

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SEMICONDUCTOR COMPONENTS INDUSTRIES, LLC,
Petitioner,

v.

GREENTHREAD, LLC,
Patent Owner.

IPR2023-00264
U.S. Patent No. 10,734,481

**PATENT OWNER'S PRELIMINARY RESPONSE
PURSUANT TO 35 U.S.C. § 313 AND 37 C.F.R. § 42.107**

TABLE OF CONTENTS

TABLE OF AUTHORITIES	iii
EXHIBIT LIST	v
I. INTRODUCTION	1
II. The Petition Fails to Set Out a Prima Facie Case that the Cited Art Discloses or Renders Obvious Any Claim	3
A. “Graded” does not mean “aided.”	3
1. Greenthread never said all graded dopant concentrations aid carrier movement.	4
2. Other evidence confirms that “graded” does not mean “aided.”	6
B. The Petition fails to establish the “aid carrier movement” limitation. (Elements [1.5], [1.6], [20.5], [20.6]).	9
1. The Petition fails, because Dr. Blalock expressly restricted his analysis to the direction of the slope—and nothing else.	10
2. Petitioner’s Kawagoe-Based Arguments are Deficient.	11
3. Petitioner’s Wieczorek-Based Arguments are Deficient.	16
III. The Petition is Untimely under 35 U.S.C. § 315(b).	18
A. Background	18
1. Prior Litigation Involving the Challenged Patent	18
2. The Current and Co-Pending Proceedings	21
B. The Petition should be dismissed under 35 U.S.C. § 315(b).	22
1. Legal Standard for Privity	22



2.	The Petition should be dismissed, because Petitioner has not even attempted to carry its burden to show that the Petition is timely.	26
3.	The Petition should be dismissed, because evidence of record shows that the Petition is time-barred.....	29
4.	Basic fairness and the policy underlying the AIA support dismissing the petition.	37
IV.	CONCLUSION.....	40

TABLE OF AUTHORITIES

	Page(s)
CASES	
<i>Applications in Internet Time, LLC v. RPX Corp.</i> , 897 F.3d 1336 (Fed. Cir. 2018)	2
<i>Arigna Tech. Ltd. v. Volkswagen AG</i> , No. 2:21-cv-00054, 2022 WL 2761288 (E.D. Tex. Jan. 19, 2022)	15
<i>Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.</i> , 800 F.3d 1375 (Fed. Cir. 2015)	10, 11, 12
<i>Ericsson Inc. v. Regents of Univ. of Minnesota</i> , IPR2017-01197, Paper 56 (PTAB Sept. 18, 2020)	13, 18, 19
<i>Fiumara v. Fireman's Fund Ins. Companies</i> , 746 F.2d 87 (1st Cir. 1984)	20
<i>Herrion v. Children's Hosp. Nat. Med. Ctr.</i> , 448 F. App'x 71 (D.C. Cir. 2011)	19, 21
<i>Herrion v. Children's Hosp. Nat. Med. Ctr.</i> , 786 F. Supp. 2d 359 (D.D.C.), <i>aff'd</i> , 448 F. App'x 71 (D.C. Cir. 2011)	19
<i>Impression Prod., Inc. v. Lexmark Int'l, Inc.</i> , 581 U.S. 360 (2017)	17
<i>John St. Leasehold, LLC v. Cap. Mgmt. Res., L.P.</i> , 283 F.3d 73 (2d Cir. 2002)	20
<i>LaserDynamics, Inc. v. Quanta Computer, Inc.</i> , 694 F.3d 51 (Fed. Cir. 2012)	17
<i>Minka Lighting, Inc. v. Vaxcel Int'l Co., Ltd.</i> , No. IPR2019-00802, Paper 8 (PTAB June 27, 2019)	23, 24
<i>New Hampshire v. Maine</i> , 532 U.S. 742 (2001)	21
<i>Power Integrations, Inc. v. Semiconductor Comps. Indus., LLC</i> , 926 F.3d 1306 (Fed. Cir. 2019)	22

<i>RPX Corp. v. Applications in Internet Time LLC</i> , IPR2015-01750, Paper 128 (PTAB Oct. 2, 2020).....	22
<i>Samsung Electronics Co. Ltd. v. Netlist, Inc.</i> , IPR2022-00615, Paper 40 (PTAB Feb. 3, 2023).....	8
<i>Sandoz Inc. v. Abbvie Biotechnology Ltd.</i> , No. IPR2018-00002, Paper 11 (PTAB Mar. 6, 2018).....	23
<i>Taylor v. Sturgell</i> , 553 U.S. 880 (2008).....	1, 12, 13, 17
<i>Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.</i> , IPR2017-00789, Paper 148, 2019 WL 858745 (PTAB Jan. 24, 2019).....	11
<i>Ventex Co. v. Columbia Sportswear North America, Inc.</i> , IPR2017-00651, Paper 148 (PTAB Jan. 24, 2019)	16, 17
<i>Volkswagen Grp. of Am., Inc. v. Arigna Tech. Ltd.</i> , IPR2021-01263, 2022 WL 211526 (PTAB Jan. 21, 2022)	19
<i>WesternGeco LLC v. ION Geophysical Corp.</i> , 889 F.3d 1308 (Fed. Cir. 2018)	12, 13, 16
<i>Worlds Inc. v. Bungie, Inc.</i> , 903 F.3d 1237 Fed. Cir. 2018	8, 9, 10, 11

STATUTES

35 U.S.C. § 313	1
35 U.S.C. § 315(b)	passim

OTHER AUTHORITIES

37 C.F.R. § 42.104(a).....	23, 25
37 C.F.R. § 42.107	1, 23
<i>Wright & Miller</i> § 4460 (3d ed.).....	20

EXHIBIT LIST

Exhibit No.	Description	Submitted Previously?
Ex. 2001	<i>Greenthread, LLC v. Intel Corp.</i> , No. 6:22-cv-00105-ADA, Dkt. 7 (summons returned executed) (W.D. Tex. Feb. 7, 2022)	X
Ex. 2002	[SEALED] Email communication from Petitioner's counsel to Patent Owner's counsel October 16, 2023	X
Ex. 2003	Presentation entitled "Accelerating the Journey Towards a Sustainable Ecosystem" (2023) available at Petitioner's website at https://www.onsemi.com/site/pdf/2023_Analyst_Day_Presentation.pdf	X
Ex. 2004	"Clock Devices for Servers" (Aug. 2020) available at https://cdrdv2-public.intel.com/620306/620306_Clock_Devices_For_Server_Rv1p3.pdf	X
Ex. 2005	On Semiconductor Corporation Form 10-K filing with U.S. Securities and Exchange Commission for the fiscal year ended December 31, 2016	X
Ex. 2006	ON Semiconductor data sheet entitled "NCP81248 Three-Rail Controller with Intel Proprietary Interface for IMVP8 CPU Applications" (Feb. 2018) available at https://www.onsemi.com/pdf/datasheet/ncp81248-d.pdf	X
Ex. 2007	onsemi data sheet entitled "+ 1 Phase Output Controller with SVID Interface for Computer CPU Applications" (May 2023) available at https://www.onsemi.com/download/datasheet/pdf/ncp81566-d.pdf	X

Exhibit No.	Description	Submitted Previously?
Ex. 2008	Onsemi data sheet entitled “+ 2 Phase Output Controller with SVID Interface for Computer CPU Applications (May 2023) available at https://www.onsemi.com/download/data-sheet/pdf/ncp81567-d.pdf	X
Ex. 2009	Article entitled “If You Invested \$1000 in ON Semiconductor Corp. a Decade Ago, This is How Much It’d Be Worth Now,” May 8, 2023 available at https://finance.yahoo.com/news/invested-1000-semiconductor-corp-decade-123012312.html	X
Ex. 2010	Onsemi Standard Terms and Conditions of Sale, Rev.08102021 available at https://www.onsemi.com/site/pdf/ONSEMI_T&C.pdf	X
Ex. 2011	Plaintiff’s First Set of Common Interrogatories to Defendants ON Semiconductor Corporation and Monolithic Power Services, Inc., Et Al., <i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA (D. Del.) (served Sept. 27, 2023)	X
Ex. 2012	Plaintiff’s First Set of Common Requests for the Production of Documents to Defendants ON Semiconductor Corporation and Monolithic Power Services, Inc., Et Al., <i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA (D. Del.) (served Sept. 27, 2023)	X
Ex. 2013	Definition of “privity” in Black’s Law Dictionary (11 th ed. 2019) available from Westlaw at westlaw.com	X
Ex. 2014	[SEALED] Email communication from Petitioner’s counsel to Patent Owner’s counsel October 11, 2023	X
Ex. 2015	Plaintiff’s Identification of Accused Products and Asserted Patents, <i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA (D. Del.) (served Oct. 12, 2023)	X

