

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY
LIMITED,

Petitioner,

v.

ALIDDOUBLE, INC.

Patent Owner.

IPR2023-00369
U.S. Patent No. 9,356,169

PATENT OWNER'S PRELIMINARY RESPONSE

UNDER 37 C.F.R. § 42.107

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Exhibit	Description
2001	<i>Alidouble Inc., v. Taiwan Semiconductor Manufacturing Company Limited.</i> , Case No. 2:22-cv 00298-JRG (E.D. Tex), Docket Control Order.

Alidouble, Inc. (“Patent Owner” or “Alidouble”) submits this Preliminary Response to the Petition of Taiwan Semiconductor Manufacturing Company Limited (“Petitioner” or “TSMC”) seeking *inter partes* review (“IPR”) of claims 1-20 (“the Challenged Claims”) of U.S. Patent No. 6,168,169 (“the ’169 patent”). For purposes of this Preliminary Statement, Alidouble addresses some but not all of Petitioner’s arguments. Alidouble does not concede any of Petitioner’s arguments that are not addressed in this Preliminary Response.

I. INTRODUCTION

The Board should deny institution under *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (precedential) and related guidance from the Director. The ongoing parallel district court litigation between the parties will likely be completed about three months before any Final Decision. Petitioner has not moved for a stay nor argued that it will move for a stay should institution be granted. Institution should be denied because an IPR “would not ... provide an effective and efficient alternative to the district court litigation.” *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, 2018 WL 4373643, at *7 (P.T.A.B. Sep. 12, 2018) (precedential) (citations omitted). Also, Petitioner’s argument regarding its so-called “stipulation” falls far short of that considered by the Board in *Sotera*, which is not the type of “stipulation” that should preclude discretionary denial. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (P.T.A.B. Dec. 1, 2020)

(designated precedential as of Dec. 17, 2020).

Further, the Petition should be denied on the merits. Petitioner argues that the independent claims 1, 16, and 19 are obvious over the cited references. Petitioner's assertions are wrong for at least three reasons: 1) material limitation "an epitaxial (epi) layer" in the independent claims 1, 16, and 19 is not disclosed by or rendered obvious by Lauxtermann; 2) the material limitation "barrier layer" is not disclosed by Ballin, and 3) the material limitations "absorption area" and "collection area" are not disclosed by Lauxtermann or Ballin.

Because the Petition does not meet its burden of demonstrating that there is a "reasonable likelihood" that Petitioner would prevail as to at least one of the claims challenged, institution must be denied.

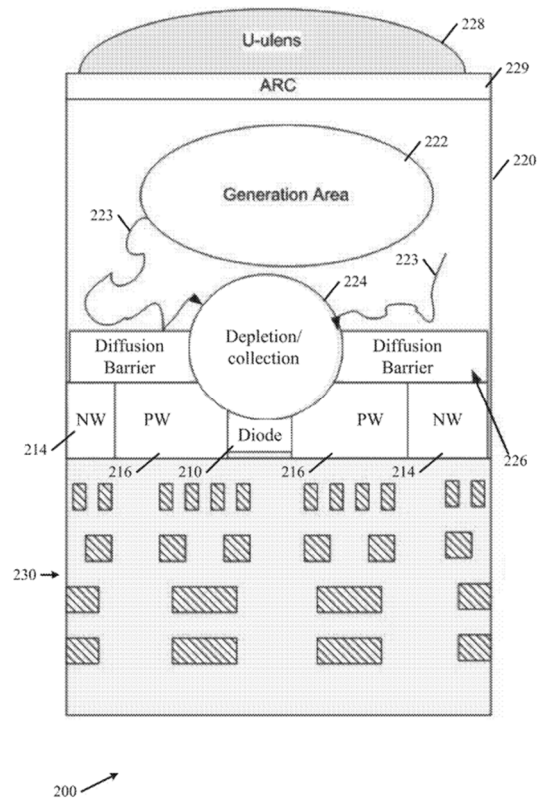
II. BACKGROUND

A. The '169 patent

The '169 patent entitled "Apparatus, system and method of back side illumination (BSI) complementary metal-oxide-semiconductor (CMOS) pixel array" was filed on July 6, 2015, and claims priority to a provisional application No. 62/021,152, which was filed on July 6, 2014. Ex. 1001. This BSI CMOS pixel array related patent was issued to inventors Assaf Lahav and Amos Fenigstein on May 31, 2016. *Id.*, 1:16-19. The '169 patent discloses a CMOS pixel that includes a photodiode and in-pixel processing transistors. *Id.*, 3:30-33, 4:9-40. As the

