

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS
AMERICA, INC., SAMSUNG SEMICONDUCTOR, INC., and SAMSUNG
AUSTIN SEMICONDUCTOR LLC,
Petitioners,

v.

W&WSENS DEVICES INC.,
Patent Owner.

Case PGR2025-00082
U.S. Patent No. 12,243,948

PATENT OWNER'S REQUEST FOR DISCRETIONARY DENIAL

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PATENT OWNER'S EXHIBIT LIST

Exhibit	Description
2001	Messages between W&Wsens and Samsung (April 25, 2019 through April 26, 2019)
2002	Messages between W&Wsens and Samsung (April 27-28, 2019, August 14, 2019, February 20, 2020)
2003	Messages between W&Wsens and Samsung (April 27, 2019, August 14-15, 2019, February 20, 2020)
2004	Messages between W&Wsens and Samsung (April 24-25, 2019, May 14, 2019, August 14, 2019, March 3, 2020)
2005	W&Wsens Devices Inc. presentation – Thin Silicon Photosensors for The Next Generation
2006	Excerpts from the file history of U.S. Patent No. 10,348,240
2007	Excerpts from the file history of U.S Patent No. 10,587,095
2008	Excerpts from Plaintiff W&Wsens Devices Inc.'s Supplemental Objections and Responses to Defendants' First Set of Interrogatories (Nos. 1, 3, 4, and 5), <i>W&Wsens Devices, Inc. v. Samsung Elecs. Co.</i> , No. 24-cv-00854-JRG, E.D. Tex., served October 1, 2025
2009	Excerpts from Plaintiff W&Wsens Devices Inc.'s Objections and Responses to Defendants' First Set of Interrogatories (Nos. 1-11), <i>W&Wsens Devices, Inc. v. Samsung Elecs. Co.</i> , No. 24-cv-00854-JRG, E.D. Tex., served March 20, 2025
2010	Photon-trapping microstructures enable high-speed high-efficiency silicon photodiodes, <i>Nature Photonics</i> 11, 301-308 (2017)
2011	Order Denying Motion to Stay, <i>W&Wsens Devices, Inc. v. Samsung Elecs. Co.</i> , No. 24-cv-00854-JRG, Dkt. No. 90 (E.D. Tex. Nov. 3, 2025)

Patent Owner's Request for Discretionary Denial
PGR2025-00082 (U.S. Patent No. 12,243,948)

Exhibit	Description
2012	Second Amended Docket Control Order, <i>W&Wsens Devices, Inc. v. Samsung Elecs. Co.</i> , No. 24-cv-00854-JRG, Dkt. No. 54 (E.D. Tex. April 22, 2025)
2013	Order, <i>Resonant Sys., Inc. v. Sony Grp. Corp.</i> , No. 2:22-cv-00424-JRG, Dkt. No. 84 (E.D. Tex. July 9, 2024)
2014	Order, <i>Gen. Access Sols., Ltd. v. Cellco P'ship</i> , No. 2:22-cv-00394-JRG, Dkt. No. 225 (E.D. Tex. May 22, 2024)
2015	Order, <i>Cal. Inst. of Tech. v. Samsung Elecs. Co.</i> , No. 21-cv-00446-JRG, Dkt. No. 108 (E.D. Tex. Jan. 20, 2023)
2016	U.S. District Court – National Judicial Caseload Profile Federal for the Eastern District of Texas (June 2025)
2017	Excerpts from Defendants' Supplemental Invalidity Contentions cover pleading, <i>W&Wsens Devices, Inc. v. Samsung Elecs. Co.</i> , No. 24-cv-00854-JRG, E.D. Tex., served May 30, 2025
2018	U.S. Patent No. 10,622,498
2019	U.S. Patent No. 9,530,905
2020	Intentionally omitted
2021	U.S. Patent Application Publication No. 2020/0006416 (“ <i>Baba</i> ”)
2022	Excerpts from file history of U.S. Patent Application No. 16/042,535

Patent Owner, W&Wsens Devices Inc. (“W&Wsens”), respectfully requests that the Director discretionarily deny this Petition challenging claims 1-16 (“the Challenged Claims”) of U.S. Patent No. 12,243,948 (Ex. 1001, “the ’948 Patent”). W&Wsens will discuss, in full, the reasons why the ’948 Patent is patentable on the merits in its Patent Owner Preliminary Response.