Exhibit No.	Description	Submitted Previously?
Ex. 2016	Petition (Paper 2) in <i>Sony Group Corp. v. Greenthread, LLC</i> , IPR2023-00324	X
Ex. 2017	Petition (Paper 1) in <i>Sony Group Corp. v. Greenthread, LLC</i> , IPR2023-00376	X
Ex. 2018	<i>Greenthread, LLC v. Intel Corp.</i> , No. 6:22-cv-00105-ADA, Dkt. 1 (Complaint) (W.D. Tex. Jan. 27, 2022)	X
Ex. 2019	<i>Greenthread, LLC v. Dell Inc.</i> , No. 6:22-cv-105-ADA, Dkt. 120 (Second Amended Complaint)	X
Ex. 2020	<i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA, Dkt. 1 (Complaint with accompanying exhibits) (D. Del. Apr. 21, 2023)	X
Ex. 2021	<i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA, Dkt. 24 (Scheduling Order) (D. Del. Sept. 11, 2023)	X
Ex. 2022	[SEALED] Confidential agreement	X
Ex. 2023	Petition (Paper 1) in <i>Intel Corp. v. Greenthread LLC</i> , IPR2023-00308	X
Ex. 2024	Petition (Paper 1) in <i>Intel Corp. v. Greenthread LLC</i> , IPR2023-00420	X
Ex. 2025	Petition (Paper 1) in <i>Intel Corp. v. Greenthread LLC</i> , IPR2023-00552	X
Ex. 2026	Petition (Paper 1) in <i>Dell Techs. Inc. v. Greenthread LLC</i> , IPR2023-00506	X
Ex. 2027	Petition (Paper 1) in <i>Dell Techs. Inc. v. Greenthread LLC</i> , IPR2023-00509	X

Exhibit No.	Description	Submitted Previously?
Ex. 2028	[SEALED] Confidential declaration	X
Ex. 2029	[SEALED] Email communication from Patent Owner's counsel to Petitioner's counsel between May 26 to June 1, 2023	X
Ex. 2030	Web pages from websites of Onsemi (www.onsemi.com), Mouser Electronics, Inc. (www.mouser.com), Rochester Electronics (www.rocelec.com), and DigiKey Corporation (www.digikey.com) (URLs for web pages are indicated on respective pages)	X
Ex. 2031	<i>Greenthread, LLC v. Intel Corp.</i> , No. 6:22-cv-00105-ADA, Dkt. 113 (Redacted Memorandum Opinion and Order) (W.D. Tex. Dec. 27, 2022)	X
Ex. 2032	<i>Greenthread, LLC v. Intel Corp.</i> , 6:22-cv-00105-ADA, Dkt. 38 (First Amended Complaint for Patent Infringement) (W.D. Tex., filed Apr. 29, 2022)	X
Ex. 2033	<i>Greenthread, LLC v. Intel Corp.</i> , 6:22-cv-00105-ADA, Dkt. 38-8 (Greenthread's Amended Preliminary Infringement Contentions) (W.D. Tex., filed Apr. 29, 2022)	X
Ex. 2034	<i>Greenthread, LLC v. Intel Corp.</i> , 6:22-cv-00105-ADA, Dkt. 38-12 (Exs. D-1, D-2, D-3, D-6 to Greenthread's Preliminary Infringement Contentions) (W.D. Tex., filed Apr. 29, 2022)	X
Ex. 2035	Plaintiff's Supplemental Identification of Asserted Patents and Accused Products in <i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA (served to Petitioner's counsel on Nov. 10, 2023)	X

Exhibit No.	Description	Submitted Previously?
Ex. 2036	Webpage regarding iFixIt, PlayStation 5 Teardown (https://www.ifixit.com/Teardown/PlayStation+5+Teardown/138280)	X
Ex. 2037	Webpage from Mouser Electronics, Inc. for NCP252160 (https://www.mouser.com/ProductDetail/onsemi/NCP252160MNTWG?qs=sPbYRqrBIVkc9klnZ2pXbg%3D%3D)	X
Ex. 2038	Webpage from DigiKey for NCP252160 (https://www.digikey.com/en/products/detail/onsemi/NCP252160MNTWG/15859992)	X
Ex. 2039	Webpage from Mouser Electronics, Inc. for NB3L202K (https://www.mouser.com/ProductDetail/onsemi/NB3L202KMNTXG?qs=z6PAvqrnkvrR8PcLN2EnUzg%3D%3D)	X
Ex. 2040	Webpage from DigiKey for NB3L202K (https://www.digikey.com/en/products/detail/onsemi/NB3L202KMNTXG/7220446)	X
Ex. 2041	Definition of “agent” in Black’s Law Dictionary (11 th ed. 2019) available from Westlaw at westlaw.com	X
Ex. 2042	<i>Greenthread, LLC v. Intel Corp.</i> , 6:22-cv-00105-ADA, Dkt. 135 (Motion for Admission Pro Hac Vice of L. Popovski on Behalf of Sony) (W.D. Tex., filed January 30, 2023)	X
Ex. 2043	[RESERVED]	
Ex. 2044	Email communication from Patent Owner to Petitioner’s litigation counsel dated September 13, 2023	X
Ex. 2045	<i>Greenthread, LLC v. Intel Corp.</i> , 6:22-cv-00105-ADA, Dkt. 49 (Notice of Appearance of Additional Counsel) (W.D. Tex., filed June 9, 2022)	X

Exhibit No.	Description	Submitted Previously?
Ex. 2046	[RESERVED]	
Ex. 2047	[RESERVED]	
Ex. 2048	<i>Greenthread, LLC v. Intel Corp.</i> , 6:22-cv-00105-ADA, Dkt. 120-8 (Greenthread's Amended Preliminary Infringement Contentions) (W.D. Tex., filed Jan. 23, 2023)	X
Ex. 2049	[SEALED] Email communications between Petitioner's counsel and Patent Owner's counsel, dated Oct. 31, 2023 - Nov. 1, 2023	X
Ex. 2050	[SEALED] Email communications between Petitioner's counsel and Patent Owner's counsel, dated Nov. 2-7, 2023	X
Ex. 2051	[SEALED] Email communications between Petitioner's counsel and Patent Owner's counsel, dated Nov. 14-15, 2023	X
Ex. 2052	[SEALED] Email communications between Petitioner's counsel and Patent Owner's counsel, dated Dec. 12-13, 2023	X
Ex. 2053	Web page from website of Onsemi (https://www.onsemi.com/products/custom-assp/soc-sip-custom-products)	X
Ex. 2054	<i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA, Dkt. 36 (Second Amended Complaint) (D. Del. Nov. 22, 2023)	X
Ex. 2055	<i>Greenthread, LLC v. ON Semiconductor Corp.</i> , No. 23-443-RGA, Dkt. 42 (Defendants' Answer, Affirmative Defenses, and Counterclaims to Plaintiff's Second Amended Complaint) (D. Del. Dec. 20, 2023)	X

Exhibit No.	Description	Submitted Previously?
Ex. 2056	[SEALED] Email communications between the Board, Petitioner's counsel and Patent Owner's counsel dated November 27, 2023	X
Ex. 2057	<i>Greenthread, LLC v. Samsung Electronics Co., Ltd.. et al</i> , Civil Action No. 2-19-cv-00147 (EDTX), Dkt. No. 6, Order regarding service	
Ex. 2058	Deposition Transcript of Dr. Travis Blalock taken in <i>Semiconductor Components Indus., LLC v. Greenthread, LLC</i> , IPR2023-01242, -01243 and -01244, dated May 2, 2024	
Ex. 2059	Declaration of Dr. Travis Blalock filed in <i>Semiconductor Components Indus., LLC v. Greenthread, LLC</i> , IPR2023-01242 as Exhibit 1003	
Ex. 2060	U.S. Patent No. 11,121,222	
Ex. 2061	Petition (Paper 3) in <i>Sony Group Corp. v. Greenthread, LLC</i> , IPR2023-00325	
Ex. 2062	Petition (Paper 1) in <i>Sony Group Corp. v. Greenthread, LLC</i> , IPR2023-00375	
Ex. 2063	[SEALED] Confidential agreement	
Ex. 2064-2900	[RESERVED]	
Ex. 2901	[SEALED] IPR2023-01242 Patent Owner's Motion for Additional Discovery, Paper 8	X
Ex. 2902	[SEALED] IPR2023-01242 Petitioner's Opposition to Patent Owner's Motion for Additional Discovery, Paper 11	X

Exhibit No.	Description	Submitted Previously?
Ex. 2903	[SEALED] IPR2023-01242 Patent Owner's Reply In Support of PO's Motion for Additional Discovery, Paper 14	X
Ex. 2904	[SEALED] IPR2023-01242 Order Denying Patent Owner's Motion for Additional Discovery, Paper 30	X
Ex. 2905	[SEALED] IPR2023-01243 Patent Owner's Motion for Additional Discovery, Paper 7	X
Ex. 2906	[SEALED] IPR2023-01243 Petitioner's Opposition to Patent Owner's Motion for Additional Discovery, Paper 10	X
Ex. 2907	[SEALED] IPR2023-01243 Patent Owner's Reply In Support of PO's Motion for Additional Discovery, Paper 13	X
Ex. 2908	[SEALED] IPR2023-01243 Order Denying Patent Owner's Motion for Additional Discovery, Paper 29	X
Ex. 2909	[SEALED] IPR2023-01244 Patent Owner's Motion for Additional Discovery, Paper 8	X
Ex. 2910	[SEALED] IPR2023-01244 Petitioner's Opposition to Patent Owner's Motion for Additional Discovery, Paper 11	X
Ex. 2911	[SEALED] IPR2023-01244 Patent Owner's Reply In Support of PO's Motion for Additional Discovery, Paper 14	X
Ex. 2912	[SEALED] IPR2023-01244 Order Denying Patent Owner's Motion for Additional Discovery, Paper 30	X

I. INTRODUCTION

The challenged patent discloses and claims a semiconductor device with (among other things) “active regions having at least one graded dopant concentration to *aid carrier movement*.”¹ The Petition should not be instituted, because (among other deficiencies) it fails to show that the prior art discloses the “aid carrier movement” claim limitation.

