

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

Petitioner

v.

CHIEN-MIN SUNG,

Patent Owner

IPR2024-00535
U.S. Patent No. 9,724,802

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

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Exhibit	Description
2001	U.S. Patent Pub. No. 2007/0155298
2002	U.S. Provisional Application No. 61/489,074
2003	<i>Kinik Co. v. Chien-Min Sung</i> , IPR2021-00638, Patent Owner's Preliminary Response (June 10, 2021)
2004	Volume 2 of Deposition Transcript of Stanley Shanfield in <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, LLC</i> (E.D. Tex.), held on May 28, 2024.
2005	Data on EDTX Motions to Stay Pending Inter Partes Review compiled by www.docketnavigator.com
2006	Plaintiff Dr. Chien Min-Sung's Preliminary Disclosure of Asserted Claims and Infringement Contentions from <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, LLC</i> (E.D. Tex.).
2007	Defendants' P.R. 3-3 Invalidity Contentions from <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, LLC</i> (E.D. Tex.).
2008	Declaration of Stanley Shanfield, Ph.D. in Support Of Defendants' Proposed Claim Constructions from <i>Chien-Min Sung v. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, LLC</i> (E.D. Tex.).

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Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, Patent Owner Chien-Min Sung (“Patent Owner” or “Dr. Sung”) submits his Patent Owner’s Preliminary Response.

I. INTRODUCTION

Petitioners Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, LLC (collectively, “Petitioners” or “Samsung”) contend that the challenged claims of U.S. Patent No. 9,724,802 (the “’802 Patent”) are anticipated or rendered obvious. Yet, all three of their asserted grounds of unpatentability turn entirely on an argument for a later priority date for the claims of the ’802 Patent that is both legally incorrect and misconstrues the file history of the ’802 Patent.

Consequently, each of Petitioners’ asserted grounds depend on references that are not prior art to the ’802 Patent. Tsai (Ex. 1004), the sole reference for Ground 1, was published *after* the three priority dates to which the ’802 Patent is entitled. As to Sung ’026 (Ex. 1005) and Sung ’146 (Ex. 1029), they are both *grandparents* of the ’802 Patent and to which the ’802 Patent claims priority. As such, neither Sung ’026 nor Sung ’146 is prior art to the ’802 Patent.

Tsai also does not anticipate the challenged claims of the ’802 Patent because Tsai fails to teach or suggest the “designated profile,” “tip variation” from a designated profile, “highest protruding tip,” “second highest protruding

tip,” “highest 1% of the producing tips,” and the claimed difference in protrusion distance as recited in claim 1.

For Ground 2, Tsai also fails to teach or disclose elements of the dependent claims, including claims 8-12, which recite new subject matter unique to the '802 Patent, including the claimed numbers of “working superabrasive particles.”

Petitioners' Ground 3 also fails as a matter of law because, as discussed above, neither Sung '026 nor Sung '146 is prior art. Because the '802 Patent properly claims priority to Sung '026 *and* Sung '146, neither qualifies as prior art.

In sum, as there is no reasonable likelihood that Petitioners will prevail with respect to any of the claims challenged in the Petition, and a high likelihood of duplication of efforts should the Board decide to institute, the Petition should be denied.

II. BACKGROUND

A. The '802 Patent

The '802 Patented invention relates to a pad dresser for Chemical Mechanical Polishing (CMP), which is a “technique[] to manufacture smooth and even-surfaced silicon wafers” (Ex. 1001 at 1:45-46) used in the semiconductor industry (*id.* at 1:42). CMP is performed using a polishing pad with an abrasive slurry. (*Id.* at 1:48-49.) In turn, “[a] CMP pad dresser can be used to dress or condition a CMP pad by

removing dirt and debris (i.e., deglazing the pad), as well as opening up asperities in the pad surface to capture and hold chemical slurry during a polishing procedure.” (*Id.* at 9:50-54.) Each pad conditioner can have more than 10,000 superabrasive particles (*id.* at 10:44) which dress the CMP pad (*id.* at 10:5-8).

Traditional CMP pad conditioners came with drawbacks due to inherent design flaws and manufacturing limitations, including that they “generally contain significant variation in tip height across the surface of the dresser” (*Id.* at 9:38-40.) Consequently, “only a small percentage of superabrasive particles in a typical CMP pad dresser are positioned so as to penetrate or cut into a CMP pad” (*id.* at 9:56-58), and “[a]s this small percentage of superabrasive particles become worn, plastic deformation of the CMP pad becomes large relative to the amount of CMP of pad that is cut” (*id.* at 9:58-61), leaving the pad “deformed and accumulated with dirt” (*id.* at 9:62). This brings further negative effects to the CMP process, as “the polishing rate of the CMP pad declines, and the scratch rate of the wafer or work piece increases.” (*Id.* at 9:63-64.)

To that end, the ’802 Patent provides a structural solution such that the leveling of the tips of the superabrasive particles “allows differing amounts of superabrasive particles to actually cut asperities into the pad” (*id.* at 16:8-10) and that “the relative leveling of the monolayer of superabrasive particles can greatly affect the morphology and distribution of asperities cut into the CMP pad by the

dresser (*id.* at 15:30-33). Specifically, the '802 Patent teaches that “the present CMP pad dressers can have superabrasive particles that are aligned across a designated profile, and as such, are ‘leveled’ with respect to that profile.” (*Id.* at 9:33-35.) The '802 Patent teaches that “[n]umerous configurations for designated profiles are possible depending on the particular use of the abrading tool” (*id.* at 17:5-6), and that specific profile shapes have certain benefits for the CMP process. For example, “CMP pad dressers may include such curved profiles in order to more effectively distribute the frictional forces between all of the superabrasive particles, thus reducing failures of individual particles and prolonging the life of the dresser.” (*Id.* at 17:41-45.)

B. Tsai

Tsai, which was co-authored by Patent Owner Dr. Sung, discloses an improved Organic Diamond Disk, which is compared with a conventional Brazed Diamond Disk. (Ex. 1004 at Abstract.) Tsai’s ODD is manufactured via reverse casting of polymers, in which “the substrate is prepared after the diamond grits are leveled on the surface of a mold.” (*Id.* at 3:12-4:1.)

C. Sung '026

Sung '026 refers to U.S. Patent Application No. 11/223,786, which was filed on September 9, 2005, and is identified in the Related U.S. Application Data section on the face of the '802 Patent. The '802 Patent is a CIP of U.S. Patent

Application No. 13/797,704, which is a CIP of U.S. Patent Application No. 12/726,786, which is a CIP of U.S. Patent Application 11/560,817, which is a CIP of Sung '026.

D. Sung '146

Sung '146 refers to U.S. Patent Application No. 13/479,148, which was filed on May 23, 2012 and issued as USP No. 8,974,270 to which the '802 Patent claims priority. The '802 Patent is a CIP of U.S. Patent Application No. 13/802,112, issued as USP No. 9,138,862 (which is a CIP of Sung '146).

E. Person of Ordinary Skill in the Art (“POSITA”)

For the purposes of this Preliminary Response, Patent Owner does not contest the definition of POSITA provided by Petitioners' expert Dr. Stanley Shanfield. (Ex. 1002 at ¶¶ 21-23.) However, should trial be instituted, Patent Owner contends that Dr. Shanfield is not qualified as a POSITA.

F. Claim Construction

For the purposes of this Preliminary Response, Patent Owner does not contend that any construction of any of the claim terms of the '802 Patent is necessary because the '802 Patent expressly defines those terms at issue, such as “conditioner,” “working superabrasive particles,” “cutting depth” and “profile.”

III. THE PRIORITY DATE OF THE '802 PATENT

Petitioners' contention that the priority date for *all* of the claims of the '802 Patent is October 3, 2014 is based on a factually and legally incorrect interpretation

of the intrinsic record of the '802 Patent and misconstrues Dr. Sung's Declaration in the Kinik litigation (Ex. 1011).

The '802 Patent was issued as a CIP from a number of prior applications by Dr. Sung. A CIP, by definition, contains **both** new subject matter as well as subject matter from prior applications to which the CIP (here, the '802 Patent) claims priority. *See* 37 C.F.R. 1.53(b)(1); M.P.E.P. § 201.08.

Consistent with these principles, “[d]ifferent claims of [a CIP] application may . . . **receive different effective filing dates.**” *Augustine Medical, Inc. v. Gaymar Industries, Inc.*, 181 F.3d 1291, 1302 (Fed. Cir. 1999). Accordingly, there need not be a single priority date for **all** challenged claims of the '802 Patent particularly if they recite both new subject matter and matter from earlier applications. Nor could the priority date **for all claims** be limited to the filing date of U.S. Patent Application No. 14/506,476 which led to the '802 Patent. That is because, **by definition**, a CIP such as the '802 Patent must “repeat[] a substantial portion or all of the prior-filed application.” M.P.E.P. § 201.08.

Petitioners do not dispute that at least three key limitations of the sole independent claim 1 of the '802 Patent contain **only** subject matter from prior applications. (Pet. at 20-21.) Petitioners further acknowledge that during prosecution, the Applicant amended claim 1 to include the limitation “wherein a tip of each of the plurality of superabrasive particles aligns along a designated profile

with a tip variation of from about 5 microns to about 100 microns,” and argued that *“this claim limitation is fully supported in the ’817 application [U.S. Patent Application No. 11/560,817], from which the current application claims priority.”* (Pet. at 14.)¹ Moreover, Petitioners acknowledge that all of the limitations of claim 1 are disclosed in Dr. Sung’s prior applications, further reinforcing that claim 1 of the ’802 Patent does not contain new subject matter. (Pet. at 20-21.)

The same is true for dependent claims 2-7 and 13-21—their subject matter is similarly disclosed in Dr. Sung’s prior applications, as will be discussed in greater detail below. Petitioners’ attempt to assert a single priority date for all of the claims runs roughshod over the intrinsic disclosures of the claimed elements in Dr. Sung’s priority applications. Each and every element of claims 2-5 and 13-21 are *fully* disclosed in both U.S. Patent Application No. 11/223,786 filed on Sept. 9, 2005 and published as U.S. Pub. No. 2007/0060026 (Ex. 1005, “Sung ’026”) and U.S. Patent Application No. 11/560,817 filed on November 16, 2006 (Ex. 2001, “Sung ’817”) and published as U.S. Pub. No. 2007/0155298 (“’298 Pub”), which is a CIP of Sung ’026 and issued as U.S. Patent No. 7,762,872. Both Sung ’026 and

¹ Application claim 11 was allowed as claim 1 after claims 1-10 were rejected by the Examiner. (Ex. 1003 at 205-7.) Unless otherwise indicated, all emphasis in this Preliminary Response has been added.

