Co. Ltd. Officially Established</i> (Aug. 1, 2016) ( <a href="https://www.ymtc.com/cn/news/28.html">https://www.ymtc.com/cn/news/28.html</a> ) (“YMTC Press Release”)                                                                                                                                                                         |
| 1043    | Certified English Translation of Ex. 1042 (YMTC Press Release)                                                                                                                                                                                                                                                                                                                     |
| 1044    | Testimony of Stephen Ezell (VP, Global Innovation Policy – Information Technology & Innovation Foundation) Before the U.S.-China Economic and Security Review Commission (Apr. 14, 2022)                                                                                                                                                                                           |
| 1045    | Yahoo! Finance, South China Morning Post, Tech War: China’s Top Memory Chip Maker YMTC Gets US\$7 Billion From State-Backed Investors (Mar. 2, 2023) (“Yahoo! Article”)                                                                                                                                                                                                            |
| 1046    | Baidu, <i>Yangtze Memory Increases Capital and Expands Capacity to RMB 100 Billion, Big Fund Phase II Forms a Partnership with Local Hubei State-owned Assets</i> (Mar. 2, 2023) ( <a href="https://baijiahao.baidu.com/s?id=1759256650733024656&amp;wfr=spider&amp;for=pc">https://baijiahao.baidu.com/s?id=1759256650733024656&amp;wfr=spider&amp;for=pc</a> ) (“Baidu Article”) |
| 1047    | Certified English Translation of Ex. 1046 ( <i>Baidu Article</i> )                                                                                                                                                                                                                                                                                                                 |
| 1048    | YMTC’s Rule 7.1 Corporate Disclosure Statement, <i>Yangtze Memory Technologies Company, Ltd. v. Micron Technology, Inc.</i> , Case No. 5:23-cv-05792-VKD (N.D. Cal. Nov. 9, 2023)                                                                                                                                                                                                  |
| 1049    | Lianhe Credit Rating Co., Ltd., Wuhan Optics Valley Financial Holding Group Co., Ltd., 2024 Tracking Rating Report (Jun. 28, 2024) (“2024 Tracking Rating Report”)                                                                                                                                                                                                                 |

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| 1050    | Certified English Translation of Ex. 1049 (2024 Tracking Rating Report)                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1051    | State-Owned Assets Supervision and Administration Commission of the State Council (SASAC), <i>Focusing on Key Points and Making Breakthroughs in Innovation, Hubei Solidly Promotes the Deepening and Improvement Actions to Go Deeper and More Concrete</i> (Mar. 25, 2024) ( <a href="http://www.sasac.gov.cn/n4470048/n29955503/n30329277/n30329358/c30380577/content.html">www.sasac.gov.cn/n4470048/n29955503/n30329277/n30329358/c30380577/content.html</a> ) (“Statement of China’s State Council”) |
| 1052    | Certified English Translation of Ex. 1051 (Statement of China’s State Council)                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1053    | Sina Finance, <i>Yangtze Memory’s “Double 11 Performance” Surpassed Samsung’s for the First Time</i> (Nov. 12, 2024) ( <a href="https://finance.sina.com.cn/roll/2024-11-12/doc-incvupap6483110.shtml">https://finance.sina.com.cn/roll/2024-11-12/doc-incvupap6483110.shtml</a> ) (“Sina Finance Article”)                                                                                                                                                                                                |
| 1054    | Certified English Translation of Ex. 1053 ( <i>Sina Finance</i> Article)                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1055    | Southeast University, <i>Yangtze Memory Technologies Co., Ltd. 2024 Campus Recruitment</i> (Mar. 13, 2024) ( <a href="https://seu.91job.org.cn/substation/lectureDetail?xjhid=1000000000301932&amp;xxdm=10286">https://seu.91job.org.cn/substation/lectureDetail?xjhid=1000000000301932&amp;xxdm=10286</a> ) (“Southeast Univ., YMTC 2024 Campus Recruitment”)                                                                                                                                             |
| 1056    | Certified English Translation of Ex. 1055 (Southeast Univ., YMTC 2024 Campus Recruitment)                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1057    | Wuhan University of Science and Technology, <i>Yangtze Memory Technologies Co., Ltd. 2020 Campus Recruitment Introduction</i> (Sept. 10, 2019) ( <a href="https://wust.91wllm.cn/teachin/view/id/97310">https://wust.91wllm.cn/teachin/view/id/97310</a> ) (“Wuhan Univ. of Sci. and Tech., YMTC 2020 Campus Recruitment Introduction”)                                                                                                                                                                    |
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| 1059    | China University of Petroleum, <i>Yangtze Memory 2025 Campus Recruitment</i> (Feb. 20, 2025) ( <a href="https://career.cup.edu.cn/job/view/id/618140">https://career.cup.edu.cn/job/view/id/618140</a> ) (“China Univ. Of Petroleum, YMTC 2025 Campus Recruitment”)                                                                                                                                                                                                                                                                         |
| 1060    | Certified English Translation of Ex. 1059 (China Univ. Of Petroleum, YMTC 2025 Campus Recruitment)                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1061    | Yoko Kubota et al., <i>U.S. Chip Equipment Suppliers Suspend Business Activities at Yangtze Memory</i> , WALL STREET JOURNAL CHINA (Oct. 13, 2022) ( <a href="https://cn.wsj.com/articles/美国供应商暂停在中国长江存储科技的业务活动-11665617406">https://cn.wsj.com/articles/美国供应商暂停在中国长江存储科技的业务活动-11665617406</a> ) (“WSJ China Article”)                                                                                                                                                                                                                      |
| 1062    | Certified English Translation of Ex. 1061 (WSJ China Article)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1063    | Letter from Michael T. McCaul, Member of Congress, and Bill Hagerty, U.S. Senator, to the Honorable Gina Raimondo, U.S. Commerce Secretary (July 12, 2021)                                                                                                                                                                                                                                                                                                                                                                                  |
| 1064    | Demetri Sevastopulo, <i>Bipartisan Group Urges US Blacklist for “Beijing-Directed” Chipmaker</i> , FINANCIAL TIMES (Sept. 20, 2022) ( <a href="https://www.ft.com/content/173eb5b7-c211-4fa8-af8e-93382ed12836">https://www.ft.com/content/173eb5b7-c211-4fa8-af8e-93382ed12836</a> ) (“Financial Times Article”)                                                                                                                                                                                                                           |
| 1065    | U.S. Senator Charles E. Schumer, <i>With Chinese Chip Companies Threatening National Security And Jobs, Schumer Announces President Has Heeded His Call And Will Add YMTC - One Of China’s Leading Chip Makers - To A Trade Blacklist; Administration Action Will Strengthen National Security And Protect The Domestic Chip Industry</i> (Dec. 16, 2022) (“Schumer Statement”)                                                                                                                                                             |
| 1066    | U.S. Department of Defense, <i>DOD Releases List of People’s Republic of China (PRC) Military Companies in Accordance with Section 1260H of the National Defense Authorization Act for Fiscal Year 2021</i> (Jan. 31, 2024) ( <a href="https://www.defense.gov/News/Releases/Release/article/3661985/dod-releases-list-of-peoples-republic-of-china-prc-military-companies-in-accord/">https://www.defense.gov/News/Releases/Release/article/3661985/dod-releases-list-of-peoples-republic-of-china-prc-military-companies-in-accord/</a> ) |