Rather than pointing to anything in the prior art that would teach this claim limitation, the Petition assumes that *any* “graded dopant concentration” would *necessarily* “aid carrier movement.” The Petition contains no analysis explaining why the “graded dopant concentrations” in the prior art meet the “aid carrier movement” limitation, apart from the fact that they *are* “graded dopant

¹ Greenthread, LLC (“Patent Owner,” “PO,” or “Greenthread”) submits this Preliminary Response in accordance with 35 U.S.C. § 313 and 37 C.F.R. § 42.107, responding to the Petition for *Inter Partes* Review (“Petition,” Paper 1) of U.S. Patent No. 10,734,481 (“the Challenged Patent”) filed by Semiconductor Components Industries, LLC, d/b/a onsemi (“onsemi” or “Petitioner”). This Preliminary Response is timely filed pursuant to the Board’s Order (Paper 9) extending the deadline.

concentrations.” In other words, Petitioner reads the “aid carrier movement” limitation out of the claims completely.

Patent Owner Greenthread already deposed Petitioner’s expert, Dr. Travis Blalock, in Petitioner’s co-pending IPRs challenging other patents in the same family. The patents in those IPRs contain the same claim “aid carrier movement” limitation. Dr. Blalock confirmed that “a downward-sloping gradient is sufficient,” to meet the claim limitation. He said “I see that it’s a downward-sloping gradient, and so it meets” the claim limitation.

Petitioner’s and Dr. Blalock’s assumption that “graded dopant concentrations” equals “aid carrier movement” rests on purported admissions from Greenthread. For example, according to Petitioner, Greenthread “represented to Patent Office during prosecution of the parent ‘195 Patent that a downward-sloping graded dopant concentration was known in the prior art to create an ‘inherent “built-in” unidirectional electric field.”” But that is not what Greenthread said. Petitioner leaves out Greenthread’s qualification that aiding carrier movement “[d]epend[s] on the particular slope of the graded concentration of dopant[s],” among potentially other things. Moreover, even if Petitioner’s misreading of the prosecution history were not clear on its face, the statements Petitioner attributes to Greenthread are inconsistent with the specification, the examiner’s understanding of the claims, the

prior art references on which Petitioner relies, and—as Dr. Blalock concedes—basic physics. “Graded” does not mean “aided.”

Dr. Blalock admitted that “*I did not do a calculation of the slope* because that was not needed” in light of his “graded” means “aided” assumption. Since the petitions contain nothing, except Petitioner’s misreading of Greenthread’s statements, to support the inference that their references disclose “aid carrier movement,” the petitions fail.

Below Greenthread addresses the deficiency of the petition on the merits and preserves its position regarding the timeliness of the petitions in view of a pending petition for Director Review in other proceedings.

II. The Petition Fails to Set Out a Prima Facie Case that the Cited Art Discloses or Renders Obvious Any Claim

The Board should deny institution because Petitioner fails to establish that the four references identified in the petition teach or render obvious at least the “aid carrier movement” limitation (Elements [1.5], [1.6], [20.5], [20.6]).

A. “Graded” does not mean “aided.”

Petitioner’s references do not teach the “aid carrier movement” claim limitation. Therefore, to locate “aid carrier movement” in the prior art, Petitioner asserts that Greenthread has previously admitted that *any* “graded dopant concentration” will “aid carrier movement.” That is not what Greenthread said and, as a matter of physics, it is wrong.

1. Greenthread never said all graded dopant concentrations aid carrier movement.

First, Petitioner writes: “According to [Greenthread], the claims make clear that ‘carriers **must move**’ in a particular direction (from the surface layer to the substrate)” Pet. at 23. But the bold and underlined language in brackets are *Petitioner’s* words, not Greenthread’s. The point of the sentence Greenthread actually wrote is that a “graded dopant concentration” “must move” carriers *to meet the claim limitation*, not that any and every graded dopant concentration “must move” carriers. Greenthread was emphasizing that “aid carrier movement” is a separate claim element from “graded dopant concentration”—the exact opposite of what Petitioner asserts. In context, Greenthread said:

Defendants assert that the specification does not provide guidance on how to assess or measure carrier movement. This is not true. The claims and the specification make clear that the electric field must move the carriers in a particular direction (from the surface layer to the substrate). Whether the carrier movement has a particular speed or acceleration is beyond the scope of the claim, as long as it meets the other limitations of the claim.

Ex. 1020 at 38.

Next, Petitioner attributes to Greenthread the statement that “‘when the dopant concentration is graded in a particular direction, [certain] charge carriers will move in the [same] gradient direction’” This comes from the *background* section of a

Greenthread claim construction brief where Greenthread was describing a phenomenon called “carrier drift.” Ex. 1020 at 2. By definition, carrier drift involves the movement of carriers. The fact that a phenomenon definitionally involves carrier movement and graded dopant concentrations does not mean that the phenomenon always occurs.

Finally, Petitioner claims that Greenthread said during prosecution of a related patent that “a downward-sloping graded dopant concentration was known in the prior art to create an ‘inherent “built-in” unidirectional electric field’ that sweeps carriers down.” Pet. at. 24. Most of this quote is from Petitioner, not Greenthread. Furthermore, Petitioner does not quote Greenthread’s full statement. In fact, Greenthread added that the movement of carriers “[d]epend[s] on the particular slope of the graded concentration of dopant[s].” Ex. 1016 at 289. Moreover, Greenthread was responding to an Office Action regarding a claim that required a “single static unidirectional electric drift field to aid the movement of carriers.” Ex. 1016 at 286. Those additional claim limitations were, as Greenthread said, an “*additional parameter* for ensuring that all minority carriers are moved in one direction.” Ex. 1016, 290. The fact that an “additional parameter” *besides* the graded dopants is necessary to “ensur[e] that all minority carriers are moved” shows that Greenthread was not asserting that “graded” entails “aided.”

2. Other evidence confirms that “graded” does not mean “aided.”

Even if there were any ambiguity in Greenthread’s statements, any notion that Greenthread was claiming “graded” as necessarily “aided” is implausible. First, the specification, like Greenthread’s statements during prosecution, describes the slope of the dopant concentration as a relevant parameter for determining whether a concentration gradient will aid carrier movement. “The gradient can be linear, quasi linear, exponential or complimentary error function. The relative slope of the donor concentration throughout the base creates a suitable aiding drift electric field, to help the” carriers move. Ex. 1001 at 14.

Second, during prosecution, the examiner said that in “a complex electronic device, movement of minority carriers is affected by multiple forces and fields” and that a “drift field may attempt to apply a force on all minority carriers in a specific direction” but that “without knowing other parameters of the device” one cannot say whether the field would aid carrier movement. Ex. 1016 at 270.

Third, Petitioner’s own reference, Kawagoe, confirms that graded dopant concentrations do not necessarily *aid* carrier movement, because Kawagoe teaches using a graded slope to *impede* carrier movement. Kawagoe is concerned with naturally occurring α -rays striking a semiconductor device and generating free electrons in the substrate. These free electrons can disrupt the operation of the device during a “single event upset” (“SEU”). Kawagoe teaches a “concentration gradient”

[REDACTED]

to “*prevent*” [these SEU-generated carriers] from entering the p-well” Ex. 1007, 16:7-11. Kawagoe proves that graded dopant concentrations can’t *always* aid carrier movement, as Petitioner claims, because sometimes the “concentration gradient” can “prevent” carrier movement.