Sung '817 therefore “reasonably convey[] to an artisan that the inventor had possession at that time of the later claimed subject matter.” *Augustine Med.*, 181 F.3d at 1302.

A. Claim 1 Has Written Support from Sung '026, Sung '817 and Sung '074 and Is Thus Entitled to a Priority Date of Sept. 9, 2005, Nov. 16, 2006 and May 23, 2011, Respectively

Independent claim 1 of the '802 Patent is fully supported by Sung '026 and Sung '817, as reflected in the chart below. Accordingly, claim 1 is entitled to a priority date of no later than Sept. 9, 2005 based on Sung '026 or Nov. 16, 2005 based on Sung '817. Where necessary, claim 1 is also described in U.S. Provisional Application No. 61/489,074 (Ex. 2002, “Sung '074”) filed on May 23, 2011 and to which the '802 Patent also claims priority. Thus, Claim 1 is also entitled to a priority date of no later than May 23, 2011 based on Sung '074.

'802 Patent, Claim 1	US Patent Application 11/223,786 published as U.S. 2007/0060026 (filed Sep. 9, 2005) ²	US Patent Application 11/560,817 (CIP of '786) published as US 2007/0155298 (filed on Nov. 16, 2006) U.S. Provisional Application No. 61/489,074 (filed on May 23, 2011)
[1Pre] 1. A CMP pad dresser, comprising	[0008] “As a result, a CMP pad dresser that	Sung '817 at 9:10-15 (“The present invention

² Citations in the chart are being made by referencing the disclosure of Sung '026.

	is suitable for dressing a CMP pad that meet the demands placed upon the CMP industry by the continual reductions in semiconductor size is still being sought.” [0078] “One example of a tool incorporating a single layer of superabrasive particles in an organic material matrix is a CMP pad dresser.”	provides a cutting device . . . utilized, for example, . . . as dressing devices that dress various workpieces.”) <i>See also</i> Sung ’074 at 1:14-15 (“The present disclosure provides CMP pad dressers and associated methods thereof.”)
[1A] A rigid support substrate; and	[0075] “Additionally, in one aspect the organic material layer 14 may be coupled to a support substrate 22.” [0098] “The disks are glued with an acrylic onto stainless steel substrates with the diamond facing away from the glue.” [0102] “The diamond attached epoxy layer is glued to a stainless steel (410) substrate . . .”	Sung ’817 at 3:19-24 (“ . . . obtaining a substrate; . . . and securing each of the plurality of individual polycrystalline cutting elements to the substrate with a solidified organic material layer.”) <i>See also</i> Figs. 1B, 2B, and 3B of Sung ’817. Sung ’074 at 1:21 (“In one specific aspect, a rigid support is coupled to the matrix layer.”)
[1B] a monolayer of a plurality of superabrasive particles coupled to the support substrate,	[0078] “One example of a tool incorporating a single layer of superabrasive	Sung ’817 at 23;15-17 (“The manner of arranging the cutting elements across the

	<i>particles in an organic material matrix</i> is a CMP pad dresser.” [0102] “The diamond attached epoxy layer is glued to a stainless steel (410) substrate, <i>with the diamonds facing away from the substrate.</i>” Claim 1: “A method of improving retention of superabrasive particles held in a solidified organic material layer of an abrading tool, <i>a portion of each of said superabrasive particles protruding out of the solidified organic material layer</i>” Claim 30: “A superabrasive tool having improved superabrasive particle retention, comprising: a solidified organic material layer, and <i>a plurality of superabrasive particles secured in the solidified organic material layer</i> in an	face of the base or substrate 12b can be varied for particular applications.”) Sung ’817 at 14:15-20 (“ . . . arranging on the substrate a plurality of individual polycrystalline cutting elements . . . ; and securing each of the plurality of individual polycrystalline cutting elements to the substrate with a solidified organic material layer.”) Sung ’817 at 21:1-9 (“Additionally, in one aspect a coupling agent or an organometallic compound may be coated onto the surface of each superabrasive particle . . . In this way, the organometallic coupling agent acts as a bridge to form bonds between the organic material matrix and the surface of the superabrasive particles.”) See also Figs. 1B, 2B, and 3B of Sung ’817.
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	arrangement as recited in claim 1.”	Sung ’074 at 1:17-21 (“The difference in the protrusion distance between the highest protruding tip and the next highest protruding tip of the monolayer of superabrasive particles can be less than or equal to about 20 microns, and the difference in protrusion distance between the highest 1% of the protruding tips of the mono layer of superabrasive particles are within about 80 microns or less.”)
[1C] wherein each superabrasive particle in the monolayer extends away from the support substrate to a protrusion distance,	See Limitation [1B]. See also [0073] “For example, in one aspect <i>each of the plurality of superabrasive particles may protrude to a predetermined height above the solidified organic material layer.</i>” [0076] “In order for the CMP pad dresser 20 to condition a CMP pad, <i>the superabrasive particles 12 should protrude at least partially from the</i>	Sung ’817 at 12:19-20 (“As such, in one aspect, a majority of the plurality of individual cutting elements may protrude to a predetermined height above the solidified organic material layer.”) Sung ’817 at 13:5-7 (“It may also be beneficial for the cutting elements to protrude from the solidified organic material layer to a predetermined height or series of heights that

	<i>organic material layer 14.”</i>	is/are along a designated profile.”) Sung ’817 at 15:7-10 (“The determination of the distance that the tips of the cutting elements extend from the organic binder can also be affected by considering how much of the cutting elements extend above the binder compared to how much of the cutting elements remain submerged beneath the binder surface.”) <i>See also</i> Figs. 1B, 2B, and 3B of Sung ’817. Sung ’074 at 1:17-21 (“In one aspect, as is shown in FIG. 1, a CMP pad dresser 10 includes a monolayer of a plurality of superabrasive particles 12 embedded in a matrix layer 14, such that each superabrasive particle in the monolayer protrudes from the matrix layer.”)
[1D] wherein a tip of each of the plurality of superabrasive particles aligns along a designated profile,	[0011] <i>“Arranging superabrasive particles such that they define a profile</i>	Sung ’817 at 13:5-10 (“It may also be beneficial for the cutting elements to protrude from the

	may also prove to be useful in distributing impinging mechanical forces. As such, <i>the superabrasive particles may protrude to a predetermined height that is along a designated profile. . . . Thus the designated profile defines the extent to which a plurality of superabrasive particles protrude from the solidified organic material layer.</i>” [0053] “It may also be beneficial for the superabrasive particles to protrude from the solidified organic material layer to a predetermined height or series of heights that is/are <i>along a designated profile. Numerous configurations for designated profiles are possible</i>, depending on the particular use of the abrading tool.”	solidified organic material layer to a predetermined height or series of heights that is/are <i>along a designated profile.</i> Numerous configurations for designated profiles are possible In one aspect, the <i>designated profile may be a plane.</i> In planar profiles, the highest protruding points of the cutting elements are intended to be substantially level.”) Sung ’817 at 14:10-13 (“Also, when referring to the designated profile, it should be noted that the term ‘tip’ is intended to include the highest protruding point of a cutting element, whether that point be an apex, an edge, or a face.”) Sung ’074 at 13:4-9 (“As is discussed further below, in some cases the first and second monolayers of superabrasive particles can be arranged such that corresponding
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	Claim 7: “. . . a <i>predetermined height that is along a designated profile.</i>” Claim 8: “. . . the designated profile is a plane.” Claim 9: “. . . the designated profile has a slope.” Claim 10: “. . . the designated profile has a curved shape.” Claim 11: “. . . the designated profile has a dome shape.”	superabrasive particles across the metal support layer are in substantial alignment, as is shown in FIG. 2. In other cases, the superabrasive particles of the first and second monolayers can be arranged in a substantially similar distribution, but may or may not be substantially aligned with one another across the metal support layer.”)
[1E] With a tip variation of from about 5 microns to about 100 microns,	[0056] “In another aspect, the plurality of superabrasive particles are arranged such that <i>their tips vary from the designated profile by from about 5 microns to about 100 microns.</i> ”	Sung ’817 at 14:14-16 (“As such, in one aspect a majority of the plurality of cutting elements is arranged such that the tips vary from the designated profile by <i>from about 1 micron to about 150 microns . . . [or] from about 5 microns to about 100 microns.</i>”) Also, as discussed above, Petitioners have construed “designated profile” and tip variation therefrom as the “average protrusion

