

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES-BENZ USA, LLC,
Petitioner,

v.

YECHEZKAL EVAN SPERO
Patent Owner.

U.S. Patent No. 9,955,551 to Spero

Case No.: IPR2023-01039

**PATENT OWNER'S PRELIMINARY RESPONSE TO PETITION
FOR *INTER PARTES* REVIEW UNDER 37 C.F.R. § 42.107**

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<i>Spectralytics, Inc. v. Cordis Corp.</i> , 649 F.3d 1336 (Fed. Cir. 2011)	46
<i>Valve Corp. v. Electronic Scripting Products, Inc.</i> , Case IPR2019-00062, Paper 11 (PTAB April 12, 2019) (precedential).	54, 55, 58, 62
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<i>W.L. Gore & Assocs., Inc. v. Garlock, Inc.</i> , 721 F.2d 1540 (Fed. Cir. 1983)	27, 33, 39, 46
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<i>Wellman, Inc. v. Eastman Chem. Co.</i> , 642 F.3d 1355 (Fed. Cir. 2011)	6

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35 U.S.C. § 316	1, 2, 48-52, 63

Other Authorities

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Regulations

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List of Exhibits

Exhibit No.	Description	Identifier
2001	Declaration of Matthew A. Turk, PhD	Turk Decl.
2002	Curriculum Vitae of Matthew A. Turk, PhD	Turk CV
2003	Best Practices and FAQs for Filing Requests for Reexamination Compliant with 37 CFR 1.510 and 1.915, PTAB, May 2010	Best Practices
2004	Intentionally left blank.	
2005	Petition challenging U.S. Patent No. 9,955,551, Mercedes-Benz USA LLC v. Yechezkal Evan Spero, IPR2023-01040, June 7, 2023	The '040 IPR Petition
2006	U.S. Published Patent Application US2003/0137849A1 to Alden, Prosecution History in the U.S. Patent and Trademark Office	Alden Prosecution History
2007	Wards Auto “Prospects Bright for Lighting Sensor Supplier Hella,” Roger Schreffler Wards Auto, June 6, 2017 (Available at https://www.wardsauto.com/technology/prospects-bright-lighting-sensor-supplier-hella)	Wards Auto
2008	Automotive World, “Hella: Matrix LED technology makes its debut”, February 13, 2014 (Available at https://www.automotiveworld.com/news-releases/hella-matrix-led-technology-makes-debut/)	Automotive World
2009	Intentionally left blank.	
2010	ATZ Worldwide “Multi-row Headlamp System in the Mercedes-Benz E-Class,” Franz-Josef Kalze, February 2016 (Available at https://link.springer.com/article/10.1007/s38311-015-0105-y)	ATZ Worldwide
2011	Intentionally left blank.	

Exhibit No.	Description	Identifier
2012	PR Newswire, “Mercedes Multibeam LED headlamps – in a class of their own, ” June 22, 2016 (Available at https://www.prnewswire.com/news-releases/mercedes-multibeam-led-headlamps--in-a-class-of-their-own-300288628.html)	PR Newswire
2013	Complaint, <i>Torchlight v. Daimler et al.</i> , Case No. 1:21-CV-751 District of Delaware, filed June 7, 2022	Complaint
2014	Reexamination Application Certified File History of U.S. Patent No. 9,955,551	

Pursuant to 37 C.F.R. §42.107, Patent Owner, Yechezkal Evan Spero (“Patent Owner”), submits the following Preliminary Response (“Preliminary Response”) to the Petition for *Inter Partes* Review (“Petition”) filed by Mercedes-Benz USA, LLC (“Petitioner”) that challenges Claims 8, 10-18, 24-47 (“Challenged Claims”) of U.S. Patent No. 9,955,551 (“the ’551 Patent”). Patent Owner respectfully requests that the Patent Trial and Appeal Board (“the Board”) deny Petitioner’s request to cancel the Challenged Claims.

I. Introduction

From both substantive and procedural perspectives, Petitioner has failed to meet its burden. The Petition is detached from the actual teachings of the applied references, instead offering arguments that rely on inaccurate speculation and unsupported assumptions. The Petition also fails to satisfy the particularity requirements of 35 U.S.C. § 314 and raises fairness and efficiency concerns under § 316.

Substantively, regarding its obviousness contentions, Petitioner’s rationale for combining the applied references renders the primary reference inoperable or unsatisfactory for its intended purpose and changes its principle of operation. Petitioner also fails to address the objective evidence of long felt unmet need and industry praise from the file history. Regarding its anticipation contentions, the applied reference relied upon by Petitioner is fatally ambiguous and its allegedly

anticipatory disclosures are not enabled. As a result, all of Petitioner's asserted grounds lack sufficient evidence, leaving Petitioner without a reasonable likelihood of prevailing as to any of the Challenged Claims.

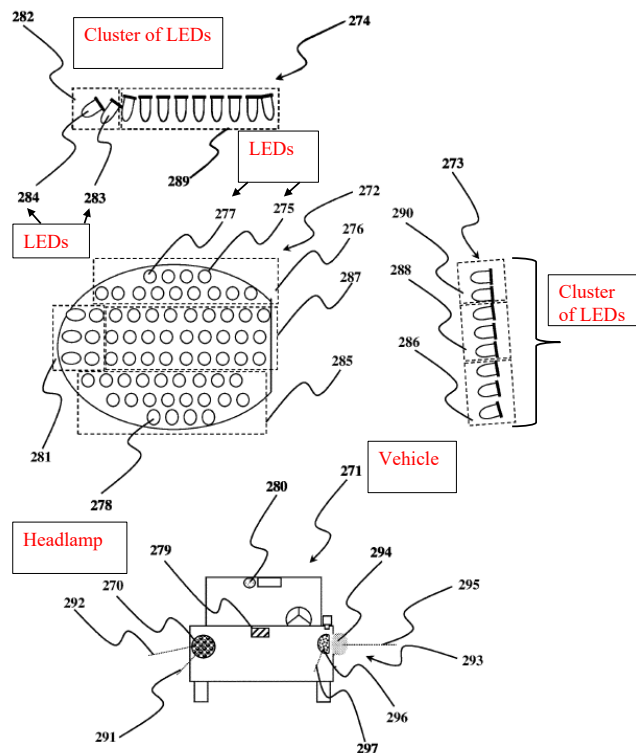
Procedurally, the Petition should further be denied under § 314 because it lacks particularity. For Ground 1, except for articulating that the primary reference discloses and renders obvious each claim, the Petition fails to specify the differences between its anticipation and obviousness assertions, resulting in vague and confusing arguments. This leaves both the Board and Patent Owner in a position where they must guess as to how the Petitioner is interpreting and applying the primary reference. Finally, Petitioner's coordinated serial petition strategy raises fairness and efficiency concerns under § 316.

For these reasons, and others explained below, the Board should deny Petitioner's Petition for *inter partes* review.

II. Overview of the '551 Patent

The '551 Patent discloses "a novel multi-light source approach to the design and construction of solid-state lighting fixtures (vs. solid state lamps), which is termed a 'Digital Lighting Fixture', due to the control of individual lighting element 'digits' to provide the 'correct' lighting solution for the situation at hand." (Ex. 1001, 11:8-13.) The '551 Patent further explains that "[t]he terminology 'digital' as used herein refers to the discrete nature of the multiple LED lamps provided in the

luminaire, whereby, ‘digital’ control results from the individual control of the discrete, *i.e.*, ‘digital’ lighting elements, the LEDs, in the luminaire.” (*Id.*, 2:65-3:3.)



(Ex. 1001, Figure 15, Annotated)

The '551 Patent describes “a different approach which is to provide the end user with the most correct lighting solution not a new technology lamp to replace the old one.” (*Id.*, 11:5-8.) “In contrast to a prior art, single large, lamp replacement like light source, the present invention provides multiple, small sized sources of differing characteristics such that the effect of the whole is greater than the sum of the individual parts.” (*Id.*, 11:45-49.) “The added controllability offered by breaking the total light output up into discrete (‘digital’) specifically aimable and dimmable

elements which can be addressed by control electronics to effect intensity, spectrum and spatial distribution of intensity and spectrum, yields a lighting fixture (vs. lamp) of unparalleled performance.” (*Id.*, 11:56-62.) The ’551 patent explains how to use its “digital lighting” in the context of headlamps to “provide the optimal lighting solution in real-time” – whether that be for predictive curve illumination (*Id.*, 57:31-37), to preserve forward illumination while preventing glare (*Id.*, 52:54-65), or both (*Id.*, 53:34-44).

The ’551 Patent describes a multitude of sensor-based techniques for observing a scene, analyzing a scene, determining varied illumination for a scene, etc. This can include determining what objects are within the scene and what illumination should correlate to those objects (*Id.*, 44:36-44.) The ’551 Patent notes the general applicability of the varied concepts across embodiments and specifically notes that techniques described elsewhere at least correspond to headlights (*Id.*, 52:66-53:4.) The ’551 Patent explains that, by using “digital” headlamps with known light directionality of discrete source elements, such as LEDs, it is possible to “continue to illuminate far ahead (in high beam) without blinding oncoming traffic.” (*Id.*, 52:60-61.) This allows for determination of “what exact aiming is the maximum allowable for any given traffic situation and the road layout.” (*Id.*, 52:64-65.)

The ’551 Patent also recognizes that different “objects” may be in the field of view in a variety of lighting situations, and that different light output may be

appropriate to accommodate these different objects. (*Id.*, 44:36-45:44.) In the context of headlamps, it can, for example, determine types of objects, *e.g.*, without limitation, whether something is a vehicle or a sign, and respond differently to each object. With regards to a preceding vehicle it may reduce illumination of the vehicle and with regards to a preceding sign it may increase illumination of the sign. It can also make these accommodations at the same time, because of the discrete nature of the directional light sources — “use the controller and properly aimed SLS to follow and illuminate distant overhead and roadside signs for a longer time, yet not blind oncoming traffic due to the narrow beam.” (*Id.*, 53:1-4.) This is a headlamp embodiment employing, among other things, the described notion of “task lighting” – contemplation of varied illumination needs within an illuminated scene.

Thus, the '551 Patent provides a comprehensive solution for the control and use of light and extends the application to headlamps that can accommodate other traffic without blinding it, predictively illuminate road curvatures, and differentially illuminate objects in a scene based on object recognition. All of this lends itself to the complete headlamp solution contemplated and described – a solution where “[a]t any instant in time the intensity, spectrum and beam pattern of the headlamp may be varied as a function of the drivers intent, lay of the road and environmental factors.” (*Id.*, 51:49-52.) The marrying of the '551 techniques with the headlamp embodiments results in a headlamp with highly controllable emission elements that,

“[w]hen combined with devices capable of detection changes in the surrounding environment the flexible DLF is capable of changing the illumination so as to provide the optimal lighting solution in real-time.” (*Id.*, 57:33-37.)

III. Level of Ordinary Skill

Patent Owner does not dispute Petitioner’s proposed skill level for a person of ordinary skill in the art (“POSA”). (Petition at 9.)