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| 1067    | U.S. Department of Defense, <i>Entities Identified as Chinese Military Companies Operating in the United States in accordance with Section 1260H of the William M. (“Mac”) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116-283)</i> ( <a href="https://media.defense.gov/2024/Jan/31/2003384819/-1/-1/0/1260H-LIST.PDF">https://media.defense.gov/2024/Jan/31/2003384819/-1/-1/0/1260H-LIST.PDF</a> ) |
| 1068    | <i>Oversight of the USPTO: Hearing Before the Subcomm. On Intellectual Property</i> , 118th Cong. (2023) (Testimony of Katherine Vidal, Undersecretary of Commerce for IP and Director of USPTO)                                                                                                                                                                                                                                         |
| 1069    | China’s State Council, <i>Notice of the State Council on Issuing Policies to Promote the High-quality Development of the Integrated Circuit Industry and Software Industry in the New Era</i> (Aug. 4, 2020) ( <a href="https://www.gov.cn/zhengce/content/2020-08/04/content_5532370.htm">https://www.gov.cn/zhengce/content/2020-08/04/content_5532370.htm</a> ) (“State Council Notice on Policies to Promote Development of IC”)     |
| 1070    | Certified English Translation of Ex. 1069 (State Council Notice on Policies to Promote Development of IC)                                                                                                                                                                                                                                                                                                                                |
| 1071    | Declaration of Karen Lee, Translator (Mar. 10, 2025)                                                                                                                                                                                                                                                                                                                                                                                     |
| 1072    | Declaration of Fei-Xue Qian, Translator (Mar. 10, 2025)                                                                                                                                                                                                                                                                                                                                                                                  |
| 1073    | Order Granting Motion to Stay Case Pending <i>Inter Partes</i> Review, <i>Yangtze Memory Techs. Co., Ltd. v. Micron Tech., Inc. et al.</i> , Case No. 23-cv-05792-RFL, Docket No. 243 (N.D. Cal. Mar. 14, 2025)                                                                                                                                                                                                                          |
| 1074    | Plaintiff and Counterclaim Defendant Yangtze Memory Technologies Company, Ltd.’s Disclosure of YMTC I Asserted Claims and Infringement Contentions, <i>Yangtze Memory Techs. Co., Ltd. v. Micron Tech., Inc. et al.</i> , Case No. 23-cv-05792-RFL (N.D. Cal. May 6, 2024)                                                                                                                                                               |
| 1075    | Press Release, Micron, Micron and Intel Unveil New 3D NAND Flash Memory (Mar. 26, 2015) (“Micron ‘3D NAND Flash Memory’ Press Release”)                                                                                                                                                                                                                                                                                                  |

| Exhibit | Description                                                                                                                                                                                                                                                                                                                                                                              |
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| 1076    | Press Release, Micron, <i>Micron and WekaIO Win Best of Show Award at the Flash Memory Summit 2019</i> (Aug. 29, 2019) (“Micron ‘Best of Show Award’”)                                                                                                                                                                                                                                   |
| 1077    | Micron Technology, Inc., Annual Report (Form 10-K) (Oct. 4, 2024)                                                                                                                                                                                                                                                                                                                        |
| 1078    | Ministry of Industry and Information Technology, The Ministry of Industry and Information Technology Officially Announced the “National Integrated Circuit Industry Development Promotion Outline” (Jun. 26, 2014) ( <a href="https://www.cac.gov.cn/2014-06/26/c_1111325916.htm">https://www.cac.gov.cn/2014-06/26/c_1111325916.htm</a> ) (“National IC Development Promotion Outline”) |
| 1079    | Certified English Translation of Ex. 1078 (National IC Development Promotion Outline)                                                                                                                                                                                                                                                                                                    |
| 1080    | Karen M. Sutter et al., Cong. Rsch. Serv., R47558, <i>Semiconductors and the CHIPS Act: The Global Context</i> (2023)                                                                                                                                                                                                                                                                    |

## **I. INTRODUCTION**

Petitioner Micron submits this opposition to Patent Owner YMTC's Brief on Discretionary Denial (Paper 10, "DD Brief"). This IPR—along with all the other still-pending IPRs and PGR that Micron filed against YMTC's patents—should proceed to a merits decision.

The public has a strong interest in reviewing the patents that YMTC has asserted. Micron—the target of YMTC's infringement allegations—is a U.S.-based semiconductor memory innovator and manufacturer. Indeed, it is the only such U.S. manufacturer. YMTC is a Chinese-state owned entity that operates to further the Chinese government's goal of expanding its global influence in the semiconductor field. Instituting IPR here is not only appropriate, but necessary to ensure that an entity operating at the behest of a foreign state is not asserting invalid patents to improperly suppress, undermine, or capture an important part of the U.S. economy.

YMTC argues that the mere fact that it chose to assert an unusually large number of patents against Micron in district court somehow warrants denial of IPR. The Board, however, routinely handles more than a thousand post-grant filings a year. Micron's filings represent only a very small percentage of this total. Moreover, this is a problem of YMTC's own making. If YMTC did not want to be subject to many post-grant proceedings, it should have been more circumscribed when selecting which patents to assert in the first place. Instead, YMTC's apparent

litigation strategy was to overwhelm Micron (and the district court) by asserting an excessive number of poor quality patents. YMTC's complaint that Micron cannot invoke the AIA to defend itself against this type of onslaught rings hollow. Asserting numerous patents does not (and cannot) operate as a "get out of the PTAB free" card. Holding otherwise will incentivize other patent holders to flood district courts with excessive numbers of patent infringement allegations.

The *Fintiv* factors also heavily favor institution. The district court stayed the parallel district court action at least until the completion of all IPRs/PGR that Micron filed. Thus, there will be no trial (or any other district court work) until well after the IPRs/PGR conclude. Moreover, Micron's IPRs/PGR will undeniably simplify the complex issues before the district court. The number of asserted YMTC patents is likely to be substantially reduced. And the Board's findings—regardless of whether they favor Micron or YMTC—will inform the district court's later analysis. Among other things, the IPR/PGR proceedings will prevent YMTC from making the type of ambiguous, overbroad, and tenuous allegations that currently permeate its complaint and infringement contentions. Indeed, the significant potential for issue simplification motivated the district court to stay the case.

Finally, the mere fact that Petitioner submitted an expert declaration does not merit denial of IPR. Certain of the Petition's grounds—including Ground 3 (obviousness over Han and Fang)—are so clear and straightforward that they can be

understood without expert testimony. The testimony accompanying the Petition simply serves to confirm that the Petition properly interpreted the prior art. Petitioner’s expert testimony is no different from the testimony accompanying almost every filed IPR/PGR: it discusses a POSITA’s background knowledge and explains the motivations a POSITA would have had in view of the prior art’s teachings.

For the reasons explained in this paper—and in the Petition itself—the Director should refer the petition to the merits panel for an institution decision.

## **II. ARGUMENT**

No good reason exists for the Director to exercise its discretion to deny institution. In fact, the Director has every reason to reject YMTC’s arguments and institute this proceeding.

### **A. Compelling Economic and National Security Interests Favor Institution**

As explained in recent guidance, the Director considers “[c]ompelling economic, public health, or nationality security interests” when deciding whether to exercise its institution discretion. *See* March 26, 2025 Interim Processes for PTAB Workload Management (“March 26, 2025 Processes”). This case presents just such issues.