		distance of the diamond tips” (Pet. at 36-38.) Patent Owner does not agree with Petitioner’s construction but under Petitioners’ construction, Sung ’074 also discloses the claimed range: • 23:5-11 (“[T]he difference in protrusion distance between the highest protruding tip and the next highest protruding tip of the first mono layer of superabrasive particles is less than or equal to about 20 microns, and where the difference in protrusion distance between the highest 1 % of the protruding 10 tips of the first mono layer of superabrasive particles, excluding the highest protruding tip, are within about 80 microns.”)
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[1F] and wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip of the monolayer of superabrasive particles is less than or equal to about 50 microns,	[0073] “. . . For example, in one aspect each of the plurality of superabrasive particles may protrude to a predetermined height above the solidified organic material layer. . . . Though the predetermined height may vary between tool applications, in one aspect <i>the predetermined height may be greater than about 20 microns</i>. In another aspect the variation from the <i>predetermined height may be from about 1 micron to about 20 microns. . . .</i>” Note: “the plurality of superabrasive particles” must necessarily include “the highest protruding tip and the second highest protruding tip”. [0056] “Also, when referring to the designated profile, it should be noted that <i>the term ‘tip’ is intended to include the</i>	See Limitation 1[E]. Also, as discussed with respect to Sung ’026, Petitioners have construed “designated profile” and “tip variation” therefrom as the “average protrusion distance of the diamond tips” (Pet. at 36-38.) Patent Owner does not agree with Petitioner’s construction but under Petitioners’ construction, Sung ’817 also discloses the claimed difference in protrusion distance. For example, for a difference in protrusion distance of 0-50 microns, the Sung ’817 discloses: 14:14-15:4 (“As such, in one aspect a majority of the plurality of cutting elements is arranged such that the tips vary from the designated profile by <i>from about 1 micron to about 150 microns. . . .</i>
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	<i>highest protruding point</i> of a superabrasive particle, whether that point be an apex, an edge, or a face.” [0085] “The spacer layer may be made from any soft, deformable material with a relatively uniform thickness. Examples of useful materials include, but are not limited to, rubbers, plastics, waxes, graphites, <i>clays</i>, tapes, grafoils, metals, powders, and combinations thereof. [0088] “As shown in FIG. 6, the spacer layer has been removed from the organic material layer 64. . . . <i>The distance of the protrusion of the superabrasive particles 38 from the organic material layer 64 will be approximately equal to the thickness of the now removed spacer layer.</i>” [0096] “The same procedure is followed	<i>from about 10 microns to about 50 microns . . . by less than about 5 microns. . . . [or] by less than about 1 micron.</i>”) As another example, for a difference in protrusion distance of 10-20 microns, Sung '817 discloses: • 14:29-15:1 (“Additionally, in one aspect, they are arranged such that their tips vary from the designated profile <i>by less than about 20 microns. . . . [or] by less than about 10 microns.</i>”) As another example, for a difference in protrusion distance of 20-50 microns, Sung '817 discloses: • 14:24-26 (“In a further aspect, they are arranged such that their tips vary from
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	as Example 1, however the base plate is precoated with <i>a layer of clay is about 60 microns thick</i>. After hot pressing, <i>the clay is scraped off, exposing the diamond particles protruding from the polyimide resin layer</i> (in other words, the difference between diamond particles, including the highest and second highest protruding tips, can be between “60 microns” or less). Claim 12 (“[T]heir tips vary from the designated profile to <i>less than 10% of the average size</i> of the superabrasive particles”). Claims 13/14 (“[A] majority of the plurality of superabrasive particles are arranged such that <i>their tips protrude to less than about [40/30] microns</i>.”) Claim 15 (“[A] majority of the plurality of superabrasive particles	the designated profile by <i>from about 20 microns to about 50 microns</i>.”) In addition, Sung ’074 discloses: • 10:10-17 (“In yet another aspect, the difference in protrusion distance between the highest 1 % of the protruding tips of the first mono layer of superabrasive particles are <i>within about 50 microns or less</i> . . . In yet another aspect, the difference in protrusion distance between the highest 100 protruding tips of the mono layer of superabrasive particles are <i>within about 50 microns or less</i>.”)
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	are arranged such that <i>their tips protrude to about 20 microns.</i>) Claim 17 (“the plurality of superabrasive particles are from <i>about 30 microns to about 500 microns in size</i>”) • In other words, the difference in protrusion distance between the highest and the second highest tip (or between the highest 1% protruding tips) can be between about 3 microns to about 50 microns (“10%” of “about 30 microns” to “10%” of “about 500 microns”; see claims 12 and 41). Claim 32 (“[T]he predetermined height is <i>greater than about 20 microns.</i>”) Claim 41 (“[T]heir tips protrude to <i>about 10% of the average size</i> of	• 9:22-25 (“The difference in protrusion distance 16 between the highest protruding tip 17 and the next highest protruding tip 18 of the monolayer of superabrasive particles is <i>less than or equal to about 20 microns.</i>”) • 9:25-29 (“Additionally, the <i>difference in protrusion distance between the highest 1 % of the protruding tips</i> of the first mono layer of superabrasive particles are <i>within about 80 microns or less.</i> In other words, for the 1 % of the plurality of superabrasive particles that have the highest protruding tips, <i>the variance in</i>
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	the superabrasive particles”). In addition, Petitioners have construed “designated profile” and “tip variation” as the “average protrusion distance of the diamond tips” (Pet. at 36-38.) Patent Owner does not agree with Petitioner’s construction but under Petitioners’ construction, Sung ’026 also discloses the claimed range. For example, for a difference in protrusion distance between 0-20 microns, Sung ’026 discloses: • [0056] (“Also, when referring to the designated profile, it should be noted that the term “tip” is intended to include the highest protruding point of a superabrasive particle, whether that point be an apex, an edge, or	<i>protrusion distance for that 1 % is less than or equal to about 80 microns.”)</i> See also Sung ’074 at 10:10-17 (“In yet another aspect, the difference in protrusion distance between the highest 1% of the protruding tips of the first mono layer of superabrasive particles are within <i>about 50 microns or less.</i> . . . In yet another aspect, the difference in protrusion distance between the highest 100 protruding tips of the mono layer of superabrasive particles are within about 50 microns or less ”) • Note: “highest 1%” and “highest 100 protruding tips” necessarily include the second or next highest protruding tip.
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	a face. As such, in one aspect a majority of the plurality of superabrasive particles are arranged such that their tips vary from the designated profile by from <i>about 1 micron to about 150 microns. . . . [or] by less than 1 microns.</i>") • Claim 21 ("[T]he predetermined attitude is <i>uniform attitude</i> across substantially all of the plurality of superabrasive particles") (i.e., zero or near zero micron). • Claim 33 ("[V]ariation . . . from <i>about 1 micron to about 20 microns.</i>") For example, for a difference in protrusion distance between 20-40	
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	microns, Sung '026 discloses: • [0056] (“[T]he plurality of superabrasive particles are arranged such that their tips vary from the designated profile by <i>from about 20 microns to about 40 microns.</i>”) • Claim 13 (“[A] majority of the plurality of superabrasive particles are arranged such that <i>their tips protrude to less than about 40 microns.</i>”) • Claim 14 (“[A] majority of the plurality of superabrasive particles are arranged such that <i>their tips protrude to less than about 30 microns.</i>”)	
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	• Claim 32 (“[T]he predetermined height is <i>greater than about 20 microns.</i>”) • Claim 42 (“[T]he plurality of superabrasive particles are arranged such that their <i>tips protrude from about 20 to about 30 microns.</i>”) As another example, for a difference in protrusion distance between 40-50 microns, Sung '026 discloses: • <i>See</i> [0056] (“a majority of the plurality of superabrasive particles are arranged such that their <i>tips vary from the designated profile to less than about 10% of the average size</i> of the superabrasive	
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	particles”) and Claim 32 above. • [0057] (“Additionally, although a variety of sizes are contemplated, in one aspect the plurality of superabrasive particles may be from <i>about 30 microns to about 500 microns in size</i>”). • <i>See also</i> Claim 12 (their tips vary from the designated profile to less than 10% of the average size of the superabrasive particles). • Claims 17/53 (“the plurality of superabrasive particles are from <i>about 30 microns to about 500 microns in size</i>”).	
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	Claim 41 (“[T]heir tips protrude to about 10% of the average size of the superabrasive particles”).	
[1G] and the difference in protrusion distance between the highest 1% of the protruding tips of the monolayer of superabrasive particles are within about 80 microns or less.	See Limitation 1[F]. See also [0073] (e.g., “By minimizing the <i>variance in the protrusion of the plurality of superabrasive particles</i> above the solidified organic material layer, mechanical forces impinging on individual superabrasive particles can be minimized. Though the predetermined height may vary between tool applications, in one aspect the predetermined height may be <i>greater than about 20 microns</i>. In another aspect the <i>variation from the predetermined height</i> may be from <i>about 1 micron to about 20 microns</i>.”) Note: “the plurality of	See Limitation [1F]. - See also Sung ’817 at 14:14-16 (“As such, in one aspect <i>a majority</i> of the plurality of cutting elements is arranged such that the tips vary from the designated profile by <i>from about 1 micron to about 150 microns</i>.”) - Sung ’817 at 14:16-21 (“In another aspect, the plurality of cutting elements are arranged such that their tips vary from the designated profile by from about 5 microns to about 100 microns . . . from

	superabrasive particles” must necessarily include the “highest 1% of the protruding tips” In addition, based on Petitioners’ construction of “designated profile” to mean the “average protrusion distance of the diamond tips” (Pet. at 36-38), Sung ’026 also discloses the claimed range: • [0056] (“Also, when referring to the designated profile, it should be noted that the term ‘tip’ is intended to include the highest protruding point of a superabrasive particle, whether that point be an apex, an edge, or a face. As such, in one aspect a majority of the plurality of superabrasive particles are	about 10 microns to about 75 microns . . . [or] from about 10 microns to about 50 microns. . . .”) In addition, Sung ’074 discloses: 3:15-20 (“In a further aspect, a CMP pad dresser is provided. Such a dresser can include a plurality of superabrasive particles arranged as a working surface, wherein the difference in protrusion distance between the highest protruding tip and the next highest protruding tip of the first monolayer of superabrasive particles is less than or equal to about 20 microns, and wherein the difference in protrusion distance between the highest 1% of the protruding tips of the first monolayer of superabrasive particles are within about 80 microns.”)
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	arranged such that <i>their tips vary from the designated profile by from about 1 micron to about 150 microns.</i> ”)	
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Dependent claims 2-7 and 13-21 are also fully supported by Sung '026 and Sung '817. Hence, claims 2-7 and 13-21 are entitled to a priority date as early as Sept. 9, 2005 but no later than May 23, 2011. Below is a chart reflecting the written support for claims 2-7 and 13-21 from these priority applications:

'802 claim element	US Patent Application 11/223,786 US 2007/0060026 (filed on Sep. 9, 2005)	US Patent Application 11/560,817 (CIP of '786) US 2007/0155298 (filed on Nov. 16, 2006)
2. The dresser of claim 1, wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip is less than or equal to about 10 microns.	See Limitations [1F] and [1G].	See Limitation [1F]. See also Sung '817 at 16:26-30 (“One manner in which the present invention addresses this problem is by configuring the "outer" cutting elements, some times as PCD grits, (e.g., those located closer to the outer perimeter of the cutting or dressing tool) more robust, and/or the

		inner elements slightly higher (e.g. about 10 microns higher) than the outer elements.”) <i>Id.</i> at 18:21-23 (“Each of the cubes can contain about 90 V% of diamond (about 10 microns in grain size) and the remaining phase can be either silicon or SiC.”)
3. The dresser of claim 1, wherein the difference in protrusion distance between the highest protruding tip and the second highest protruding tip is less than about 10 microns.	See Limitations [1F] and [1G].	See Limitations [1F] and [1G] and claim 2.
4. The dresser of claim 1, wherein the difference in protrusion distance between the highest protruding tip and the 10th highest protruding tip is less than or equal to about 20 microns.	See Limitations [1F] and [1G]. <i>See also</i> [0011] (“In yet another aspect, the plurality of superabrasive particles are arranged such that their tips protrude to less than about 20 microns above the organic material matrix.”) Claim 5 (“The method of claim 3, wherein the predetermined height produces a cutting depth of from about 1 micron to about 20	See Limitations [1F] and [1G] and claim 2.

