

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LTD.,
Petitioner,

v.

ADVANCED INTEGRATED CIRCUIT PROCESS LLC,
Patent Owner.

IPR2025-00683
U.S. Patent No. 8,907,425

PETITIONER'S REQUEST FOR DIRECTOR REVIEW

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I. INTRODUCTION

The Director Discretionary Denial Decision (Paper 17; “Decision”) should be reversed because it fails to consider important issues of compelling public interest, is based on erroneous conclusions of law and clearly erroneous findings of material fact, and reflects significant inconsistency with discretionary denial decisions in other Board proceedings. The Decision ignores TSMC’s showing that IPR is appropriate because of at least (1) the significant national security and policy interests associated with the technologies put at risk by the challenged patents, (2) the settled expectations of Petitioner and its customers versus whatever settled expectations the new patent owner, Advanced Integrated Circuits Process (“AICP”) might have had when it asserted the patent for the first time just two days after acquiring it, (3) the lack of any overlap between the IPR and District Court proceedings due to the extraordinary stipulation offered by TSMC, and (4) the material errors by the Examiner in issuing the ’425 patent.

First, semiconductors are the enablers that unleash innovation and drive the global economy. Petitioner, Taiwan Semiconductor Manufacturing Corporation Ltd. (“TSMC”), is the world’s largest semiconductor manufacturer, and provides around 90% of the world’s most advanced chips according to reports. About 70% of its revenues are from its customers headquartered in the U.S. AICP’s allegations target chips made by TSMC that are essential for U.S. national security and to the health

and wellbeing of the U.S. public and industry. These chips are responsible for today's advanced smartphones, communication networking, autonomous vehicles, robotics, artificial intelligence, and military/defense applications. Given the extraordinary impact of TSMC's technology on the U.S. economy and national security, it is hard to imagine a case with more compelling public interest. As Secretary Lutnick explained, "national security" is the "key" reason to "bring semiconductors home," a goal of President Trump's agenda: "Our national security depends on bringing our supply chain home. This is especially true when we are dealing with critical technology, computer chips that are not only important to our civilian world ... but also to our military." EX-1111, 44 of 128. TSMC has committed \$165 billion to building Arizona manufacturing facilities to fulfill this national security agenda. EX-1139.

AICP is asserting U.S. Patent No. 7,579,227 (the "'227 patent"), 7,923,764 (the "'764 patent"); 8,198,686 (the "'686 patent"); 8,253,180 (the "'180 patent"); 8,587,076 (the "'076 patent"); 8,796,779 (the "'779 patent"); and 8,907,425 (the "'425 patent") against Petitioner TSMC. EX-2001, ¶ 29. Based on these patents, AICP asks the Eastern District of Texas to enjoin the sale of *all* semiconductors made using TSMC's 28nm, 22nm, 16nm, 10nm, 7nm, 6nm, 5nm, 4nm, and 3nm process node technologies. (*See* EX-2001, ¶¶ 67, 70, 79, 97, 115, 129, 143, 163, 182. And it asserts the '425 patent to enjoin sale and distribution of all products made

using TSMC’s 28nm HPL (High Performance Low Power) and 28nm LP (Low Power) process technologies (*id.*, at ¶¶65-67)—the backbone of a wide range of “military-grade” devices used by the Department of War. If AICP is successful in its litigation campaign despite strong reason and evidence to the contrary, it will harm vital U.S. economic and national security interests. The Office has an interest in ensuring that the patents asserted against these critical technologies—patents that were issued by the Office in the first place—were correctly issued.

Second, a balanced settled-expectations analysis does not weigh in favor of discretionary denial; it weighs against denial. TSMC and its customers have settled expectations that this patent would not be enforced in view of the accused technologies predating the application for this patents and the lengthy period of the prior owner’s inaction. AICP did not exist until June 2024, about 15 years after the accused technologies were announced for commercialization. It acquired the ’425 patent only two days before asserting it against TSMC. And AICP must have expected to face invalidity challenges when it initiated litigation.

Third, TSMC proffered an extraordinarily broad stipulation that removes all overlap between the IPR and parallel litigation by foregoing all Section 102 and 103 prior art challenges upon institution. United Microelectronics Corporation (“UMC”), which seeks to join this IPR, proffered a reciprocal stipulation. The Decision’s finding that there would be “significant duplication of effort, additional

expense for the parties, and a risk of inconsistent decisions” (Paper 17, 2) is clearly erroneous in view of these stipulations.