specification states, a pixel would have poor collection efficiency if photogenerated electrons are absorbed not by the photodiode but by well regions (specifically, the N-well regions) of the transistors, which act as parasitic photodiodes. *Id.*, 4:41-61. The '169 patent addresses this issue by placing a barrier layer below the transistor well regions to prevent the photogenerated electrons from diffusing to the transistor well regions. *Id.*, 5:57-60, 6:57-60.

In summary, the '169 patent discloses a BSI CMOS image sensor pixel array, as shown in its FIG. 2 reproduced below, that includes: one or more MOS transistors with one or more well regions (N-well 214 and/or P-well 216), a photodiode 210, an epitaxial layer 220 with an absorption area 222 and a collection area 224, the latter of which connects the absorption area 222 to the photodiode 210, and a barrier layer 226 separating the absorption area 222 from the one or more well regions 214 and 216 to prevent diffusion of electrons to both N-well region 214 and P-well region 216. Ex. 1001, Abstract, FIGS. 1 and 2.



Ex. 1001, FIG. 2

The PTO's publicly accessible patent assignment records indicate that inventors Assaf Lahav and Amos Fenigstein assigned the entire right, title, and interest in the '169 patent to Tower Semiconductor Ltd. (reel 038324; frame 0383), which assigned its entire right, title and interest to Keystone Intellectual Property Management Limited (reel 057110; frame 0159), which subsequently assigned the '169 patent to Alidouble (reel 058130; frame 0548). As a result, Alidouble owns the entire right, title, and interest in the '169 patent.

B. The '169 patent claims

The patent contains 20 claims, with claims 1, 16, and 19 being independent.

Independent claim 1 is reproduced below. The limitations for claim 1 are identified below consistent with the Petition for ease of reference.

U.S. Patent No. 9,356,169	
Claim 1	
1pre	A back-side illumination (BSI) complementary metal-oxide-semiconductor (CMOS) pixel array comprising:
1a	a plurality of pixels, a pixel of said plurality of pixels comprising
1b	one or more Metal-Oxide-Semiconductor (MOS) transistors comprising one or more well regions, a well region of said one or more well regions comprising an N-well (NW) region or a P-well (PW) region;
1c	a photodiode;
1d	an epitaxial (epi) layer comprising an absorption area and a collection area, said absorption area to absorb incoming photons and to generate electrons responsive to absorbed photons, and said collection area connecting said absorption area to said photodiode to provide said electrons from said absorption area to said photodiode; and
1e	a barrier layer separating said absorption area from said one or more well regions.

C. Parallel District Court Proceedings

The '169 patent is presently at issue in the following district court litigation brought by Patent Owner against Petitioner for infringement of several patents, including the '169 patent: *Alidouble Inc., v. Taiwan Semiconductor Manufacturing Company Limited.*, United States District Court for the Eastern District of Texas, Case No. 2:22-cv 00298-JRG. Patent Owner filed the lawsuit against Petitioner in

August 2022 for infringement of several patents, including the '169 patent, for its use of and sale of products incorporating accused image sensors made by Petitioner. The Court has entered docket control and discovery orders (Dkt. 39). Ex. 2001. Invalidity and infringement contentions have been exchanged, written discovery has been served and responded to, and the parties are now fully engaged in remaining fact discovery and claim construction. Jury selection is scheduled for May 6, 2024. *Id.* at 1.