	microns when used to abrade a work piece.”) Claim 6 (“The method of claim 3, wherein the predetermined height produces a cutting depth of from about 10 micron to about 20 microns when used to abrade a work piece.”) Claim 15 (“The method of claim 3, wherein a majority of the plurality of superabrasive particles are arranged such that their tips protrude to about 20 microns.”)	
5. The dresser of claim 1, wherein the difference in protrusion distance between the highest protruding tip and the 100th highest protruding tip is less than or equal to about 40 microns.	See Limitations [1F] and [1G] and claim 4.	See Limitations [1F] and [1G] and claim 2.
6. The dresser of claim 1, wherein the plurality of superabrasive particles includes a plurality of working superabrasive particles, such that rotating the dresser against a CMP pad cuts asperities into the CMP pad having a cutting depth of less than or equal to about 50 microns.	[0010] (“In one aspect, the predetermined height may produce a cutting depth of greater than about 20 microns when used to abrade a work piece. In another aspect, the predetermined height may produce a cutting depth of from about 1 micron to about 20 microns when used to abrade a work	<i>Id.</i> at 12:21-29 (“Though any predetermined height that would be useful in an abrading or cutting tool would be considered to be within the presently claimed scope, in one specific aspect the predetermined height may produce a cutting depth of less than about 20 microns . . . a cutting depth of from

	piece. In yet another aspect, the predetermined height may produce a cutting depth of from about 10 micron to about 20 microns when used to abrade a work piece.”) [0052] (“Though any predetermined height that would be useful in an abrading tool would be considered to be within the presently claimed scope, in one specific aspect the predetermined height may produce a cutting depth of less than about 20 microns when used to abrade a work piece. In another specific aspect, the predetermined height may produce a cutting depth of from about 1 micron to about 20 microns when used to abrade a work piece. In yet another specific aspect, the predetermined height may produce a cutting depth of from about 10 micron to about 20 microns when used to abrade a work piece.”) Claim 4 (“The method of claim 3, wherein the predetermined height produces a cutting depth of less than about 20	about 1 micron to about 20 microns . . . a cutting depth of from about 10 micron to about 20 . . . [and] a depth of up to or more than 50 or 100 microns.”) Claim 14 (“The cutting device of claim 13, wherein the predetermined height produces a cutting depth of less than about 20 microns”)
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	microns when used to abrade a work piece.”) Claim 5 (“The method of claim 3, wherein the predetermined height produces a cutting depth of from about 1 micron to about 20 microns when used to abrade a work piece.”)	
7. The dresser of claim 6, wherein the cutting depth is from about 10 microns to about 50 microns.	See Claim 6.	See Claim 6.
13. The dresser of claim 1, wherein the highest protruding tip of each of the plurality of superabrasive particles align along the designated profile with a tip variation of from about 10 microns to about 50 microns.	See Limitations [1F] and [1G]. See also [0056] (“In a further aspect, the plurality of superabrasive particles are arranged such that their tips vary from the designated profile by from about 10 microns to about 50 microns.”)	See Limitations [1F] and [1G] and claim 2. See also 14:19-21 (“In a further aspect, the plurality of cutting elements are arranged such that their tips vary from the designated profile by from about 10 microns to about 50 microns.”)
14. The dresser of claim 1, wherein the highest protruding tip of each of the plurality of superabrasive particles align along the designated profile with a tip variation of from about 20 microns to about 40 microns.	See Limitations [1D] and [1E]. See also [0011] (“Arranging superabrasive particles such that they define a profile may also prove to be useful in distributing impinging mechanical forces. As such, the superabrasive particles may protrude to a predetermined height that	See Limitations [1D] and [1E]. See also <i>id.</i> at 14:27-28 (“In another aspect, the plurality of cutting elements are arranged such that their tips vary from the designated profile by from about 20 microns to about 40 microns.”)

	is along a designated profile. In one aspect, the plurality of superabrasive particles may be arranged such that their tips protrude to less than about 40 microns . . . to less than about 30 microns [or] . . . to less than about 20 microns above the organic material matrix.”) [0056] (“In another aspect, the plurality of superabrasive particles are arranged such that their tips vary from the designated profile by from about 20 microns to about 40 microns.”)	
15. The dresser of claim 1, wherein the highest protruding tip of each of the plurality of superabrasive particles align along the designated profile with a tip variation of less than about 20 microns.	See Limitations [1D] and [1E] and claim 14.	See Limitations [1D] and [1E] and claim 14.
16. The dresser of claim 1, wherein the protrusions of the plurality of superabrasive particles produce cutting depths of less than about 20 microns when used to abrade a CMP pad.	See Claim 6.	See Claim 6.
17. The dresser of claim 1, wherein the protrusions of the plurality of	See Claim 6.	See Claim 6.

superabrasive particles produce cutting depths of from about 1 micron to about 20 microns when used to abrade a CMP pad.		
18. The dresser of claim 1, wherein the protrusions of the plurality of superabrasive particles produce cutting depths of from about 10 microns to about 20 microns when used to abrade a CMP pad.	<i>See Claim 6 above.</i> <i>See also [0010] (“In yet another aspect, the predetermined height may produce a cutting depth of from about 10 micron to about 20 microns when used to abrade a work piece.”)</i> <i>See also Claim 6 (“The method of claim 3, wherein the predetermined height produces a cutting depth of from about 10 micron to about 20 microns when used to abrade a work piece.”)</i>	<i>See Claim 6.</i>
19. The dresser of claim 1, wherein the designated profile includes a configuration selected from the group consisting of a plane, a slope, a curved shape, a dome shape, and combinations thereof.	<i>See Limitation [1D].</i>	<i>See Limitation [1D].</i>
20. The dresser of claim 1, wherein the plurality of superabrasive particles is arranged across the support substrate in a predetermined pattern.	Claim 20 (“The method of claim 1, wherein securing the plurality of superabrasive particles includes arranging the plurality of	<i>Id.</i> at 27:27-26:2 (“PCD blanks pressed from a cubic press were trimmed from both sides to remove refractory metal container (e.g. Ta). The outside

	superabrasive particles according to a predetermined attitude.”) [0013] (“In one aspect, securing the plurality of superabrasive particles includes arranging the plurality of superabrasive particles according to a predetermined attitude. . . . In another aspect, the plurality of superabrasive particles are substantially configured with an apex portion oriented towards a work piece. In addition to uniform attitudes, some aspects include variations in attitude . . . [such as] an apex or an edge portion oriented towards a work piece”)	diameter of the blanks were ground off. The PCD blanks were bonded to a cemented WC base and the PCD layer was EDM shaped to form pyramids distributed in a predetermined pattern.”)
21. The dresser of claim 20, wherein the predetermined pattern includes an even distribution of the plurality of superabrasive particles spaced at a distance of from about 100 microns to about 800 microns.	[0060] (“In yet another aspect, the plurality of superabrasive particles may be evenly space at a distance of from about 100 microns to about 800 microns.”) Claims 26/45 (“[T]he plurality of superabrasive particles are evenly spaced at a distance of from about 100 microns to about 800 microns.”)	

B. Claims 8-12 Cover Subject Matter Unique to the '802 Patent

As noted above, certain claims recites new subject matter unique to the '802 Patent; namely, the specific *numbers* of “working superabrasive particles” as claimed in claims 8-12 and as disclosed in the specification of the '802 Patent:

As yet another exemplary aspect of the present disclosure, a CMP pad dresser can include a rigid support substrate and a monolayer of a plurality of superabrasive particles coupled to the support substrate, where the plurality of superabrasive particles includes a plurality of working superabrasive particles . . . [that] include[] at least 100 working superabrasive particles . . . at least 1000 working superabrasive particles . . . from about 1000 to about 6000 working superabrasive particles . . . from about 2000 to about 5000 working superabrasive particles [or] at least about 1000 working superabrasive particles that protrude from the rigid support substrate to distances within about 30 microns of one another.

('802 Patent at 2:55-3:9.) Additional new subject matter is also disclosed in another portion of the specification:

As a non-limiting example, in one aspect a CMP pad dresser can include a support substrate, such as a rigid support substrate, and a monolayer of a plurality of superabrasive particles coupled to the support substrate, where the plurality of superabrasive particles includes a plurality of working superabrasive particles . . . [that] include[] at least 100 working superabrasive particles, at least 300 working superabrasive particles, or at least 500 working superabrasive

particles . . . at least 1000 working superabrasive particles . . . from about 1000 to about 6000 working superabrasive particles . . . from about 2000 to about 5000 working superabrasive particles . . . [or] at least about 1000 working superabrasive particles that protrude from the rigid support substrate to distances within about 30 microns of one another.

(*Id.* at 13:58-14:15.) Thus, the new subject matter as recited in claims 8 through 12 of the '802 Patent is easily identified.

Dr. Sung's declaration filed in the *Sung v. Kinik* matter did ***not*** disclaim "all earlier priority dates" because Dr. Sung's statement that the '802 Patent contained "new subject matter" is consistent with the disclosures of the '802 Patent and the nature of it being a CIP. Nor did the court's opinion in *Sung v. Kinik* affirm a single priority date for all claims of the '802 Patent based on Dr. Sung's declaration. Indeed, the *Sung v. Kinik* court expressly found that "there is a ***possibility*** of the infrequent posture that ***the alleged infringer will be the one arguing for the earlier priority date,***" (Ex. 1019 at 2) leaving the door open for an "earlier priority date." Coupled with the fact that the *Sung v. Kinik* court ***did not adjudicate the substance of the priority claim at issue here,*** there is no controlling authority that supports Petitioners' contention for a single priority date, let alone being the filing date of the '802 Patent.