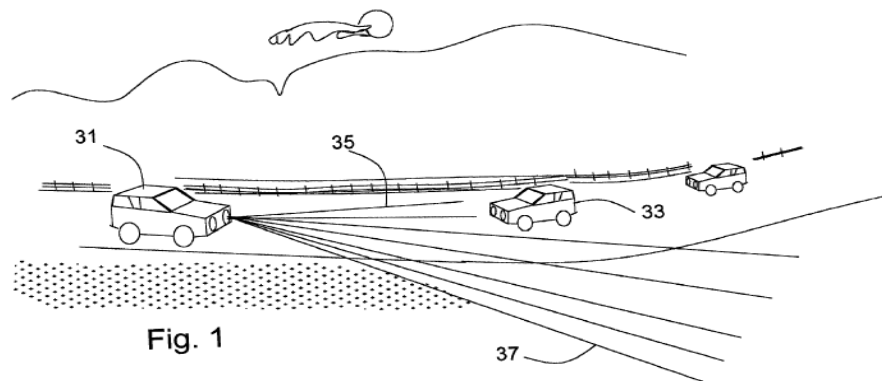
IV. Claim Construction

No claim construction is necessary to deny institution because Patent Owner’s arguments for denial do not hinge on the outcome of an actual controversy about claim interpretation. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed to the extent necessary to resolve the controversy”). The deficiencies of the Petition are readily identifiable without defining the bounds of any specific claim term or phrase. *Id.*

V. The Applied References

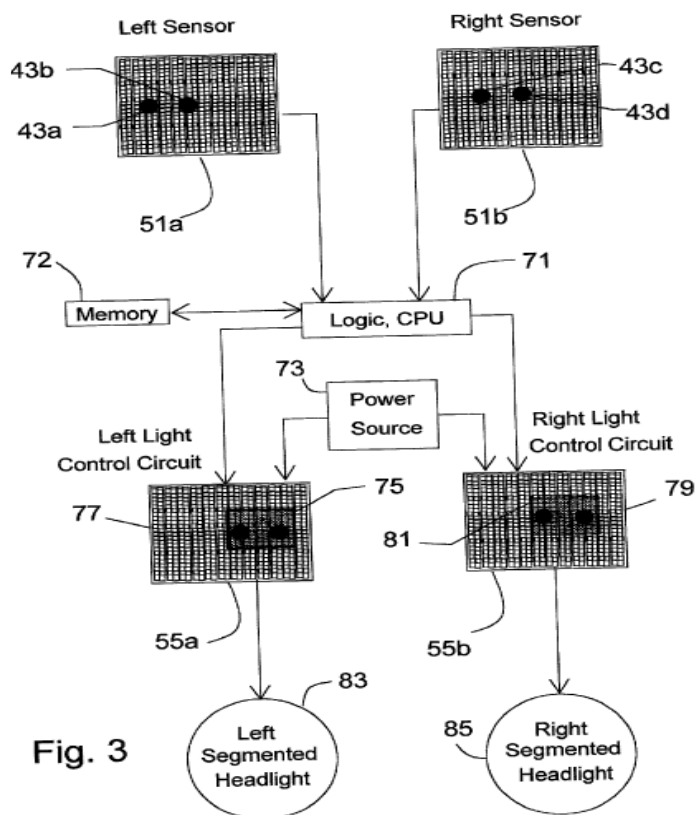
A. Alden

Alden is directed to controlling the distribution of light by a vehicle headlight. Alden’s systems include headlights that produce multiple individually controllable beam segments of light, each illuminating a sector of the area (“distribution area”) ahead of the vehicle equipped therewith (“equipped vehicle”). (Ex. 1005, ¶¶[0002, 0004-0006, 0008]; Ex. 2001, ¶33.)



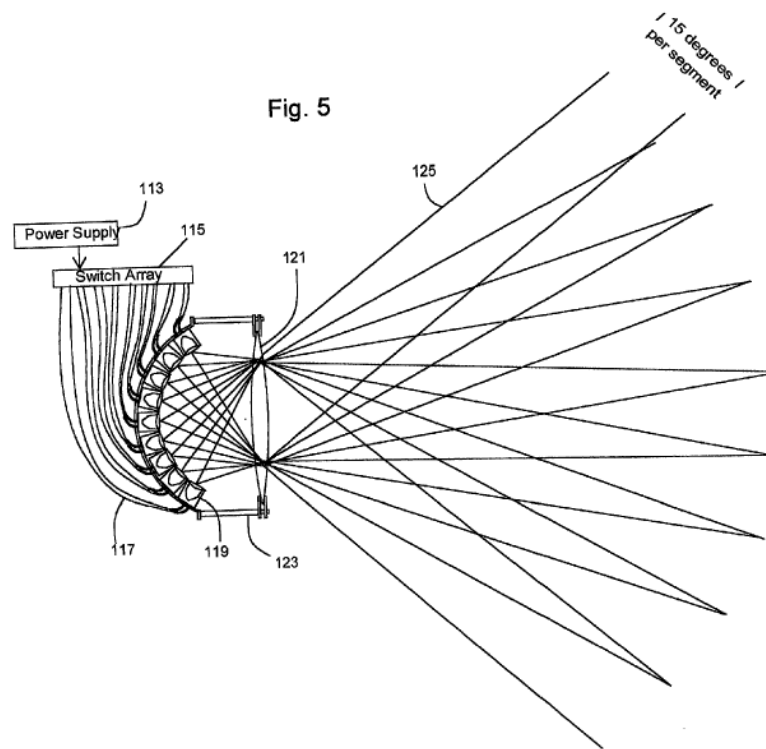
(Ex. 1005, FIGURE 1)

The systems also include sensors 51a, 51b for detecting incoming light received from the distribution area, which sensors 51a, 51b are divided into multiple sectors associated with sectors of the distribution area illuminated by the beam segments of the headlight of the equipped vehicle. (Ex. 1005, ¶¶[0027-0028], Fig. 4.; Ex. 2001, ¶34.) The systems further include a central processing unit (CPU) 71 that determines whether incoming light detected in each sector of the sensors 51a, 51b has an intensity that meets a threshold value. (*Id.*)



(Ex. 1005, FIGURE 3)

In one of the two types of embodiments described, illustrated in Figures 1, 2, and 5, the headlight system dims the intensity of those beam segments produced by the headlight of an equipped vehicle that are incident on a sector or sectors in the distribution area. (Ex. 1005, ¶¶[0025, 0026, 0029]; Ex. 2001, ¶35.) In this embodiment, a headlight 123 employs a one-dimensional array of light emitting diode (LED) elements 119 and a convex lens 121 for directing the beam segment produced by each LED element 119 that illuminate different sectors of the distribution area. (*Id.*)

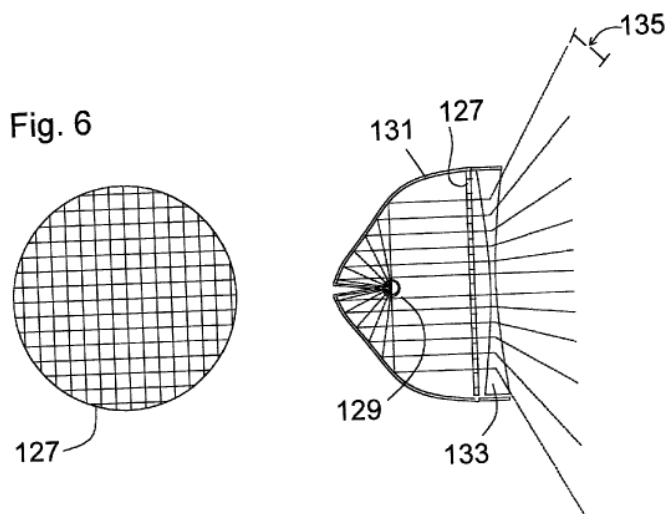


(Ex. 1005, FIGURE 5)

The CPU 71 determines the sector or sectors of the sensors 51a, 51b receiving incoming light from the distribution area that have a detected threshold intensity. (Ex. 1005, ¶¶0026-0029; Ex. 2001, ¶36.) In response, the CPU 71 controls the headlight 123 to dim those beam segments or segments produced by the individual LED elements 119 that illuminate the distribution area sector or sectors associated with any such sensor sectors. (*Id.*)

In the other of the two types of embodiments described, illustrated in Figures 6-14, the headlight system changes the direction of light produced by the headlights of an equipped vehicle. (Ex. 1005, ¶¶0030-0040; Ex. 2001, ¶37.) For example, light produced by the equipped vehicle headlights may be re-directed from a forward

direction to a leftward or rightward direction to illuminate a turn in the road, or from a forward direction to an upward or downward direction to illuminate an incline or decline in the road. In these embodiments, the headlight system employs a single point light source 129, a collimating reflector 131, electro-chromatic refractive elements 127, and a concave lens 133 to produce multiple light beam segments. (*Id.*)



(Ex. 1005, FIGURE 6)

Fig. 8

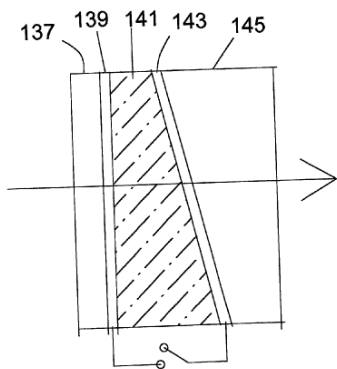
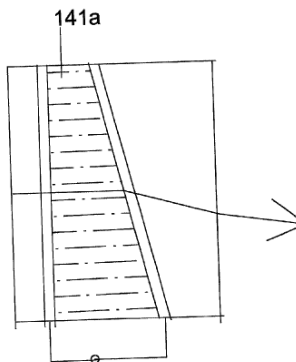
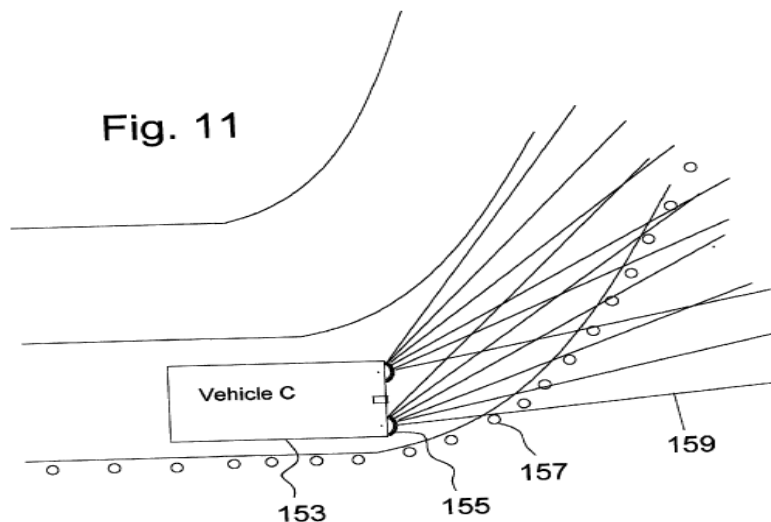


Fig. 9



(Ex. 1005, FIGURES 8, 9)

In one example of this second type of embodiment, the CPU 71 determines the sector or sectors of the sensors 51a, 51b receiving incoming light from the distribution area that have a detected threshold intensity. (Ex. 1005, ¶[0036], Figure 11; Ex. 2001, ¶38.) In response, the CPU 71 controls the electro-chromatic refractive elements 127 of the headlight to change the direction of the beam segments produced thereby to illuminate a turn in the road. (*Id.*)



(Ex. 1005, FIGURE 11)

Significantly, each of the two types of embodiments disclosed by Alden is discrete and includes features that are incompatible with the other type of embodiment. For example, the headlight system embodiment described in connection with Figures 6-14 having electro-chromatic refractive elements 127 for changing the direction of headlight beam segments is designed to work with collimated light produced by single point light source 129, collimating reflector 131,

and concave lens 133. (Ex. 1005, ¶¶[0036-0038]; Ex. 2001, ¶39.) However, the LED elements 119 of the headlight system embodiment described in connection with Figures 1, 2 and 5 produce non-collimated light. (*Id.*) Non-collimated light cannot be directed in any meaningful fashion by the electro-chromatic refractive elements 127 of the headlight system embodiment described in connection with Figures 6-14. (*Id.*) Rather, non-collimated light would blend and have different incident angles on those electro-chromatic refractive elements 127 thereby preventing any meaningful control of individual sectors as well as redirecting much of the non-collimated light they receive away from the desired segments of the distribution area. (*Id.*) Any combination of these different types of Alden's headlight system embodiments would therefore be incapable of meeting the basic requirements of a headlight, *i.e.*, effectively illuminating the area ahead of the equipped vehicle, let alone directing its emitted light in any meaningful fashion. (*Id.*) Indeed, rather than suggesting combinations of various features of its different headlight system embodiments, Alden only states generally that each of its two types of headlight system embodiments may employ the sensing elements 51a, 51b discussed in connection with Figures 3 and 4. (*Id.*)