Finally, Petitioner’s expert, Dr. Blalock actually agrees that Petitioner’s “aided” means “graded” theory is an artificial assumption Petitioner created for this IPR. First, Dr. Blalock agrees that the magnitude of the force a dopant gradient exerts on a carrier depends on the slope of the gradient’s curve.² Like the patent examiner, Dr. Blalock acknowledged that other forces and factors besides a dopant

² Ex. 2058, 89 (“Q. How do you know the magnitude of the force a dopant concentration puts on carriers? A. ... Anyway, it’s related to the -- the steepness of the gradient, the slope of the concentration gradient. And that was also well known by a POSITA as well, which the patent owner pointed out also.”) (emphasis added). Dr. Blalock sat for a single, consolidated deposition for IPR2023-01242, -01243, and -01244 involving patents that share a specification and drawings with the ’481 Patent due to being in the same patent family. For brevity, that deposition is referred to herein as his IPR2023-01242 deposition.

gradient act on a carrier and that “additional force” “*might be larger than the force created by the gradient.*” Ex. 2058, 137-138.³

Last, if two forces are acting on an object in opposite directions, both forces cannot aid its movement. Either the opposing forces are equal—and there is no movement—or the two forces are not equal and the object moves in the direction of the larger force. The smaller force does not “aid” the movement of the object,

³ *Id.* 126-127 (“Q. And you just said, ‘if you have a gradient, you’ll get a force and it will tend to move carriers.’ Will it move carriers or -- what do you mean “tend to move carriers”? A. Well, it creates a force on the carriers. *All other things being equal*, they’ll move. I mean, you could have, I suppose -- I don’t want to theorize....”); *Id.*, 213 (Q. So if you had an electric field that applied a force to an electron moving in material, how would a recombination rate impact the travel of that electron? A. *As the recombination rate gets higher and higher*, it will travel -- on average, it will travel a shorter distance); *Id.* 187 (“Q. And you said that there could be some additional force. Do you recall that testimony? A. I said they would move *if you didn’t have some other external force acting*. I also pointed out that the movement is a statistical process. So it’s not like you can reach in and say that carrier will move in this direction.”) (all emphasis added).

because it is pushing *against* the movement. Dr. Blalock testified that, when multiple forces act on a carrier, the carrier moves according to the “net force”:

Q. Suppose there are two forces pushing on the carrier in opposite directions. Do both of those forces aid the movement of the carrier?

[objection omitted]

THE WITNESS: The *net* field will exert a force which -- it will have some direction depending on what the field directions were, but *we can calculate the net force*. And it will have -- *it* [i.e. the net force] *will act to move the carrier*.

Ex. 2058, 187-188 (emphasis added).

B. The Petition fails to establish the “aid carrier movement” limitation. (Elements [1.5], [1.6], [20.5], [20.6]).

For all of the asserted grounds, the Petition fails to show that any of the primary references disclose any of the claim elements requiring “aid carrier movement.”⁴

⁴ (A) Elements [1.5] / [20.5]: “at least a portion of at least one of the first and second active regions having at least one graded dopant concentration to *aid carrier movement*” “from the first surface to the second surface of the substrate” (claim 1) or “from the surface to the substrate” (claim 20), and (B) Elements [1.6] / [20.6]: “at

1. The Petition fails, because Dr. Blalock expressly restricted his analysis to the direction of the slope—and nothing else.

Dr. Blalock's testimony should be rejected, because it rests on a false premise. As discussed above, a mere downward sloping gradient does *not* necessarily "aid carrier movement." *See supra* § II.A. Yet, Dr. Blalock admitted that, to determine whether a dopant concentration gradient would "aid carrier movement," he looked *only* at the direction of the slope. He did not look at the magnitude of the slope or other possible forces acting on a carrier. If there was any slope at all, he concluded that the slope "aid[ed] carrier movement," regardless of the slope's magnitude or other possible forces. Greenthread's counsel asked with regards to the same references in this IPR "have you looked at any aspect of the gradient other than its being downward sloping?" Dr. Blalock replied "As I've said, the patent owner tells us that that's sufficient, so *[t]hat's what I did. I have not done calculations of the slope per se.*" Ex. 2058, 191-192 (emphasis added). Greenthread's counsel also asked Dr. Blalock "Do you need to know the magnitude of the force on carriers to know if their movement is being aided?" Dr. Blalock said: "Well, the patent owner -- the patent hasn't given us a threshold for aiding. ... *when I look at the prior art, when I find a*

least one well region adjacent to the first or second active region containing at least one graded dopant region, the graded dopant region to *aid carrier movement* from the first surface to the second surface of the substrate."

concentration gradient, ... if there was a gradient, then it was producing that force and aiding the movement.” Ex. 2058, 91-92 (emphasis added). Since the mere direction of the gradient is *not* sufficient to determine whether there is a “net force”—as Dr. Blalock testified (*supra* § II.A.2)—the premise of Dr. Blalock’s analysis is false and his conclusions are irrelevant and cannot support institution.

2. Petitioner’s Kawagoe-Based Arguments are Deficient.

The Petition fails to demonstrate that Kawagoe teaches the “aid carrier movement” claim limitation.

Dr. Blalock did not consider the relevant factors in analyzing Kawagoe:

Dr. Blalock admitted specifically regarding Kawagoe that he did not calculate or consider the slope.

Q. In your analysis of the Limitation 1.5 of the ‘222 patent, you did not analyze any particular slope of Kawagoe; correct?

[objection omitted]

THE WITNESS: *I did not do a calculation of the slope* because that was not needed. There’s nothing in the language of the patent, in the disclosure or in the elements that define that we have – that requires a particular slope.

Ex. 2058, 181-182 (emphasis added). That admission dooms the Petition’s analysis of Kawagoe. Dr. Blalock admitted that the magnitude of the slope is necessary to

calculate the net force on carriers, and it is the *net* force that determines carrier movement. *Supra* § II.A.2. (citing Ex. 2058, 89, 187-188).

Further, the Petition and Dr. Blalock's declaration in the present proceeding contain no discussion of the magnitude of the slope or net forces. To the contrary, the Petition and Dr. Blalock's declaration focus on the *direction* of Kawagoe's slope.⁵

Kawagoe's concentration gradient impedes carrier movement: *See supra* § II.A.2. According to the Petition, Kawagoe teaches that a "downward-sloping graded dopant concentrations aid[s] the movement of carriers" Pet. at 25. But the Petition strategically uses ellipses to conceal the fact that Kawagoe's graded dopant

⁵ Pet. at 23-24 ("Here, Kawagoe's Figure 17 shows that the dopant concentration is downward-sloping with increasing depth towards/to the bottom of the substrate, and thus, according to Patent Owner (and also *in light of Patent Owner's representation to the Patent Office, discussed in §VII.A.1.g*), causes carriers to move deeper into the substrate as well."); Ex. 1003, ¶94 ("Here, Kawagoe's Figure 17 shows that the *dopant concentration is downward-sloping* with increasing depth towards/to the bottom of the substrate, *and thus*, according to Patent Owner (and also in light of Patent Owner's representation to the Patent Office, discussed in X.A.1.g), *causes carriers to move deeper* into the substrate.")

concentration is quite different from what Petitioner claims. The Petition reproduces the following passage from Kawagoe in which Greenthread has highlighted Petitioner's ellipses:

[T]he impurity concentration of the p-well 6p is given such a gradient that it is *gradually lowered in the depthwise direction from the surface* of the epitaxial layer 2E, so that the influence to be caused by the carriers (or electrons) due to the α -ray is lowered. Specifically, the *electrons produced by the α -ray are attracted to the substrate body 2S by that concentration gradient* ... so that the soft errors can be reduced in case the MIS memory of the DRAM or the like is formed in the p-well 6p.

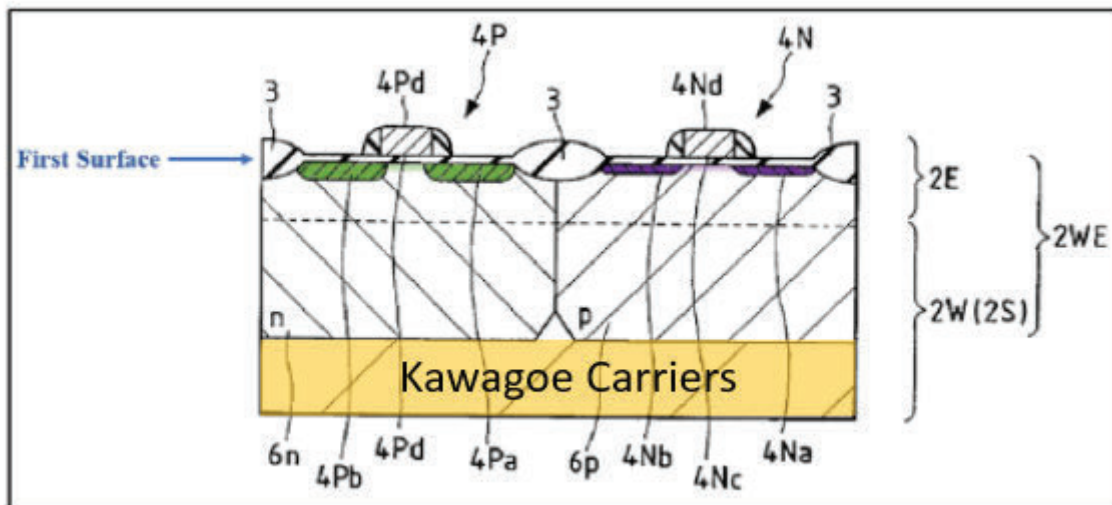
Pet. at 22 (quoting Ex. 1007, 16:2-11, emphasis and ellipses added by Petitioner). What is missing from Petitioner's quotation is Kawagoe's teaching that the graded concentration actually *inhibits* carrier movement. The full sentence from Kawagoe that Petitioner elides actually states:

Specifically, the electrons produced by the α -ray are attracted to the substrate body 2S by that concentration gradient and *prevented from entering the p-well 6p* so that the soft errors can be reduced in case the MIS memory of the DRAM or the like is formed in the p-well 6p.

Ex. 1007, 16:7-11 (emphasis added). Since Kawagoe teaches inhibiting carrier movement, it does not teach aiding carrier movement.