I. INTRODUCTION

W&Wsens invented microstructured holes in thin silicon photodetectors, an important improvement in image sensors that dramatically improved their sensitivity in low-light situations. After conceiving of these microstructures in April 2013, W&Wsens invested in research and development, simulations, and proof-of-concept test wafer fabrication to validate and refine its microstructure inventions. W&Wsens shared its discoveries with the world in a seminal 2017 article in Nature Photonics that is now widely cited. W&Wsens repeatedly disclosed its patents to Petitioners (“Samsung”), explaining the importance of its patented microstructure technology that Samsung is now using. W&Wsens provided detailed presentations to several of Samsung’s officers and offered to partner with or license the patents to Samsung.

Despite these repeated disclosures, Samsung decided to infringe W&Wsens’ patents without taking a license. More than six years later and long after W&Wsens commenced an infringement action against Samsung, it has now decided to pursue

post grant review of W&Wsens' '948 Patent. The Director should exercise his discretion to deny this Petition for multiple reasons:

(1) the advanced stage of the corresponding litigation between W&Wsens and Samsung in the Eastern District of Texas (the "District Court Action") warrants denial under *Apple Inc. v. Fintiv, Inc.*, with a trial date set for seven months before the final written decision ("FWD") is due in this proceeding;

(2) the parties' settled expectations support denial because Samsung has long been on notice of W&Wsens' patents, and the PTAB already denied institution for Samsung's IPRs challenging two related W&Wsens patents due to the parties' strong settled expectations;

(3) Samsung relies extensively on its expert to fill in limitations missing from the asserted references, demonstrating the weakness of its grounds; and

(4) Samsung relies on the same or substantially the same art previously considered by the Office, warranting discretionary denial under 35 U.S.C. § 325(d).

II. THE DIRECTOR SHOULD DENY THE PETITION

A. The Director Should Deny Institution Under *Fintiv*

The Director should deny institution under 35 U.S.C. § 314(a) because the *Fintiv* Factors overwhelmingly support denial. The present Petition for post grant review has similar *Fintiv* discretionary considerations as those recently presented in Samsung's petitions challenging U.S. Patent Nos. 10,468,543 ("the '543 Patent")

and 10,446,700 (“the ’700 Patent”) which are in the ’948 Patent’s priority chain. See *Samsung Elecs. Co. v. W&Wsens Devices Inc.*, Nos. IPR2025-00995, IPR2025-00996, Paper 17 (P.T.A.B. Oct. 17, 2025) (granting Patent Owner’s request for discretionary denial). In those cases, the Board denied institution on discretionary grounds because “it is unlikely that a final written decision in these proceedings will issue before the district court trial occurs, resulting in significant duplication of effort, additional expense for the parties, and a risk of inconsistent decisions.” *Id.* at 2.

The present case presents a stronger case for discretionary denial under *Fintiv* because trial in the District Court Action is scheduled to commence on August 3, 2026, seven months before a final written decision would be expected in this case (March 5, 2027), which is a larger gap than those in IPR2025-00995 and -00996. Thus, it is even more unlikely that a final written decision in this proceeding will issue before the trial in the District Court Action.

The discretionary denial of Samsung’s IPR2025-00995 and IPR2025-00996 further increases the risk of duplication of efforts and inconsistent decision-making with the District Court Action. The District Court Action will now necessarily include validity determinations for at least those two patents and Samsung is presenting the same obviousness challenge based on *Kuboi* for those two patents and in this proceeding.

1. *Fintiv* Factor 1 Favors Denial Because a Stay Is Unlikely

Fintiv Factor 1 favors discretionary denial in this case because Judge Gilstrap is highly unlikely to stay the District Court Action. Factor 1 favors discretionary denial where “there is insufficient evidence that the district court is likely to stay its proceeding even if the Board were to institute trial.” *Arm Ltd. v. Daedalus Prime LLC*, No. IPR2025-00207, Paper 10 at 2 (P.T.A.B. May 16, 2025) (denying institution in part due to the absence of evidence of a likelihood of a stay, vacated on other grounds). In this case, Judge Gilstrap has already denied Samsung’s Motion to Stay the District Court Action, (“Motion to Stay”) as premature. Ex. 2011 at 2.