## **1. *Factual Background***

### **a) Micron Is a Pioneer in NAND Flash Memory**

The '276 patent—like most of the other YMTC patents<sup>1</sup> that Micron challenges—relates generally to 3D NAND flash memory. *See* Ex. 1001, 1:21-24. NAND flash memory is a crucial component in the semiconductor ecosystem. It is a type of memory that does not lose data when it loses power. Conventional NAND stores data in memory cells laid out in an array of rows and columns. Historically, NAND arrays were laid out two-dimensionally in a single layer. But, as demand for data storage grew, the semiconductor industry developed multi-level NAND devices, in which multiple levels of NAND memory cells are stacked vertically on top of each other. This is 3D NAND. By stacking levels vertically, 3D NAND dramatically increases memory storage capacity compared to conventional NAND. Connection with the stacked levels is typically accomplished using a staircase structure.

Micron—headquartered in Boise, Idaho—began its pioneering work in developing 3D NAND products more than fifteen years ago. Micron invested

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<sup>1</sup> The '941 patent relates more generically to NAND, but does include 3D NAND embodiments (IPR2025-00190), and the '164 patent relates to ESD circuitry generally (IPR2025-00118).

billions of dollars and years of effort towards researching, developing, and manufacturing 3D NAND technology. As part of this effort, Micron filed for (and later obtained) thousands of U.S. patents on this technology starting at least by 2010. This culminated in Micron launching its first 3D NAND product on March 26, 2015. *See* Ex. 1075 at 1-2.

Since 2015, Micron has continued to innovate its 3D NAND technology by developing memory products with more and more capacity and capabilities. Micron has received numerous awards and widespread recognition for its innovation (*see, e.g.*, Ex. 1076 at 1), and is a leading innovator—both in the U.S. and globally—of semiconductor memory devices, with over 57,000 patents (*see* Ex. 1077 at 2). In fact, Micron remains the only U.S.-based manufacturer of semiconductor memory devices.

YMTC did not file the earliest application identified on the face of '276 patent until 2017. *See* Ex. 1001, Cover.

**b) The Chinese Government's Control of Its Semiconductor Industry**

YMTC's role in the global semiconductor industry (and the strategic, state-backed initiative of which it is part) contrasts sharply with that of Micron. For more than a decade, the Chinese government has invested heavily in the semiconductor industry within its borders and set policies for Chinese semiconductor companies. In June 2014, China's State Council announced its "National Integrated Circuit

Industry Development Outline” with the “goal of establishing a world-leading semiconductor industry in all areas of the integrated circuit supply chain.” *See* Ex. 1079 at 1; Ex. 1080 at 19-20. It sought to remove “bottleneck[s] of industrial development,” establish “a national integrated circuit industry development leading group ... for the overall coordination of the integrated circuit industry,” and create “a financing platform and policy environment.” Ex. 1079 at 1-2; Ex. 1080 at 19-23.

The Chinese government then created the “National Integrated Circuit Industry Investment Fund” (or “Big Fund”) and raised 138.7 billion yuan from multiple government and state-owned enterprises,<sup>2</sup> including China’s Ministry of Finance. Ex. 1034 at 5; *see id.* at 3-7. The Big Fund aimed to “***support[] the integrated circuit manufacturing field,***” “implement mergers,” and “***standardize***

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<sup>2</sup> According to China’s State Council, the term “state-owned enterprise” includes “state-owned enterprises, state-owned companies and state-owned capital holding companies that the State Council and local people’s governments respectively perform the duties of investors on behalf of the state, including enterprises supervised by central and local state-owned assets supervision and administration agencies and other departments at the same level and enterprises formed by their investment at each level.” Ex. 1036.

*corporate governance.*”<sup>3</sup> Ex. 1079 at 2.

In May 2015, China’s State Council launched its “Made in China 2025” initiative. *See* Ex. 1038. The initiative set an ambitious ten-year roadmap for China to become a global leader in high-tech industries and officially solidified the semiconductor industry as one of the Chinese government’s targets. Ex. 1038 at 1-13 (e.g., “[W]e must seize the current rare strategic opportunities, actively respond to challenges, strengthen overall planning, highlight innovation-driven, formulate special policies, give full play to institutional advantages, mobilize the whole society to work hard, rely more on Chinese equipment and Chinese brands, ... and complete the strategic task of transforming Chinese manufacturing from big to strong.”), 30.

The “Made in China 2025” initiative also outlined a comprehensive set of strategic goals, emphasizing the government’s central role in control and financing.<sup>4</sup> *Id.* at 8-9 (e.g., “Market-led, **government-guided**. Comprehensively deepen reform, give full play to the decisive role of the market in resource allocation, strengthen the dominant position of enterprises, and stimulate the vitality and creativity of

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<sup>3</sup> All emphases added unless otherwise noted.

<sup>4</sup> *See also* Ex. 1070 at 4-5 (“Strengthen services and guidance for the construction of major integrated circuit projects [and] orderly guide and regulate the development of the integrated circuit industry”), 8-9.

enterprises. ***Actively transform government functions, strengthen strategic research and planning guidance***, improve relevant support policies, and create a good environment for enterprise development.”), 37, 39, 41-44 (e.g., “***Deepen the reform of state-owned enterprises [and] improve the corporate governance structure....***”).

The Chinese government has aggressively sought foreign (including U.S.) patent protection in support of its goal to increase its control over the global semiconductor market. Indeed, the U.S. Congressional Research Service (CRS) explained:

China’s policies feature ***a substantial and central role for the government in directing and financing Chinese businesses to obtain foreign IP*** related to semiconductors. The Chinese government uses production targets; subsidies; tax preferences; trade and investment barriers (including pressure to engage in joint ventures); and discriminatory antitrust, IP, procurement, and standards practices. The policies seek to leverage China’s central role in global consumer electronics manufacturing and potential as a semiconductor production hub to incentivize and pressure foreign companies to localize production, share technology, and partner with the Chinese government and affiliated entities.

Ex. 1039 at 6; *see also id.* at 7-11.

**c) YMTC Is China’s State-Owned NAND Memory Company**

In pursuit of its “Made in China 2025” initiative, the Chinese government tasked Tsinghua Unigroup, a state-controlled company, with leading the country’s memory chip development. *See* Ex. 1041 at 2; Ex. 1044 at 7. On July 26, 2016, Tsinghua Unigroup—jointly with the Big Fund and municipal governments—founded YMTC to develop NAND memory. Ex. 1043 at 1. This joint venture initially invested more than \$24 billion (USD) in YMTC. *See* Ex. 1044 at 7. Since then, the Chinese government has continued to invest heavily in YMTC. In 2023, for example, the Chinese government invested another \$7 billion (USD) through various investment vehicles, such as the second phase of its Big Fund. Ex. 1045 at 1; Ex. 1047 at 1-2.