D. Petitioner's Arguments

Petitioner asserts that the Challenged Claims of the '169 Patent are obvious in light of five references on six different grounds:

1. U.S. Patent No. 7,498,650 ("Lauxtermann") [Ex. 1004]
2. J. Ballin et al, Monolithic Active Pixel Sensors (MAPS) in a Quadruple Well Technology for Nearly 100% Fill Factor and Full CMOS Pixels, Sensors 2008 ("Ballin") [Ex. 1007]
3. S. Zucca et al, Monolithic Pixel Sensors for Fast Particle Trackers in a Quadruple Well CMOS Technology, 2012 IEEE Nuclear Science Symposium and Medical Imaging Conference Record ("Zucca") [Ex. 1005]
4. U.S. Patent No. 8,076,172 ("Akiyama") [Ex. 1006]
5. U.S. Patent No. 8,531,565 ("Wang") [Ex. 1010]

Petitioner asserts the following Grounds:

Ground	Claims	Statutory Basis	References
1	1-6, 10-15	§103	Lauxtermann
2	2, 6-7, 9	§103	Lauxtermann in view of Zucca
3	10, 11	§103	Lauxtermann in view of Akiyama

4	16-20	§103	Lauxtermann in view of Wang
5	1, 3-8, 12-15	§103	Ballin
6	10, 11	§103	Ballin in view of Akiyama

III. PERSON OF ORDINARY SKILL IN THE ART (“POSA”)

Petitioner asserts that a POSA “would have been a person having a Master’s degree in electrical engineering, material science, physics, or other related disciplines with at least three years of industry experience in integrated circuit design, layout, packaging or fabrication,” and further asserts that “[a] greater level of experience may compensate for less education and vice versa.” Pet. at 10. Patent Owner reserves the right to dispute Petitioner’s definition of a POSA if an IPR is instituted. For present purposes, this Response establishes that Petitioner’s arguments fail even under its proffered definition of a POSA.

IV. CLAIM CONSTRUCTION

Petitioner states that “Petitioner does not believe the claim terms need to be construed to resolve the prior art issues presented in this Petition.” Pet. at 10. Patent Owner reserves the right to advance its own construction for any claim term should an IPR be instituted.

V. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION

Whether to institute an IPR is “a matter committed to the Patent Office’s

discretion.” *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016). The Board should exercise its discretion and deny this petition under 35 U.S.C. § 314(a) because it would be a waste of the Board’s resources and fundamentally unfair to Patent Owner to institute trial when a final written decision would issue after the conclusion of the same validity challenge in overlapping district court litigation. In *Apple Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020), the Board stated that the following factors are relevant to a determination of whether the Board should exercise discretion not to institute a petition in view of parallel district court proceedings on the same patent:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

On June 1, 2022, the Director issued a Guidance, which stated that the PTAB will not rely on the *Fintiv* factors where a petition presents compelling evidence of unpatentability. See Memorandum from USPTO on Interim Procedure for

Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022), at 2. For the reasons set forth below, the Petition in this case does not present compelling evidence.

In this case, Patent Owner first sued Petitioner for infringement of the patent-at-issue on December 14, 2021. That suit was voluntarily dismissed on May 14, 2022. Petitioner did not file a petition against the patent-at-issue while the first lawsuit was pending. Patent Owner again sued Petitioner for infringement on August 4, 2022. Petitioner waited until December 16, 2022 to file the Petition in this case, just narrowly beating the deadline for filing a Petition.

According to the Second Amended Docket Control Order, the jury selection would be on May 6, 2024. *Alidouble, Inc. v. Taiwan Semiconductor Manufacturing Company Limited*, 2:22-cv-0298-JRG (E.D. Tex.), Dkt. 39 at 1. The Final Decision by the Board would be due on or about July 20, 2024, about three months after the jury is scheduled to be impaneled in the district court case. In this case, Petitioner's long delay in filing a Petition, coupled with the likelihood that the jury will render its verdict substantially before the Board issues its final written decision, compels the conclusion that the Board should exercise its discretion to deny institution.