There are multiple additional reasons Judge Gilstrap is also very unlikely to stay the District Court Action should Samsung re-file its Motion.

First, any decision invalidating claims of the '948 Patent would not materially simplify the District Court Action because W&W is asserting five patents. As noted above, the PTAB already denied institution on two of Samsung’s five petitions, which undermines the rationale for any stay because the validity of at least those two patents will be decided in the District Court Action. This creates a “serious problem” for Samsung’s request for a stay because “even in a situation where the PTAB invalidates every instituted claim,” the other patents’ “asserted claims ‘would remain live in this case.’” *Force Mos Tech., Co. v. ASUSTek Comput., Inc.*, No. 2:22-cv-00460-JRG, 2024 WL 1586266, at *4 (E.D. Tex. Apr. 11, 2024). Judge Gilstrap,

therefore, would have no reason to stay the District Court Action in favor of this PGR. *Id.* (“In short, the Court still has a case to try regardless of the outcome of the IPRs.”). In this case, Samsung’s case-narrowing stipulation, which does not extend to the ’543 and ’700 Patents, will not provide meaningful “simplification of the issues.” Ex. 2013, *Resonant Sys., Inc. v. Sony Grp. Corp.*, No. 2:22-cv-00424-JRG, Dkt. No. 84 at 3-4 (E.D. Tex. July 9, 2024).

Second, Judge Gilstrap denies motions to stay where the “parties [have] engaged in extensive discovery” before the briefing on the motion to stay is complete. *See* Ex. 2015, *Cal. Inst. of Tech. v. Samsung Elecs. Co.*, No. 21-cv-00446-JRG, Dkt. No. 108 at 5 (E.D. Tex. Jan. 20, 2023); Ex. 2014, *Gen. Access Sols., Ltd. v. Cellcco P’Ship*, No. 2:22-cv-00394-JRG, Dkt. No. 225 at 4 (E.D. Tex. May 22, 2024) (finding that the state of the case disfavors a stay when “the parties have already completed fact discovery and will have served opening expert reports by the time the Motion to Stay is fully briefed”).

Accordingly, Factor 1 strongly favors denying institution because the District Court Action has already denied Samsung’s motion to stay.

2. *Fintiv* Factor 2 Favors Denial Due to the Trial’s Proximity to the Final Written Decision Deadline

Fintiv Factor 2 strongly favors discretionary denial because trial in the District Court Action is scheduled to commence on August 3, 2026, seven months before the

March 5, 2027, deadline to issue a FWD in this case.¹ Ex. 2012 at 1. As a result, engaging in a PGR in parallel to the District Court Action would raise a risk “of inconsistent outcomes and duplication of efforts resulting from . . . proceedings operating in parallel.” *Amgen Inc. v. Bristol-Myers Squibb Co.*, No. IPR2025-00601, Paper 9 at 2 (P.T.A.B. July 24, 2025).

The Board and Director have repeatedly found that discretionary denial is appropriate when the FWD is expected one or more months after the projected trial date, including in denying Samsung's two IPR petitions challenging related patents that are also at issue in the District Court Action. *See, e.g., Amazon.com, Inc. v. KAIFI LLC*, No. IPR 2025-00624, Paper 16 at 2 (P.T.A.B. July 29, 2025) (a one-month gap between the trial date and FWD deadline favors denial); IPR2025-00995, Paper 17 at 2.

Therefore, *Fintiv* Factor 2 strongly favors discretionary denial of institution.

3. *Fintiv* Factor 3: the Parties' Investment in the Case Favors Denial

Fintiv Factor 3 favors discretionary denial because the parties will already have invested significant resources in the District Court Action by the time the

¹ The median time-to-trial in the Eastern District of Texas is 25.1 months (approximately December 2026), which is still over two months before a FWD would be expected in this case. Ex. 2016.