Nor was Dr. Sung's Patent Owner's Preliminary Response in IPR2021-00638 a waiver of earlier priority dates, as Petitioners argue. In that case, Dr. Sung did *not* address the merits of Kinik's invalidity arguments at all; nor was it necessary because Patent Owner argued that Kinik lacked standing to petition for *inter partes* review based on Kinik's then-unresolved claim of ownership of the '802 Patent. (Ex. 2003 at 1.) A patent owner can permissibly reserve arguments for a Patent Owner's Response post-institution to which waiver *only* applies. This is because a patent owner preliminary response is optional, and that "[a] patent owner may expedite the proceeding by filing an election to waive the patent owner preliminary response." 37 C.F.R. § 42.107.

In sum, the intrinsic record clearly delineates those portions of the specification of the '802 Patent that are new subject matter and those that originated from Sung '026, Sung '817, and/or Sung '074 application(s). Accordingly, only claims 8-12 are derived from new subject matter and have a priority date of Oct. 3, 2014 based on the '802 Patent's filing date. By contrast, claims 1-7 and 13-21 have priority dates as early as Sept. 9, 2005 and no later than May 23, 2011.

IV. TSAI DOES NOT ANTICIPATE THE CHALLENGED CLAIMS BECAUSE TSAI IS NOT QUALIFIED AS PRIOR ART

A. Tsai Is Not Prior Art to Claims 1-3 and 13-21

As shown above, claims 1-3 and 13-21 of the '802 Patent claim subject matter that was disclosed entirely in Dr. Sung's prior Sung '026, Sung '817 and/or Sung '074 application(s) and accordingly have priority dates as early as Sept. 9, 2005 but no later than May 23, 2011.

According to Petitioners, Tsai was published on January 10, 2012 (Pet. at 3). Accordingly, Tsai is *not* prior art because Tsai was published after the priority dates of the '802 Patent. *See* 35 U.S.C. § 102(a)(1).³

B. Under Samsung's Asserted Priority Date, Tsai Also Does Not Anticipate Claims 1-5, 13, 15 and 19-21

Even if Samsung's erroneous assertion that all of the claims of the '802 Patent have a single priority date of October 3, 2014 has merit, Tsai still does not anticipate or render the claims of the '802 Patent obvious. In particular, Tsai does not teach or disclose, nor is it obvious to provide, a (1) "designated profile"; (2) "tip variation" from the designated profile; and (3) specific protrusion distances as recited in claims 1-5, 13, 15, and 19-21 of the '802 Patent.

1. Tsai Does Not Teach or Suggest the Claimed "Designated Profile"

There is no explicit disclosure of a "profile" or "designated profile," let alone of "a tip of each of the plurality of superabrasive particles [that] aligns along

³ The result would be the same under pre-AIA § 102(a), which would apply to claims 1-3 and 13-21 based on their effective filing date.

a designated profile” *anywhere* in Tsai. In fact, the only basis for Petitioners’ assertion that Tsai contains this element is Dr. Shanfield’s addition of a red line to Fig. 2e of Tsai which he contends represents a “designated profile.” (Pet. at 37, citing Ex. 1002 at ¶¶ 131-132.) But Dr. Shanfield’s annotation cannot substitute for the absence of this element from Petitioners’ principal reference, which is fatal to its anticipation ground.

Moreover, Petitioners’ and their expert’s argument that a designated profile can be present in Tsai based solely upon the levelling of superabrasive particles in Tsai’s ODD fundamentally mischaracterizes the “designated profile” and would read this term out completely because it fails to account for “deviation” from the designated profile as required in, for example, claims 1, 13, and 15 in the ’802 Patent. A profile that simply traces the heights of the diamonds, such as the red dotted line drew up by Dr. Shanfield with respect to Tsai’s Fig. 2e (Ex. 1002 at ¶ 131) could never deviate from any profile, because that profile would have *no tip deviation* (*c.f.*, claim 1’s claim language of “a designated profile with a *tip deviation* of from about 5 microns to about 100 microns”). *See also* Ex. 1001 at 11:45-12:3 (“tips [that] *vary from the designated profile* by from about [1/5/10/10/50/20/20/20/20] microns to about [150/100/75/50/150/100/50/40] microns”).

This is consistent with specification’s definition of a “profile” as “a

predetermined contour above a support substrate to which a plurality of superabrasive particles or other cutting elements are *intended to align*.” (Ex. 1001 at 6:22-25.) In Tsai, no such contour is discussed or even defined as a design parameter (e.g., any of “a plane, a slope, a curved shape, a dome shape, and combinations thereof” as recited in claim 19); nor does Tsai discuss any particular alignment that would yield such a design parameter (be it the contour or shape). A random trace of a phantom line, or a random spread of diamond particles on a pad conditioner, does not provide any evidence of a designated profile.

In this regard, the ’802 Patent discloses that “the *actual distribution of protrusion distances* across the plurality of superabrasive particles in a finished dresser *can be compared against the designated profile* to determine the variance, or degree of ‘leveling’ achieved” (*id.* at 11:24-27)—that is, the ’802 Patent explicitly distinguishes the “designated profile” over “protrusion distances” such that Fig. 6 of Tsai would *not* anticipate this claim element, and Petitioners’ reliance on “protrusion distances” to show a “designated profile” is fatal to their petition.

Dr. Shanfield’s misunderstanding is confirmed by his conflation of conventional levelling of diamond particles on a conditioning disk in Tsai with a designated profile. Tsai discloses that during manufacturing of the disk “the diamond tips can be leveled by compressing the disk with a flat plate to reduce the variation in the heights of the diamond tips.” (Ex. 1004 at 6:8-10.) From this

teaching, Dr. Shanfield concludes that “controlling superabrasive tip height variation in this way *designates* a flat profile above the epoxy resin (represented as a red dotted line) to which each of the tips of the superabrasive particles should align.” (Ex. 1002 at ¶ 131.) But that only confirms that Dr. Shanfield improperly construes the protrusion heights and the designated profile as being equivalent.

Also, even if there is merit (and there is none) to Dr. Shanfield’s argument that “compressing the disk with a flat plate” would lead to a “flat profile” such that all tips are leveled at the same height, this hypothetical profile still would not meet claims 1 and 13-14 because it requires a tip *variation* from this profile “from about 5 microns to about 100 microns” (claim 1), “from about 10 microns to about 50 microns” (claim 13) or “less than about 20 microns” (claim 15). A flat profile as contemplated by Dr. Shanfield *would not yield any tip deviation*.

Also, the ’802 Patent contemplates a “designated profile” that includes “any geometric configuration” selected from, for example, “a plane, a slope, a curved shape, a dome shape, and the like, including appropriate combinations thereof.” (Ex. 1001 at 2:15-17.) For example, a sloping profile may be selected because “tools having sloping surfaces may function to more evenly spread the frictional forces impinging thereon across the superabrasive particles, particularly for rotating tools such as disk sanders and CMP pad dressers.” (*Id.* at 13:15-18 and 17:16-20.) As another example, “CMP pad dressers may include such curved

profiles in order to more effectively distribute the frictional forces between all of the superabrasive particles, thus reducing failures of individual particles and prolonging the life of the dresser.” (*Id.* at 13:41-43; *id.* at 17:43-45.) As Tsai makes no reference to any predetermined geometric profile or configuration along which the diamond grits align (or that any alignment of the diamond grits would be used to design or develop such a “designated profile,” Tsai neither anticipates nor renders obvious the challenged claims, which require a “designated profile” and “tip variation” from that profile.

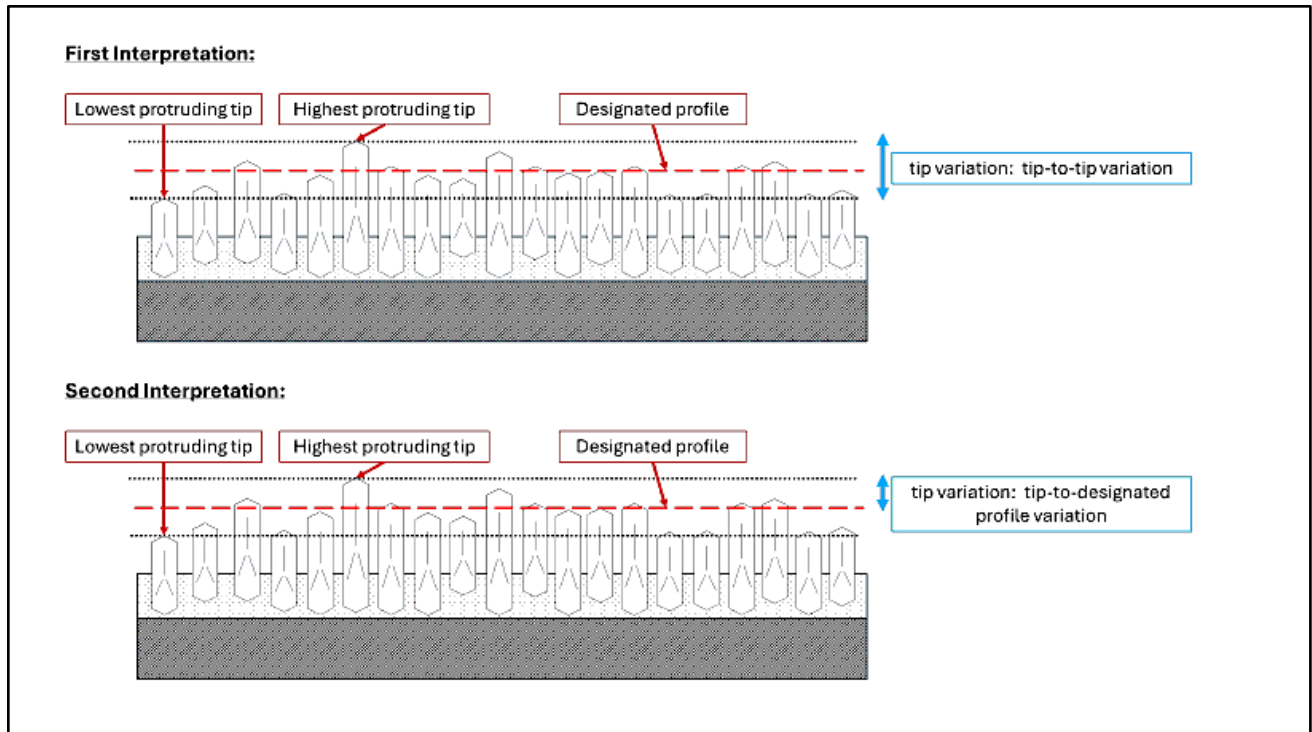
Also, nothing in Tsai suggests that the protrusion heights of diamond particles *by themselves* can achieve or were even intended to achieve a specific tip profile, as Petitioners argue. (Pet. at 36.) Instead, the benefit of the leveling in Tsai’s Organic Diamond Disk (“ODD”) is addressing the “major disadvantage” of the previous generation of advanced diamond disks, “its manufacturing cost that increased by more than three-folds.” (Ex. 1002 at 3:5-7.) Tsai’s ODD “improves the leveling of diamond tips and markedly reduces the CMP cost.” (*Id.* at 3:8-10.) However, the unimproved ADD of Tsai already “contain[ed] diamond grits with *equal heights and identically shaped tips*” (*id.* at 3:2), which is consistent with the ’802 Patent’s teaching that “traditional CMP pad dresser manufacturing methods” included “techniques for leveling superabrasive particle tips prior to fixation” (Ex. 1001 at 9:36-38). In sum, there is no indication that the ODD of Tsai or its