Although Petitioner contends that it has provided a "*Sotera*-type stipulation," it has not done so. In *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB December 1, 2020) (designated precedential as of Dec. 17, 2020), the

Petitioner filed a stipulation in the district court, stating that Petitioner “will not pursue in [the District Court] the specific grounds [asserted in the inter partes review], or on any other ground . . . that was raised or could have been reasonably raised in an IPR (i.e., any ground that could be raised under §§ 102 or 103 on the basis of prior art patent or printed publications).” *Id.* at 13-14. Here, in contrast, the Petitioner has not filed a stipulation in district court. Further, the alleged “stipulation” offered in the Petition falls short of the stipulation that was filed in the district court in *Sotera*. Here, the Petitioner states only that it “will not pursue in the district court litigation any ground raised or that could have been reasonably raised in the instituted IPR with respect to the patent claim subject to the instituted IPR.” This is significantly narrower than the petition filed in the district court that was considered by the Board in *Sotera*. There the stipulation precluded Petitioner from litigating in the district court “*any other ground . . . that was raised or could have been reasonably raised in an IPR*” which the Petitioner there characterized as “any ground that could be raised under §§ 102 or 103 on the basis of prior art or printed publications.” *Sotera*, at 13-14. Thus, Petitioner’s argument regarding its so-called “stipulation” falls far short of that considered by the Board in *Sotera*. This is not the type of “stipulation” that should preclude discretionary denial.

VI. THE BOARD SHOULD DENY INSTITUTION

Petitioner must establish a reasonable likelihood of prevailing on

unpatentability to support institution of an IPR. *See* 35 U.S.C. § 314(a) (prohibiting the institution of IPR absent “a reasonable likelihood that Petitioner would prevail”); 37 C.F.R. § 42.108(c). Petitioner has not shown a reasonable likelihood of success that Challenged Claims are rendered obvious.

A. Applicable Legal Standard

“[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). “This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *Id.* at 418-419. For this reason, “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 418. “One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art.” *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988).

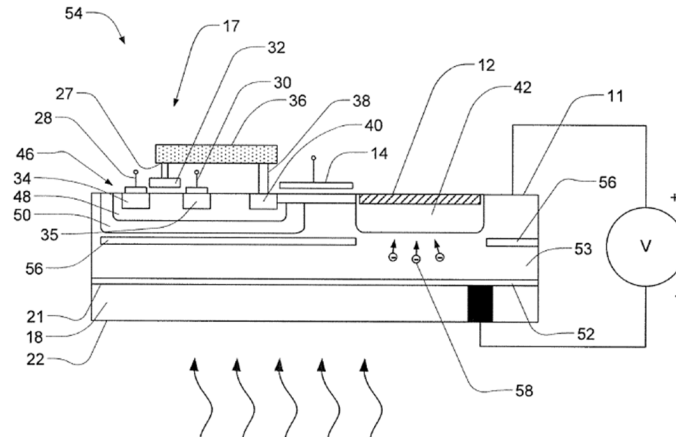
A proper petition must both “clearly point out the differences between the claimed invention and [the prior art]” and “explain why a person of ordinary skill in the art would have found the claimed subject matter obvious in spite of those differences.” *Synopsys, Inc. v. Mentor Graphics Corp.*, IPR2012-00041, 2013 WL

3355865 at *8 (P.T.A.B. Feb. 22, 2013). A Petitioner must specifically recite where the challenged limitation is found in the secondary reference(s), and explain why a POSA would have modified the primary reference with the recited limitation from the secondary reference(s). *See Microsoft Corp. v. Secure Web Conf. Corp.*, IPR2014-00745, 2014 WL 4925718, at *6-7 (P.T.A.B. Sept. 29, 2014). “[M]ere conclusory statements” are not sufficient. *Wowza Media Sys., LLC v. Adobe Sys. Inc.*, IPR2013-00054, 2013 WL 5653113, at *8 (P.T.A.B. April 8, 2013).