Board's institution decision is due. By March 2026, the parties will have prepared infringement, invalidity, and subject-matter eligibility contentions, a disclosure of proposed claim terms for construction, preliminary claim constructions, a joint claim construction statement, narrowed elections of asserted claims and prior art, document productions, privilege logs, and completed claim construction briefing and a claim construction hearing. *See* Ex. 2012 at 4-6. This level of investment in the parallel District Court Action favors denial. *Fintiv*, Paper 11 at 11-12.

4. *Fintiv* Factor 4 Favors Denial Because Samsung's Stipulation is Not a True Alternative to the District Court Action

Fintiv Factor 4 favors denial because Samsung's Petition raises "the same or substantially the same claims, grounds, arguments, and evidence" as are at issue in the parallel District Court Action. *Apple Inc. v. Fintiv*, No. IPR2020-00019, Paper 11 at 12-13 (P.T.A.B. Mar. 20, 2020) (precedential) ("*Fintiv*"). Here, Samsung disputes the validity of all of the claims asserted in District Court. *See* Ex. 2017 at 1-2. Moreover, there is substantial overlap between the reference and arguments Samsung elected to assert in both forums. *Fintiv*, Paper 11 at 12-13.

Samsung's invalidity contentions assert *Kuboi* (Ex. 1004), *Vasylyev* (Ex. 1005), and *Shinohara* (Ex. 1006) in three of the eight invalidity grounds for the '948 Patent in the District Court Action. Ex. 2017 at 65-66 (listing invalidity grounds F1, F2, and F6). Samsung also asserts lack of enablement under 35 U.S.C. § 112 in its

contentions. *Id.* at 80-81; Pet. at 138-142. Thus, there is substantial overlap of issues between this PGR and the parallel District Court Action.

Samsung's stipulation does not represent a true alternative to the validity portion of the District Court Action because the district court will consider overlapping issues with respect to related patents even if this PGR is instituted. See Paper 9; *Cisco Sys. Inc. v. WSOU Investments LLC*, No. IPR2025-00188, Paper 14 at 3 (P.T.A.B. Aug. 22, 2025) (denying institution in part because petitioner's stipulation did not ensure the proceeding would be a true alternative to the district court proceeding).²

As noted above, the Director recently denied institution on Samsung's petitions challenging the related '543 and '700 Patents, which are in the '948 Patent's priority chain. See IPR2025-00995, Paper 17; IPR2025-00996, Paper 17. Those petitions raised obviousness grounds based on the same *Kuboi* reference cited in this Petition and in the District Court Action. See Pet. at 8 (raising 4 obviousness grounds based on *Kuboi*); IPR2025-00995, Paper 1 at 7 (raising §§ 102 and 103 challenges over *Kuboi*); IPR2025-00996, Paper 1 at 8 (same); Ex. 2017 at 65-66

² Samsung's stipulation is limited by its Petition's carve-out of "the right to contend in another proceeding that certain limitations are indefinite" and "the right to dispute the claimed priority in another proceeding." Pet. at 7 nn.2-3.

(listing invalidity grounds F1, F2, and F6). Because Petitioner will not face IPR estoppel for the '543 and '700 Patents, instituting trial in this case will result in the litigation of overlapping validity issues in both forums at the same time. Moreover, the parties to the District Court Action will have already engaged in invalidity and subject-matter eligibility contentions, and narrowed the election of prior art by the time an institution decision is expected in this case, which is an inefficient duplication of efforts and raises the risk of inconsistent outcomes, unaddressed by Samsung's stipulation. See Ex. 2012 at 5-6.

Nor does Samsung's limited stipulation outweigh the other *Fintiv* Factors. The Office's decision in *Motorola Solutions, Inc. v. Stellar, LLC* emphasized the non-dispositive nature of a party's stipulation. No. IPR2024-01205, Paper 19 at 2, 4 (P.T.A.B. Mar. 28, 2025) (reversing Board's grant of institution based on the *Fintiv* Factors "as a whole," emphasizing that the "Board did not give enough weight to the investment in the parallel proceeding and gave too much weight to Petitioner's *Sotera* stipulation"). Here, too, the parties' investment in the parallel proceeding greatly outweighs the effect of Petitioner's stipulation.