Finally, the petition established and AICP fails to substantively contest, this patent issued as a result of material errors by the Patent Office. Specifically, the Examiner erroneously concluded the prior art lacked what was, in fact, a commonly used feature, as evidenced by prior art of record the examiner overlooked during prosecution, as well as by multiple prior-art references identified by TSMC. In cases like the present proceeding addressing material error, the Acting Director has declined to grant discretionary denial; the Decision therefore reflects inconsistency with these prior decisions.

The adjudication of these patents has national economic and security consequences, and the Administration should determine on its own whether the patents being asserted were correctly issued. The Board is best suited to review the patentability of the '425 patent. There is no dispute that the underlying technology, involving complicated semiconductor processing, is complex or that the technically trained PTAB judges are more capable than a lay jury of assessing validity of this patent. Further, the district court case is complex, involving seven patents related to different aspects of semiconductor fabrication and design, and the PTAB can provide significant efficiencies in reviewing this patent.

TSMC respectfully requests reconsideration of the Decision.

II. ARGUMENT

A. **Compelling economic, national security, and other public interest considerations all warrant reconsideration and referral of the petition**

The TSMC process technologies implicated by AICP’s litigation campaign include all products made using TSMC’s 28nm, 22nm, 16nm, 10nm, 7nm, 6nm, 5nm, 4nm, and 3nm process technologies. *See* EX-2001, ¶¶ 67, 70, 79, 97, 115, 129, 143, 163, 182. These accused nodes are used to manufacture thousands of unique customer-designed semiconductor devices, accounting for 84% of TSMC’s annual revenue—the bulk of which are purchased by companies headquartered or with a substantial presence in the U.S. About 70% of TSMC’s revenues are from customers headquartered in the U.S, including AMD, Amazon, Apple, Broadcom, Google, Intel, Marvell, Meta, Microsoft, NVIDIA, Qualcomm, Tesla, and Xilinx. Indeed, AICP itself has recognized that “nationwide companies headquartered in the United States” and foreign companies with “substantial operations in the United States” rely on accused TSMC products for their U.S. operations and that TSMC’s accused 28nm chips currently play a significant and increasing role in meeting the needs of TSMC’s customers, as do TSMC’s newer and more advanced chips such as the accused 5nm products. *See* EX-2001, ¶¶ 12, 17, 82-84, 166-168; TSMC-1135, 5-6; TSMC-1126, 2; TSMC-1130, 1-2. It is difficult to envision a more devastating scenario for these companies than to strip them of access to TSMC’s accused process nodes and the accused products based on patents that should never have issued. Paper 10, at 58-61.

This result would cripple not only these leading U.S. semiconductor companies, but also the U.S. economy. The Administration's goals for U.S. semiconductor leadership would be set-back by such a result.

For national security, TSMC makes semiconductors for a wide range of "military-grade" devices used by the Department of War. TSMC offers multiple technologies, ranging from 28nm to 3nm, to power widespread applications that include avionics, missile guidance, radar systems, radar electronic warfare, radiation-hardened systems, power systems, imaging for defense and aerospace, secure communications. And the U.S. Air Force estimates "90% of its precision-guided munitions rely on TSMC chips." TSMC-1093, 4. And a similar calculus applies to warships, satellites, and communication systems. *Id.* AICP asserts the '425 patent against military-grade products manufactured by TSMC, for example, defense-grade FPGA chips from AMD/Xilinx used for military avionics, missiles & munitions, and electronic warfare, including for example, the F-35 Lightning II fighter jet, considered the most advanced and versatile U.S. military aircraft.

TSMC is the world leader in the manufacture of FPGAs and military-grade chips that are durable, reliable, radiation tolerant, and with higher heat tolerance. *See* TSMC-1136, 2-3; TSMC-1147, 2; TSMC-1166, 655. Semiconductors made with

TSMC’s accused 28nm nodes form the backbone of these chips.¹ *See, e.g.*, TSMC-1093, 3 (“The Pentagon has even begun stockpiling legacy chips—because a 28nm processor you can trust is more valuable than a 5nm chip you can’t.”); TSMC-1153, 2-4, 7 (AMD’s “[l]arge portfolio of defense-grade devices” for FPGA chips, with “High-Density, Low-Power 28 nm Technology”); TSMC-1166, 181.