predecessors was based on a “*predetermined* contour” (definition of a “profile”) that would anticipate the challenged claims or one that is intended to resolve the problem that the designated profile of the ’802 Patent addresses that would render the challenged claims obvious.

And even if it could be argued that a random distribution or spread of diamond particles or grits with “*equal heights and identically shaped tips*” on Tsai’s ADD and ODD would create a certain random profile or contour, “*equal heights and identically shaped tips*” still would not satisfy claim 1 because “*equal heights and identically shaped tips*,” like Dr. Shanfield’s phantom “flat profile,” would lead to *no* tip variation, let alone one in the claimed range of “from about 5 microns to about 100 microns.”

2. Tsai Does Not Teach or Suggest the Claimed Tip Variation from a Designated Profile

Because Tsai does not teach or disclose a designated profile, it follows that Tsai also does not teach or suggest a tip variation from a designated profile, as elaborated above. Also, relying on Dr. Shanfield’s opinion, Petitioners construe Tsai’s “tip-to-tip variation” as the claimed “tip variation” (Pet. at 37). But this position directly contradicts Dr. Shanfield’s declaration submitted in the underlying litigation that “tip-to-tip variation” can be interpreted as separate and distinct from “tip variation.”



Specifically, in contending that the term “tip variation” is purportedly indefinite, Petitioners and Dr. Shanfield argued that the “tip variation” limitation “can also be *reasonably interpreted to mean that the tip-to-designated profile* variation of the plurality of superabrasive particles is from “about 5 microns to about 100 microns.’ In other words, *the distance between the highest / lowest tip and the designated profile* is between ‘about 5 microns and about 100 microns.’” (Ex. 2008 at ¶ 110.) This “tip-to-designated” interpretation, which Dr. Shanfield labels as the “second interpretation, is substantively different from the “tip-to-tip variation” interpretation, which he labels as the first interpretation. Dr. Shanfield seems to now talk out of both sides of his mouth.

The specification is clear as to the scope and meaning of “tip variation”—

“[t]raditional CMP pad dresser manufacturing methods, even many of those describing techniques for leveling superabrasive particle tips prior to fixation, generally contain significant variation in tip height across the surface of the dresser ***that is not accounted for by an intended tip alignment profile.***” (Ex. 1001 at 9:36-41.) In addition, the specification states that “the actual distribution of protrusion distances across the plurality of superabrasive particles in a finished dresser can be compared against the designated profile to determine the variance, or degree of ‘leveling’ achieved.” (*Id.* at 11:24-27.) This “variance” is further described in another portion of the specification that “the plurality of superabrasive particles are arranged such that their tips vary from the designated profile by less than about 20 microns.” (*Id.* at 12:3-5.) Hence, the intrinsic record is clear as to the scope and meaning of “tip variation.”

It is clear even from Petitioners’ and Dr. Shanfield’s own labeling that the “tip-to-tip variation” does not comport with the claim language, which is described in the context of a designated profile. Dr. Shanfield acknowledged this much in his deposition. (Ex. 2004 at 124:25-125:10 (“Q: None of the claim language that you actually quote in the chart spanning pages 22 to 23 includes the words ‘designated profile,’ right? A: Are you asking what’s in my table, as are the words ‘designated profile’ in the table? Q: Correct. A: No, there is not.”))

In fact, Dr. Shanfield illustrated his own confusion with his own “tip-to-tip”

interpretation when he testified that comparing the highest protruding tip to the second highest protruding tip does not constitute a tip-to-tip comparison at all. (Ex. 2004 at 121:15-21 (“Q: It says ‘highest protruding tip and second highest protruding tip,’ do you see that? A: Yes. Q: So that’s comparing tip-to-tip, right? A: No.”).)

Dr. Shanfield acknowledges that the “tip variation” term “include[s] the words ‘designated profile’” in the claim language and that this is different than the “protrusion distance” claim terms, which do not include “designated profile.” (*Id.* at 124:20-125:10.) Thus, Dr. Shanfield’s “tip-to-tip” interpretation has no bearing on the term “tip variation” in the context of a “designated profile.”

3. Tsai Does Not Teach or Suggest the Claimed Highest protruding Tip, Second Highest Protruding Tip, the Highest 1% of the Protruding Tips and Difference in Protrusion Distance

Petitioners and Dr. Shanfield argue that Tsai purportedly discloses a “tip-to-tip variation of about 19.8 microns in Figure 6 and discloses that the variation can be less than 15 microns for all superabrasive particles,” and view these disclosures as meeting the claimed range for the claimed difference in protrusion distance between “the highest protruding tip and the second highest protruding tip” and between “the highest 1% of the protruding tips.” (Ex. 1002 at ¶¶ 140-142.)

As a preliminary matter, it is axiomatic that illustrations are not drawn to scale. Yet, Dr. Shanfield speculates from Fig. 6 that Tsai discloses “a tip-to-tip

variation of approximately 19.8 microns,” basing on his view of “protrusion heights rang[ing] from approximately 13.2 microns to approximately 33.0 micron” such that Tsai purportedly discloses “an average protrusion height of about 24.2 microns.”

As a preliminary matter, Tsai is completely silent on the highest, second highest, or highest 1% protruding tips.⁴ Tsai thus does not anticipate nor render the challenge claims obvious on this reason alone. Also, Dr. Shanfield’s argument holds no water because an “average protrusion height” (Ex. 1002 at ¶ 85) does not address the protrusion difference between two specific tips (namely, the highest and the second highest protruding tips) or a specific set of tips (namely, highest 1%) particularly where “[a] typical diamond disk contains over 10,000 grits.” (Ex. 1004 at 2:14-15.) Dr. Shanfield does not even provide a motivation for manufacturing these specific tips or set of tips with the claimed ranges.

In addition, the variation across multiple tips as claimed in the ’802 Patent is distinct from the values claimed in *Ineos* cited by Petitioners. In that case, the teaching of a prior art reference of a *single* value was found to anticipate a claimed

⁴ If consideration is to be given to Petitioners’ argument that Tsai need not be explicit about which diamond grit has the “highest” or “second highest protruding tip,” or the highest 1% of the protruding tips,” such consideration should also be given to Patent Owner’s evidence regarding entitlement of priority claim that it is sufficient to show that the disclosure in Sung ’026 and Sung ’074 of “the plurality of superabrasive particles,” for example, also encompasses the “highest” or “second highest protruding tip,” or the highest 1% of the protruding tips.”

range for a single value, “i.e. *a* lubricant in an amount between 0.05 and 0.5% by weight.” *Ineos USA LLC v. Berry Plastics Corp.*, 783 F.3d 865, 868 (Fed. Cir. 2015). That is distinct from claim 1 of the ’802 Patent, where “tip variation” encompasses *multiple* values of *multiple* superabrasive tips. Tsai’s disclosure of a single potential value of “less than 15 microns” is insufficient to show multiple values of distinct superabrasive tips and their variation from one another or from a designated profile. For that reason, *Ineos* is inapplicable and Tsai’s disclosure of a single value of a diamond tip cannot anticipate the claimed tip variation. *See Colas Sols., Inc. v. Blacklidge Emulsions, Inc.*, 759 Fed. Appx. 986, 990 n.7 (Fed. Cir. 2019) (“But the prior art here does not actually disclose a range of softening points.”).

C. Dependent Claims

Because Tsai does not teach or disclose many of the elements of independent claim 1, including a “designated profile,” “tip variation,” “highest protruding tip,” “second highest protruding tip,” “highest 1% protruding tips,” and the “difference in protrusion distance,” Petitioners’ first ground of unpatentability also fails with respect to all of the remaining challenged claims 2-5, 13, 15 and 19-21, all of which depend from claim 1. Thus, for at least the reasons provided above for claim 1, Tsai does not anticipate or render obvious claims 2-5, 13, 15 and 19-21.

V. TSAI AND SUNG '026 DO NOT RENDER OBVIOUS CLAIMS 1-3, 6-14, AND 16-18

A. Sung '026 Is Not Prior Art to Claims 1-3, 6-7, or 16-18 Because Sung '026 Is the Grandparent of the '802 Patent

As set forth in Section III above, claims 1-3, 6-7, 13-14 and 16-18 are fully supported by the priority applications Sung '026 and Sung '817, of which the '802 Patent is a CIP. Accordingly, Tsai is not prior art to claims 1-3, 6-7, 13-14 and 16-18 of the '802 Patent.

Petitioners' secondary reference, Sung '026 is the *grandparent* of the '802 patent and to which the '802 Patent claims priority. As argued in Section III above, Sung '026 fully supports claims 1-3, 6-7, 13-14 and 16-18 of the '802 Patent and those claims are not based on new subject matter. Therefore, Sung '026 is not prior art to claims 1-3, 6-7, 13-14 and 16-18. Also, as detailed at length in Section III above, Dr. Sung did not disclaim, nor could he have disclaimed, the subject matter of his earlier applications. Instead, Petitioners' argument rests on a skewed misreading and intentional mischaracterization of Dr. Sung' declaration. Accordingly, Sung '026 is not prior art to claims 1-7 and 13-21 and cannot render these claims obvious.