B. The References Relied Upon by Petitioner

1. Lauxtermann

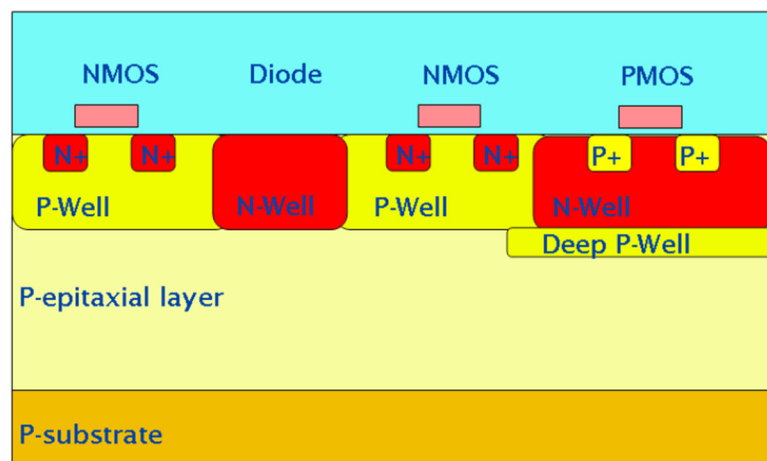
Lauxtermann is a U.S. patent directed to BSI CMOS image sensors with pinned photodiodes. Ex. 1004. As shown in the figure reproduced below and discussed in detail later, Lauxtermann includes a semiconductor layer 53. All elements of the BSI CMOS sensor 54 including a source follower transistor 17 with a P-well 48 and an N-well 50, a pinned photodiode 12, and a P-layer 56 are formed on the semiconductor layer 53. *Id.*, 1:56-2:12, FIG. 4. Contrary to Petitioner’s argument at page 12 of its Petition, Lauxtermann does not disclose that semiconductor layer 53 is an epi layer.



Ex. 1004, FIG. 4.

2. Ballin

Ballin is a printed publication directed to Monolithic Active Pixel Sensors (MAPS) and was published in a September 2008 edition of the journal *Sensors*. Ex. 1007. As shown in the FIG. 2 reproduced below, each pixel of Ballin's sensor includes: at least two NMOS transistors formed in P-wells and one PMOS transistor formed in an N-well, an N-well photodiode, a P-epitaxial layer, and a deep P-well implant only under the PMOS N-well. Ex. 1007, FIG. 2, 5339-40.



Ex. 1007, FIG. 2 (colors in original)

C. Institution Should Be Denied As To Ground I Because Claims 1-6, 10-15 Are Not Obvious Over Lauxtermann

1. Claim 1 is not rendered obvious by Lauxtermann

As shown above, claim 1 of the '169 patent requires on its face that the epi layer be separate and distinct from the MOS transistors, photodiode, and barrier layer. See Ex. 1001, 15:42-58, 16:29-47, 16:53-17:10; *Becton, Dickson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (“Where a claim lists elements separately, ‘the clear implication of the claim language’ is that those elements are ‘distinct component[s]’ of the patented invention.”).

Petitioner distorts the teaching of Lauxtermann with respect to Fig. 4. Lauxtermann does not describe layer 53 as being an epitaxial (epi) layer. On the contrary, layer 53 is described as a “semiconductor layer”. Ex. 1004, 5:30-31. A POSA would not understand that layer 53 is an epi layer. Although Lauxtermann states that layer 16 of Fig. 1 “may be an epitaxial layer with a p-doped region 20,” *Id.*, 3:5-6, there is no such statement regarding semiconductor layer 53 shown in Fig. 4, which is an entirely different embodiment. No evidence support’s Petitioner’s arguments on page 26 of the Petition that semiconductor layer 53 is an epitaxial layer because it is formed by deposition on a single-crystalline Silicon substrate.” Petitioner cites only the conclusory declaration of its expert, which must be disregarded because it parrots the Petition. See, e.g., *Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1359 (Fed. Cir. 2018) (“Attorney argument is not