Additionally, Alden is a theoretical reference that fails to enable much of its

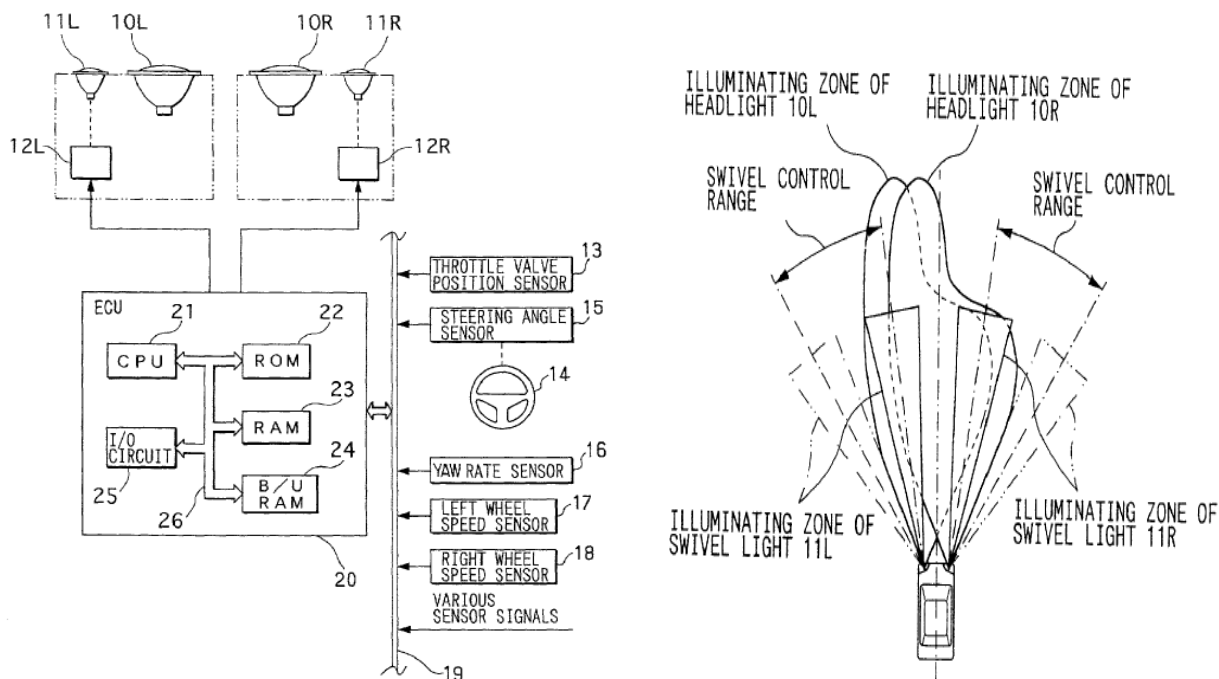
disclosure and is ambiguous in critical respects. (Ex. 1005, ¶[0027]; Ex. 2001, ¶40.)¹ In that regard, the disclosure in Alden is directed to certain features of headlamp systems and general benefits such features and systems could provide but lacks detailed explanations as to how those features and systems are practically implemented or how those benefits are realized thereby. (*Id.*) For example, while Alden depicts control circuit switch array switches in Figure 3 for dimming certain headlight beam segments while leaving other beam segments on high intensity, it does not clearly describe or specifically demonstrate how such operations are accomplished using the one-dimensional array of LED elements 119 of headlight 123 illustrated in Figure 5. (*Id.*) In connection with Figure 4 Alden describes progressing through the sectors of sensors 51a, 51b of Figure 3 to detect incoming light, but it does not explain how those sensor sectors are mapped to either the one-dimensional array of LED elements 119 shown in Figure 5, the switches 115 for that array, or the distribution area sectors depicted therein. (*Id.*) In fact, Alden specifically states that the switch arrays of the light control circuits 55a, 55b shown

¹Notably, Alden contacted Gentex Corporation, an automotive industry supplier, regarding his segmented headlight system and was informed that Gentex's technical staff had determined the system to be "futuristic" and likely "years away from any practical use." (Ex. 2006 at 39; Ex. 2001, ¶41.)

in Figure 3 are merely for illustrative purposes. (*Id.*)

B. Kondo

Kondo discloses a system for automatically adjusting the direction of optical axes of vehicle lights. The system includes left and right vehicle headlights 10L, 10R and left and right swivel lights 11L, 11R. (Ex. 1007, ¶¶[0016-0019]; Ex. 2001, ¶42.) The swivel lights 11L, 11R are attached to left and right actuators 12L, 12R which are controlled by an ECU 20 based on information obtained from sensors, such as a steering angle sensor 15, yaw rate sensor 16, and wheel speed sensors 17, 18. (*Id.*)



(Ex. 1007, FIGURES 1, 2)

The ECU 20 evaluates the output signals from the sensors 15, 16, 17, 18 as either normal or abnormal and uses normal sensor signals to calculate optical axes

for the swivel lights 11L, 11R. (Ex. 1007, ¶¶[0018, 0028-0029]; Ex. 2001, ¶43.) The ECU 20 then drives the left and right actuators 12L, 12R of the left and right swivel lights 11L, 11R to control the direction of the light produced by the those swivel lights 11L, 11R within a swivel control range. (*Id.*)

VI. The Board Should Deny Institution Because No Ground Has a Reasonable Likelihood of Success

For **Ground 3**, Petitioner attempts to combine Alden and Kondo to satisfy the elements of independent claim 8 and dependent claims 10-14. For **Ground 4**, Petitioner attempts combine Alden, Kondo, and Stam to satisfy the elements of dependent claims 15-18. Petitioner has failed to meet the requisite burden of showing a reasonable likelihood that it would prevail on either of these Grounds for at least the following reasons: (i) Petitioner's rationale for combining Alden and Kondo renders the primary reference Alden inoperative or unsatisfactory for its intended purpose and changes its principle of operation, and (ii) Petitioner relies on the primary reference Alden to satisfy claim elements that Alden fails to teach.

For **Ground 1**, Petitioner attempts to rely on Alden to satisfy the elements of claims 24-27, 29-35, 37-43, and 45-47. Of those, claims 24, 32, and 40 are independent claims, with each of the remaining claims depending directly or indirectly from one of those independent claims. For **Ground 2**, Petitioner attempts to combine Alden and Kobayashi to satisfy the elements of dependent claims 28, 36, and 44. Petitioner

has failed to meet the requisite burden of showing a reasonable likelihood that it would prevail on these Grounds for at least the reason that Petitioner relies on the primary reference Alden to satisfy claim elements that Alden fails to teach.

A. Grounds 3 and 4: Petitioner's Combination of Alden and Kondo Fails to Teach All of the Features of Independent Claim 8

Petitioner must show where each claim limitation is found in the applied references. *See e.g., Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1361 (Fed. Cir. 2012). Failure to do so defeats a claim of obviousness. *Id.* To establish a *prima facie* obviousness rejection, all of the claimed features must be taught or suggested by the prior art. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

1. A Person of Ordinary Skill in the Art Would Not Have Been Motivated to Combine Alden and Kondo Because Such a Combination Renders Alden Inoperable or Unsatisfactory for Its Intended Purpose and Changes Its Principle of Operation

Petitioner must explain how and why a POSA would have modified or combined the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2006) (requiring articulated reasoning with rationale underpinning as to how or why a person of ordinary skill in the art would have combined or modified the teachings of the prior art); *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017) (holding obviousness determination to be improper where the record lacked a

“clear, evidence-supported account” of “how the combination” would work); *Adidas AG v. Nike, Inc.*, IPR2016-00922, Paper 21, 36 (October 19, 2017) (holding that challenged claims are patentable when the “Petitioner fails to explain why and how a person of ordinary skill in the art would combine” two references).

“[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co.*, 550 U.S. at 418, 82 USPQ2d at 1396 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). As the Federal Circuit recently stated, a prior art combination must be a “suitable option” to satisfy the motivation to combine requirement. *Intel Corp. v. PACT XPP Schwiez AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023). If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125 (Fed. Cir. 1984). Moreover, if a proposed modification or combination of prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are insufficient to render a claim obvious. *In re Ratti*, 270 F.2d 810, 813, 123 USPQ 349, 352 (CCPA 1959). Petitioner completely fails to address these issues.

Independent claim 8 requires “a light fixture . . . having movable structure for aiming the directional light sources mounted thereon in a defined direction.”

Petitioner relies on Kondo for satisfying these claim features. Petitioner's sole contention in this regard consists of conclusory statements that a portion of the LED elements 119 of Alden's headlight 123 could be made moveable using Kondo's actuator 12L (12R) for moving a vehicle front light 11L (11R). (Petition at 72-73; Ex. 2001, ¶46.) Headlight 123 is one of two types of headlight system embodiments disclosed in Alden. The intended purpose of this type of embodiment is to dim the intensity of those beam segments produced by the LED elements 119 of headlight 123 that may be incident on an oncoming vehicle present in the distribution area of that headlight 123. (Ex. 1005, ¶[0027]; Ex. 2001, ¶47.)

This purpose is purportedly accomplished using a sensor 51a (51b), which receives incoming light from the distribution area. In response to the detection of any such light having a threshold intensity in any sector of the sensor 51a (51b), the CPU 71 controls the headlight 123 to dim the beam segment or segments produced by the individual LED element or elements 119 that illuminate the distribution area sector or sectors associated with any such sensor sector. (Ex. 1005, ¶¶[0025-0029]; Ex. 2001, ¶48.)

Critically, then, both the LED elements 119 and sensor 51a (51b) of the headlight 123 must be oriented toward the distribution area. Indeed, it is only this common orientation of, and association between, the LED elements 119 and the sensor 51a (51b) that would enable the headlight 123 to accomplish the intended

purpose of Alden. (Ex. 2001, ¶49.)

However, Petitioner's combination of Alden and Kondo, whereby a portion of the LED elements 119 of Alden's headlamp 123 are made movable using Kondo's actuator 12L (12R), would render Alden inoperable or unsatisfactory for its intended purpose and thus an unsuitable option. More specifically, once moved, that portion of LED elements 119 would be disassociated from the distribution area and the sensor 51a (51b), which Alden shows and describes in connection with Figure 2 thereof as part of a sensor unit 45 (including lens 49) mounted to the equipped vehicle. (Ex. 1005, ¶[0026], Figure 2.) As a result, the fixed sensor 51a (51b) would receive no incoming light from the new and different area illuminated by the now-moved LED elements 119. The CPU 71, having no information from the sensor 51a (51b) regarding that new and different illuminated area, would be unable to control the now-moved LED elements 119 to dim the beam segment or segments produced thereby that are incident on any oncoming vehicle present in that new and different area illuminated. (Ex. 2001, ¶50.)

Moreover, contrary to Petitioner's contention, Kondo does not disclose a "swivel structure." (Petition at 72.) Figure 2 of Kondo merely illustrates black-box actuators 12L, 12R schematically connected by dotted lines to lights 11L, 11R, which are referred to as swivel lights because they can be rotated by the actuators 12L, 12R. (Ex. 1007, ¶¶[0016-0019, 0028-0029], Figures 1, 2; Ex. 2001, ¶51.)

Petitioner's obviousness contention likewise fails to include any details of a structure for mounting a portion of the LED elements 119 of Alden's headlight 123, or any explanation of *how* one of ordinary skill would mount a portion of those LED elements 119 on a moveable structure and integrate such a structure or coordinate it with operation of Alden's headlight 123 — in particular given Alden's description of the positioning of the LED elements 119 on a curve along the focal point of the lens 121 in order to illuminate specific portions of the distribution area. (Ex. 1005, ¶[0029].) Such engineering details are critical to Petitioner's proposed combination of Alden and Kondo, but they are simply ignored by Petitioner. (Ex. 1005, ¶[0029]; Ex. 2001, ¶51.). *See Personal Web Techs., LLC*, 848 F.3d at 994; *Adidas*, IPR2016-00922, Paper 21, 36.