Kawagoe's carriers are not in the active region: Not only does Kawagoe not disclose aiding carrier movement, the carriers that its graded dopant concentration affects are in the wrong place. Every challenged claim requires “*active regions* having at least one graded dopant concentration to aid carrier movement,” but Kawagoe's graded dopant concentration and the electrons it seeks to move are not in the “active regions” of the device.

Dr. Blalock admitted in a footnote of his declaration that, according to Kawagoe, SEUs generate “electrons produced in the large substrate body below the wells”—far below the active regions. *See* Ex. 1003, ¶91 n.7. Kawagoe's electrons are initially *below* p-well 6p, and prevented from moving *upward* into p-well 6p. Below Greenthread has further annotated Petitioner's Figure from page 33 of the Petition, highlighting in orange, the location of the carries in Kawagoe.



Pet. at 33 (annotated). Kawagoe does not address carriers in the “active region,” and as the image shows, does not “aid carrier movement *from the first surface*” because Kawagoe’s carriers are nowhere near what Petitioner identifies as the “first surface.”

The Petition relies on a post-priority date reference to make up for Kawagoe’s deficiency: Apparently recognizing that Kawagoe doesn’t teach anything about carriers in the “active region” or moving carriers “from the first surface to the second surface of the substrate,” the Petition relies on testimony from Dr. Blalock and another reference to fill the gap. The petition says that “Dr. Blalock explains that during a so-called single event upset (SEU), an α -ray generates millions of carriers, *some of which are produced in or near the active regions at the surface of the substrate.*” Pet. at 23.

But Dr. Blalock doesn’t (and can’t) fill the gap. First, in support of that assertion, Dr. Blalock *only* cites Wang (Ex. 1009)—a document whose public availability Petitioner has not established, and which purports to be from **2008, i.e., four years after the critical date** for the ’481 Patent. Ex. 1003, ¶92 (citing Ex. 1009); Pet., viii (Table of Exhibits, listing “2008” for Ex. 1009); Ex. 1009, 429 (listing copyright date of 2008). Dr. Blalock did not cite any other reference or basis for his assertion that during an SEU “some [carriers] are produced in or near the active regions at the surface” (Ex. 1003, ¶92). Therefore, the Petition contains no evidence

that a POSITA would have known about SEU carriers in the active region at the time of Greenthread's patent.

Second, setting aside the date issue, Wang does not give a POSITA a reason to use Kawagoe in the active region. Wang's image—just like Kawagoe—shows that the SEU carriers are primarily generated deep in the device. Wang shows some carriers in the active region, *but never says that they are known to be a problem*. Dr. Blalock does not say that either. He merely asserts that some carriers are in the active region, without saying how many or that a POSITA would have been concerned about them.

In short, the Petition cites no evidence that a POSITA would have known of or thought about α -rays at the top of a semiconductor device on the critical date, much less adopted Kawagoe's solution (misconstrued by Petitioner) to solve the problem..

3. Petitioner's Wieczorek-Based Arguments are Deficient.

The Petition's Wieczorek grounds fail for similar reasons as the Kawagoe grounds.

The Petition points to Figure 2B of Wieczorek for the claimed "graded dopant concentration" of limitation [1.5]. Pet. at 52-53. But for the claimed "aid carrier movement" feature of limitation [1.5], the Petition relies entirely on Greenthread's supposed admissions:

Further, Wieczorek's downward-sloping graded dopant concentrations aid carrier movement from the first surface to the second surface of the substrate to the same extent to which Applicant relied on the prior art and admitted to the Patent Office that such carrier movement would occur under the same scenario."

Pet. at 54. (emphasis added). As he did for the Kawagoe-based ground regarding claim 1, Dr. Blalock repeated the Petition's language nearly verbatim without analyzing anything actually disclosed in Wieczorek for the "aid carrier movement..." feature. Pet. at 54-55; Ex. 1003, ¶¶147-153.

Furthermore, Dr. Blalock admitted that he did not calculate the slope of the graded concentration curve in Wieczorek.

Q. And regarding any of these three references [including Wieczorek], for the mapping of the claim phrase 'aid carrier movement,' have you looked at any aspect of the gradient other than its being downward sloping?

[objection omitted]

THE WITNESS: As I've said, the patent owner tells us that that's sufficient, so *[t]hat's what I did. I have not done calculations of the slope per se.*

Ex. 2058, 191-192 (emphasis added). Indeed, it would have been impossible for Dr. Blalock to make such a calculation, because the dopant gradient Petitioner points to

[REDACTED]

in Figure 2B (and Wieczorek generally) does not have any values from which one could calculate a slope. As Dr. Blalock testified, the magnitude of the slope is essential to determine the magnitude of the force the dopant gradient places on the carrier and thus the net force. *Supra* § II.A.2.

III. The Petition is Untimely under 35 U.S.C. § 315(b).

A. Background

1. Prior Litigation Involving the Challenged Patent

Greenthread owns a family of patents which all claim priority to the same provisional application. OnSemi has filed IPRs challenging six of those patents.⁶

a. [REDACTED] Litigation

On April 30, 2019, Greenthread filed a complaint against [REDACTED] in the Eastern District of Texas alleging infringement of the '195 patent, the '502 patent, and other patents not at issue in the Petitions. On July 8, 2020, Greenthread and [REDACTED] settled the litigation and Greenthread granted a license to [REDACTED] as described below.

b. Intel-[REDACTED]-[REDACTED] Litigation

On February 1, 2022, Greenthread served Intel and [REDACTED] and [REDACTED] [REDACTED] (collectively, "[REDACTED]") with a complaint filed in the Western

⁶ See IPR2023-01242, IPR2023-01243, IPR2023-01244, IPR2023-00263, IPR2023-00264, IPR2023-00265, IPR2023-00266.

District of Texas alleging infringement all of the Challenged Patents, except the '014 patent. Ex. 2001 (Complaint), 1-4; Ex. 2039 (Returned Summons). After the '014 patent issued, Greenthread filed a First Amended Complaint against [REDACTED] and Intel which it served via ECF on April 29, 2022. Ex. 2032. The cases against Intel and [REDACTED] were severed and the case against Intel was transferred to the District of Oregon. Ex. 2031, 22. The [REDACTED] litigation remained in Texas and continued in parallel with the *Intel* litigation.

█████ was a real-party-in-interest to the █████ litigation. Greenthread’s allegations in the First Amended Complaint against █████ (i.e. the April 29 complaint) were based on, among other things, █████ components in █████ products. Ex. 2032, ¶¶18, 60, 76-81; Ex. 2033, 8 (“█████ Accused Products”), 18-20 (section entitled “█████ Accused Products”); Ex. 2034, 1-34. After Greenthread served the April 29 complaint accusing █████ products, additional counsel stepped in to represent █████ with respect to █████ products. Ex. 2045. █████ then filed its own IPRs against the Challenged Patents that had been asserted against █████ products. Ex. 2017 (IPR2023-00376, Petition), Ex. 2016 (IPR2023-00324, Petition), Ex. 2061 (IPR2023-00325, Petition), Ex. 2062 (IPR2023-00375, Petition). The █████ petitions named █████ as a real-party-in-interest. *E.g.*, Ex. 2017, 7; Ex. 2016, 7; Ex. 2061, 7; Ex. 2062, 8. Afterwards, Greenthread added █████ as a party to the █████ litigation. Ex. 2019. After █████ was added to the case, █████ counsel for █████

products appeared in the case for [REDACTED] Ex. 2042. [REDACTED] other counsel did not represent [REDACTED] Greenthread and Intel, [REDACTED] and [REDACTED] settled their disputes and Greenthread granted [REDACTED] and Intel licenses as described below.

c. Greenthread Licenses to [REDACTED] Intel, and [REDACTED]

As part of the settlements, Greenthread granted [REDACTED] Intel, and [REDACTED] releases for past infringement and a license to Greenthread's patents, by way of sublicense through RPX Corporation ("RPX") ("Licenses"). Ex. 2022, 2. Greenthread licensed [REDACTED] (and two other companies) in one agreement signed July 8, 2020. Ex. 2063. Greenthread signed the second agreement, licensing and Intel and [REDACTED] on April 7, 2023. Ex. 2022. The two agreements are similar in all relevant respects. In a parallel IPR, RPX submitted an affidavit stating: "By operation of their membership agreements with RPX, Intel and [REDACTED] acquired the full scope of sublicensable rights Greenthread granted to RPX at the time the RPX-Greenthread Agreement was executed." Ex. 2028.

The Licenses grant Licensees (i.e. [REDACTED] Intel, and [REDACTED] via RPX) the right "to make, have made, use, have used, sell, ... offer for sale, have offered for sale, have sold, ... import, have imported, own, order, ... purchase, ... obtain, keep, acquire, receive, ... and otherwise exploit or dispose of any Licensed Product and Service." Ex. 2022, 3 (definition of "Patent License"); Ex. 2063, 3 (definition of "Patent License"); *see also* Ex. 2028.

The Licenses define “Licensed Product and Service” to include “any product ... made, have made, used, purchased, provided, hosted, sold, leased, licensed, distributed, transmitted, exported, imported or offered for sale, lease, or import or otherwise exploited or disposed of by or on behalf of” Licensees. Ex. 2022, 2; Ex. 2063, 2.