Only claims 8-12 of the '802 Patent recite new subject matter with a priority date that falls after the publication date of Tsai and the filing date of Sung '026. *See* Section III above. However, Tsai and Sung '026, alone or in combination, do

not teach or suggest the claimed “plurality of working superabrasive particles” in claims 8-12, let alone the specific numbers of “working superabrasive particles” recited therein.

1. Tsai and Sung ’026 Do Not Render Obvious Claims 8-12

Dr. Shanfield’s erroneous opinion that “Tsai discloses that all the diamond particles on the CMP pad dressers are cutters and share an equal dressing load when conditioning CMP pads” (Ex. 1002 at ¶ 189) is based on nothing more than his conclusory opinion. The view that “all” superabrasive particles are working superabrasive particles that cut into a CMP pad finds no support in Tsai. As Dr. Shanfield has noted that “ODD can be leveled to less than 15 microns” in Tsai, there is no telling as to how many diamond grits are working superabrasive particles (as required in claims 8-11). That “ODD can be leveled to less than 15 microns” further demonstrates that Tsai does not disclose any diamond grits “protrude from the rigid support substrate to distances within about 30 microns of one another” (as required in claim 12).

Nor can Dr. Shanfield’s opinion be derived from his own experience, as he has never measured the number of diamonds in a CMP pad conditioner (Ex. 2004 at 91:23-92:10) or even looked at a CMP pad conditioner in a scanning electron microscope (Ex. 2004 at 93:10-20). His testimony on this point should be disregarded for that reason alone.

Dr. Shanfield’s testimony is also unreliable because it lacks foundation in the disclosures of Tsai. Tsai teaches that its ODD has “has more cutters that can dress the pad,” (Ex. 1002 at 8:24-25) over a conventional CMP pad dresser but provides no indication of what a typical number of “cutters” in a conventional pad dresser would be, or how many more cutters are present on an ODD. Nor does Tsai provide a motivation to include a specific number of cutters on an ODD. Accordingly, there is no basis, other than Dr. Shanfield’s assumption, untethered to any objective evidence, that a *plurality* of Tsai’s “diamond particles” are “cutters.” (Ex. 1002 at ¶¶ 180, 189.)

For the specific numbers of working superabrasive particles claimed in claims 8 [“at least 100 working superabrasive particles”], 9 [“at least 1000 working superabrasive particles”], 10 [“from about 1000 to 6000 working superabrasive particles”], 11 [“from about 2000 to about 5000 working superabrasive particles”], and 12 [“at least about 1000 working superabrasive particles that protrude from the rigid support substrate to distances within about 30 microns of one another”], Dr. Shanfield relies on the same extrapolation from a single segment of Tsai’s ODD to a purported total number of “working superabrasive particles.” (Ex. 1002 at ¶¶ 186-89.) But just as this extrapolation is insufficient to establish the total number of diamond particles on Tsai’s ODD, it cannot be used to count the number of Tsai’s cutters, unless it is combined with Dr. Shanfield’s faulty assumption that “all”

diamonds on Tsai's ODD are "cutters."

Dr. Shanfield's alternative argument that in Sung '026 "each superabrasive particle is itself cutting asperities in the CMP pad and is a working superabrasive particle," (Ex. 1002 at ¶ 191) is similarly infirm and is contradicted by Sung '026's teaching that its superabrasive particles include particles that "will be *recessed in height* as compared to superabrasive particles having tips and edges oriented towards the adhesive, and *thus will not contact the CMP pad during dressing.*" (Ex. 1005 at [0080].) Sung '026's teaching of "uniform distribution of frictional force" (*id.* at [0051]) does not dictate that all particles must be working particles, only that individual particles will not be overstressed. Likewise, Sung '026's disclosure that "[t]he protruding superabrasive particles 12 *can* cut into the CMP pad to a depth that is essentially the distance of the protrusion" does not dictate that all particles of all protrusion depths actually do cut into the CMP pad.

VI. SUNG '146 AND SUNG '026 DO NOT RENDER OBVIOUS CLAIMS 1-7 AND 13-21

A. Like Sung '026, Sung '146 Is Not Prior Art to Claims 1-3, 6-7, or 16-18 Because Sung '026 Is Also the Grandparent of the '802 Patent

Like Sung '026, Sung '146, which issued as USP No. 8,974,270, is not prior art to the '802 Patent because Sung '146 is the *grandparent* of the '802 Patent and to which the '802 Patent claims priority. Petitioners' invalidity based on Sung '026 and Sung '146 for claims 1-7 and 13-21 rises and falls entirely on their

argument that Dr. Sung has purportedly disclaimed any priority date earlier than the filing date of the '802 Patent on October 3, 2014. However, as detailed at length in Section III above, Dr. Sung did not disclaim, nor could he have disclaimed, the subject matter of his earlier applications. Instead, Petitioners' argument rests on a skewed misreading and intentional mischaracterization of Dr. Sung' declaration. Accordingly, neither Sung '146 nor Sung '026 is prior art to claims 1-7 and 13-21 and cannot render those claims obvious.

VII. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY REVIEW

The Board should exercise its discretion under § 314(a) and deny the Petition because institution of this proceeding would not be consistent with the objective of the AIA to “provide an effective and efficient alternative to district court litigation.” *NHK Spring Co. v. IntriPlex Techs.*, IPR2018-00752, Paper 8, at 19–20 (P.T.A.B. Sept. 12, 2018) (precedential)(citing *General Plastic Indus. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19, at 16–17 (P.T.A.B. Sept. 6, 2017) (precedential)).

In keeping with the precedential decision in *NHK*, “a parallel proceeding in an advanced state implicates considerations of efficiency and fairness, which can serve as an independent reason to apply discretion to deny institution.” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15, at 11 (P.T.A.B. May 13, 2020) (“*Fintiv II*”). Indeed, the Board held in *NHK* that the state of a parallel district court

proceeding may be an additional factor (beyond those identified in *General Plastic*) that weighs in favor of denying a petition under § 314(a). IPR2018-00752, Paper 8, at 20.

Here, there exists a parallel district court proceeding between the same parties (Petitioners and Patent Owner) regarding the same '802 Patent: *Sung v. Samsung Electronics Co. Ltd., et al.*, Case No. 4:23-cv-752-SDJ (E.D. Tex.) (Aug. 21, 2023). (Pet. at 1.) That action has already begun claim construction briefing, with a claim construction hearing scheduled to occur on September 4, 2024, almost a month *prior to* the Board's institution decision deadline. (Ex. 1019 at 2.) Further, any trial before the Board here will likely not conclude until the end of September 2025—almost a month after the final pretrial conference, and likely weeks after the district court trial. (Ex. 1019 at 5.) This relative timeline strongly favors denial of the Petition in accordance with *NHK* and *Fintiv I*.

The totality of these circumstances is contrary to the AIA's goal of providing "an effective and efficient alternative to district court litigation.". See *NHK*, IPR2018-00752, Paper 8, at 20. Indeed, allowing this IPR to proceed in parallel with the district court proceeding would increase, rather than limit, the parties' litigation costs.

A. *NHK* and Its Progeny

The circumstances here are the type that the Board has consistently found warranted a denial of institution under 35 U.S.C. § 314(a) and *NHK*.

In the precedential *NHK* decision, on efficiency grounds, the Board exercised discretion under § 314(a) to deny a petition involving the same patent, the same parties, the same claim construction standard, and “the same prior art and arguments” as the district court proceeding set to begin trial approximately six months before the statutory deadline for a Final Written Decision (“FWD”). IPR2018-00752, Paper 8, at 20.

Since *NHK*, the Board has continued to exercise its discretion to deny petitions in similar circumstances. For example, in *Supercell Oy v. GREE, Inc.*, the Board denied institution of a petition in view of the advanced state of a parallel district court proceeding involving the same parties—one that would be scheduled for trial before the Board on the same date, and also on the same schedule, as the parallel district court proceeding. IPR2020-00310, Paper 13 (P.T.A.B. June 18, 2020).

Similarly, in *Fintiv I*, the Board, relying on *NHK*, denied institution where: (a) “[t]he same art” was presented in both proceedings; and (b) jury trial in the district court proceeding was set to begin “approximately two months before a final written decision would be due in [the Board] proceeding.” IPR2020-00019, Paper 15, at 7–17.

B. Analysis of the *Fintiv I* Factors Favors Denial

The facts surrounding the present Petition warrant exercise of the Board’s discretion to deny institution under § 314(a) for the same reasons as in *NHK* and its progeny. Indeed, each of the Board’s identified factors relating to “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding” in line with *NHK*—supports denial here. *Fintiv I*, IPR2020-00019, Paper 11, at 6. A balancing of these factors demonstrates that efficiency and integrity of the AIA are best served by denying institution.

1. *Fintiv* Factor 1: No Stay Has Been Granted in the District Court Proceeding and No Evidence Exists that One May Be Granted If a Proceeding Is Instituted

This factor weighs in favor of discretionary denial because while a district court determines whether to grant a stay to resolve an IPR based on the facts of each case, there is little evidence here to suggest that the district court would grant such a stay. In fact, a stay is extremely unlikely.

Indeed, the courts in Eastern District of Texas “have uniformly denied motions for a stay” “when the PTAB has not yet acted on a petition for inter partes review.” *Trover Group, Inc. v. Dedicated Micros USA*, No. 2:13-cv-1047-WCB, 2015 U.S. Dist. LEXIS 29572, at *6 (E.D. Tex. Mar. 11, 2015) (Bryson, J.). The *Trover* ruling was further solidified in *AR Design Innovations LLC v. Ashley*

Furniture Indus., Inc., No. 4:20-CV-392, 2021 U.S. Dist. LEXIS 250577 (E.D. Tex. Jan. 11, 2021) (Jordan, J.), denying as premature motions to stay patent cases prior to institution. Since Judge Jordan assumed office on August 20, 2019, the Eastern District of Texas has granted 51 Motions to Stay Pending Inter Partes Review and denied 87, not counting those that were granted and denied in part, creating a greater-than 60% chance a stay would be denied. (Ex. 2005.) Given the district court litigation is in the Eastern District of Texas, is in Judge Jordan’s Court, and Judge Jordan decided the *AR Design Innovations* decision, it is unlikely that any stay would be granted prior to institution. The parties met and conferred on a proposed stay related to a motion for summary judgment but no agreement was reached.