The Chinese government not only invests heavily in YMTC, but it also owns and controls YMTC. YMTC is wholly owned by one parent corporation: Yangtze Memory Technologies Holding Co., Ltd. (“YMTC Holding”). *See* Ex. 1048 at 2. And YMTC Holding is owned by the following state-owned enterprises (as of March 12, 2025):

| <b>Shareholder</b>                                                                 | <b>Ownership</b> |
|------------------------------------------------------------------------------------|------------------|
| Hubei Changsheng Development Co., Ltd.<br>(湖北长晟发展有限责任公司), a state-owned enterprise | ~29%             |
| Wuhan Xinfei Technology Investment Co., Ltd.                                       | ~27%             |

| <b>Shareholder</b>                                                                                            | <b>Ownership</b> |
|---------------------------------------------------------------------------------------------------------------|------------------|
| (武汉芯飞科技投资有限公司), a state-owned enterprise                                                                      |                  |
| National IC Industry Investment Fund Co., Ltd.<br>(国家集成电路产业投资基金股份有限公司), a state-owned enterprise              | ~13%             |
| National IC Industry Investment Fund Phase II Co., Ltd.<br>(国家集成电路产业投资基金二期股份有限公司), a state-owned enterprise   | ~12%             |
| Hubei Science & Technology Investment Group Co., Ltd.<br>(湖北省科技投资集团有限公司), a state-owned enterprise            | ~10%             |
| Hubei Guoxin Industry Investment Fund Partnership (L.P.)<br>(湖北国芯产业投资基金合伙企业 (有限合伙)), a state-owned enterprise | ~6%              |
| Yangtze Industrial Investment Group Co., Ltd.<br>(长江产业投资集团有限公司), a state-owned enterprise                     | ~3%              |
| <b>Total</b>                                                                                                  | <b>100%</b>      |

See Ex. 1050 at 9-10; Ex.1054 at 1 (“Yangtze Memory is a state-controlled enterprise ... [where] all seven shareholders of Yangtze Memory Technologies Holdings Co., Ltd. are state-owned assets.”); Ex. 1047 at 1-2 (“Hubei Changsheng Development Co., Ltd. is held by Hubei Integrated Circuit Industry Investment Fund, Wuhan Optics Valley Finance and Yangtze River Industrial Investment Group”—with the actual “controller behind the scenes [being the governmental] Administration of Wuhan East Lake High-tech Development Zone.... [The] actual controller of

Yangtze River Industrial Investment Group is the Hubei Provincial State-owned Assets Supervision and Administration Commission.... [The] actual controller of Hubei Guoxin Industry Investment Fund Partnership (Limited Partnership) is the Wuhan State-owned Assets Supervision and Administration Commission, and the actual controller of Hubei Science [&] Technology Investment Group Co., Ltd. is the [governmental] Administration of Wuhan East Lake High-tech Development Zone.”). All shareholders (listed above) are state-owned enterprises and, therefore, YMTC Holding and YMTC are state owned. See Ex. 1050 at 9-10; Ex. 1054 at 1; Ex. 1047 at 1-2.

This ownership structure and the Chinese government’s significant investment (*i.e.*, tens of billions of U.S. dollars) clearly show that YMTC serves the Chinese government’s semiconductor strategy and operates under the direction and control of the Chinese government. Indeed, China’s State Council has described YMTC as a “state-owned enterprise.” Ex. 1052 at 2. And Chinese media outlets and Chinese universities identify YMTC as a “state-owned enterprise” or “state-controlled enterprise.” Ex. 1054 at 1 (***“Yangtze Memory [Technologies, Inc.] is a state-controlled enterprise”***); see also, *e.g.*, Ex. 1056 at 1 (***“Nature of [YMTC]: State-owned enterprise”***); Ex. 1058 at 1 (same); Ex. 1060 at 1 (same); Ex. 1062 at 1-2 (***“China’s state-owned enterprise Yangtze Memory Technologies Co. Ltd.... Yangtze Memory is controlled by the Hubei Provincial Government and the China***

*National Integrated Circuit Industry Investment Fund.”).*

**d) Bipartisan U.S. Policymakers Agree That the Chinese Government Controls YMTC**

U.S. policymakers consistently highlight the Chinese government’s ownership and control over YMTC. In July 2021, U.S. Senator Bill Hagerty and U.S. Representative Michael McCaul urged the U.S. Commerce Secretary to add YMTC to the Department of Commerce’s Entity List<sup>5</sup> because it “has clear ties to the Party-state and military and plays a significant role in CCP plans to control the supply chain for a strategic dual-use sector.” Ex. 1063 at 1-2. They explained that:

***YMTC is the PRC’s state-owned national champion for memory chips***

— a type of semiconductor with defense, artificial intelligence, and aerospace applications. YMTC was created as a joint-venture by the National Integrated Circuit (IC) Industry Investment Fund, Tsinghua Unigroup (a state investment firm that is one of the IC Fund’s shareholders), the Hubei IC Industry Fund (a regional branch of the national IC Fund), and the Hubei Science and Technology Investment

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<sup>5</sup> The “Entity List” identifies persons—including corporate entities—reasonably believed to be involved, or pose a significant risk of being or becoming involved, in activities contrary to the national security or foreign policy interests of the United States. See <https://www.bis.gov/licensing/guidance-on-end-user-and-end-use-controls-and-us-person-controls#End-usercontrols>

Group (an investment vehicle of the Wuhan Municipal Government that provides capital investment, infrastructure and services for the PRC’s strategic industries, including semiconductors).

*Id.*; see also Ex. 1064 at 2 (“The White House has described YMTC as a Chinese ‘national champion.’”).

In April 2022, Mr. Stephen Ezell, Vice President of Global Innovation Policy at the Information Technology and Innovation Foundation, testified before the U.S.-China Economic and Security Review Commission (which is a bipartisan legislative commission created by the U.S. Congress) on “U.S.-China Innovation, Technology, and Intellectual Property Concern.” Ex. 1044 at 1, 3. In his testimony, he explained:

***[YMTC] is a Chinese state-controlled joint venture stood up from whole cloth by the National IC Industry Investment Fund, the state university-controlled fabless semiconductor firm Tsinghua Unigroup, and the Hubei Science and Technology Investment Group, supported by \$24 billion in initial government funding allocated for its initial Wuhan factory alone. In effect, YMTC is China’s state-owned national champion for memory chips.***

*Id.* at 7. Similarly, in September 2022, U.S. Senator Mark Warner stated it “has been clear for some time now that YMTC is ... a key part of the Chinese Communist party’s goal of shifting control of global microelectronics to the PRC.” Ex. 1064 at 2. Similarly, in December 2022, U.S. Senator Charles E. Schumer called YMTC a “CCP-backed technology compan[y].” Ex. 1065 at 1.

Next, pursuant to Section 1260H of the William M. (Mac) Thornberry National Defense Authorization Act, the Secretary of Defense must identify entities that the Secretary “determines” to be a “Chinese military company” “based on the most recent information available.” H.R. 6395, 116th Cong. §1260H(a), (d) (2021). A ‘Chinese military company’ refers to any entity that is “directly or indirectly owned, controlled, or beneficially owned by, or in an official or unofficial capacity acting as an agent of or on behalf of, the People’s Liberation Army or any other organization subordinate to the Central Military Commission of the Chinese Communist Party”—i.e., an entity that is owned and/or controlled by the Chinese government. *Id.* §1260H(d). On January 31, 2024, the Department of Defense identified YMTC as a “Chinese military compan[y].” Ex. 1066 at 1; Ex. 1067 at 1, 3; *see also* 90 Fed. Reg. 1105 (Jan. 7, 2025) (same).