Therefore, for at least the foregoing reasons, *Fintiv* Factor 4 weighs in favor of the Board exercising its discretion to deny institution

5. *Fintiv* Factor 5 Favors Denial Because the Parties Are the Same

Fintiv Factor 5 weighs in favor of exercising discretionary denial because petitioners in this proceeding (Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc.) are also defendants in the District Court Action. *Fintiv*, Paper 11 at 13-14 (having the same parties to the PGR and parallel district court action favors discretionary denial).

6. *Fintiv* Factor 6 Favors Denial on the Merits of the Unpatentability Case

Fintiv Factor 6 weighs in favor of denying institution because the merits of Samsung's proposed grounds are weak. As discussed directly below, *Kuboi*, *Shinohara*, and *Vasylyev* facially fail to disclose multiple limitations of the Challenged Claims. Tacitly acknowledging the shortcomings in *Kuboi*, *Shinohara*, and *Vasylyev*'s disclosures, Samsung relies extensively on the conclusory testimony of its expert, Dr. Lebby, to try to fill in these gaps. See § II.C, *infra*; Lebby Decl., ¶¶ 175-201. The facial weakness of Samsung's case is another factor in favor of discretionary denial. *Fintiv*, Paper 11 at 15 (“[I]f the merits of the grounds raised in the petition are a closer call, then that fact has favored denying institution when other factors favoring denial are present.”).

B. The Parties' Settled Expectations Favor Discretionary Denial

The parties' settled expectations weigh in favor of discretionary denial because (1) Samsung filed IPRs challenging the validity of other, related W&Wsens

patents that issued long ago and is also challenging their validity in the District Court Action, (2) Samsung has long had notice of Patent Owner's asserted patents, including the '948 Patent's divisional parent, U.S. Patent No. 12,087,871 ("871 Patent"), and (3) W&Wsens invested substantial resources in the inventions of the '948 Patent.

First, the strong settled expectations with respect to W&Wsens' related patents support denial here. Samsung filed petitions for IPR of other W&Wsens patents, including IPR2025-00995, challenging U.S. Patent No. 10,468,543, which issued almost six years ago (on November 5, 2019), and IPR2025-00996, challenging U.S. Patent No. 10,446,700, which issued almost six years ago (on October 15, 2019). The Board has already issued orders granting discretionary denial for these petitions, expressly finding "settled expectations for Patent Owner" had been "create[ed]" for the '543 Patent and '700 Patent and noted "evidence demonstrating that Petitioner was aware of the challenged patents as early as 2020." Nos. IPR2025-00995, IPR2025-00996, Paper 17 at 2. The strong settled expectations for those related long-standing patents support denial of this Petition as well. *Samsung Elecs. Co. v. iCashe, Inc.*, No. IPR2025-00639, Paper 11 at 2-3 (P.T.A.B. Aug. 14, 2024) (declining to institute IPRs against patents that issued approximately two years ago in view of denial of IPRs against related patents that issued eight to twelve years ago).

Second, Samsung's awareness of other patents in the '948 Patent's family further creates settled expectations. *See Google LLC v. Soundclear Techs., LLC*, No. IPR2025-00344, Paper 15 at 2-3 (P.T.A.B. Aug. 4, 2025) (a petitioner's prolonged knowledge of the challenged patents creates strong settled expectations)

W&Wsens first communicated with four executives at Samsung about its patents on April 24, 2019, and continued to do so for over a year. Ex. 2004; *see generally* Exs. 2001-2004. On February 20, 2020, W&Wsens emailed those executives a comprehensive presentation entitled "Thin Silicon Photosensors For the Next Generation." Exs. 2002-2004, and Ex. 2005. This presentation included a wealth of information about W&Wsens' patent portfolio, including the marketing outlook for W&Wsens' patents and scientific reports on W&Wsens' technology. Ex. 2005 at 4-5, 6, 8, 11. W&Wsens then offered Samsung the possibility of partnering, licensing, or investing in W&Wsens on multiple occasions, including March 24, 2020. Ex. 2004 at 14-16. W&Wsens' offer and comprehensive presentation put Samsung on notice of the '948 Patent's ancestral applications.