evidence.”) (quoting *Icon Health & Fitness, Inc.*, 849 F.3d at 1043); *Xerox Corp. et al. v. Bytemark, Inc.*, IPR2022-00624, Paper 12 at 4-5 (expert declaration that offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner’s conclusory arguments given little weight); *Unirac, Inc. v. Ecofasten Solar, LLC*, IPR2021-00532, 2021 WL 3116853, at *7 (P.T.A.B. July 22, 2021) (denying institution where “Petitioner’s witness merely parrots the conclusory statements of Petitioner”); *Unified Patents Inc. v. GE Video Compression, LLC*, IPR2019-00726, 2019 WL 3714386, at *11 (P.T.A.B. Aug. 6, 2019) (giving little weight to expert testimony that “simply parrots the Petition without providing any basis for his opinion” and denying institution); *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) (“conclusory expert testimony is inadequate to support an obviousness determination”); *Free-Flow Packaging Int’l, Inc. v. Automated Packaging Sys., Inc.*, IPR2016-00447, Paper 7, at 10 (P.T.A.B. June 22, 2016) (denying institution where the petitioner’s expert did “nothing more than parrot the language of the Petition word for word”). Further, the disclosures at 5:29-31 of Ex. 1004 do not support Petitioner’s argument that “semiconductor layer is deposited just like semiconductor layer 16.” Indeed, no evidence supports it, and the conclusory statement of Petitioner’s expert must be disregarded. Thus, Petitioner’s annotated figure shown on page 29 of the Petition, is grossly misleading and should be disregarded.

Moreover, nothing in the Petition or the conclusory expert declaration that parrots the Petition, provides any reason why a POSA would conclude that semiconductor layer must be an epi layer. Modifying a single reference to arrive at a patented invention is “less common” and must be “explained with sufficient reasoning.” *Arendi S.A.R.L. v. Apple, Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016). Petitioner has not provided “sufficient reasoning” to fill Lauxtermann to provide the obviously missing claim limitations for its obviousness argument.

Further, the “absorption area” and “collection area” recited in limitation [1d] (“an epitaxial (epi) layer comprising an absorption area and a collection area, said absorption area to absorb incoming photons and to generate electrons responsive to absorbed photons, and said collection area connecting said absorption area to said photodiode to provide said electrons from said absorption area to said photodiode”) are not also disclosed by Lauxtermann.

Petitioner asserts that “absorption area” and “collection area” are disclosed because Lauxtermann discloses “[w]ithin that epitaxial layer, layer 53 includes a collection area and an absorption area, the former of which connects the absorption area to the photodiode.” Pet. at 27. There is also a footnote stating: “[a]ccording to the plain language of the claims, absorption area and collection area are parts of the epitaxial layer. They need not be separate layers.” *Id.*

The '169 patent describes and defines the absorption area 222 and collection

area 224 as shown clearly in FIG. 2 as reproduced above. *See e.g.*, Ex. 1001, 8:29-46; *supra*. §II.A. Against this clear intrinsic evidence, Petitioner only relies on the attorney arguments and conclusory expert opinion, none of which are evidence. *Compare, e.g.*, Pet. at 26-27 with Ex. 1003 ¶¶ 103-105 (parroting same argument with the use of same annotated Figures).

Thus, Lauxtermann fails to teach an epi layer comprising an absorption area and a collection area connecting the absorption area to the photodiode as claimed by the '169 patent.

Because Lauxtermann fails to render claim 1 obvious, it follows that claims 2-6 and 10-15, which depend on claim 1, are not obvious.

D. Institution Should Be Denied As To Ground 2 Because Claims 2, 6, 7, and 9 Are Not Obvious Based On Lauxtermann In View Of Zucca

As is demonstrated above, Lauxtermann fails to render claim 1 obvious. Thus, the additional disclosure in Zucca, which Petitioner does not argue as being relevant to the obviousness of claim 1, does not render claim 1 obvious. Thus, dependent claims 2, 6, 7, and 9, which depend on claim 1, are not obvious.

Petitioner cites Zucca for the proposition that Zucca teaches a low fill factor diode and epitaxial layers with certain minimum thicknesses. Zucca, however, does not disclose backside illumination sensors. Nothing in Zucca or Lauxtermann would give a POSA motivation to combine them to achieve the patented properties.