Indeed, U.S. reliance on TSMC process technologies is a matter of Congressional record. *See* TSMC-1166, 181, 652; TSMC-1165, 13-15; *see also* 136 Stat. 1371 (CHIPS Act of 2022) §102. This was an important factor underlying U.S.

¹ To the extent AICP were to raise 28 USC §1498(a), a Section 1498 defense cannot ensure an uninterrupted supply of semiconductors for the U.S. government. Not all government supply agreements necessarily contain the required FAR clause for invoking the §1498(a) defense. TSMC does not have a direct supply relationship with the U.S. government. Due to the multi-level supply chain from wafers to end systems, TSMC would have no way to completely identify all of the TSMC-made wafers that will be used by the U.S. government and should be excluded from the scope of any potential injunction. An injunction would also halt ongoing U.S. research and development efforts by ending access to TSMC technologies, including prototype applications intended to be used by the U.S. government. It would necessarily disrupt the supply of semiconductor chips for the U.S. Government.

government efforts to incentivize TSMC to move production to the U.S., including for military devices. TSMC-1135, 5-6; TSMC-1166, 652; TSMC-1165, 13-15. And it was the impetus for the CHIPS Act (136 Stat. 1371). *See* TSMC-1093, 4.

AICP is relying on erroneously-issued patents to seek an injunction against an expansive set of the same critical semiconductor technologies that President Trump and Congress sought to protect, hoping to exploit the uncertainty that is inherent in having lay jurors decide issues of patent validity. The America Invents Act was designed to prevent scenarios precisely like this one, and the Office has an interest in ensuring that the patents asserted against this critical technology were correctly granted in the first place. This Office, with professionally trained Administrative Patent Judges, is uniquely positioned to decide the invalidity of this patent. The mission of this Office and U.S. national security and economic interests uniformly point to one conclusion: this Office should review the merits of TSMC's petition.

B. Petitioner's "Settled Expectations" Heavily Outweigh Whatever "Settled Expectations" AICP Might Have Had

A settled expectations analysis that focuses only on the expectations of AICP, without regard for the expectations of TSMC, its customers, and the public is not balanced or fair. TSMC, its customers, and the public have "settled expectations," and they heavily outweigh AICP's expectations. Indeed, prior decisions gave significant weight to the petitioner's economic activities that developed and expanded during an extended period of non-assertion after the patent issued.

1. *Petitioner's Settled Expectations Favor Referral*

TSMC commercialized the accused technology—TSMC's 28nm HPL and 28nm LP processes—before the '425 patent was even applied for. For well over a decade, no one asserted the '425 patent against those technologies. TSMC and its customers settled expectations during this lengthy period of inactivity weigh heavily against discretionary denial.

The accused TSMC 28nm LP and 28 nm HPL process technologies, whose respective commercializations were first announced in September 2008 and August 2009 and went into production soon after with volume production by at least October 2011. Ex-1116; Ex-1117. This was (i) before the application for the '425 patent was filed in June 2012, (ii) before the '425 patent issued in December 2014, and about a decade before (iii) AICP was formed in June 2024, (iv) acquired the '425 patent in July 2024, and (v) sued TSMC in August 2024 without advance notice.² Ex-1001

² AICP does not allege that TSMC was aware of the '425 patent itself, and there is no evidence that any entity has ever marked any product with the '425 patent. Instead, AICP argues “the published application” of the '425 patent was cited by the Examiner in a “Notice of References Cited” in a TSMC patent application. Paper 6, at 39 (emphasis added). Judge Gilstrap, where the underlying infringement action is pending, for one, has aptly criticized the notion that one document in a patent family