Petitioner's combination of Alden and Kondo would therefore render Alden inoperable or unsatisfactory for its intended purpose and change its principle of operation—making it an unsuitable option. As a result, one of ordinary skill would not be motivated to combine Alden and Kondo as Petitioner contends and, indeed, the teachings of Alden and Kondo are insufficient to render the claimed invention obvious. *Intel Corp. v. PACT*, 61 F.4th at 1381; *In re Gordon*, 733 F.2d at 902; *In re Ratti*, 270 F.2d at 813.

2. Petitioner’s Combination of Alden and Kondo Does Not Teach the Independent Claim 8 Features of “*determining illumination within the illuminated area using at least one of artificial intelligence, pattern recognition, video analytics, and look-up tables*”

Petitioner must show where each claim limitation is found in the applied references. *See e.g., Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1361 (Fed. Cir. 2012). Failure to do so defeats a claim of obviousness. *Id.* To establish a *prima facie* obviousness rejection, all of the claimed features must be taught or suggested by the prior art. *See generally In re Royka*, 490 F.2d 981.

Independent claim 8 requires “*determining illumination within the illuminated area using at least one of artificial intelligence, pattern recognition, video analytics, and look-up tables.*” Petitioner relies on Alden for satisfying these claim features. Petitioner contends that Alden’s CPU 71 receives information from sensors 51a, 51b regarding patterns of sensed light and assesses whether such patterns appear to be a vehicle. (Petition at 78.)² This is a mischaracterization of Alden.

To the contrary, Alden’s sensors 51a, 51b are divided into sectors that detect light received from the distribution area. In Alden’s headlight system embodiment illustrated in Figures 1, 2, and 5, the CPU 71 determines those sectors of the sensors

²Petitioner does not contend that Alden teaches determining illumination within an area using artificial intelligence, video analytics, or look-up tables.

51a, 51b in which any such received light has a threshold intensity. The sensor sectors are associated with sectors of the distribution area illuminated by beam segments produced by the LED elements 119 of headlight 123. Alden's CPU 71 then simply designates one or more distribution area sectors associated with sensor sectors that encompass those sensor sectors in which the threshold intensity light was detected. The CPU 71 then controls the LED elements 119 of headlight 123 as required to dim the beam segments produced thereby that illuminate the designated sector or sectors of the distribution area. (Ex. 1005, ¶¶[0025-0029]; Ex. 2001, ¶54.)

Thus, rather than pattern recognition, Alden's system uses thresholding of detected incoming light to control the beam segments produced by the LED elements 119 of headlight 123.³ (Ex. 2001, ¶55.) Moreover, contrary to Petitioner's contention, Alden also does not teach identifying a vehicle. Instead, as previously explained, Alden's CPU 71 simply determines whether detected incoming light has a threshold intensity and controls the beam segments produced by the LED elements 119 of headlight 123 accordingly. (Ex. 1005, ¶¶[0025-0029].) While Alden describes an example in which two spots of incoming light having a threshold

³Indeed, the word "pattern" appears in Alden only twice, both times in the context of the distribution pattern of light produced by Alden's headlight systems. (Ex. 1005, ¶[0002].)

intensity are detected, Alden's sensors 51a, 51b and CPU 71 would similarly detect a single spot of incoming light having a threshold intensity and control the beam segments produced by the LED elements 119 of headlight 123 accordingly, whether that single detected spot resulted from an oncoming motorcycle with a single headlight, an oncoming vehicle having only one functioning headlight, a flashlight held by a pedestrian, a streetlight, or a house light. (Ex. 2001, ¶55.)

Alden's system that includes headlight 123 with LED elements 119 therefore does not recognize or use any pattern of light or any pattern of a vehicle to control the LED elements 119 illuminating the distribution area. Rather, Alden's system detects incoming light having a threshold intensity and simply designates a sector or sectors of the distribution area for use in then selectively controlling beam segments produced by LED elements 119. (Ex. 1005, Alden ¶¶[0025-0029]; Ex. 2001, ¶56.)

In connection with the second of the two types of headlight system embodiments disclosed, Alden describes an example in which the headlight system changes the direction of light produced by the headlights of an equipped vehicle. To do so, the CPU 71 controls electro-chromatic refractive elements 127 to change the direction of collimated light produced by a headlight having a single point light source 129 and a collimating reflector 131. (Ex. 1005, ¶¶[0048-0054].) Here again, rather than pattern recognition, Alden's system uses thresholding of detected incoming light to control the direction of beam segments produced by the headlight

system. Alden's CPU 71 controls the direction of the beam segments produced by the headlight in response to detecting any incoming light having a threshold intensity. (*Id.*; Ex. 2001, ¶56.) This embodiment of Alden's headlight systems therefore also does not recognize any pattern of light (Ex. 2001, ¶56.) and thus again fails to anticipate the claim features of "determining illumination within the illuminated area using at least one of artificial intelligence, pattern recognition, video analytics, and look-up tables." Moreover, as previously demonstrated, Alden's different headlight system embodiments have different functions and thus include features that are incompatible and cannot be combined with each other. (Ex. 2001, ¶57.) (*See, e.g.*, Response, §V.A., pp. 7-13, *supra*; *see also, e.g.*, Response, §VI.B.2., pp. 38-39, *infra*.)⁴

⁴Moreover, Petitioner cannot simply treat the various aspects of Alden's embodiments as interchangeable. Instead, Alden's disclosure must support any contention of interchangeability. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008); *Microsoft Corp. v. Biscotti, Inc.*, 878 F.3d 1052, 1068-1069 (Fed. Cir. 2017). Extrinsic evidence, such as an expert declaration, on what Alden's different embodiments could include or would accommodate are not the same as what Alden specifically discloses. *Scripps Clinic & Research Found.*, 927 F.2d

Alden therefore fails to teach the independent claim 8 features of “determining illumination within the illuminated area using at least one of artificial intelligence, pattern recognition, video analytics, and look-up tables.” Any combination of Alden and Kondo therefore fails to render claim 8 obvious. *Kinetic Concepts*, 688 F.3d at 1361; *In re Royka*, 490 F.2d at 985.

B. Grounds 1 and 2: Alden Fails to Teach All of the Features of Independent Claims 24, 32, and 40

To demonstrate anticipation, Petitioner must show that Alden discloses each and every limitation of the claim, either expressly or inherently. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966); *Schering Corp. v. Geneva Pharmaceuticals, Inc.*, 339 F.3d 1373, 1379 (Fed. Cir. 2003); *Atlas Powder Co. v. Ireco, Inc.*, 190 F.3d 1342, 1346-1347 (Fed. Cir. 1999); *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991). In that regard, a prior art reference does not anticipate if it must be modified to meet a challenged claim limitation. *Apple Inc. v.*

at 1576, *overruled on other grounds by Abbott Labs*, 566 F.3d at 1293. Petitioner must provide a sufficient rationale to combine Alden’s different embodiments. Having failed to explain sufficiently *why* a POSA would have found it obvious to combine those embodiments, any contentions by Petitioner of obviousness based thereon fail. *KSR Int’l*, 550 U.S. at 418.

Corephotonics, Ltd., 861 F. App'x 443, 450 (Fed. Cir. 2021); *see also*, *Display Device Corp. v. Seoul Semiconductor Co.*, 909 F.3d 398, 405 (Fed. Cir. 2008). Similarly, “inoperative embodiments cannot be anticipatory.” *See In re Dowty*, 118 F.2d 363, 366 (CCPA 1941) (“[A]n inoperative prior art device may not be relied upon as an anticipation.”) (*quoting In re Kehl*, 101 F.2d 193, 195 (CCPA 1939); *see also Corephotonics, Ltd.*, 861 F. App'x at 451. Moreover, inherency requires a **basis in fact** and/or **technical reasoning** to **reasonably support** a determination that an allegedly inherent characteristic **necessarily flows** from the teaching of the applied reference. *See Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). That a certain result or characteristic **may occur** or be present in an applied reference **is insufficient** to establish inherency of that result or characteristic. *See In re Rijckaert*, 9 F.3d 1531, 1537 (Fed. Cir. 1993).

To anticipate, a prior art reference must also “enable one of ordinary skill in the art to make the invention without undue experimentation.” *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). That is, the claimed invention is not anticipated “if the allegedly anticipatory disclosures cited as prior art are not enabled.” *Elan Pharms., Inc. v. Mayo Foundation for Medical Ed. And Research*, 346 F.3d 1051, 1054 (Fed. Cir. 2003).

In addition, “it is not enough that the prior art reference . . . includes multiple, distinct teachings that [an ordinary] artisan might somehow combine to achieve the

claimed invention.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). Instead, the reference must “clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [invention] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.” *Id.* (quoting *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972) (emphasis in original). Thus, anticipation cannot be proven merely by “multiple, distinct teachings in a single prior art document that the artisan might somehow combine to achieve the claimed invention.” *Microsoft Corp. v. Biscotti, Inc.*, 878 F.3d 1052, 1069 (Fed. Cir. 2017). Instead, a reference may anticipate only if a POSA “reading the reference, would at once envisage the claimed arrangement or combination.” *Id.* at 1068.

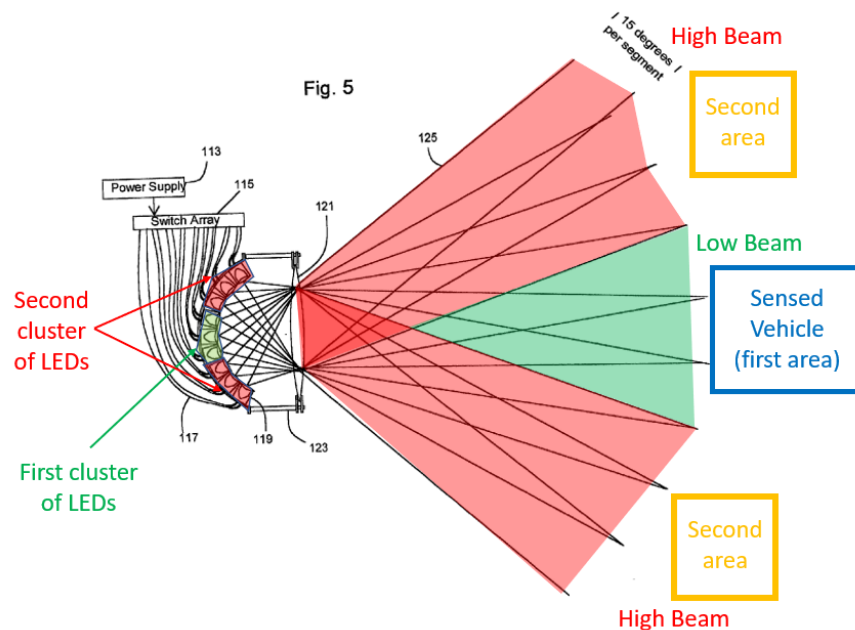
Anticipation also requires that a single reference “describe the claimed invention *with sufficient precision and detail* to establish that the subject matter existed in the prior art.” *Wasica v. Continental Automotive*, 853 F.3d 1272, 1284 (Fed. Cir. 2017) (emphasis added); *see also Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002). For this reason, ambiguous references do not anticipate a claim. *See, e.g., W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983) (refusing to find claims anticipated when the prior art references were “unacceptably vague”); *see also In re Hughes*, 345 F.2d 184, 188 (CCPA 1965); *In re Turlay*, 304 F.2d 893, 899 (CCPA 1962) (“It is well established

that an anticipation rejection cannot be predicated on an ambiguous reference.”).

1. Alden Fails to Teach the Independent Claim 24 Features of “*change emission of the selected cluster of LEDs relative to emission of other LEDs not included in the cluster to create headlamp illumination that preserves a first level of illumination illuminating past the other vehicle while preventing glare to a driver of the other vehicle*”

Petitioner contends that Alden teaches the above-noted independent claim 24 features relating to creating headlamp illumination that preserves a first level of illumination illuminating past the other vehicle while preventing glare to a driver of another vehicle. Critically, however, Alden fails to provide an enabling disclosure of these claim features.