## **2. *YMTC’s State-Owned Status Weighs in Favor of Institution***

The USPTO’s regulations governing IPR/PGR proceedings—including those controlling IPR/PGR institution—are intended to account for “the effect ... on the economy” and “the integrity of the patent system....” 35 U.S.C. §316(b). Consistent with this, as the former USPTO Director explained to Congress in 2023, “the USPTO is committed to an all-of-Government approach to leveraging IP rights to catalyze U.S. economic competitiveness and national security.” Ex. 1068 at 9. She further testified, “[t]he USPTO is working globally to strengthen the innovation, creativity,

and entrepreneurship ecosystem, to hold competitors to their agreements, to curb abuses and unfair practices, and to directly assist stakeholders facing IP issues abroad.” *Id.*

Proceeding to a merits decision in this IPR will further these goals. Accepting YMTC’s arguments, however, will frustrate them. Micron is the sole U.S.-based semiconductor memory manufacturer. Micron is currently the target of an expansive district court patent infringement action brought by YMTC involving 19 patents. YMTC is a Chinese-state owned and controlled company. As explained above, China has publicly explained that it intends to, among other things, leverage foreign intellectual property rights to increase its control over the global semiconductor market. Engaging in a full, comprehensive, and substantive review of YMTC’s patents will ensure that China is not improperly using U.S. patents—through its proxy YMTC—to target, impose costs on, and potentially extract monetary concessions on invalid patents from U.S.-based companies like Micron. This in turn furthers U.S. economic interests by ensuring continued, fair competition in the semiconductor field. Relatedly, it will ensure that the U.S. patent system operates to further U.S. economic and national security interests, as opposed to those of a foreign state and its proxy YMTC. This all weighs heavily in favor of institution.

**B. The Large Number of Patents Asserted by YMTC Does Not Weigh Against Institution**

None of YMTC's other arguments even remotely suggests any other course of action, and a merits decision is appropriate here.

YMTC begins its brief by discussing the supposedly "substantial burden" imposed on both it and the Board by Micron's "barrage" of IPR and PGR petitions. DD Brief, 1. According to YMTC, these petitions are meant to provide Micron with a "tactical advantage in district court" and somehow operate only to "harass[]" and "punish[]" YMTC. *Id.* Further, YMTC complains that instituting would unnecessarily consume the Board's "finite resources." *Id.*

As an initial matter, the Board handles over a thousand IPRs and PGRs every year. Micron's filings represent only a very, very small percentage of this total. This falls well short of imposing anything that could even remotely be characterized as a "substantial burden" on the Board.

Next, in complaining that it will be burdened by Micron's filings, YMTC has it backwards. Micron filed the number of IPRs/PGRs it did only because YMTC chose to assert an excessive number of patents (19 in total) and claims (more than 200) in district court. Thus, it was YMTC—not Micron—that improperly sought a "tactical advantage." By arguing for discretionary denial due to the large number of Micron IPRs/PGR, YMTC is attempting to prevent meaningful review of its many (and non-meritorious) patent allegations simply by asserting a large number of

patents. Micron, unsurprisingly, sought to defend itself against YMTC’s “barrage” both in district court and in the USPTO. The district court also refused to become bogged down by YMTC’s excessive assertions and instead stayed the case pending resolution of Micron’s IPR/PGR filings. *See* Ex. 1073 at 2 (noting that a stay will “simplify the issues” by reducing the number of “infringement, validity, and claim construction issues”). If YMTC did not want to defend multiple patents in IPR/PGR, it should have been more careful when selecting which patents to assert in the first place. This would have both allowed for more expeditious district court proceedings and reduced the number of IPR petitions Micron filed. Once again, YMTC made its bed and must lie in it.

Nor does the fact that Micron occasionally filed multiple petitions against certain YMTC patents have any bearing on whether institution is appropriate here. **YMTC’s** actions—like the total number of filed IPRs/PGRs—required that Micron file multiple petitions against certain YMTC patents. Rather than asserting only a single claim (or small number of claims) per patent, YMTC chose to assert **many** claims. Indeed, even as the district court action progressed from the pleadings stage into early fact discovery, YMTC continued to expand the total number of asserted claims. *See, e.g.,* Ex. 1031 at 2 (asserting more than 150 claims across 11 patents); Ex. 1074 at 2 (asserting more than 50 claims across 8 patents). It was YMTC’s expansion that necessitated additional IPR/PGR filings.

Declining to address Micron’s petitions on the grounds that YMTC asserted numerous patents would serve little purpose besides improperly rewarding YMTC for its chosen litigation tactic. Even more perniciously, however, were the Board to agree with YMTC, the Board would incentivize other patent owners to behave similarly. Rather than limiting and focusing their district court assertions, patent owners will be motivated to assert even more patents in district court in the hopes of similarly avoiding Board review. The Director should discourage this type of gamesmanship and forum shopping—which has the potential to further burden district courts with reams of unnecessary allegations. The most straightforward way to do so is to strongly and unambiguously reject YMTC’s argument here: the volume of IPRs filed does not (and cannot) have any bearing on whether institution is appropriate, particularly when that volume was patent owner’s own creation.

**C. The District Court Has Deferred to the PTAB**

YMTC next argues that this IPR is “unlikely to result in a commensurate simplification of the issues before the District Court.” DD Brief, 12. Relatedly, it posits that the district court—and not the Board—is better situated to “manag[e]” the scope of the parties’ dispute. *See id.* at 12-15.

The district court arrived at the opposite conclusion when it stayed the co-pending district court case. In particular, the district court explained that “staying the case pending IPR will simplify the issues.” Ex. 1073 at 2. Among other things,

the district court noted that Micron’s IPRs/PGR will likely entirely eliminate patents from the case, resulting in simplification of the “infringement, validity, and claim construction issues” confronting the court. *Id.* at 2. Moreover, the district court noted that many of YMTC’s patents embrace “overlapping subject matter.” *Id.* So each Board decision has the potential to resolve issues spanning across multiple patents. *See id.*

While the district court did issue a series of orders requiring YMTC to reduce the number of asserted claims as YMTC notes in its brief (*see* DD Brief, 12-13), this fact alone does not merit a discretionary denial of IPR/PGR. Micron’s IPRs/PGR cover a larger number of claims than will ultimately be at issue in district court because YMTC itself chose to assert these claims in the first instance in its district court infringement contentions. Moreover, most of the independent claims addressed by Micron’s IPRs/PGR—which will likely be the focus of any disputes between the parties if the Board institutes this and Micron’s other proceedings—currently remain at issue in district court. YMTC’s argument is also self-contradictory. If Micron had waited to file until after the district court had narrowed the number of asserted claims, YMTC presumably would have argued that Micron’s petitions should be discretionarily denied because they were filed too late. Given this, YMTC cannot now argue that filing early (and addressing the claims at issue at the time when doing so) somehow also merits a discretionary denial. Agreeing with

YMTC would be nonsensical: both early and late IPR/PGR filings would be deemed unworthy of review on the merits.

**D. The *Fintiv* Factors Weigh Strongly In Favor of Institution**

The Director also continues to evaluate “the discretionary considerations enumerated in existing Board precedent” including *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper No. 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). March 26, 2025 Processes at 2. These considerations make it abundantly clear that Micron’s IPR petition should be reviewed on the merits. In particular: the district court has stayed the parallel district court case, no trial is currently scheduled, no substantive district court work has occurred, the stay ensures that there will be little overlap, and the petition is substantively strong.

**1. *The District Court Litigation Is Stayed***

The district court has stayed the case pending IPR/PGR. *See* Ex. 1073. By issuing a stay, the district court indicated that it prefers the Board to address unpatentability of YMTC’s patents in the first instance. This weighs strongly in favor of institution. *See Fintiv* at 12.