(cover, item 45); EX-1088 (June 12, 2024 Certificate of Formation); EX-1089, at 3-4 (July 30, 2024 Assignment) Ex-2009, at 5 (Dkt. 1, identifying the August 1, 2024 Complaint). Meanwhile during this nearly 10 years of inaction by the prior patent owner, TSMC had invested billions of dollars to build fabrication facilities to continuously manufacture millions of wafers per year using the accused 28nm technologies, and its customers had similarly invested significant resources into designs that work with TSMC’s 28nm technologies. The ’425 patent was enforced for the first time only after AICP acquired it about a decade after its issuance. TSMC’s continuous manufacture of the accused chips (requiring billions of dollars of investment) since before the application for the ’425 patent had even been filed and with no enforcement after, show that TSMC—and its customers who implement TSMC’s accused technology—had settled expectations that the ’425 patent would not apply to the accused technology. These interests were not given due consideration in the Decision. *See Intel Corp. v. Proxense LLC*, IPR2025-00327, Paper 12, at 2-3 (June 26, 2025) (explaining it “weigh[s] against a patent owner’s

imputes constructive knowledge of the rest: “Saying you knew about the family is not too far a step from saying you knew there was this PTO in Virginia, and you should just go check everything there and see if anything there applies.” *Intell. Ventures II*, 2019 WL 1987172, at *2 (quoting Ex-1090, at 4).

claim of settled expectation” when “a patent may have been in force for years but may not have been ... applied in a petitioner’s particular technology space”).

2. AICP Has No Legitimate Settled Expectations

Contrary to the findings in the Decision, AICP could not have had “strong settled expectations.” AICP acquired the ’425 patent in 2024, mere days before suing TSMC for infringement. The two days that AICP held the ’425 patent cannot support any claim of “settled” expectations. As the Director has consistently found, less than a year is not long enough for a party to develop “settled expectations.” *See, e.g., Cambridge Indus. USA, INC. v. Applied Optoelectronics, Inc.*, IPR2025-434, -436, -437, Paper 11, at 2-3 (Stewart June 26, 2025) (referring patents that had been in force only since 2019 and 2020).

It cannot seriously be argued that AICP had settled expectations merely because the ’425 patent issued in 2014. At the time AICP acquired the ’425 patent in 2024, the patent had never before been litigated. AICP surely understood that asserting the patent for the first time would invite invalidity challenges. What matters is AICP’s expectations for its 2024 investment. *See Anaheim Gardens, L.P. v. United States*, 953 F.3d 1344, 1350-51 (Fed. Cir. 2020) (noting that “the timing” of a purchase of property and the “knowledge of the purchaser” are relevant considerations in determining whether a purchaser had reasonable investment-backed expectations). Indeed, given their inaction, the prior owners could not have

had “settled expectations” that the ‘425 patent is enforceable. The Decision’s statement to the contrary is inconsistent with the Director’s earlier finding in *Shenzhen Tuozhu Technology*, where years of non-enforcement weighed against the patent owner’s claim to “settled expectations” of enforceability. *See Shenzhen Tuozhu Tech. Co., Ltd. v. Stratasy, Inc.*, IPR2025-00438, -531, -532, -585, -611, Paper 10, at 3 (Stewart July 17, 2025) (referring based in part on evidence that the challenged patents, which had been in force for approximately 10 years, had “never been commercialized, asserted, marked, licensed, or otherwise applied” in petitioner’s “technology space”—a factor that “weigh[ed] against Patent Owner’s claim of strong settled expectations”).

Moreover, the Federal Circuit has held that patent owners receive their patents with the knowledge and expectation that those patents may be subject to post-issuance reconsideration proceedings by the PTO, including IPRs. *See Celgene Corp. v. Peter*, 931 F.3d 1342, 1361-63 (Fed. Cir. 2019). The PTO intervened in *Celgene* and repeatedly advanced the position that patent owners lack a settled expectation that their patents will not be subject to post-issuance challenges, including IPRs. *See* Brief for Intervenor at 42-43, *Celgene Corp. v. Iancu*, No. 2018-1167 (Fed. Cir. Aug. 30, 2018) (Doc. No. 43). Having prevailed by making this argument in *Celgene*, the PTO is judicially estopped from taking the opposite

position in later proceedings, including this one. *See Trs. in Bankr. of N. Am. Rubber Thread Co. v. United States*, 593 F.3d 1346, 1353 (Fed. Cir. 2010).