The Licenses cover all of Greenthread’s patents, including the Challenged Patent. *See* Ex. 2022, 3-4 (“‘Patents’ shall mean ...”) and 17 (listing patents); *see also* Ex. 2063, 3 (“‘Patents’ shall mean”) and 15 (listing patents).

Accordingly, “any product” Licensees “have made” by Petitioner or “purchase” from Petitioner is a “Licensed Product or Service” which Licensees have the right to “use, ... sell, ... obtain, ... acquire, ... receive, ... and otherwise exploit.” Ex. 2022, 2-3; *see also* Ex. 2063, 2-3.

2. The Current and Co-Pending Proceedings

On April 21, 2023, Greenthread filed a complaint alleging that Petitioner infringes U.S. Patent Nos. 10,510,842 (the “’842 Patent”) and 11,121,222 (the “’222 Patent”). Ex. 2020. Greenthread’s motion to amend the complaint to allege infringement of U.S. Patent Nos. 10,734,481 (the “’481 Patent”) and 11,316,014 (the “’014 Patent”) is pending in the district court.

On July 27, 2023, Petitioner filed three IPRs challenging the ’842 and ’222 Patents. IPR2023-01242, Paper 1; IPR2023-01243, Paper 1; IPR2023-01244, Paper

1. Those IPRs were instituted on February 12, 2024. *See, e.g.*, IPR2023-01242, Paper 32. Greenthread timely sought Director Review of each of the institution decisions. *See, e.g.*, IPR2023-01242, Paper 37. The Director Reviews were denied on April 24, 2024. *See, e.g.*, IPR2023-01242, Paper 44). On December 11, 2023, Petitioner filed four IPR petitions, including the petition in the instant proceeding, challenging claims from the '481 Patent, the '014 Patent, and U.S. Patent Nos. 9,190,502 and 8,421,195. IPR2023-00263; IPR2023-00264; IPR2023-00265; IPR2023-00266.

B. The Petition should be dismissed under 35 U.S.C. § 315(b).

1. Legal Standard for Privity

a. Control of prior litigation is not required to establish privity.

Section 315(b) provides that “[a]n inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the patent.” 35 U.S.C. § 315(b). In its decision in a related IPR, the panel said that “the rationale behind the privity provision of § 315(b), [is] ‘to prevent successive challenges to a patent by those who previously have had the opportunity to make such challenges in prior litigation.’” IPR2023-01242 at Paper 35, 19. Greenthread respectfully contends that the purpose of § 315(b) and the privity inquiry is not so narrow.

Whether two parties are privies with respect to one another is evaluated under the “common law” framework set forth in *Taylor v. Sturgell*, 553 U.S. 880 (2008). *WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1317 (Fed. Cir. 2018); *see also* Office Trial Practice Guide at 13 (citing *Taylor*). Control of the prior litigation is *sufficient* to establish privity between the parties. *See, e.g., WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1319 (Fed. Cir. 2018). But control or even awareness of the prior litigation are not necessary to establish privity. Rather, *Taylor* identifies a “pre-existing ‘substantive legal relationship’” as one reason to find privity and litigation via “proxy” or “control over the [prior] litigation” as different reasons to find privity. 553 U.S. at 894-95 (cleaned up.). Preclusion based on a pre-existing substantive legal relationship is justified by the “needs of property law,” *not* because a precluded party was adequately represented in prior litigation, controlled prior litigation, or served as a proxy. *Id.* “Preclusion is extended or denied in an effort to protect conflicting property interests *rather than an effort to implement concepts of participation or representation.*” Wright & Miller (3d ed.) § 4448 Persons Affected by Preclusion (emphasis added).

The Board also has distinguished between privity based on a proxy relationship and privity based on pre-existing substantive legal relationship. For example, in the *Worlds* remand decision, the Board rejected the argument that the petitioner was not in privity when it “was not placed on notice of the infringement”

previously and could not “control the [prior] District Court litigation.” *Bungie Inc. v. Worlds Inc.*, IPR2015-01264, Paper 64 at 38, 44 (PTAB Jan. 14, 2020).

Therefore, *Taylor* and the Board have identified “a variety of pre-existing ‘substantive legal relationship[s]’ between” two parties that can create privity, even in the absence of control over the prior litigation. *Taylor*, 553 U.S. at 894 (alterations in original). For example, customer-supplier relationships can and frequently do create privity. See, e.g., *Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00789, Paper 148 at 14, (PTAB Jan. 24, 2019) (precedential); *Volkswagen Grp. of Am. Inc. v. Argina Tech. Ltd.*, IPR2021-01263 Paper 16 (PTAB Jan. 21, 2022); *Ericsson Inc. v. Regents of Univ. of Minn.*, IPR2017-01197, Paper 56 at 8, 10 (PTAB Sept. 18, 2020). “[A]n indemnity relationship is [also] the type of relationship that can establish privity,” particularly when the indemnity obligations “directly relate to the” accused products. *Ericsson Inc. v. Regents of Univ. of Minnesota*, IPR2017-01197, Paper 56 at 8, 10 (PTAB Sept. 18, 2020). A finding of privity is also appropriate when two parties are “preceding and succeeding owners of property” and when one party acts as the “agent” for the other. *Taylor*, 553 U.S. 894-95.

- b. Petitioner bears the burden to show that its petition is timely—i.e. it is not in privity with a time-barred party.**

[REDACTED]

“[T]he IPR petitioner bears the burden of persuasion to demonstrate that its petitions are not time-barred” under § 315(b). *Samsung Electronics Co. Ltd. v. Netlist, Inc.*, IPR2022-00615, Paper 40 at 2 (PTAB Feb. 3, 2023) (quoting *Worlds, Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1242 Fed. Cir. 2018)). There is no “rebuttable presumption that formally shifts a burden of production to the patent owner” or a presumption that a petition is timely because a petitioner asserts that it is. *Worlds*, 903 F.3d at 1242. Such a presumption would be unfair, because it would “disfavor the party that likely has inferior access to potential sources of proof.” *Id.* at 1244. As in this case, a patent owner is unlikely to know the details (or even existence) of a petitioner’s relationships that might give rise to privity. Therefore, to dispute the timeliness of the petition, “a patent owner must produce *some* evidence that” a petition is time barred—but only “*some*.” *Worlds*, 903 F.3d at 1244 (emphasis in original). Once the patent owner has “presented evidence sufficient to put” the timeliness of the petition “into dispute,” “the Board c[an] no longer merely rely upon” the petitioner’s assertion that its petition is timely. *Id.* at 1246. Throughout the proceeding, the “burden remains with the petitioner to establish” that its petition is timely. *Id.* at 1242.

Here, [REDACTED] was served with a complaint alleging infringement of the ’195, ’502, ’481 Patents, and another patent not at issue by May 29, 2019. Ex. 2057. Intel and [REDACTED] were served with a complaint alleging infringement of the Challenged

Patent on February 1, 2022. Ex. 2001, 2, 4; Ex. 2018. [REDACTED] was an RPI to the First Amended Complaint against [REDACTED] (served by ECF on April 29, 2022). Ex. 2032; Ex. 2017, 7. Thus, the Petition is untimely if Petitioner is in privity with [REDACTED] Intel, or [REDACTED] Greenthread has disputed the timeliness of the Petition with evidence showing that Petitioner is in privity with Licensees. Petitioner has offered no evidence whatsoever to controvert Greenthread's evidence or demonstrate the timeliness of its Petition. Accordingly, the Petition should be dismissed.

2. The Petition should be dismissed, because Petitioner has not even attempted to carry its burden to show that the Petition is timely.

a. Greenthread has satisfied its “practical” burden under *Worlds*.

There can be no serious dispute that Greenthread here has met its initial “practical” burden under *Worlds*. *Worlds*, 903 F.3d at 1243-44. First, it is well-established that customer-supplier relationships can create privity and there is no dispute that Petitioner and the Licensees have such a relationship. *See supra* § IV.B.1; Ex. 2014, 3-4. The burden therefore falls on Petitioner to establish that the relationship does *not* create privity. Meeting its burden requires Petitioner to put into the record evidence about its relationships. The privity inquiry is a “highly fact-dependent question,” “handled by the Office on a case-by-case basis.” *Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00651, Paper No. 148 at 6 (PTAB Jan. 24, 2019) (precedential). Therefore, in virtually every case where the

Board has found that a petitioner met its burden, the Board examined the actual agreements and correspondence between the alleged privies. *See, e.g., WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1321 (Fed. Cir. 2018) (“the Board reviewed the purchase agreements”); *Samsung Electronics Co. Ltd. v. Netlist Inc.*, IPR2022-00615, Paper 64 at 14-15 (PTAB Jun. 30, 2023) (examining “indemnification correspondence” and contracts); *Assa Abloy AB v. CPC Patent Tech. Pty., Ltd.*, IPR2022-01093, Paper 20 at 18 (PTAB Feb. 2, 2023) (citing an “88-page agreement”). When the documents are *not* in the record the Board has consistently said that the absence of evidence “cuts against” the *petitioner*, not the patent owner. *Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00789, Paper 148 at 14 (PTAB Jan. 24, 2019) (precedential). Moreover, to the extent that control of the prior litigation is relevant, “the lack of evidence” regarding control should count against Petitioner, not Greenthread. *Bungie Inc. v. Worlds Inc.*, IPR2015-01264, Paper 64 at 35 (PTAB Jan. 14, 2020).