Patent Owner argues that if the Director declines to institute, it “intends to seek to lift the District Court stay and resume the litigation.” DD Brief, 15. No basis exists for doing so any time soon. The district court ordered that the case be stayed until “the completion of all IPR proceedings.” Ex. 1073 at 1, 3. The PTAB has

already instituted several Micron IPRs. *See, e.g.*, IPR2024-00788, -00789, -00790, -00791, -00792, -00794, -00795, -00909, -00911, and IPR2025-00034. The most recent of these will not reach final decision until May 2026. *See* IPR2025-00034, Paper 19. Other IPRs are still in the pre-institution phase, with institution decisions not due for several months. *See, e.g.*, IPR2025-00117, -00118, -00119, -00189, -00191, -00190, -00228, -00244, -00294, and -00245. Given this, IPRs/PGR involving YMTC's patents will be ongoing for quite some time. The district court's stay will remain in place throughout this process. Any suggestion by YMTC to the contrary is pure speculation. This factor weighs heavily in favor of institution.

## **2. *No Trial Is Scheduled***

Next, because the district court case is stayed, no trial date is currently scheduled. As a result, if IPR is instituted, proceedings before the Board will be completed long before any potential district court trial. YMTC references the district court's previously scheduled June 2026 filing date. *See* DD Brief, 16. But the district court vacated that date, and it no longer applies. *See generally* Ex. 1073. And as the case is currently stayed, once the stay is eventually lifted, it will take more than a year (if not years) of further work before the parties will be ready for trial. This also weighs strongly in favor of institution.

## **3. *Little Substantive Progress Has Been Made***

According to YMTC, "[t]he parties extensively invested in the district court

litigation prior to the court staying the case.” DD Brief, 16. The district court reached the opposite conclusion. As explained in its stay order, “the litigation is in an early stage.” Ex. 1073 at 1. “Fact discovery” remained open and “the parties had not yet taken a single deposition.” *Id.* “Claim construction briefs [had] not yet been filed....” *Id.* So, while the parties had engaged in some fact discovery, almost all substantive work—including depositions, claim construction briefing, expert discovery, and dispositive motion briefing—remained to be done. None of this work will occur until after the district court’s stay is lifted. This also weighs in favor of institution. *See Sand Revolution II, LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative).

While YMTC makes much of the fact that it was “forced to defend against” various discovery motions (*e.g.*, DD Brief, 16-17), this was also a problem of its own making. YMTC aggressively pursued overbroad, extraordinarily burdensome, and irrelevant discovery from Micron. At the same time, it largely refused to provide any meaningful productions of its own. This lopsided approach predictably led to discovery briefing. Moreover, the parties’ briefing focused on the scope of discovery. The fact that back-and-forth briefing regarding discovery scope was still ongoing at the time of the stay (*see, e.g.*, Ex. 1073 at 2-3 (referencing still pending motions)) further evinces the parties’ lack of meaningful progress and the amount of work that remains in district court. Rather than finishing the discovery process, the

parties were still in the process of debating what fact discovery would entail.

The Board also has explained that institution is appropriate where “the petitioner filed the petition expeditiously....” *Fintiv* at 11. Here, Petitioner proceeded with diligence, filing only months after being served with the complaint. *See Ex. 1032*. This, just like the early stage of the district court action, also weighs in favor of institution.

#### **4. *The Stay Minimizes Any Issue Overlap***

YMTC argues that “[t]here is substantial overlap” between this proceeding and the district court action. DD Brief, 18. This, however, entirely ignores that the impact of the district court’s stay. The district court action will not resume until all of Micron’s IPRs/PGR conclude. Because of this, in the event the Board institutes and renders a final written decision, estoppel will prevent Micron from asserting the petition’s grounds (or grounds it reasonably could have included in the petition) in district court if YMTC prevails (if Micron wins, there will be no valid patent on which to proceed). There will be no overlap at all. Moreover, even if the district court were to lift the stay for some reason (it will not be), Micron stipulated in the Petition that it will not advance the Petition’s grounds in district court. *See Petition at 14-15*. This all weighs in favor of institution. *See Sand Revolution*, 11-12.

#### **5. *Party Overlap***

Both Petitioner and Patent Owner are parties in the parallel proceeding. This,

however, is of little moment as parallel proceedings often result in party overlap.

## **6. *Other Circumstances***

Petitioner submits that its petition has significant substantive merit. It is premised on clear, understandable prior art that the Patent Office did not previously consider. *See generally* Pet. This factor—like the others discussed above—weighs in favor of institution.

Patent Owner asserts that the Director should discretionarily deny institution because the Petition is “[w]eak.” DD Brief, 21. To the contrary, the Petition presents a compelling case of unpatentability based on two primary references: Kim and Han.<sup>6</sup> Patent Owner’s arguments to the contrary fail.

The alleged novelty of the ’276 patent is adding “an etch stop layer over the staircase structure [to] protect[] underlying staircase structure layers during the etching process.” Paper 12 (“POPR”) at 4-5. According to Patent Owner, “[t]his improves fabrication yield and reduces cost.” *Id.* at 5. Notably, Patent Owner does not dispute that all grounds in the Petition disclose exactly this.

Petitioner relies on Kim’s method illustrated in Figures 17A-22B in arguing that the Challenged Claims are unpatentable. *See, e.g.*, Pet., 35-49 (claim 1).

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<sup>6</sup> Kim is the primary reference in Grounds 1 and 2, and Han is the primary reference in Grounds 3 and 4.

Petitioner also relies on Kim’s disclosure in a closely related method illustrated in Figures 5A-14B that either a sacrificial layer or an insulator layer may be on the top of each step of the staircase structure to swap the order of the two layers illustrated in Figures 17A-22B. *Id.* at 27-28, 32-35. The best that Patent Owner can do is argue that “Petitioner mixes and matches embodiments within a single prior art reference.” DD Brief, 22. This argument fails because it is wrong on both the facts and the law.

Regarding the facts, Kim’s Figures 17A-22B use “the same elements as in the embodiments ... described with reference to FIGS. 5A through ... 14B ... denoted by the same reference numbers,” and Kim omits “overlapping description of [common] elements” for conciseness. Kim, [0184]. Thus, Figures 17A through 22B and Figures 5A through 14B are not “disparate embodiments” as Patent Owner contends (DD Brief, 22), and should not be treated as such for a motivation-to-combine analysis. To the contrary, Kim’s extensive reference to the earlier embodiment in its descriptions of Figures 17A-22B demonstrates that a POSITA would have understood the descriptions of Figures 5A-14B apply to Figures 17A-22B.<sup>7</sup> Pet., 31-32. Further, order swapping based on Kim’s disclosure would involve