In sum, the settled expectations of TSMC, its customers, and the public, which span over a decade, cannot be overridden merely based on AICP's acquisition of the '425 patent. AICP acquired that patent subject to TSMC's, its customer's, and the public's expectations, which were reasonable in view of the prior owner's inaction. Other areas of law that have analyzed a property owner's extended periods of inaction routinely find the equities favor innocent actors such as TSMC. *See* Restatement (First) of Prop. § 459 cmt. a (1993) ("Through lapse of time old rights become obscure. A long continued use raises reasonable expectations of its continuance."); *Anaheim Gardens, L.P. v. United States*, 953 F.3d 1344, 1350-51 (Fed. Cir. 2020) (noting that "the timing of the purchase and knowledge of the purchaser"—especially "a sophisticated investor"—"are relevant considerations in determining whether a purchaser had reasonable investment-backed expectations" in the takings context).

C. The Discretionary Denial Decision Did Not Consider the Material Errors by the Examiner During Prosecution That Favors Referral

IPR proceedings were created out of the recognition that sometimes the Patent Office makes errors. *See, e.g., Thryv, Inc. v. Click-to-Call Techs., LP*, 590 U.S. 45, 54 (2020). When the Office materially erred during prosecution, it should address its error through the IPR process. *See Taiwan Semiconductor Mfg. Co. Ltd. v. Marlin*

Semiconductor Ltd., IPR2025-00847, Paper 11, at 4 (September 3, 2025) (“Although the challenged patent has been in force for fifteen years, Petitioner appears to show a material error by the Office, and it is an appropriate use of Office resources to review the potential error.”); *Microsoft Corp. v. Partec Cluster Competence Ctr. GmbH*, IPR2025-00318, Paper 9, at 3 (June 12, 2025) (referring to the panel, despite a later trial date, because “Ppetitioner appears to show a material error by the Office and it is an appropriate use of Office resources to review the potential error”).

During prosecution, the Examiner found that the prior art disclosed all elements of claim 1 except for “the first stress-relief film is not in direct contact with the side surface of the first gate electrode.” *See* Ex-1002, at 436. But the Examiner failed to recognize that this feature was widely used in the prior art—a material error. The Examiner even overlooked that the same feature was disclosed in Murthy556 (EX-1030), a prior art reference that was part of the prosecution history. Murthy556 explains that “buffer oxide 322” is “blanket deposited over” “sidewall spacers 310,” which are “opposite sidewalls of gate electrode 306” and separate buffer oxide 322 from gate electrode 306. EX-1030, 6:45-48, 9:10-15, 9:27-29, FIGS. 7-9. AICP never disputed that this feature was conventional or was disclosed in Murthy556.

And Murthy556 is not alone in teaching that stress-relief films not in direct contact with the side surface of the first gate electrode (the allegedly distinguishing feature) were widely known. TSMC cited eight other prior art references disclosing

this feature in its Petition. *See, e.g.*, Ex-1006 at Abstract, ¶¶[0043], ¶¶[0049], ¶¶[0066], ¶¶[0068], ¶¶[0077], FIGS. 9-11; Ex-1008 ¶¶[0063], Fig. 4j; Ex-1029 ¶¶[0042], Figs. 1-2, 14-15; Ex-1010, FIG. 12; Ex-1030 at 9:27-29, FIGS. 2, 9, 13-15; Ex-1031 ¶¶[0029], ¶¶[0046]-[0067], FIGS. 2-5; Ex-1032 ¶¶[0022]-[0031], Figs. 1B-1F; Ex-1033 ¶¶[0037], Fig. 2; Ex-1034 ¶¶[0108].

The Examiner's allowance of claim 1 based solely on that feature, which was expressly shown by the art of record but overlooked by the Examiner, was material error that weighs heavily against discretionary denial.

III. CONCLUSION

The question before the Director is whether this Office should review TSMC's petitions on the merits to determine if erroneously-issued patents are being used to threaten vital national security and economic interests. The Board is optimally positioned to correct the errors that led to the issuance of the patent at issue in this Petition. A discretionary denial that prevents a substantive assessment of TSMC's petition unnecessarily risks essential U.S. economic and national security interests. Here, the discretionary denial was based on an abuse of discretion and erroneous findings of material fact. To avoid the harm that would arise from an injunction of TSMC's 28nm node technology, Petitioner respectfully requests that the Director withdraw the Discretionary Denial and refer the matter to a panel for consideration of the grounds presented.

Date: September 15, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Petitioner's Request for Director Review** was served on September 15, 2025, via email directed to counsel of record for the Patent Owner at the following:

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