As noted above, any decision from this Board regarding institution is due after the claim construction hearing, just two months prior to the burden-of-proof expert report deadline, and less than a year before trial. By that time, the late stage of the district court proceeding will even further weigh against a stay.

Accordingly, this first *Fintiv* factor weighs in favor of discretionary denial.

2. *Fintiv* Factor 2: The Court’s Trial Date Is Before, or Contemporaneous with, the Board’s Projected Statutory Deadline for a FWD

“If the court’s trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny

institution under *NHK*.” *Fintiv I*, IPR2020-00019, Paper 11, at 9. Such is the case here.

In the parallel proceeding, the Final Pretrial Conference is set for September 3, 2025, with trial expected to begin as soon as practicable thereafter. (Ex. 1019 at 5.) In other words, if the Board were to institute trial here, the district court trial is scheduled to conclude before, or contemporaneously with, the expected FWD in late September 2025.

As noted above, the Board has consistently denied institution in cases involving similar or smaller gaps between the trial date and the statutory deadline for a FWD. *See, e.g., E-One, Inc. v. Oshkosh Corp.*, IPR2019-00161, Paper 16, at 6–9 (P.T.A.B. May 15, 2019) (***one-month gap***); *ZTE USA Inc. v. Fractus SA*, IPR2018-01461, Paper 10, 16-17 (P.T.A.B. Feb. 28, 2019) (“substantially the same grounds” raised, claim construction issued, court “likely to go to trial before a final decision is reached”).

Petitioners admit that Final Pretrial Conference is scheduled for September 3, 2025, but claim without support that the trial “is expected to occur” after the statutory deadline for the Board’s FWD. (Pet. at 85.) There is no indication that trial will be scheduled more than a month after the Final Pretrial Conference, let alone delayed a full month to avoid concluding prior to the statutory deadline for the Board’s FWD. In fact, this *Fintiv* factor concerns the “***projected statutory***

deadline” for the FWD, not Petitioners’ expectations, and the statutory deadline is not until the very end of September, at best occurring at the same time as the district court trial. *Fintiv I*, IPR2020-00019, Paper 11, at 9.

The second *Fintiv* factor weighs heavily in favor of discretionary denial.

3. *Fintiv* Factor 3: There Has Been Immense “Investment in the Parallel Proceedings by the Court and Parties”

This factor weights strongly in favor of denying institution because the parties and the district court here have already invested substantial resources, and will have invested even more resources, in the parallel district court proceeding by the institution deadline of September 28, 2024. For example, in addition to the extensive, hard-fought third-party discovery already obtained, and continuing to be obtained, by both parties, the parties have spent or will have spent considerable time and resources in completing claim construction, with the opening claim construction brief filed on June 12, 2024, the responsive claim construction brief due on July 3, 2024, the reply claim construction brief due on July 17, 2024, the technology tutorial due July 31, 2024, and the *Markman* hearing occurring on September 4, 2024. (Ex. 1019 at 2.) Additionally, expert reports for which each party has the burden of proof are due on November 27, 2024, just two months after the institution deadline, with rebuttal expert reports due a month later on December 23, 2024.

In granting a discretionary denial in *Cisco Sys., Inc. v. Ramot at Tel Aviv Univ. Ltd.*, IPR2020-00122, Paper 15 (P.T.A.B. May 15, 2020), the Board considered facts very similar to those here. There, the Board found Factor 3 favored denying institution, noting that “at the time of this decision, the parties have spent months briefing the district court on the claim construction issues,” that “[t]he parties submitted claim construction charts and briefs,” a claim construction hearing was held prior to the institution decision date, and expert discovery was scheduled to be completed within two months of the institution decision deadline. *Id.* at 8–9.

The facts are similar here. Claim construction briefing will have been concluded for two months, with the *Markman* hearing occurring weeks before the institution decision deadline. The deadline for initial expert reports is also within two months of the institution deadline, with rebuttal expert reports due just a month later. The hefty investment that will occur before this Board decides whether or not to institute indicates that the district court parallel litigation will be in an advanced state and, thus, weighs against institution.

Petitioners contend that the parallel litigation is “in its early stages” and “the investment in it has been minimal” because the parties “have not exchanged preliminary positions on claim construction, and discovery has just begun.” (Pet. at 85.) First, Petitioners knew that claim construction would be in an advanced

stage by the time this POPR was due, let alone by the statutory institution deadline. Petitioners agree that the *Markman* hearing will occur on September 4, 2024 (Pet. at 85), but Petitioners incorrectly guessed that the statutory institution deadline would be before that date. Instead, as noted above, the institution deadline is not for almost a month *after* the *Markman* hearing. Second, Petitioners also knew that three additional months of discovery would pass from filing of the Petition to this POPR, and six months would pass from filing to the statutory institution deadline. The parties are now entrenched in discovery amongst themselves and several third parties, incurring considerable expense.

As shown above, the parties have invested, and will continue to invest, substantial time and capital in the parallel proceeding prior to an institution decision. Petitioners' statements hold no sway, and this third *Fintiv* factor weighs heavily in favor of discretionary denial.

4. *Fintiv* Factor 4: There Is “Overlap Between Issues Raised in the Petition and in the Parallel Proceedings”

Fintiv factor 4 weighs in favor of discretionary denial as “the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding.” *Fintiv I*, IPR2020-00019, Paper 11 at 12. Petitioners have the burden of proof for invalidity when serving its expert reports, which are due on November 27, 2024. (Ex. 1019.) Petitioner has not presented a complete *Sotera*-type stipulation and is thus free to assert

substantially the same grounds of invalidity alleged in the Petition. Though Petitioners “stipulate[s]” that if instituted, Petitioners “will not pursue the same grounds in the district court litigation,” Petitioners do not mention pursuit of invalidity using the *same references* or *substantially similar arguments*.

Petitioners’ own cited case, *Sand Revolution II LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7, specifically cautions Patent Owners against Petitioners’ type of “stipulation” because IPR Petition grounds are very specific. *See Sand Revolution II*, IPR201-01393, Paper 24 at n.5. That case favors a stipulation that Petitioners “would not pursue any ground raised or that could have been reasonably raised in an IPR.” *Id.* It is telling that Petitioners knew they could make such a stipulation but chose not to.

In this regard, it should be noted that the Board has previously found that mere use of the same two references in a Petition and corresponding district court litigation favored discretionary denial, even though the grounds were not identical. *See Apple Inc. v. Maxell, Ltd.*, IPR2020-00203, Paper 12 at 14 (July 6, 2020) (“Although there may be some differences in the reasoning presented in the various obviousness grounds for combining the prior art teachings, we nevertheless find the assertion of Waldroup and Nakayama in both proceedings may result in duplication of work and create the potential for inconsistent decisions.”) So, even if Petitioners do not use the same grounds in the district court litigation that they

use in the Petition, but use the same references for invalidity (which is likely given Petitioners' toothless stipulation), duplication of work is likely and favors discretionary denial.

There is also overlap between the claims challenged. In the district court, Patent Owner asserted infringement of claims 1-21 of the '802 Patent in its Preliminary Infringement Contentions. (Ex. 2006 at 3-5.) In the instant Petition, Petitioners challenge claims 1-21. (Pet. at 3), and Petitioners have cited Tsai, Sung '026 and Sung '146 as invalidity references in district court (Ex. 2007 at 26, 31, 39); *see Fintiv II*, IPR2020-00019, Paper 15, at 15 ("Thus, because the identical claims are challenged based on the same prior art in both the Petition and in the District Court, this factor weighs in favor of discretionary denial in this case.").

Because it is likely that the same claims, same references, and substantially similar arguments and evidence will be presented in the parallel district court proceeding as in the Petition, this fourth *Fintiv* factor weighs in favor of discretionary denial.

5. *Fintiv* Factor 5: The Petitioner and the Defendant in the Parallel Proceeding Are the Same Party

Fintiv factor 5 favors discretionary denial because the Petitioners here and the defendants in the parallel proceeding are the same. *See Fintiv II*, IPR2020-00019, Paper 15 at 15. There is no unrelated third party involved in either the IPR or the district court parallel litigation, and adjudication in the district court

proceeding will therefore resolve all claims between the parties. Thus, this factor favors denying institution.

6. *Fintiv* Factor 6: Petitioner’s Grounds Do Not Rise to the Level of “Compelling Evidence of Unpatentability”

With respect to this *Fintiv* factor, as described in detail below, there are substantial issues with Petitioners’ analysis of the challenged independent claims and, thus, even if the Board were to determine that Petitioners met the lower threshold for instituting IPR, the evidence does not rise to the level of being “compelling.” Petitioners also failed to present a meaningful *Sotera*-type stipulation not to pursue in the parallel proceeding the same grounds or any grounds that could have reasonably been raised before the Board. Therefore, Factor 6 weighs in favor of denial.

As the Board has explained, an objective of the AIA is to provide “an effective and efficient alternative to district court litigation.” *NHK*, IPR2018-00752, Paper 8, at 20. Where no such “effective and efficient” alternative is needed in view of a district court’s just and speedy adjudication of the same issue, there is no need for the Board to unnecessarily duplicate the district court’s efforts at the expense of the Board’s time and resources—which are appropriately and best applied elsewhere. (*Id.*)

Because three of the factors (Factors 1, 5, and 6) favor discretionary denial and the remaining three factors (Factors 2, 3, and 4) weigh heavily in favor of discretionary denial, the Board should deny institution under § 314(a).

VIII. CONCLUSION

For all the reasons stated above, Patent Owner respectfully requests that the Board decline to institute review of the challenged claims of the '802 Patent.

Dated: June 28, 2024

/s/ Alex Chan

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that there are 13,956 words in this paper, excluding any table of contents, table of authorities, mandatory notices under 37 C.F.R. § 42.8, certificate of word count, certificate of service, or appendix of exhibits. This certification relies on the word count of the word-processing system used to prepare this paper.

Respectfully submitted,

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Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on June 28, 2024, the foregoing document is being served via electronic mail upon the following counsel of record for Petitioner:

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