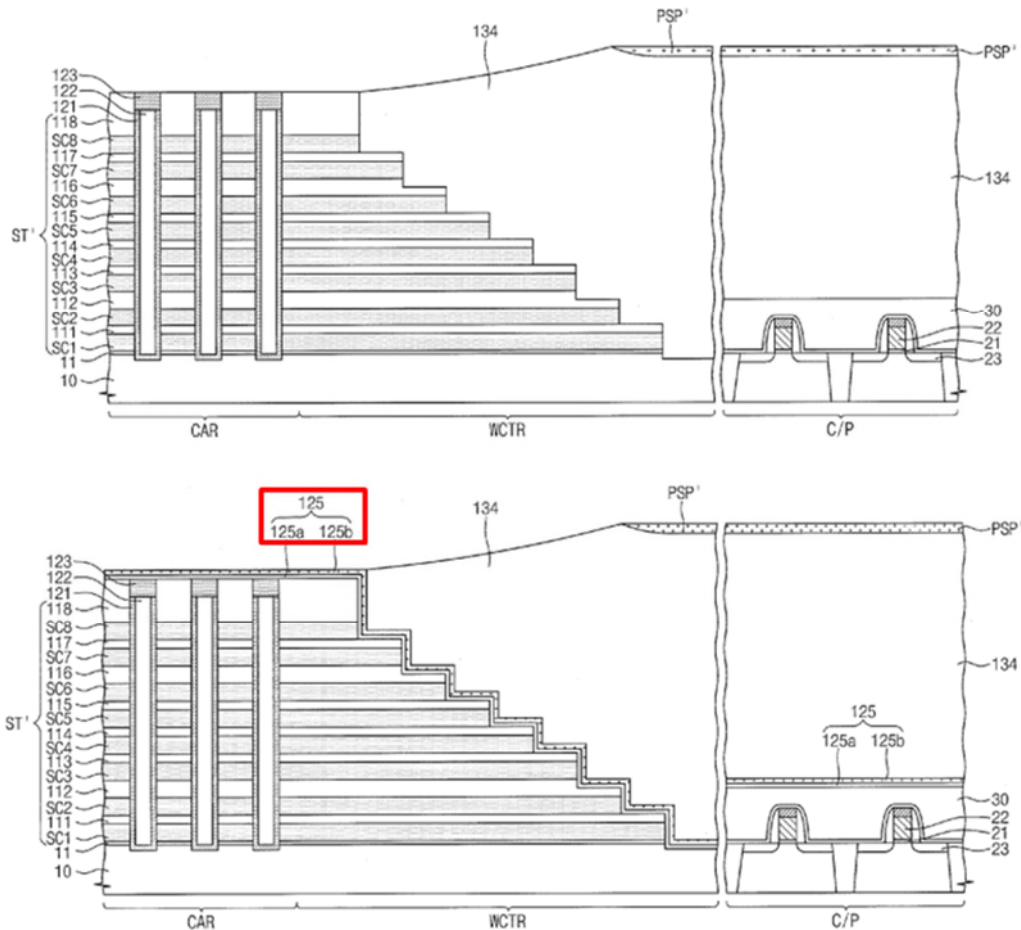
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<sup>7</sup> This also distinguishes Patent Owner’s case law. For example, Kim’s description of the close relationship between Figures 5A-14B and 17A-22B is not merely a generic statement. *Contrast BlephEx, LLC v. Myco Indus., Inc.*, 24 F.4th 1391, 1401

layers having the same reference numbers in both embodiments: sacrificial layers SC1-SC8 and insulating layers 111-118. Kim, [0090]. In fact, as figures of these two embodiments show, the only difference is the addition of etch-stop layers 125, the very alleged novelty of the '276 patent:

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(Fed. Cir. 2022) (cited in POPR at 17) (“[a]ny of these methods of applying the compound may be combined with any other method”). Patent Owner’s remaining cases (all involving combining unrelated embodiments from multiple references) are equally unavailing. See POPR at 18-20 (citing, *e.g.*, *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993-94 (Fed. Cir. 2017) (also cited in DD Brief, 22) (two references); *Securus Techs., Inc. v. Glob. Tel\*Link Corp.*, 701 F. App’x 971, 974 (Fed. Cir. 2017) (two references “generally in the same field of art”)).

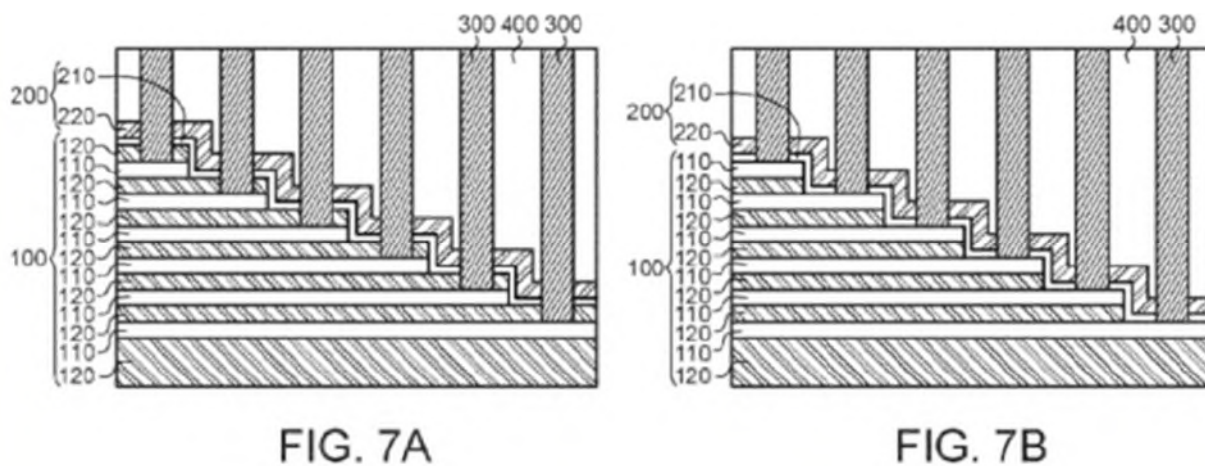


Kim, Figs. 11A (top), 19A (bottom) (annotated)

Accordingly, Kim’s disclosure with respect to the Figures 5A-14B embodiment of a sacrificial layer on top of an insulating layer applies to the embodiment of Figures 17A-22B. Pet., 27-28 (citing Kim, [0090]-[0091]). In arguing to the contrary, Patent Owner makes the same mistake the Board corrected in *Mercedes-Benz USA, LLC v. Yechezkal Evan Spero*, where the patent owner similarly mischaracterized two embodiments in the same reference as “distinct” even though their descriptions “expressly refer[] to the same reference numeral....” IPR2023-01040, Paper 29 at 16-17 (PTAB Dec. 10, 2024). Having such “a plain connection” between the

embodiments, the Board rejected patent owner's argument and should do the same here. *Id.*

Patent Owner's argument against the Kim grounds also fails on the law. Kim's repeated disclosures that either a sacrificial layer or an insulating layer may be on top of each staircase step indicate that either is a suitable choice. Kim, [0090], [0091], [0240] (cited in Pet., 27-28). This is further confirmed by other references (such as Chen (Ex. 1008), pasted below), which teach that either layer ordering is acceptable when an etch-stop layer covers the top of the staircase. Pet., 7, 33.



*Id.* at 7 (citing Ex. 1008, Fig. 7A (insulator on top), Fig. 7B (conductor on top)). Together, these references show that either layer order was “a suitable option,” that reversing the order was routine and highly predictable, and that a POSITA would have had a reasonable expectation of success using both layer orders. *Id.* at 33 (citing *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023)).

Patent Owner disregards the clear import of Kim’s disclosures (and the teachings of the other cited references) that either layer order was a suitable option. Instead, Patent Owner demands identification of a flaw, problem, or benefit (something Kim itself found unnecessary to identify). DD Brief, 22. But where an alternative is suitable, a patent challenger need not show that the alternative represents “an improvement.” *Intel*, 61 F.4th at 1381 (internal quotation marks omitted). Indeed, even when combining two references, showing a benefit is not required. *Cisco Sys., Inc. v. K.Mizra LLC*, No. 2022-2290, 2024 WL 3841809, at \*4 (Fed. Cir. Aug. 16, 2024). Here—where the Kim reference itself discloses a suitable alternative—no further showing of motivation to combine is necessary (though Petitioner made such a showing (*see* Pet., 32-33)). Patent Owner relies on outdated case law (*see* DD Brief, 22 (citing *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000))) to demand a “teaching, suggestion, or motivation” for the modification, an approach the Supreme Court rejected as “rigid.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007).