The only exception of which Greenthread is aware are this panel’s decision in *Semiconductor Components Indus., LLC v. Greenthread, LLC*, IPR2023-01242, Paper No. 31 (Feb. 5, 2024). *See also* IPR2023-01243, Paper No. 30 (Feb. 5, 2024); IPR2023-01244, Paper No. 31 (Feb. 5, 2024). Greenthread respectfully urges the panel decide this case in accordance with the Board’s other post-*Worlds* precedents.

b. Petitioner has done nothing to satisfy its burden under Section 315(b).

Here, institution should be denied because (1) it has the burden to show that its Petition is timely and (2) Petitioner has introduced no relevant evidence—absolutely none—to support such a finding. “Failure to prove [a] matter ... means that the party with the burden of persuasion loses on that point—thus, if the fact trier of the issue is left uncertain, the party with the burden loses.” *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378–79 (Fed. Cir. 2015). *Id.* Since Petitioner has not even attempted to meet its burden, it should “lose[]”. *Id.*

The Petition simply asserts, without support or explanation, that “Petitioner is not barred or estopped from requesting IPR of the Challenged Claims on the grounds identified in this Petition.” Pet., 5. That is inadequate on these facts. Mere “attorney argument that itself fail[s] to cite evidence” cannot meet Petitioner’s burden. *Worlds*, 903 F.3d at 1246. Further, Greenthread provided Petitioner the opportunity to come forward with evidence or explanation for the timeliness of its Petition—and even sought to compel the production of such evidence. Paper 7 (PO’s Motion for Additional Discovery). However, Petitioner refused to provide any discovery whatsoever or put into the record a single piece of evidence. Therefore, Petitioner cannot rely on its mere assertion, and in the absence of evidence to show that its Petition is timely, Petitioner “loses.” *Dynamic Drinkware*, 800 F.3d at 1379.

Moreover, not only does Petitioner lose in the *absence* of any evidence, the “lack of evidence” that would presumably be in Petitioner’s possession affirmatively “cuts against the party bearing the burden of proof on these issues.” *Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00789, Paper 148 at 14, 2019 WL 858745, at *6 (PTAB Jan. 24, 2019) (precedential). Therefore, the Board can reasonably infer from Petitioner’s resistance to providing evidence to meet its burden that the evidence (not in the record) is unfavorable to Petitioner.

Since Petitioner is “the party with the burden” and adduced no relevant evidence, Petitioner “loses.” *Dynamic Drinkware*, 800 F.3d at 1379.

3. The Petition should be dismissed, because evidence of record shows that the Petition is time-barred.

The Board need not evaluate whether Greenthread’s evidence suffices to show that the Petition is time-barred, because Petitioner bears the burden of proof on that issue and has not even attempted to meet its burden. If the Board chooses to look at the evidence of record, however, it is clear that the Petition is time-barred.

a. Petitioner and Licensees are “preceding and succeeding owners of property” and parties to sales of accused goods.

It is undisputed that Petitioner and Licensees are “preceding and succeeding owners of” the licensed and/or infringing products that Petitioner makes and supplies to Licensees. *Taylor*, 553 U.S. at 894. Under the America Invents Act (“AIA”), privity “extend[s] to parties to transactions and other activities relating to the

property in question,” i.e., infringing goods. *WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1318 (Fed. Cir. 2018) (quoting legislative history of the AIA). Here, the “transactions ... in question” are the sales Petitioner makes to Licensees and “the property in question” is the goods conveyed in those sales. *Id.* Indeed, some of the same products that were at issue in the litigation with Licensees are at issue again in the litigation with Petitioner. As parties to the same transactions involving the same property at issue in successive litigation, Petitioner and Licensees are unquestionably in privity.

b. Petitioner supplies accused goods to Licensees.

Licensees are Petitioner’s customers (Ex. 2003 at 12 (identifying [REDACTED] and [REDACTED]), Ex. 2014, 3-4; Paper 7, 1 (citing Exs. 2003-2008); Ex. 2004, 10; Ex. 2036, 11 (identifying Petitioner’s products in Licensees’ products), and in opposing Greenthread’s motion for discovery, Petitioner did not dispute that fact. Petitioner said that “Intel, [REDACTED] and [REDACTED] are customers of Petitioner.” IPR2023-01242, Paper 11 (OnSemi’s Opposition to Patent Owner’s Motion for Additional Discovery), 10. Further, some of the same products were at issue in the litigation with Licensees and are at issue again in the litigation with Petitioner. For example, Petitioner’s NCP252160 chip is a component in the [REDACTED]. Ex. 2036, 11. The [REDACTED] was accused in the [REDACTED] litigation. Ex. 2019, ¶¶12, 28-30, 36, 79, 85, 101-104; Ex. 2048, 18 (“Exemplary [REDACTED] Accused products that are gaming

products include [REDACTED], and associated [peripheral] equipment.”). Similarly, Petitioner’s data sheets describe its NCP81248 product as being “optimized for Intel’s ... CPUs,” and including an “Intel Proprietary Interface.” Exs. 2006, 2015. The NCP81248 chip is accused in the current district court litigation and numerous Intel CPUs were accused in the Intel litigation. Ex. 2032, ¶¶50-52; Ex. 2035, 5. Intel’s documents identify other products accused in the current district court litigation, like Petitioner’s NB3L202K, NB3L204K, and NB3N1900K chips (among others), as components of licensed Intel servers. Exs. 2004, 10-13, 21; 2035, 5. Further, it would be unfair for Petitioner to dispute that it sells accused products to Intel and [REDACTED] at this point, having taken the position that that additional “information on specific products is [not] necessary” to the instant proceeding. IPR2023-01242, Paper 11 (OnSemi’s Opposition to Patent Owner’s Motion for Additional Discovery), 10.

Additionally, even if none of the products currently accused by model number were sold to Licensees, the district court litigation is in its early stages. Ex. 2021, 4-5. Many more products are likely to be accused as the case progresses. *Arigna Tech. Ltd. v. Volkswagen AG*, No. 2:21-cv-00054, 2022 WL 2761288, at *2 (E.D. Tex. Jan. 19, 2022) (“‘It is expected that during [] discovery, infringement contentions may be clarified or refined’ based upon information produced during discovery.”). Likewise the Intel and [REDACTED] litigation settled early in discovery. Greenthread’s

accusations in those cases were likely to expand in discovery, including potentially to encompass specific components of Intel and [REDACTED] products.

Indeed, Greenthread's district court complaint specifically alleges that Petitioner sells additional types of infringing products that have not yet been specifically accused, because Greenthread has not yet received relevant discovery. For example, the complaint recites that that "[t]he infringing structures within semiconductor devices have application in many types of devices designed and manufactured by ON Semiconductor, including discrete & power modules, ... wireless connectivity, and timing, logic, and memory devices." Ex. 2020, ¶14. An Intel document indicates that Petitioner is one of its suppliers of "Clock Devices," i.e., the "timing ... devices" mentioned in the complaint. Ex. 2004, 1, 3, 10. Each sale of accused products to Licensees is a "transaction" regarding a piece of "property" which puts Petitioner and Licensees in privity. *WesternGeco*, 889 F.3d at 1318.

c. Petitioner is a beneficiary of Licensees' "agreement[] directly related" to the accused products.

"[A]greements directly related to the product accused of infringing the patent at issue in this proceeding" satisfy *Taylor's* "pre-existing substantive legal relationship" test. *Ventex Co. v. Columbia Sportswear North America, Inc.*, IPR2017-00651, Paper 148 (PTAB Jan. 24, 2019) (precedential)). Here, Petitioner operates under and is a beneficiary of Licensees' agreement with Greenthread. That

agreement is “directly related to” the accused products, because it licenses some of them. *Id.*

Under the license “any product” Licensees “have made” by Petitioner or “purchase” from Petitioner is a “Licensed Product or Service” which Licensees have the right to “use, ... sell, ... obtain, ... acquire, ... receive, ... and otherwise exploit.” Ex. 2022, 2-3. Furthermore, the license grants a limited sublicense to Licensees’ “have-made vendors” (for the limited purposes of making products for Licensees). *Id.*, 5. Petitioner is one such vendor and is therefore a (limited) sublicensee of Licensees under the license. Even if that were not the case, “have-made vendors” are entitled to a limited implied license. *See LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 73 (Fed. Cir. 2012). Therefore, Petitioner is a beneficiary of Licensees’ “agreements directly related to the product accused of infringing the patent at issue in this proceeding” satisfying *Taylor’s* “pre-existing substantive legal relationship” test. *Ventex Co.*, IPR2017-00651, Paper 148 (precedential).

d. Petitioner’s licensed sales encumber otherwise infringing articles.