Petitioner's argument includes a number of obviously incorrect statements. As discussed above, Laxutermann does not teach using an epi layer in the Laxutermann Fig. 4 embodiment that Petitioner relies on. Thus, Petitioner's statement that "Lautermann expressly teaches using a thick epitaxial layer" at page 45 of the Petition is unsupported by any evidence. It's conclusory expert report, parroting the petition, does not constitute evidence for the reasons discussed above.

E. Institution Should Be Denied As To Ground 3 Because Claims 10-11 Are Not Obvious Over Laxutermann In View Of Akiyama

As is demonstrated above, Laxutermann fails to render claim 1 obvious. Thus, the additional disclosure in Akiyama, which Petitioner does not argue as being relevant to the obviousness of claim 1, does not render claim 1 obvious. Thus, dependent claims 10 and 11, which depend on claim 1, are not obvious.

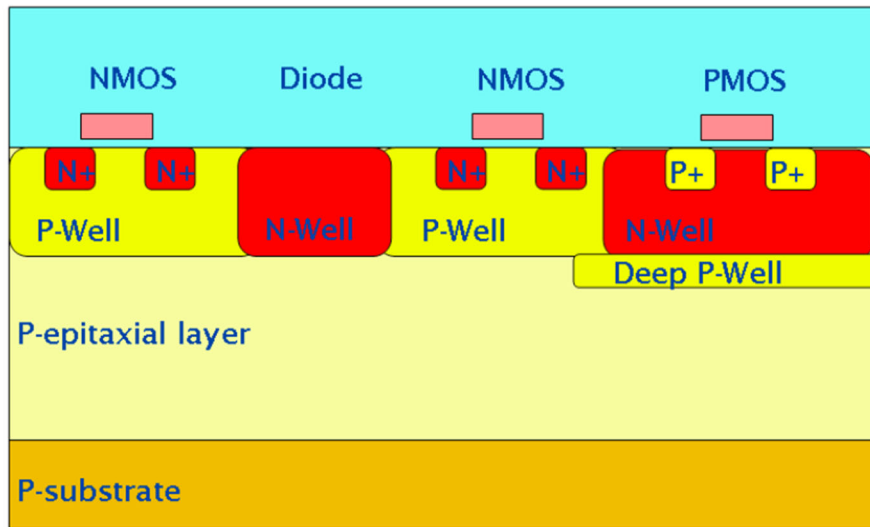
F. Institution Should Be Denied As To Ground 4 Because Claims 16-20 Are Not Obvious Over Laxutermann In View Of Wang

As is demonstrated above, Laxutermann fails to render claim 1 obvious. For the same reasons, Laxutermann does not disclose the epi layer limitation in independent claims 16 and 19. Nor does it disclose the "barrier layer separating said absorption area from said well regions." Thus, the additional disclosure in Wang, which Petitioner does not argue as disclosing the epi layer limitation or the barrier layer limitation, would not render independent claims 16 or 19 obvious. Thus, dependent claims 17, 18, and 20 are also not obvious.

G. Institution Should Be Denied As To Ground 5 Because Claims 1, 3-8 and 12-15 Are Not Obvious In View Of Ballin

There is no merit to Petitioner's assertion that Ballin renders obvious limitation [1e], "a barrier layer separating said absorption area from said one or more well regions." Ex. 1001, 15:57-58. Petitioner argues that "Ballin's deep P-well separates the N-wells of the PMOS transistors from the P-epitaxial layer" and "[a] POSA would have understood that Ballin's deep P-well implant is a barrier layer separating the absorption area from the one or more well regions." Pet. at 73-74 (emphasis added).

In fact, the deep P-well does not function as a barrier layer because it separates the asserted absorption area only from the N-well of the PMOS transistors, but not both the N-well and P-well regions (the "one or more well regions" identified by Petitioner itself). *See id.* Petitioner has presented no evidence that it would be obvious for a POSA to understand that Ballin's deep P-well implant is barrier layer separating the absorption area from the one or more well regions. Further, Ballin describes the function of the "deep P-well" to isolate only an N-well, but not the P-well. Ex. 1007 at 4-5.



Pet. at 73.

Thus, Ballin does not teach a barrier layer separating the absorption area from both N-well and P-well regions as claimed by the '169 patent.