The Han grounds combine Han’s staircase structure with Fang’s etch-stop layer. Patent Owner admits that “punch-through [was] a known semiconductor processing defect.” DD Brief, 23. Patent Owner also recognizes that a POSITA would have found it beneficial to address punch-through in Han when it argues that “Han describes a separate process for addressing punch-through.” *Id.* Fang also

discusses this problem and presents another solution, which a POSITA would have recognized would further assist in preventing punch-through in Han's similar staircase structure. Pet., 102-03. Without any legal support, Patent Owner contradicts itself and faults Han for not disclosing the punch-through problem—an assertion that is both factually incorrect and not dispositive of motivation to combine. DD Brief, 23. That makes little sense, because Patent Owner admits that Han specifically addresses the punch-through problem. Moreover, ignoring Patent Owner's tacit admission that Hans does grapple with the problem of punch-through, Patent Owner's argument that the primary reference itself must disclose its own shortcoming to provide a motivation to combine runs directly afoul of *KSR*. See *KSR Int'l*, 550 U.S. at 415, 418 (rejecting “rigid” TSM test and holding it “necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; ... to determine whether there was an apparent reason to combine”).

Patent Owner's self-contradictory argument that Han does not have a punch-through problem is an apparent attempt to insinuate that Han would not benefit from Fang's solution. See DD Brief, 23. Even ignoring the self-contradiction, Patent Owner's argument fails because “[t]he Federal Circuit has made it clear that the fact that there are other possible solutions to a problem does not affect the obviousness analysis as to one of those possible solutions.” *Purdue Pharma L.P. v. Accord*

*Healthcare Inc.*, No. CV 22-913-WCB, 2024 WL 4120717, at \*19 (D. Del. Sept. 9, 2024) (Bryson, J., sitting by designation). Further, Han’s disclosure that “[i]n some exemplary implementations” the upper and lower contact holes “may” be formed in separate steps (what Patent Owner tacitly admits is recognition of the punch-through problem) does not teach away from Fang’s disclosure because Han’s disclosure does not discourage an alternative solution. Han, [0156] (cited in DD Brief, 23); *see L’Oreal USA, Inc. v. Olaplex, Inc.*, 844 F. App’x 308, 318 (Fed. Cir. 2021) (finding no teaching away based on similar, permissive language). Indeed, Han’s recognition of a problem and its disclosure of one possible solution indicates the possibility of, and even the need for, a different solution such as Fang’s. For example, Han’s “separate steps” solution involves multiple masks and increases manufacturing complexity and cost. *See* Fang, [0004]. This would have motivated a POSITA to adopt an etch-stop layer as disclosed by Fang, which provides a well-known, obvious, and beneficial solution to improve Han’s device.

**E. Expert Testimony Accompanying the Petition**

YMTC concludes its brief by arguing that the Petition’s “extensive reliance on expert testimony indicates that its assertions are better resolved in district court.” DD Brief, 20. Once again, the district court disagreed: it deferred to the Board and stayed the district court case. *See* Ex. 1073. In doing so, the district court signaled its belief that it is more appropriate for the **Board** to assess Micron’s arguments first.

Petitioner recognizes that, after it filed its IPR, the Board recently issued guidance stating that the “extent of the petition’s reliance on expert testimony” may play a role in the Board’s institution decision. March 26, 2025 Processes at 2. Here, the IPR does not use expert testimony in a way that favors denial. For example, Ground 3 (obviousness over Han and Fang) entails little more than a straightforward inclusion of Fang’s etch-stop layer in Han’s method of fabricating a staircase structure. *See, e.g.*, Pet., 74-90 (claim 1). This ground can be readily understood without any expert testimony at all. Apparently recognizing this, YMTC merely alleges that Petitioner “create[d]” a problem in Han when in fact a POSITA would have recognized the problem based on Fang’s teaching. DD Brief, 20-21.

YMTC also grossly misrepresents why the Petition’s other grounds cite to expert testimony. YMTC alleges that the expert declaration parrots the Petition. *Id.* at 21. A comparison of the two shows otherwise. The expert explained that Kim’s approach of including shared elements between embodiments was common among patent publications. Ex. 1003 ¶ 81 (cited in DD Brief, 21). The expert further explained that swapping the layer ordering “was compatible with common deposition techniques such as CVD or ALD used to deposit these layers” with reference to exemplary materials of the layers. *Id.* ¶ 84 (cited in DD Brief, 21). YMTC’s demand for “actual evidence that the claimed inventions would have been obvious given the disclosure in the cited art” ignores additional prior art references

in the Petition and reflects the “rigid” approach that the Supreme Court has repudiated. DD Brief, 21; *see KSR Int’l*, 550 U.S. at 415.

Petitioner also notes that, contrary to YMTC’s arguments, binding Federal Circuit precedent requires (or at least strongly favors) a thorough expert declaration like that accompanying the Petition. For instance, the Federal Circuit has explained that it is “reasonable for the Board to accept” one party’s “expert testimony over” the other party’s “bare attorney argument.” *Wasica Finance GmbH v. Continental Auto Sys.*, 853 F.3d 1272, 1284 (Fed. Cir. 2017). In view of this, if the Petition was not accompanied by comprehensive expert testimony, YMTC would presumably submit its own expert testimony and then argue that this testimony—even if tenuous and poorly supported by the prior art—trumps whatever the Petition says. Next, the Federal Circuit has explained that a “[p]etitioner may not submit new evidence or argument in reply that it could have presented earlier.” *See VidStream LLC v. Twitter, Inc.*, 981 F.3d 1060, 1064 (Fed. Cir. 2020). Thus, if Micron had not addressed all claim limitations with expert testimony when it filed the Petition, it is unclear whether it would be able to do so as the IPR proceeds. It follows that without Micron’s own expert testimony, the Board may be deprived of relevant information to assess the technical accuracy of Patent Owner’s responsive arguments. The Board’s decision in this matter should be premised on facts and the prior art. Allowing both parties to submit expert testimony (and then subjecting that testimony

to cross examination and discussion in briefing as provided for in the Board's rules) will ensure that the focus remains—as it must—on these facts and the prior art of record.

### **III. CONCLUSION**

Institution is appropriate for the reasons outlined above and in the Petition.

Respectfully submitted,

ORRICK, HERRINGTON & SUTCLIFFE LLP

Dated: May 28, 2025

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## **CERTIFICATE OF COMPLIANCE**

The undersigned certifies that the foregoing PETITIONER’S OPPOSITION TO PATENT OWNER’S BRIEF ON DISCRETIONARY DENIAL complies with the type volume limitation in 37 C.F.R. § 42.24(a). According to the utilized word-processing system’s word count, the paper—excluding the caption, table of contents, table of exhibits, certificate of word count, and certificate of service—contains 7,254 words.

Dated: May 28, 2025

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## **CERTIFICATE OF SERVICE**

The undersigned hereby confirms that the foregoing paper was caused to be served on May 28, 2025 via electronic mail, upon the following attorneys of record for the Patent Owner:

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