Petitioner relies on its annotations of Figure 5 of Alden to support its contention. Petitioner’s annotated version of Figure 5 is reproduced immediately below:



(Petition at 30, Annotated)

Unlike elsewhere in its Petition, Petitioner has not here annotated Figure 5 to simply highlight elements of Alden's headlight system. (Petition at 10, 12, 13, 15-18, 21, 24-26.) Instead, with these annotations of Figure 5, Petitioner purports to show how headlight 123 operates in a specific scenario. However, none of the operations purportedly shown by these annotations of Figure 5 are expressly disclosed in Alden. (Ex. 2001, ¶64.) Petitioner's annotations are therefore mere speculation, *i.e.*, extrinsic evidence that cannot be used to fill gaps in Alden. *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991) (*overruled on other grounds by Abbott Labs.*, 566 F.3d at 1293).

Moreover, in its annotations, Petitioner has clearly rendered the sensed oncoming vehicle shown using a completely inaccurate scale, with the width of that

vehicle being less than that of the headlight 123. Properly scaled given the size of headlight 123, the sensed vehicle located at the distance shown in Petitioner's annotated version of Figure 5 would have a width that spans all the beam segments illuminating the distribution area. According to this embodiment of Alden's headlight systems, this means that all the light LED elements 119 would be dimmed to produce low beam illumination. (Ex. 2001, ¶65.) As a result, Alden's system would fail to *preserve a first level of illumination illuminating past the other vehicle*, as claimed. That is, independent claim 24 requires not merely creating illumination illuminating past the other vehicle, but instead changing emission of a selected cluster of LEDs *relative* to emission of other LEDs not included in the cluster to create illumination *to preserve a first level of illumination* illuminating past the other vehicle while preventing glare to a driver of the other vehicle.⁵

It is only by rendering the annotated vehicle with a completely inaccurate scale relative to headlight 123 that Petitioner can pretend that Alden "teaches" these claim features. For these reasons, Alden fails to provide an enabling disclosure of these independent claim 24 features and therefore fails to anticipate. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009); *Elan Pharms.*, 346 F.3d at 1054.

⁵Petitioner omits "to preserve a first level of illumination" from its recitation of these claim features. (Petition at 35.)

Alden is also fatally ambiguous because it fails to disclose these independent claim 24 features clearly and unequivocally. While Alden depicts control circuit switch array switches in Figure 3 for dimming certain headlight beam segments while leaving other beam segments on high intensity (Ex. 1005, ¶[0027]), it does not clearly describe or specifically demonstrate how such operations are accomplished using the one-dimensional array of LED elements 119 of headlight 123 illustrated in Figure 5 (Ex. 2001, ¶67), which is the only headlight system embodiment of Alden that involves LED elements and the only embodiment relied upon by Petitioner in connection with these claim features. In that regard, Alden does not describe the array of LED elements 119 as multi-dimensional. Indeed, Alden indicates that LED elements 119 are positioned along the focal point of the lens 121 in order to illuminate specific portions of the distribution area (Ex. 1005, ¶[0029]), with no explanation of how that could be accomplished with a multi-dimensional array of LEDs. Moreover, while in connection with Figure 4 Alden describes progressing through the sectors of sensors 51a, 51b of Figure 3 to detect incoming light (Ex. 1005, ¶¶[0027-0028]), it does not explain how those sensor sectors are mapped to either the one-dimensional array of LED elements 119 shown in Figure 5, the switches 115 for that array, or the distribution area sectors depicted therein. In fact, Alden specifically states that the switch arrays of the light control circuits 55a, 55b shown in Figure 3 are merely for illustrative purposes. (Ex. 1005,

¶[0027]; Ex. 2001, ¶67)⁶

If the disclosure of Alden purportedly relating to these claim features was clear, Petitioner's annotations of Figure 5 would be unnecessary. Petitioner's annotations are therefore themselves a demonstration of Alden's ambiguity. Because it does not disclose these independent claim 24 features with sufficient

⁶Alden is also ambiguous regarding the propagation of beam segments produced by headlight 123 beyond the endpoints illustrated in Figure 5. In that regard, the beam segments of each LED element 119 exiting the lens 121 are illustrated in Figure 5 as collimated and propagating with a columnar shape, which would be unchanged with distance. However, Alden's contradictory description and illustration in Figure 5 indicate that each such beam segment illuminates a 15° arc of the distribution area, which would continue to expand with distance. (Ex. 1005, ¶[0029], Figure 5.) Thus, even if the oncoming vehicle(s) in Petitioner's annotated versions of Figure 5 were to be depicted at a properly scaled distance from the headlight 123, it is completely unclear how that oncoming vehicle would be illuminated by the equipped vehicle headlight, particularly in view of the statement in Alden that the intensity of light (high-beam/low-beam) produced by the equipped vehicle headlight is determined by the distance between the equipped vehicle and the oncoming vehicle. (*Id.*, ¶¶[0027-0028]; Ex. 2001, ¶68.)

precision and detail to establish their existence as prior art, Alden is fatally ambiguous and again fails to anticipate. *Wasica*, 853 F.3d at 1284; *Verve*, 311 F.3d at F1120; *W.L. Gore*, 721 F.2d at 1554; *In re Hughes*, 345 F.2d at 188; *In re Turlay*, 304 F.2d at 899.

Moreover, Alden can only anticipate the claimed invention if it discloses every claim feature, either expressly or inherently. Once again, **none** of the operations purportedly shown by Petitioner's annotations of Figure 5 are expressly disclosed in Alden. (Ex. 2001, ¶70.) To anticipate these claim features, Petitioner's annotations therefore must be inherently disclosed by Alden. Inherency requires a basis in fact and/or technical reasoning to reasonably support a determination that an allegedly inherent characteristic necessarily flows from the teaching of the applied reference. *See Ex parte Levy*, 17 USPQ2d at 1464. That a certain result or characteristic may occur or be present in an applied reference is insufficient to establish inherency of that result or characteristic. *See In re Rijckaert*, 9 F.3d at 1537.

As previously demonstrated, however, Petitioner's annotations of Figure 5 are clearly and completely inaccurate. As a result, those annotations do not and, indeed, cannot flow necessarily from the express disclosure in Alden. Petitioner's annotations are therefore insufficient to demonstrate that Alden teaches these independent claim 24 features and Alden therefore again fails to anticipate. (Ex. 2001, ¶71.)

Petitioner also contends that Alden not only anticipates these independent claim 24 features but also renders the claimed invention obvious. Yet nowhere in its petition does Petitioner explain this contention at any level of detail. Instead, Petitioner's obviousness contention is based on nothing more than cursory and completely conclusory statements consisting of no more than a single sentence -- essentially: "It's obvious." (Petition at 11, 37, 39 (*citing* p. 11), 44, 46, 47, 49, 51-53, 57-59.) Petitioner has utterly failed to establish or demonstrate multiple elements that are required to support an obviousness conclusion, including explaining *how* Alden must be modified (*i.e.*, identifying the differences between the claimed invention and Alden) and explaining *why* a POSA would be motivated to so modify Alden (*i.e.*, providing some articulated reasoning with some rational underpinning to support an obviousness conclusion). *KSR*, 550 U.S. at 418; *Graham*, 383 U.S. at 17-18. In short, Petitioner cannot argue that Alden anticipates these claim features and then, when that argument proves insufficient, simply assert in the alternative -- with what amounts to nothing more than a wink and a nod -- that Alden renders these claim features obvious.

In that regard, Petitioner cannot simply treat the various features of Alden's embodiments as interchangeable, particularly for anticipation, but also for obviousness. Instead, Alden's disclosure must support any contention of interchangeability. *Net MoneyIN*, 545 F.3d at 1371; *Microsoft*, 878 F.3d at 1068-

1069. Extrinsic evidence, such as an expert declaration, on what Alden's different embodiments could include or would accommodate are not the same as what Alden specifically discloses. *Scripps Clinic & Research Found.*, 927 F.2d at 1576, *overruled on other grounds by Abbott Labs*, 566 F.3d at 1293. Petitioner must provide a sufficient rationale to combine Alden's different embodiments. Having failed to explain sufficiently *why* a POSA would have found it obvious to combine those embodiments, any contentions by Petitioner of obviousness based thereon fail. *KSR*, 550 U.S. at 418.

The requirements for demonstrating anticipation and obviousness are well-established and Petitioner bears the burden of proof for each. However, regarding anticipation, Petitioner has failed to cite a prior art reference that enables and unambiguously discloses, either expressly or inherently, the claimed invention. Regarding obviousness, Petitioner has offered nothing more than conclusory statements, failing to provide any articulated reasoning with a rational underpinning to support those statements. Petitioner has had ample time and opportunity to meet its burdens of proof and, having failed to do so, should not now be assumed to have proffered arguments not expressly included in its Petition, nor be heard to plead for leave to file a reply to Patent Owner's Preliminary Response when that Response has simply demonstrated the failure of Petitioner's contentions rather than raised any new issues. *See. e.g., Smithkline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312,

1319 (Fed. Cir. 2006) (“Our law is well established that arguments not raised in the opening brief are waived.”); *see also Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016); *Fresenius USA, Inc. v. Baxter Int’l, Inc.*, 582 F.3d 1288, 1296 (Fed. Cir. 2009) (“If a party fails to raise an argument before the trial court, or presents only a skeletal or undeveloped argument to the trial court, we may deem that argument waived on appeal.”).

2. Alden Fails to Teach the Independent Claim 32 Features of “*create a beam of diminished illumination illuminating at least a portion of the at least one target with non-glaring illumination, created in a broader field of illumination having different intensity than the beam . . . the beam diminished in intensity relative to the broader field of illumination illuminating at least above and on both sides of the beam*”

Petitioner contends that Alden teaches the above-noted independent claim 32 features relating to creating a beam of diminished illumination illuminating a target with non-glaring illumination, in a broader field of illumination having different intensity than the beam, the beam diminished in intensity relative to the broader field of illumination illuminating at least above and on both sides of the beam. Critically, however, Alden fails to provide an enabling disclosure of these claim features.

More specifically, the headlight system embodiment illustrated in Figures 1, 2, and 5 of Alden is directed to dimming selected beam segments. Figure 5 discloses a one-dimensional array of LED elements 119. (Ex. 1005, ¶[0029].) Consequently,

as shown therein, the beam segments produced by the LED elements 119 of that one-dimensional array propagate within horizontally divided sectors of the distribution area.⁷ In each of those distribution area sectors, any portion of a beam segment propagating vertically would therefore have the same intensity (*e.g.*, high-beam or low-beam) as that portion of the beam segment propagating horizontally in that sector. (Ex. 2001, ¶75.)⁸ The headlight system embodiment type illustrated in

⁷Petitioner admits this fact in its IPR petition filed concurrently with the present Petition. (Ex. 2005 at 35.)

⁸In that regard, Figure 1 of Alden depicts the elements of a segmented distribution headlight according to the first type of headlight system embodiment disclosed therein. (Ex. 1005, ¶[0026].) Contrary to Petitioner's contention, the distribution area sectors 63, 65 illustrated in Figure 1 are the same as the distribution area sectors of Figure 2 (*e.g.*, 35, 37) and Figure 5 directed to that same embodiment, which are illustrated in each of Figures 2 and 5 in a horizontal plane. (Ex. 1005, Figures 2, 5; Ex. 2001, ¶75.) Moreover, Petitioner's contention here that Figure 1 of Alden illustrates a headlight of an equipped vehicle producing low-beam illumination directed toward an oncoming vehicle and high-beam illumination directed above that oncoming vehicle directly contradicts its contention in its IPR

Figures 1, 2, and 5 of Alden is therefore incapable of creating a beam of diminished illumination illuminating at least a portion of the at least one target with non-glaring illumination, created in a broader field of illumination having different intensity than the beam, the beam diminished in intensity relative to the broader field of illumination illuminating at least **above** and on both sides of the beam, as claimed.

For these reasons, Alden fails to provide an enabling disclosure of these claim features and therefore fails to anticipate the claimed invention. *In re Gleave*, 560 F.3d at 1334; *Elan Pharms.*, 346 F.3d at 1054.