Further, the “absorption area” and “collection area” recited in limitation [1d] (“an epitaxial (epi) layer comprising an absorption area and a collection area, said absorption area to absorb incoming photons and to generate electrons responsive to absorbed photons, and said collection area connecting said absorption area to said photodiode to provide said electrons from said absorption area to said photodiode”) are not also disclosed by Ballin.

Petitioner asserts that “absorption area” and “collection area” are disclosed because FIG. 2 of Ballin discloses “an epitaxial layer that includes an absorption area and a collection area, the latter of which connects the absorption area to a photodiode.” *Id.* at 71. There is also a same footnote as shown in the Petitioner’s

arguments with Lauxtermann: “[a]ccording to the plain language of the claims, absorption area and collection area are parts of the epitaxial layer. They need not be separate layers.” *Id.*

The ’169 patent describes and defines the absorption area 222 and collection area 224 as shown clearly in FIG. 2 as reproduced above. *See e.g.*, Ex. 1001, 8:29-46; *supra*. §II.A. Against this clear intrinsic evidence, Petitioner only relies on the attorney arguments and conclusory expert opinion, none of which are evidence. *Compare, e.g.*, Pet. at 70-72 with Ex. 1003 ¶¶ 222-224 (parroting same argument with the use of same annotated Figures). It should be given no weight. *See, e.g.*, *Elbit Sys. of Am., LLC.*, 881 F.3d at 1359 (“Attorney argument is not evidence.”) (quoting *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017)); *Xerox Corp. et al.*, IPR2022-00624, Paper 12 at 4-5 (P.T.A.B. Feb. 10, 2023) (expert declaration that offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner’s conclusory arguments given little weight); *Unirac, Inc.*, IPR2021-00532, 2021 WL 3116853, at *7 (denying institution where “Petitioner’s witness merely parrots the conclusory statements of Petitioner”); *Unified Patents Inc.*, IPR2019-00726, 2019 WL 3714386, at *11 (giving little weight to expert testimony that “simply parrots the Petition without providing any basis for his opinion” and denying institution); *TQ Delta, LLC*, 942 F.3d at 1359 (“conclusory expert testimony is inadequate to support an obviousness

determination”); *Free-Flow Packaging Int’l, Inc.*, IPR2016-00447, Paper 7 at 10 (denying institution where the petitioner’s expert did “nothing more than parrot the language of the Petition word for word”).

Thus, Ballin does not teach an epi layer comprising an absorption area and a collection area connecting the absorption area to the photodiode as claimed by the ’169 patent. As such, dependent claims 3-8 and 12-15 are not obvious over Ballin.

H. Institution Should Be Denied As To Ground 6 Because Claims 10 and 11 Are Not Obvious Over Ballin In View Of Akiyama

As is demonstrated above, Ballin fails to render claim 1 obvious. Thus, the additional disclosure in Akiyama, which Petitioner does not argue as being relevant to the obviousness of claim 1, does not render claim 1 obvious. Thus, dependent claims 10 and 11, which depend on claim 1, are not obvious.

VII. CONCLUSION

For the reasons set forth above, Patent Owner respectfully requests that the Board deny the Petition for *inter partes* review in its entirety.

Dated: April 19, 2023

Respectfully submitted,

By: /s/Eric Cohen
Eric Cohen
Registration No. 27,429

Counsel for Patent Owner
Alidouble Inc.

CERTIFICATION OF WORD COUNT UNDER 37 CFR § 42.24(d)

Pursuant to 37 C.F.R. §§ 42.24(d) and 42.24(a)(1), I hereby certify that the number of words in this Response is no more than 4,592 excluding the parts of the petition exempted by 37 C.F.R. § 42.24(a), as determined using the word count provided by Microsoft Word, which was used to prepare this Petition.

DATE: April 19, 2023

Respectfully Submitted,

/s/Eric Cohen
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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e), the undersigned hereby certifies that a copy of the Patent Owner's Preliminary Response Under 37 C.F.R. §42.107 by P-TACS electronic notification and electronic mail to each of the following individuals on the date indicated below:

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