Samsung was also put on notice of W&Wsens' patents and applications related to the '948 Patent by no later than November 16, 2018, more than seven years before Samsung filed this Petition, when those applications were cited as prior art to pending applications filed by Samsung. *See Dabico Airport Sols Inc. v. AXA Power ApS*, No. IPR2025-00408, Paper 21 at 3 (P.T.A.B. June 18, 2025) (noting that actual

notice of a particular challenged patent is unnecessary to create settled expectations because published applications are searchable). Once Samsung was put on notice of W&Wsens' technology and portfolio of patents covering its microstructured-holes-in-silicon inventions, it had every reason to avail itself of "the Office's automated search systems as well as publicly available resources on the Internet" to understand the scope of W&Wsens' IP rights. *Id.*

From its patent prosecution activities, Samsung has had at least constructive notice of patents related to the '948 Patent for at least seven years, which further supports strong settled expectations. *See iRhythm Techs., Inc. v. Welch Allyn, Inc.*, No. IPR2025-00363, Paper 10 at 3 (P.T.A.B. June 6, 2025) (finding settled expectations where the petitioner was aware of the patent owner's patents during prosecution of its own patents). Specifically, the USPTO identified one of the applications in the '948 Patent's priority chain as prior art to one of Samsung's pending applications in a Notice of References Cited on November 16, 2018. Ex. 2006 (File History of '240 patent) at 9 (citing U.S. Patent App. Pub. No. 2016/0254407), Ex. 2018 ('498 patent, U.S. Patent App. No. 14/947,718). On July 11, 2019, the USPTO identified another application in the '948 Patent's priority chain as prior art to one of Samsung's pending applications in an Office Action. Ex. 2007 at 9-10, 12 (citing U.S. Patent App. Pub. No. 2016/0307939), Ex. 2019 ('905 patent, U.S. Patent App. No. 14/943,898). Both patent applications cited by the

UPSTO to Samsung are in the priority chain of the '948 patent and share common subject matter with the '948 Patent.

Third, W&Wsens' "investment, time, and resources dedicated to research, development, [and] trials" that went into developing the claimed invention further gives rise to settled expectations that weigh in favor of discretionary denial. *Amgen*, Paper 9 at 2 (explaining that the level of investment in the claimed invention can create settled expectations for patents in force for even less than six years).

In April 2013, inventors Shih-Yuan Wang and Shih-Ping Wang were working on solutions to improve the absorption efficiency of thin silicon photodetectors, such as for use in CMOS sensor and optical interconnect applications. Ex. 2008 (10/1/25 Resp. to Interrogatory No. 1) at 7-8. The company that they founded, Patent Owner W&Wsens, bears the inventors' surname initials (Wang & Wang). After conceiving of the solution of using microstructures in thin silicon photodetectors, they worked diligently with their patent counsel to prepare a patent application, filing U.S. provisional application No. 61/826,446 shortly thereafter on May 22, 2013. *Id.* at 8.

W&Wsens invested in bringing in additional team members to participate in developing their technology. In January 2014, W&Wsens engaged Dr. M. Saif Islam, a professor at the University of California, Davis, to fabricate proof of concept photodetectors to test their inventions and collaborate on design improvements. *Id.* at 8-9. Dr. Islam conducted a series of proof-of-concept fabrication runs, verifying

the efficacy of the use of microstructures and fabricating and testing the resulting photodetectors. *Id.* In addition, W&Wsens engaged Katya Ponizovskaya Devine, who conducted computer simulations confirming the efficacy of the inventors' inventions. Ex. 2009 (3/20/25 Resp. to Interrogatories) at 14. The group published *Photon-trapping microstructures enable high-speed high-efficiency silicon photodiodes* in *Nature Photonics* 11, 301-308 (2017). Ex. 2010.

Thus, strong settled expectations favor discretionary denial. *iRhythm Techs., Inc.*, Paper 10 at 3 (denying institution in view of the settled expectations of the parties).