For these same reasons, and for the reasons set forth above in connection with independent claim 24, Alden is also fatally ambiguous because it fails to disclose

petition filed concurrently with the present Petition. (Ex. 2005, at 36.) As a result, Petitioner's inconsistent contention here is entitled to no weight. *See, Merck Sharp & Dohme Corp. v. Genentech, Inc.*, PGR2021-00036, 2021 WL 3134454, at *15 (P.T.A.B. July 24, 2021)(Board found inconsistent statements “add further support to our determination” to deny institution.); *Polygroup Servs. N.A., Inc. v. Willis Elec. Co., Ltd.*, No. IPR2021-00489, 2021 WL 3469962 (P.T.A.B. Aug. 6, 2021) (Board expressed its concern about a party's “assertions regarding some of the prior art cited in [another] IPR and its “willingness to now present a seemingly inconsistent position.”).

these independent claim 32 features clearly and unequivocally, lacking sufficient precision to establish their existence as prior art. (*See*, Response, §VI.B.1., *supra*, pp. 30-31.) Thus, Alden again fails to anticipate. *Wasica*, 853 F.3d at 1284; *Verve*, 311 F.3d at 1120; *W.L. Gore*, 721 F.2d at 1554; *In re Hughes*, 345 F.2d at 188; *In re Turlay*, 304 F.2d at 899.

Moreover, Alden can only anticipate the claimed invention if it discloses these claim features expressly or inherently. Inherency requires a basis in fact and/or technical reasoning to reasonably support a determination that an allegedly inherent characteristic necessarily flows from the teaching of the applied reference. *See Ex parte Levy*, 17 USPQ2d at 1464. That a certain result or characteristic may occur or be present in an applied reference is insufficient to establish inherency of that result or characteristic. *See In re Rijckaert*, 9 F.3d at 1537.

As previously demonstrated, however, Alden's disclosure fails to enable these claim features and is fatally ambiguous because it does not disclose them with sufficient precision and detail to establish their existence as prior art. Alden therefore not only fails to expressly disclose these claim features, but also fails to do so inherently. That is, these claim features do not and, indeed, cannot flow necessarily from the express disclosure in Alden. Alden therefore again fails to anticipate. (Ex. 2001, ¶77.)

In that regard, to the extent Petitioner's contentions of anticipation are based

on picking, choosing, and/or combining various features of Alden's different headlight system embodiments not directly related to each other (Petition at 43), those contentions also fail because any resulting headlight would be inoperative. (Ex. 2001, ¶78.) *Apple Inc. v. Corephotonics, Ltd.*, 861 F. App'x 443 (Fed. Cir. 2021) (“[I]noperative embodiments cannot be anticipatory.” See *In re Dowty*, 118 F.2d 363, 366 (CCPA 1941) (“[A]n inoperative prior art device may not be relied upon as an anticipation.” (quoting *In re Kehl*, 101 F.2d 193, 195 (C.C.P.A. 1939))).

Each of the embodiments disclosed by Alden is discrete and includes features that are incompatible with other embodiments. For example, one of the two headlight system embodiments described in Alden in connection with Figures 1, 2, and 5 is directed to a headlight having a one-dimensional array of individually controlled LED elements 119 and a convex lens 121 for providing selective dimming and fixed direction (*i.e.*, forward) of non-collimated light produced by the LED elements 119. (Ex. 1005, ¶¶[0025-0026, 0029]; Ex. 2001, ¶79.) In contrast, the other of the two headlight system embodiments described in Alden in connection with Figures 6-14 is directed to a headlight having a single point light source 129, a collimating reflector 131, electro-chromatic refractive elements 127, and a concave lens 133 for changing the direction (*i.e.*, forward, left, right, up, down) of multiple beams of collimated light produced by the single point light source 129 and collimating reflector 131. (*Id.*, ¶¶[0030-0040]; Ex. 2001, ¶79.)

Alden's non-collimated light producing LED elements 119 and convex lens 121 are incompatible with Alden's electro-chromatic refractive elements 127 and concave lens 133, which are designed to work with collimated light and, indeed, are inoperable with non-collimated light. (Ex. 2001, ¶80.) Non-collimated light cannot be directed in any meaningful fashion by the electro-chromatic refractive elements 127 of the headlight system embodiment described in connection with Figures 6-14 of Alden. (*Id.*) Rather, non-collimated light would blend and have different incident angles on those electro-chromatic refractive elements 127 thereby preventing any meaningful control of individual sectors as well as redirecting much of the non-collimated light they receive away from the desired segments of the distribution area. (*Id.*) The result of any combination thereof would therefore be incapable of meeting the basic requirements of a headlight, *i.e.*, effectively illuminating the area ahead of the equipped vehicle, let alone directing its emitted light in any meaningful fashion. (*Id.*)

Moreover, in the context of anticipation, the question is not whether a prior art reference suggests a claim feature. Rather, the question is whether the reference discloses the claim feature. *AstraZenica LP v. Apotex. Inc.*, 633 F.3d 1042, 1055 (Fed. Cir. 2011) (*citing In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991)). Regardless, here, rather than suggesting combinations of various features of its different headlight system embodiments, Alden does nothing more than state

generally that each of its two types of headlight system embodiments may employ the sensing elements discussed in connection with Figures 3 and 4. (Ex. 1005, ¶¶[0036-0038]; Ex. 2001, ¶81.)

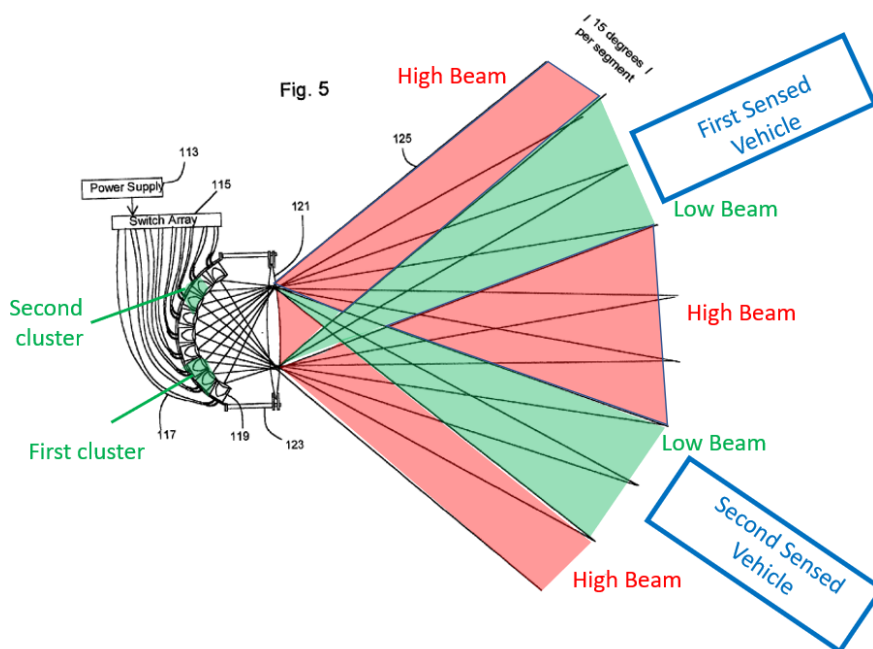
Petitioner has also completely failed to support its contention that Alden renders these independent claim 32 features obvious for the same reasons as set forth above in connection with independent claim 24. (See, Response, §VI.B1., *supra*, pp. 33-34; Ex 2001, ¶82.) Thus, Petitioner's contention that Alden renders such claim features obvious fails. *KSR*, 550 U.S. at 418; *Graham*, 383 U.S. at 17-18.

3. Alden Fails to Teach the Independent Claim 40
Features of (i) “*determine a second, different cluster of the LEDs illuminating at least a second portion of a second other vehicle based at least in part on data indicating a second position associated with the second other vehicle*” and (ii) “*wherein the first and second changes decrease intensity of first emission from the first cluster and second emission from the second cluster relative to a third emission, from the at least one headlamp, illuminating an area between the first and second portion*”

Petitioner contends that Alden teaches the above-noted independent claim 40 features relating to illuminating a second portion of a second other vehicle based on data indicating a second position associated with the second other vehicle and changes that decrease intensity of first and second emissions from first and second clusters relative to a third emission illuminating an area between the first and second portions. Critically, however, Alden fails to provide an enabling disclosure of these

claim features.

Petitioner relies on its annotations of Figure 5 of Alden to support its contention. Petitioner's annotated version of Figure 5 is reproduced immediately below:



(Petition at 30, Annotated)

Once again, unlike elsewhere in its Petition, Petitioner has not h annotated Figure 5 to simply highlight elements of Alden's headlight system. (Petition at 10, 12, 13, 15-18, 21, 24-26.) Instead, with these annotations of Figure 5, Petitioner purports to show how headlight 123 operates in a specific scenario. However, **none** of the operations purportedly shown by these annotations of Figure 5 are expressly disclosed in Alden. (Ex. 2001, ¶¶64, 85.) Petitioner's annotations are therefore mere speculation, *i.e.*, extrinsic evidence that cannot be used to fill gaps in Alden. *Scripps*

Clinic & Research Found., 927 F.2d at 1576, *overruled on other grounds by Abbott Labs*, 566 F.3d at 1293.

In that regard, nowhere does Alden clearly describe or specifically illustrate ***concurrent detection of first and second vehicles***, as is required according to these claim features. Rather, those portions of Alden cited by Petitioner in connection with these claim feature merely state that the system can detect “the sector” ahead in which any vehicle is located, and that the system provides means for sensing “vehicles.” (Ex. 1005, ¶[0025].) Neither of those statements specifically describes concurrent detection of multiple vehicles but rather are simply references to vehicles encountered in the distribution area serially over time by an equipped vehicle, as is illustrated in Figure 1 of Alden. (Ex. 1005, Fig. 1; Ex. 2001, ¶86.)

Moreover, in its annotations, Petitioner has clearly rendered the annotated pair of oncoming “sensed” vehicles using a completely inaccurate scale. (Ex. 2001, ¶87.) Properly scaled given the size of the headlight 123, the pair of annotated “sensed” vehicles located at the distance shown in Petitioner’s annotated version of Figure 5 would span all the beam segments illuminating the distribution area. (*Id.*) According to this embodiment of Alden’s headlight systems, this means that all the light emitting diode (LED) elements 119 would be dimmed to produce low beam illumination. (*Id.*) As a result, Alden’s system would fail to decrease intensity of first emission from a first cluster and second emission from a second cluster relative to a

third emission, from the at least one headlamp, illuminating an area between first and second portions associated with first and second other vehicles, as claimed.⁹

It is only by rendering the annotated “sensed” vehicles with an inaccurate scale relative to headlight 123 that Petitioner can pretend that Alden “teaches” these claim features. Indeed, to do so, Petitioner has even rendered the pair of annotated “sensed” vehicles in connection with its contentions here concerning independent claim 40 at a *different* scale than it previously used to render the annotated sensed vehicle in connection with its contentions concerning independent claim 24. For these reasons, Alden fails to provide an enabling disclosure of these claim features and therefore fails to anticipate the claimed invention. *In re Gleave*, 560 F.3d at 1334; *Elan Pharms.*, 346 F.3d at 1054.

Moreover, for the same reasons as set forth above in connection with independent claim 48, Alden is also fatally ambiguous because it fails to disclose these independent claim 56 features clearly and unequivocally, and furthermore does not inherently disclose those features. Petitioner has also completely failed to support its contention that Alden renders these independent claim 56 features

⁹Petitioner’s reliance on Figure 1 of Alden concerning these claim features is also unavailing because Figure 1 clearly does not illustrate illuminating an area between vehicles. (Ex. 1005, Fig. 1; Ex. 2001, ¶87.)

obvious for the same reasons as set forth above in connection with independent claim 48. (*See* Response, §VI.B.1., *supra*, pp. 30-34.) Thus, Alden again fails to anticipate these independent claim 56 features and Petitioner's contention that Alden renders such features obvious again fails. *Wasica*, 853 F.3d at 1284; *Verve*, 311 F.3d at 1120); *W.L. Gore*, 721 F.2d at 1554; *In re Hughes*, 345 F.2d at 188; *In re Turlay*, 304 F.2d at 899.