Under the doctrine of exhaustion, a licensed “sale is treated, for purposes of patent exhaustion, as if the patentee made the sale itself. The result: The sale exhausts the patentee’s rights *in that item.*” *Impression Prod., Inc. v. Lexmark Int’l, Inc.*, 581 U.S. 360, 376 (2017) (emphasis added). Therefore, after Petitioner sells

products under the license, any downstream user of the article sold would have an exhaustion defense against Greenthread. Put differently, the “property” of which Petitioner and Licensees are “preceding and succeeding owners” becomes encumbered under the doctrine of exhaustion. *Taylor*, 553 U.S. at 894. Further, it does not matter whether the products were accused in the instant litigation *or whether Petitioner even asserts its license defense*. Petitioner still limits Greenthread’s rights vis-à-vis the “property” it sells under the license by giving future owners an exhaustion defense. Thus, Petitioner is effectively providing rights to third-parties under the license and, therefore, is in privity with Licensees.

e. Petitioner’s indemnity obligations to Licensees further support a finding of privity.

“[A]n indemnity relationship is the type of relationship that can establish privity,” particularly when the indemnity obligations “directly relate to the” accused products. *Ericsson*, IPR2017-01197, Paper 56 at 8, 10. Petitioner’s “Standard Terms and Conditions of Sale” agreement requires Petitioner “to defend any claim” that its product “infringes any patent,” and “to pay settlements or costs and damages.” Ex. 2010, 3. The agreement further gives Petitioner “sole control of the defense” in any action for which it will indemnify the purchaser. *Id.* Presumably, two of Petitioner’s most significant customers, [REDACTED] and Intel, received terms at least as generous as the “Standard” conditions it offers to any purchaser. Petitioner has not disputed that they did receive at least those terms.

[REDACTED]

To distinguish cases where the Board has found that an indemnity obligation created privity, Petitioner has pointed to the supposedly “ambiguous and undefined” or “non-specific” nature of the indemnity clause in its standard terms. Opp., 9. However, Petitioner has not produced its indemnity agreements with Licensees—or even asserted that *those* agreements have “ambiguous,” “undefined,” or “non-specific” indemnity clauses. Petitioner has claimed only that its “standard agreement” is non-specific, which, even if true, is irrelevant. Petitioner bears the burden of proving that it is not in privity *with Licensees*, but has refused to produce the agreements *with Licensees*. *Id.* The refusal to produce documents “suggest[s] that the [document] does not support [Petitioner] in meeting its burden regarding the” time bar. *Volkswagen Grp. of Am., Inc. v. Arigna Tech. Ltd.*, IPR2021-01263, 2022 WL 211526, at *4 n.4 (PTAB Jan. 21, 2022).

Further, assuming that there is a clause in Petitioner’s agreements with [REDACTED] and Intel similar to the one in Petitioner’s standard terms, it is hardly “ambiguous,” “undefined,” or “non-specific.” Rather, it covers the goods Petitioner sold to Licensees and at issue in both the prior and current district court litigation. It therefore “directly relate[s] to the” accused products and establishes privity. *Ericsson*, IPR2017-01197, Paper 56 at 8, 10.

f. Petitioner acts as Licensees’ “agent” for Licensees’ “have made” rights.

It is well established that “agents and principals are in privity for res judicata purposes ‘if the prior action concerned a matter within the agency.’” *Herrion v. Children's Hosp. Nat. Med. Ctr.*, 448 F. App’x 71, 73 (D.C. Cir. 2011). The D.C. Circuit is “hardly alone in this approach to privity between principals and their agents.” *Herrion v. Children’s Hosp. Nat. Med. Ctr.*, 786 F. Supp. 2d 359, 371 n.9 (D.D.C.), *aff’d*, 448 F. App’x 71 (D.C. Cir. 2011). Courts around the country have held similarly and the leading treatise on Federal procedure agrees. *Id.* (citing cases from the Supreme Court, First, Second, Third, Fifth, Sixth, Seventh, Ninth, and Eleventh Circuits); *Wright & Miller* § 4460 (3d ed.).

For example, in *John St. Leasehold, LLC v. Cap. Mgmt. Res., L.P.*, 283 F.3d 73, 75 (2d Cir. 2002), the FDIC contracted with asset managers to exercise its rights as receiver for a failed bank. The Second Circuit held that the asset managers were the FDIC’s agents, acting within “the scope of their agency,” and thus “in privity with the” FDIC. *Id.* at 75.

Likewise in, *Fiumara v. Fireman's Fund Ins. Companies*, 746 F.2d 87, 87 (1st Cir. 1984), a motel operator sued his fire insurer for denying his claim in bad faith. The motel operator lost and then sued the *contractors* the insurer used to investigate his claim. *Id.* The First Circuit affirmed summary judgment for the contractors, holding that the contractors were “acting as agents of the” insurer and therefore

“clearly qualify as persons in privity” for the purposes of collateral estoppel. *Id.* at

92

Here, Petitioner is Licensees’ contractor exercising their rights under the license, including by making accused products on their behalf under the “have made” clause. This is no different than the contract asset managers in *John St. Leasehold* acting on behalf of the FDIC or the contract investigators acting on behalf of the insurance company in *Fiumara*. See also Black’s Law Dictionary (11th ed. 2019) (defining “agent” as “[s]omeone who is authorized to act for or in place of another”). Ex. 2041. Therefore, Petitioner is Licensees’ agent and is in privity with Licensees. *Herrion*, 448 F. App’x at 73.

4. Basic fairness and the policy underlying the AIA support dismissing the petition.

a. Petitioner is trying to take inconsistent positions before the Board and in district court.

“[T]o protect the integrity of the judicial process,” “courts have uniformly ... prohibit[ed] parties deliberately changing [litigation] positions according to the exigencies of the moment.” *New Hampshire v. Maine*, 532 U.S. 742, 750 (2001). That is what Petitioner is attempting here. Right now, Petitioner wants to claim that it is a stranger to Licensees’ agreement, and therefore not in privity with them. But, Petitioner refuses to produce any evidence to support that conclusion or to say whether it will later claim the benefit of the agreement to reduce the likely damages

against it in district court. Petitioner is “playing fast and loose” with the Board and the district court. *Id.* Petitioner stepped into Licensees’ shoes by making and selling products under their license. Petitioner should not be able to take those shoes off when standing before the Board, only to put them back on again when it appears in district court.⁷

b. Petitioner’s other interests are irrelevant.

“Congress ‘chose language that bars petitions where proxies or privies would *benefit* from an instituted IPR, even where the petitioning party might separately have its own interest in initiating an IPR.’” *Power Integrations, Inc. v. Semiconductor Comps. Indus., LLC*, 926 F.3d 1306, 1316 (Fed. Cir. 2019) (emphasis in original); *RPX Corp. v. Applications in Internet Time LLC*, IPR2015-01750, Paper

⁷ Patent Owner is not suggesting that Petitioner could make its Petition timely by disclaiming a license defense in district court. Whether or not Petitioner actually asserts its license defense, it still has been acting under the license and reaping benefits from it, such as not owing any indemnity to Licensees. *Supra* § III.B.2. Petitioner also has been selling goods subject to exhaustion, thereby limiting Patent Owner’s rights, whether or not Petitioner disclaims any license. *Supra* § III.B.1.c. Petitioner cannot turn privity on and off at will. Patent Owner’s point is simply that Petitioner’s apparent strategy is unfair and the Board should not condone it.

128 at 10 (PTAB Oct. 2, 2020) (precedential) (same). Therefore, the fact that the Petitioner benefits from a license that does not cover *all* of Petitioner's sales is irrelevant. Petitioner *still benefits* from the license (and exercises Licensees' "have made" rights). Therefore, Petitioner is in privity with Licensees. Petitioner will have the opportunity to challenge the validity of the Challenged Patent in district court. The only question before the Board is whether Petitioner can avail itself of *additional* challenges here. The answer Congress provided in § 315(b) is "no."

c. Petitioner should not receive a preliminary reply or be allowed to submit new evidence.

A preliminary reply is only justified on a showing of "good cause." Office Trial Practice Guide at 13. A reply is not appropriate to address arguments "Petitioner could have reasonably foreseen" when filing its petition. *Sandoz Inc. v. Abbvie Biotechnology Ltd.*, No. IPR2018-00002, Paper 11 at 3 (PTAB Mar. 6, 2018). Here, Greenthread and Petitioner were actively litigating essentially the same privity issues in IPR2023-01242, IPR2023-01243, and IPR2023-01244 at the time the instant petition was filed. Petitioner's decision not to address the privity issues in its petition was a deliberate choice and Petitioner cannot reasonably claim that it did not foresee that Greenthread would raise the timeliness of its petitions here.

IV. CONCLUSION

For the foregoing reasons, institution of the Petition should be denied. If institution is denied, the Board could deny Greenthread's motion for additional discovery as moot.

Dated: May 8, 2024

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Petitioner hereby certifies that the word count for the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** is 8,762 words, which is within the limit set in 37 C.F.R. §42.24(b)(1). This word count does not include the table of contents, table of authorities, exhibit list, certificate of word count, and certificate of service. This word count was prepared using Microsoft Word.

Dated: May 8, 2024

By: /Alan Whitehurst/
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CERTIFICATION OF SERVICE

The undersigned hereby certifies that a copy of this **PATENT OWNER'S PRELIMINARY RESPONSE** has been served on Petitioner via email on the following counsel of record for Petitioner:

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