C. Petitioners' Extensive Use of Expert Testimony to Fill in a Missing Limitation Warrants Discretionary Denial

Samsung's Petition depends on expert testimony to fill in missing claim limitations, which is another reason to deny institution. In particular, Samsung's Petition relies on 24 pages of expert testimony to fill in claim limitations [1h] and [13h], which are missing from the asserted references, *Kuboi*, *Shinohara*, and *Vasylyev*. These limitations require: "wherein the presence of said one or more holes increases by a factor of at least 1.1 the absorption of the light by at least some of the photodetectors relative to like photodetectors lacking said holes." Pet. at 40-52 (Ground 1, citing Lebby Decl., ¶¶ 175-201); *id.* at 118, 128 (incorporating by reference arguments in Ground 1 to satisfy the corresponding limitation for Grounds 2-3).

Samsung does not argue that *Kuboi*, *Shinohara*, or *Vasylyev* inherently or expressly discloses that the presence of alleged “holes” increases light absorption by a factor of at least 1.1 relative to like photodetectors lacking said holes, as the Challenged Claims require. Pet. at 40. Instead, Samsung relies on its expert's declaration in which he tries to calculate a hypothetical amount of light absorption for *Kuboi*'s pixels based on a series of assumptions stemming from their pixel dimensions. Leiby Decl., ¶¶ 176-187. These calculations are extrinsic to the references and not evidence of how a person of ordinary skill in the art would understand their disclosures.

Samsung's Petition thus depends on expert testimony, rather than any specific teaching in a patent or printed publication to satisfy critical claim limitations that require a specific minimum increase in light absorption. This type of gap filling warrants discretionary denial, as it indicates substantive weakness in the grounds and that resolution of the Petition will require weighing battling expert opinions which may be more appropriately handled through the receipt of fulsome live testimony in the District Court Action. See *USPTO Memorandum on Interim Processes* (Mar. 26, 2025) at 2 (discretionary denial may be warranted based on the “extent of the petition's reliance on expert testimony”).

D. Discretionary Denial is Warranted Under 35 U.S.C. § 325(d)

The Director should exercise his discretion to deny institution under § 325(d) because Petitioners' challenge relies on references that are cumulative of art already considered by the Examiner during examination.

1. *Kuboi* is Less Relevant to Patentability Than any Reference Cited During Prosecution or in this Petition

Denial of Samsung's Petition under § 325(d) is appropriate because *Kuboi* is less relevant to patentability than any of the references cited during prosecution or in the Petition. See *Regeneron Pharms., Inc., v. Kymab Ltd.*, No. IPR2019-01579, Paper 9 at 10-11 (P.T.A.B. Mar. 20, 2020) (finding *Advanced Bionics* prong 1 satisfied when the new reference was found "not relevant, or, at most, cumulative of the prior-art reference . . . considered by the Examiner").

Kuboi discloses an array of photodetectors, including the typical P-I-N semiconductor layers. However, *Kuboi* does not disclose using pillars of Si, Ge, and/or SiGe alloy with holes to increase the absorption of photons in these semiconductor layers. Instead, *Kuboi* actively **blocks** the Si semiconductor regions from receiving photons, ensuring that they are only incident on adjacent *organic* material and not on the semiconductor layers, which is the opposite of what the Challenged Claims require. Compare *Kuboi* at [0059] ("A light shielding film 19 is formed on a surface of the p⁺-type semiconductor region 18 on the rear surface side of the semiconductor layer 12 so that light hv does not enter the semiconductor layer

12.”) *with* ’948 Patent at Claim 1 (reciting an array of pillars comprising Si, Ge, and/or SiGe alloy ***semiconductor material*** that have light-receiving surfaces).

At best, Kuboi is cumulative to the photosensitive structures the Examiner already considered during examination. Ex. 1003 at 296-298 (Non-final rejection discussing prior art with has “similar structures” but acknowledging each prior art “alone cannot be used to reject claim 1.”) *Kuboi* is, therefore, not relevant to patentability and is, at most, cumulative to art considered during prosecution because photodetectors without the claimed microstructures were fully considered during prosecution. *Id.*

2. Vasylyev Was Already of Record During Examination of the ’948 Patent

Vasylyev, a supplemental reference cited in Grounds 2 and 4, was already of record and considered during examination of the ’948 Patent. W&Wsens disclosed *Vasylyev* to the Examiner in a September 3, 2024, IDS. Ex. 1003 at 487 (9/2/2024 IDS disclosing *Vasylyev*), *id.* at 319 (marking *Vasylyev* considered); ’948 Patent at 4 (listing *Vasylyev* on the cover page as a cited reference). Moreover, the same Examiner that examined the ’948 Patent application applied *Vasylyev* in a non-final rejection in a related W&Wsens patent. Ex. 2022 at 21-22 (Non-final rejection of U.S. Patent App. No. 16/042,535). Thus, the first prong of *Advanced Bionics* is satisfied with regards to *Vasylyev* because Samsung’s Petition raises art already considered by the Office during prosecution.