VII. Objective Evidence of Nonobviousness

During the reexamination of the '551 Patent, Patent Owner provided detailed objective evidence of nonobviousness directed to the Challenged Claims, including nexus proofs. Ex. 2014, 67-83.) The Petition however fails to address this objective evidence, impermissibly ignoring the fourth factor of the Graham obviousness analysis. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

Objective indicia, such as unexpected results, industry praise and long-felt need, “can be the most probative evidence of nonobviousness in the record, and enable the court to avert the trap of hindsight.” *Crocs, Inc. v. ITC*, 598 F.3d 1294, 1310 (Fed. Cir. 2010). These objective criteria “turn back the clock and place the claims in the context that led to their invention” providing evidence of “how the patented device is viewed in the marketplace.” *Mintz v. Dietz*, 679 F.3d 1372, 1378 (Fed. Cir. 2012); *Spectralytics, Inc. v. Cordis Corp.*, 649 F.3d 1336, 1344 (Fed. Cir. 2011). “Thus evidence rising out of the so-called ‘secondary considerations’ must

always when present be considered en route to a determination of obviousness. . . It is to be considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art.” *In re Cyclobenzaprine Hyd*, 676 F.3d 1063, 1076 (Fed. Cir. 2012).

During the reexamination of the ’551 Patent, Patent Owner detailed the long-felt need and industry praise for the glare-free adaptive beam technology claimed in the ’551 Patent. (Ex. 2014, 67-83.) Patent Owner, *inter alia*, correlated each limitation of claim 24 with specific statements of industry praise through the Stam declaration, providing an explanation of the nexus between the two. (Ex. 2014, 70-77, 728-734.)

Notably, Patent Owner can prove nexus “by showing that the evidence of secondary considerations is the direct result of the unique characteristics of the claimed invention.” *Fox Factory, Inc. v. Sram*, LLC, 944 F.3d 1366, 1373-74 (Fed. Cir. 2019). As explained in section II above, the ’551 Patent claims include multiple unique characteristics that are novel and nonobvious over the asserted art, such as “Predictive Curve Illumination” the subject of claims 26-29, 34-37 and 42-45, and adapting light emission to provide at least two dark zones with “light in-between,” the subject of claim 40. Objective evidence in the form of industry praise and long felt unmet need were correlated with both claimed characteristics in the Stam Declaration. (Ex. 2014 at 70-77, 728-734.)

Accordingly, the objective evidence, when considered as part of the totality of the evidence, supports a nonobviousness finding.

VIII. The Board Should Deny Institution on Procedural Grounds

The Board has discretion to deny institution. 35 U.S.C. § 314(a); *Cuozzo Speed Techs., LLC v. Lee*, 136 S.Ct. 2131, 2140 (2016). As informed by 35 U.S.C. § 316, the Board must consider “the integrity of the patent system, the efficient administration of the Office, and the ability of the Office to timely complete proceedings.” Consolidated Trial Practice Guide (“CTPG”) at 5. Post-grant proceedings were “designed to establish a more efficient and streamlined patent system that will ... limit unnecessary and counterproductive litigation costs.” (*Id.* at 56 (citation omitted)).

The Board should also consider “events in other proceedings related to the same patent, either at the Office, [or] in district courts” and whether multiple petitions are fair and efficient, because “[b]ased on the Board’s experience, one petition should be sufficient to challenge the claims of a patent in most situations.” (*Id.*, 58, 59.) “Two or more petitions filed against the same patent ... may place a substantial and unnecessary burden on the Board and the patent owner and could raise fairness, timing, and efficiency concerns. *See* 35 U.S.C. § 316(b).” (*Id.*, 59.)

In this case, the Board should exercise its discretion and deny institution because as explained below: A) the Petition lacks particularity; and B) Petitioner

flouts ethics rules, increases inefficiencies, and creates unnecessary burdens on the Board and Patent Owner. 35 U.S.C. §§ 314, 316(b); 2018 CTPG at 56.

A. The Petition Lacks Particularity under 35 U.S.C. § 312(a)(3)

Under 35 U.S.C. § 312(a)(3), it is Petitioner’s burden to adequately explain its challenge and the references it uses. Here, the Petition creates “teachings” and combines features of the applied references in a vague manner, resulting in an LED headlight system that does not and cannot function to provide controlled light delivery as claimed. (*See, e.g.,* Response, §§VI.A. - VI.B., pp. 16-43, *supra.*)

An IPR petition must identify “with particularity, each *claim* challenged, the *grounds* on which the challenge to each claim is based, and the *evidence* that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3). “In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (*citing* 35 U.S.C. § 312(a)(3).) The PTAB Trial Practice Guide advises that “parties should avoid submitting a repository of all the information that a judge could possibly consider, and instead focus on concise, well-organized, easy-to-follow arguments supported by readily identifiable evidence of record.” (CTPG at 39.) Further, “[t]he petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.” 37 C.F.R. § 42.104(b)(4).

“The statutory requirement of particularity in a petition for IPR takes on heightened importance when considered in conjunction with SAS’s ‘all-or-nothing’ approach,” and “the Board may consider whether a lack of particularity as to one or more of the asserted grounds justifies denial of an entire petition.” *Adaptics LTD. v. Perfect Co.*, IPR2018-01596, Paper 20 (PTAB March 6, 2019) (Informative). Further, “where a petition contains voluminous or excessive grounds, Office guidance indicates ‘[t]he panel will evaluate the challenges and determine whether, in the interests of efficient administration of the Office and integrity of the patent system (*see* 35 USC § 316(b)), the entire petition should be denied under 35 USC § 314(a).’” *Id.* at 18 (*citing* SAS Q&As (June 5, 2018) (“SAS Q&As”), 11 at Part D, Effect of SAS on future challenges that could be denied for statutory reasons, Question D2).

The USPTO also discourages lumping of challenges: “***Do NOT lump*** together multiple proposed rejections based on different grounds. [] Separate rejections based on anticipation and rejections based on obviousness.” (Ex. 2003 at 3, Best Practices and FAQs for Filing Requests for Reexamination Compliant with 37 CFR 1.510 and 1.915, PTAB, May 2010 (emphasis in original)). The Petition does not identify with particularity “the ***grounds*** on which the challenge to each claim is based,” and therefore should be denied institution under 35 U.S.C. § 312(a)(3). Petitioner’s lack

of particularity leaves the Board and Patent Owner in a position where they must guess how the Petition is interpreting and applying the references.

Here, the Petitioner has improperly lumped grounds together in its Petition. Indeed, Petitioner expressly denominates Ground 1 as an anticipation/obviousness ground based on Alden. (Petition at 5.) Thus, as shown in the table below, Ground 1 of the Petition is actually two alternative grounds, but the Petition does not clearly state which of those alternatives from “Lumped Ground #1” are relied upon by Petitioner. It is therefore unclear as to which ground the Patent Owner is expected to respond, and which ground the Board must undertake in its review of the Petition.

Grounds		Basis	Challenged Claim(s)	Reference(s)
Lumped Ground #1	1A	102	24-27, 29-31, 32-35, 37-39, 40-43, 45-47	Alden
	1B	103	24-27, 29-31, 32-35, 37-39, 40-43, 45-47	Alden

For example, Petitioner repeatedly states that a Challenged claim or claim feature is “anticipated and obvious over Alden.” (Petition at 11, 37, 39, 44, 46, 47, 49, 51-53, 57-59.) However, as previously demonstrated, Petitioner never clearly articulates these obviousness positions and never provides any support for its conclusory statements. With respect to these Challenged Claims, Petitioner’s

alternative argument amounts to nothing more than: “It’s obvious.” (*Id.*; *see also*, *e.g.*, Preliminary Response, §VI.B., pp. 21-44, *supra*.)

In *Adaptics*, the Board determined “that the lack of particularity [in the Petition] results in voluminous and excessive grounds,” and that “in the interests of efficient administration of the Office and integrity of the patent system and as a matter of procedural fairness to Patent Owner, the entire petition should be denied under 35 USC § 314(a).” *See* 35 U.S.C. § 316(b); *see also* SAS Q&As, question D2. *Adaptics* at 24. The Petition does not identify with particularity, “the **grounds** on which the challenge to each claim is based,” and therefore should be denied institution under 35 U.S.C. § 312(a)(3).

B. Petitioner’s Serial Petitions Raise Fairness and Efficiency Concerns Under § 316

In coordination with Volkswagen Group of America, Inc., Petitioner Mercedes uses serial petitions – and have regularly done so before – to allow Mercedes to review Preliminary Responses before filing its petitions. Petitioner Mercedes consequently flouts ethics rules, increases inefficiencies, and creates unnecessary burdens on the Board and Patent Owner. The Board should deny institution.

1. The Volkswagen/Mercedes Coordinated Serial Filings

On June 7, 2022, the '551 Patent, 10,894,503 ("503 Patent"), and 11,208,029 ("029 Patent") were asserted in a District of Delaware lawsuit against Mercedes-Benz USA, LLC ("Mercedes"), Volkswagen Group of America, Inc. ("VW"), Porsche Cars North America, Inc. ("Porsche), and others. (Petition at 3; Ex. 2013.)

On December 9 and 22, 2022, VW filed Petitions in IPR2023-00315 and IPR2023-00318, challenging claims 24-55 and 56-87 of the '551 Patent respectively based on (1) U.S. Patent No. 6,144,158 to Beam in view of Japanese Publication H7-101291 to Satonaka or in view of Satonaka and U.S. 6,049,749 to Kobayashi, and (2) WIPO Patent Publication No. 1998/054030 to Karlsson in view of Japanese Publication H7-65603 to Nakamura or in view of Nakamura and U.S. 5,588,733 to Gotou. (IPR2023-00315, Paper 2 at 3; IPR2023-00318, Paper 2 at 3.) On March 22 and April 19, 2023 respectively, Patent Owner filed Preliminary Responses. (IPR2023-00315, Paper 6; IPR2023-00318, Paper 6.)¹⁰

On June 7, 2023, after being able to review Patent Owner's Preliminary Responses in all of the VW IPRs, Mercedes filed two more Petitions: IPR2023-

¹⁰ On July 19 and August 9, 2023, Porsche filed "me-too" Petitions asserting the same grounds asserted by VW in IPR2023-00315 and IPR2023-00318. (IPR2023-01225, Paper 1; IPR2023-01296, Paper 2.)

01039 and IPR2023-01040. In the ‘039 Petition, Mercedes challenges claims 8, 10-18, and 24-27 based on combinations of (1) Alden, (2) Alden in view of Kobayashi, (3) Alden in view of Kondo, and (4) Alden in view of Kondo and Stam. (Petition at 5.) In the ‘040 Petition, Mercedes challenges claims 48-87 based on the following combinations (1) Alden, (2) Alden in view of Beam, and (3) Alden in view of Kobayashi. (Ex. 2005 at 5.)

C. Mercedes’ Serial Petition Should Be Denied Institution Under 35 U.S.C. § 314

In *General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha*, Case IPR2016-01357, Paper No. 19 at 15–16 (PTAB Sept. 6, 2017) (precedential), the Board articulated a non-exhaustive list of factors to be considered in determining whether to exercise discretion under § 314(a) to deny a petition that challenges the same patent as a previous petition. *Valve Corp. v. Electronic Scripting Products, Inc.*, Case IPR2019-00062, Paper 11 at 2 (PTAB April 12, 2019) (precedential).

1. First GP Factor

The first *General Plastic* (“GP”) factor is “whether the same petitioner previously filed a petition directed to the same claims of the same patent.” In *Valve*, the PTAB extended the first GP Factor to include different, but similarly situated petitioners, such as co-defendants in litigation:

[A]pplication of the *General Plastic* factors is not limited solely to instances when multiple petitions are filed by the same petitioner.

Rather, when different petitioners challenge the same patent, we consider any relationship between those petitioners when weighing the *General Plastic* factors.

Valve at 9 (citation omitted).

The present situation was addressed in *Shenzhen Silver Star Intelligent Tech. v. iRobot Corp.* IPR 2018-00761, Paper 15 at 16-17 (PTAB September 5, 2018):

Given petitions filed by two or more similarly situated defendants, there is a rebuttable presumption that a later-filed petition will be denied under *General Plastic* if that later-filed petition is filed after an earlier-filed petition has received a preliminary response or a decision on institution. The concept behind this is that, things being equal, if two or more co-defendants are sued around the same time, they should, within reason, file their petitions around the same time; it is generally unfair for one defendant to wait for a "test case" to go through the *inter parties* review process by another defendant before filing their own petition.

As described above, Petitioner Mercedes and VW are co-defendants, both were sued in the same case for infringement of the '551 Patent on June 7, 2002. (Ex. 2013.) Further, both were sued based on the same type of headlight technology.¹¹ In

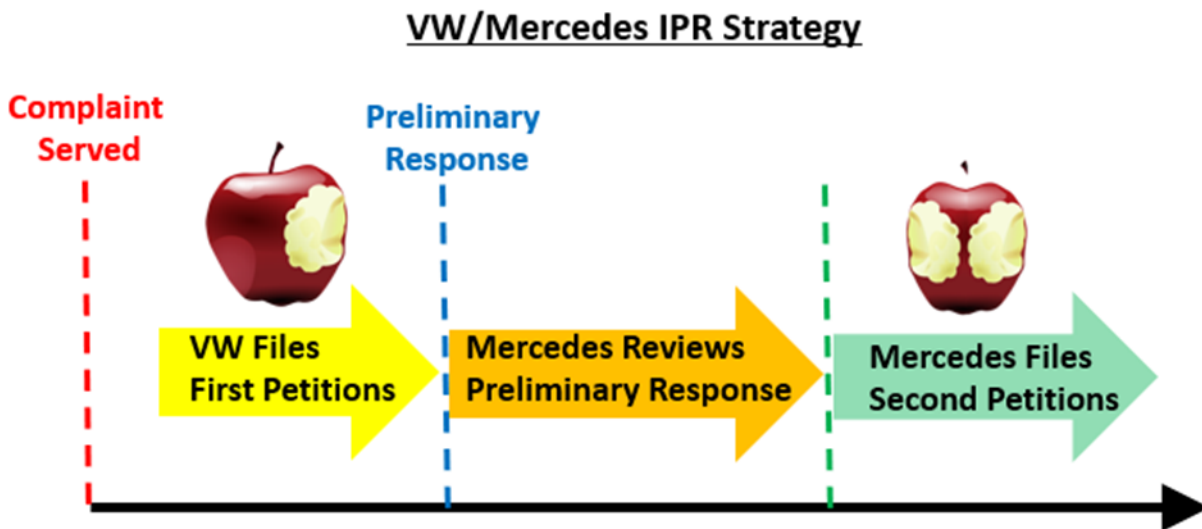
¹¹A vehicle headlamp system that automatically controls light provided by a light source to an illuminated area ahead, including a camera for detecting coordinate-specific information about the illuminated area, and a controller in communication with the light source controlling

fact, the VW and Mercedes headlight at issue were both developed jointly with Hella KGaA Hueck & Co., a German automotive parts supplier (Exs. 2007-2008; Exs. 2010, 2012) regarding the 25 and 84 LED example systems of VW and Mercedes detailed in the Complaint (Ex. 2013 at 3, 9-12, 19-24.) Accordingly, VW and Mercedes have closely aligned interests and are similarly situated parties – *i.e.*, they are same petitioner for the purposes of the first *GP* factor.

Mercedes and VW have a history of coordinating serial IPR petitions against asserted patents when they are co-defendants in related litigation. In each case, VW files a first wave of IPR petitions, then after receiving Patent Owner's preliminary response, Mercedes files at least one serial petition. This strategy is illustrated in the following image:

power circuitry and arranged to process information from the camera
and automatically control the light provided to the illuminated area.

(Ex. 2013 at 3, 9-12, 19-24.)



For example, after Carucel Investments sued VW and Mercedes, VW filed a first wave of IPR petitions in May 2019 challenging the asserted patents (e.g., US 7,221,904 and US 8,718,543), then Mercedes followed up with multiple waves of IPR petitions challenging the same patents in July and September 2019.

More specifically, VW filed IPR2019-01101 challenging US 7,221,904 on May 20, 2019, and Carucel filed a preliminary response (Paper 6) on September 5, 2019. Over two weeks later, Mercedes filed IPR2019-01635 challenging the ‘904 Patent on September 21, 2019.

VW also filed two IPR petitions (IPR2019-01105 and IPR2019-01106) on May 20, 2019 challenging US 8,718,543. Carucel filed preliminary responses in both proceedings on September 5, 2019. Mercedes filed two IPRs challenging the ‘543 Patent, including IPR2019-01644 on September 23, 2019.

Additionally, after Arigna sued VW and Mercedes, VW filed IPR2022-00147 challenging US 7,049,850 on November 9, 2021; and Unified Patents, LLC filed IPR2022-00285 challenging the '850 Patent on December 9, 2021. The Patent Owner filed the Preliminary Response (Paper 7) in the '285 IPR on March 21, 2022. After the Preliminary Response, Mercedes filed its serial petition in IPR2022-01031 challenging the '850 Patent on May 18, 2022.

While *Shenzhen* in conjunction with *General Plastic* hold that such similarly situated defendants should file their IPR petitions "around the same time," and should not wait for one defendant's petition to be a "test case" before the other defendant files their own petition, that is exactly what VW and Mercedes did. Mercedes could have filed its Petition at or around the same time as VW but chose to wait for the opportunity to review Patent Owner's preliminary Responses in the VW IPRs (and in other related patent IPRs as explained below) — a strategy VW and Mercedes have employed in the past as explained above.

Accordingly, the first *GP* factor weighs against institution. *See also Valve Corp. v. Elec. Scripting Prods., Inc.*, Case IPR2019-00062, -00063, -00084, Paper No. 11 at 10 (PTAB Apr. 2, 2019) (precedential) (Similar to this case, the Board found a significant relationship, and the first *GP* factor weighed against institution, where Valve and HTC were co-defendants in the same litigation, both were accused

of infringing the same patent, and the litigation was based on the same technology licensed from Valve to HTC.)

2. Second *GP* Factor

The second *GP* factor is “whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it.” This factor includes considering whether prior art relied on in the later petition “could have been found with reasonable diligence.” *General Plastic* at 11.

Mercedes also clearly knew or should have known of Kobayashi because it was cited and analyzed by VW in the IPR2022-01586, IPR2023-00197, IPR2023-00328, and IPR2023-00335 petitions filed on October 3, November 30, December 16, and December 22, 2022 as to the '029 Patent and the '503 Patent. (Ex. 2013.) As for Alden (Ex. 1005), it is entitled “Segmented Distributed Headlight System, Method, And Apparatus” and published on July 24, 2003.

Likewise, as for Kondo (Ex. 1007), it is entitled “Automatic Optical-Axis Adjusting Device For Automatically Adjusting Directions Of Optical Axes Of From Lights” and published on May 16, 2002. Mercedes asserts it “is directed to vehicle headlamp systems that adjust the direction of “the front lights with respect to a turning direction or traveling direction of the vehicle to improve visibility to a driver.” (Ex. 1007, Abstract, [0005], [0008]; Petition at 69-70).

Accordingly, Patent Owner submits that Alden and Kondo could have easily been found through any reasonable search – *i.e.*, they “could have been found with reasonable diligence.”

The second *GP* factor weighs against institution.

3. Third *GP* Factor

The third *GP* factor is “whether at the time of filing of the second petition the petitioner already received the patent owner’s preliminary response to the first petition...” At the time of filing this petition on June 7, 2023, Mercedes had already received the Patent Owner’s preliminary responses in the VW IPRs regarding the ’551 Patent. *General Plastic* at 17 recognized this provides a “potential benefit from receiving and having the opportunity to study Patent Owner’s Preliminary Response, as well as our institution decisions on the first-filed petitions, prior to its filing of follow-on petitions.”

In fact, the Patent Owner’s preliminary responses in the VW IPRs provided a clear roadmap for Mercedes to drop Beam as a primary reference. Mercedes knew from the March 22, 2023 Preliminary Response in IPR2023-00315 that Patent Owner was asserting: (1) Beam teaches away from the asserted combination because it “explains that mounting the sensor within the headlamp assembly is critical to ensure accuracy,” (2) using a secondary reference’s remote camera rather than Beam’s renders Beam inoperable, and (3) “an image from Beam’s co-located and

boresighted camera [cannot] be used by Satonaka’s vehicle recognition zone image processing strategy — a processing strategy that is based on a remote camera” because the different viewpoint would shift the perspective. (IPR2023-00315, Paper 6 at 42, 47-52.)

Additionally, in a May 29, 2023 institution decision in IPR2022-01586 regarding the related ‘029 Patent, the Board rejected VW’s Beam-Kobayashi Ground, but instituted based on a redundant Gotou-Karlsson Ground. The Board found that “Beam’s disclosures cast doubt on Petitioner’s combination” of Beam and Kobayashi. (IPR2022-01586, Paper 7 at 20.) Accordingly, Mercedes did not pursue Grounds that included Beam as a primary reference in this Petition. Such a strategy was denounced in *General Plastic* at 17: “As discussed in our Decisions Denying Institution, we are concerned here by the shifts in the prior art asserted and the related arguments in follow-on petitions. Multiple, staggered petitions challenging the same patent and same claims raise the potential for abuse.”

The third *GP* factor weighs against institution.

4. Fourth *GP* Factor

The fourth *GP* factor is “the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition.” *General Plastic* at 17.

Mercedes knew or should have known of the Beam and Kobayashi references at least 6 months before filing the Petition in the present IPR because, as explained above, they were cited in other VW IPR petitions. While Mercedes has not taken a position as to when it learned of Alden or the secondary Kondo reference, as noted above, Alden and Kondo could have easily been found through any reasonable search conducted at any time since the district court complaint was filed on June 7, 2022.

Accordingly, the fourth *GP* factor weighs against institution.

5. Fifth *GP* Factor

The fifth *GP* factor is “whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent.” Petitioner Mercedes did not provide any such explanation in the Petition.

The fifth *GP* factor weighs against institution.

6. Sixth *GP* Factor

Pursuant to the sixth *GP* factor, the Board must consider “the finite resources of the Board.” First, as noted in *General Plastic* at 21, “staggered petition filings ... are an inefficient use of the *inter partes* review process and the Board’s resources.” Second, the *GP* factors list is “a non-exhaustive list of factors to be considered.” *Valve* at 2.

Recognizing that "[t]wo or more petitions filed against the same patent ... may place a substantial and unnecessary burden on the Board ...," and the serial petition gamesmanship employed by VW/Mercedes, Patent Owner submits the sixth *GP* factor weighs against institution. (CTPG at 59).

7. Seventh *GP* Factor

The seventh *GP* factor considers "the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review." It appears this is the only factor that does not weigh against institution.

For the reasons stated above, six of the seven *GP* factors weigh against VW/Mercedes' serial petition strategy. Consequently, Petitioner Mercedes' coordinated serial petition strategy should not be permitted and institution should be denied.

IX. Conclusion

In light of the remarks herein, Patent Owner respectfully requests that the Board deny the Petition for *inter partes* review of the '551 Patent.

Respectfully submitted,

Dated: September 14, 2023

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Certificate of Service

The undersigned hereby certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE TO PETITION FOR *INTER PARTES* REVIEW UNDER 37 C.F.R. § 42.107**, including any attachments and exhibits, was served in its entirety on **September 14, 2023** upon the following parties by electronic mail:

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Certificate of Compliance Pursuant to 37 C.F.R. § 42.24

This paper complies with the type-volume limitation of 37 C.F.R. § 42.24. The paper contains 13,139 words, excluding the parts of the paper exempted by § 42.24(a).

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Respectfully submitted,

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