3. *Shinohara* is Substantially Similar to *Baba*

Shinohara is cumulative to U.S. Patent App. Pub. No. 2020/0006416 (“*Baba*”), which was previously considered during the ’948 Patent’s examination, further weighing in favor of denial. W&Wsens disclosed *Baba* to the Office in a September 3, 2024, IDS. Ex. 1003 at 487 (IDS, Entry 14); Ex. 2021 (*Baba*); *see also* Ex. 1003 at 319 (marking *Baba* considered).

Samsung redundantly cites *Shinohara* as a supplemental reference for allegedly disclosing “a base dielectric region” (limitation [1f]). Pet. at 128-132.³ Petitioners cited to *Shinohara*’s discussion about “multilayer wiring layer 33” and “interlayer insulating film 31.” *Id.* at 129 (citing *Shinohara*, [0082]). *Baba* provides a substantially identical discussion to *Shinohara*. *Compare* Ex. 2021 at [0111] (“interlayer insulating film 39 is formed on a surface of the first semiconductor substrate 31”) with Ex. 1006 at [0082] (“one interlayer insulating film 31 provided therebetween is formed on the surface of the semiconductor substrate 22”). Therefore, the portions of *Shinohara* relied upon by Petitioners are substantially the same as those already considered by the Office in *Baba*.

³ *Shinohara* is arguably cumulative to *Kuboi*, which Samsung argues discloses limitation [1f] in Ground 1. *See* Pet. at 34-36.

4. Petitioners Have Not and Cannot Make a Showing of Material Error

The second prong of *Advanced Bionics* is satisfied because Petitioners do not show that the Examiner erred in a manner material to patentability. *Ecto World LLC v. RAI Strategic Holdings, Inc.*, No. IPR2024-01280, Paper 13 at 5 (P.T.A.B. May 19, 2025) (“[A] petitioner must provide an analysis even when the asserted prior art is on an IDS but the Examiner did not apply the reference.”). Here, Petitioners do not discuss the ’948 Patent’s prosecution history, do not acknowledge that *Vasylyev* was previously presented to and considered by the Office, and do not allege any material error during the ’948 Patent’s examination. Pet. at 6. Because the Petition presents only the same or substantially the same prior art and arguments previously presented during prosecution and because Petitioners have failed to show any error by the USPTO, the Director should exercise his discretion and deny institution under 35 U.S.C. § 325(d). See *Advanced Bionics, LLC v. Med-El Elektromedizinsche Geräte GmbH*, No. IPR2019-01469, Paper 6 at 8-10 (P.T.A.B. Feb. 13, 2020).

III. CONCLUSION

For all of these reasons, W&Wsens requests that the Director deny institution of post-grant review of the Challenged Claims of the ’948 Patent.

Patent Owner's Request for Discretionary Denial
PGR2025-00082 (U.S. Patent No. 12,243,948)

Respectfully submitted,

Date: November 5, 2025

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CERTIFICATE OF SERVICE

The undersigned certifies, in accordance with 37 C.F.R. § 42.6(e), and pursuant to agreement by the parties that filing with the Board through the Patent Trial and Appeal Case Tracking System (P-TACTS) constitutes electronic service, that service was made on Petitioners as detailed below.

<i>Date of service</i>	November 5, 2025
<i>Manner of service</i>	Electronic Filing with the Board (joshua.goldberg@finnegan.com; benjamin.saidman@finnegan.com; abhay.watwe@finnegan.com; biju.chandran@finnegan.com; kai.rajan@finnegan.com)
<i>Documents served</i>	PATENT OWNER'S REQUEST FOR DISCRETIONARY DENIAL
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