

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOE TECHNOLOGY GROUP CO., LTD.,
Petitioner,

v.

138 EAST LCD ADVANCEMENTS LIMITED,
Patent Owner.

IPR2024-00976
Patent 7,502,079 B2

Before GRACE KARAFFA OBERMANN, GEORGE R. HOSKINS,
and CHRISTOPHER M. KAISER, *Administrative Patent Judges*.

OBERMANN, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. BACKGROUND

Petitioner¹ filed a Petition (Paper 2, “Pet.”) for *inter partes* review of claims 1–3 of U.S. Patent No. 7,502,079 B2 (Ex. 1001, “the ’079 patent”). Patent Owner² filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

With Board pre-authorization, Petitioner filed a Reply (Paper 7) limited to “provid[ing] Sotera stipulation(s) addressing Fintiv issues raised in Patent Owner’s Preliminary Response” and “show[ing] good cause for why Sotera stipulation(s) were not filed earlier with the Petition.” Paper 7, 1. With Board pre-authorization, Patent Owner filed a Sur-reply (Paper 8).

We have authority to institute an *inter partes* review where a petitioner shows a reasonable likelihood of prevailing with respect to at least one challenged claim. 35 U.S.C. § 314(a); 37 C.F.R. § 42.4(a). For reasons that follow, Petitioner does not meet that evidentiary threshold. We decline to reach the issues raised in the Reply or Sur-reply, which relate to Patent Owner’s alternative argument that a discretionary denial of the Petition is warranted.

B. RELATED MATTER

Both parties identify as related a co-pending district court litigation in *Longitude Licensing Ltd. and 138 East LCD Advancements Ltd. v. BOE Tech. Group Co., Ltd.*, 2:23-cv-00515 (E.D. Tex.). Pet. 90; Paper 4, 1.

¹ Petitioner asserts that BOE Technology Group Co., Ltd. is the real party-in-interest. Pet. 89.

² Patent Owner asserts that the real parties-in-interest are 138 East LCD Advancements Limited and Longitude Licensing Limited (the exclusive licensee). Paper 4, 1.

C. THE '079 PATENT (EX. 1001)

The '079 patent is titled “Electro-Optical Device and Electronic Apparatus.” Ex. 1001, code (54). The claimed invention relates to “[a]n electro-optical device” having “a thin-film transistor having a channel area that extends in a direction and that intersects a predetermined direction that intersects the direction,” “a pixel electrode formed correspondingly to the thin-film transistor,” “a data line extending in the direction in which the channel area extends,” “a scanning line extending in the predetermined direction and intersecting the data line and the channel area of the thin-film transistor,” “a storage capacitor including a pixel-potential capacitor electrode,” and “a capacitive line having a portion that serves as the fixed-potential capacitor electrode of the storage capacitor, the capacitive line having a portion extending along the scanning line and a portion extending along the data line.” *Id.* at 25:51–26:23, 26:24–53 (claims 1 and 2, the independent challenged claims).

Independent claim 1 specifies that the data line has “a broad-width portion that overlaps the channel area in plan view,” that the scanning line has “a broad-width portion in a portion overlapping the channel area of the thin-film transistor in plan view and a narrow width portion in another portion,” that the portion of the capacitive line “extending along the data line [has] a width that is equal to or broader than a width of the data line,” as well as including “a contact hole electrically connecting the data line and the thin film transistor, the contact hole being positioned at a portion of the broad-width portion of the data line that extends beyond the channel area in a direction extending from the channel area toward the contact hole.” *Id.* at 25:51–26:23.

Independent claim 2 also specifies that the data line has “a broad portion that overlaps the thin-film transistor and a non-broad portion that does not overlap the thin-film transistor, the broad portion being wider than the non-broad portion,” that the scanning line has “a broad-width portion in a portion facing the channel area of the thin-film transistor and a narrow width portion in another portion,” that the portion of the capacitive line “extending along the data line [has] a width that is narrower than the broad portion of the data line and that is wider than the non-broad portion of the data line.” *Id.* at 26:24–53.

We reproduce below Figure 16 from the '079 patent, which illustrates a plan view of the claimed embodiment with the claimed data line shape.

FIG. 16

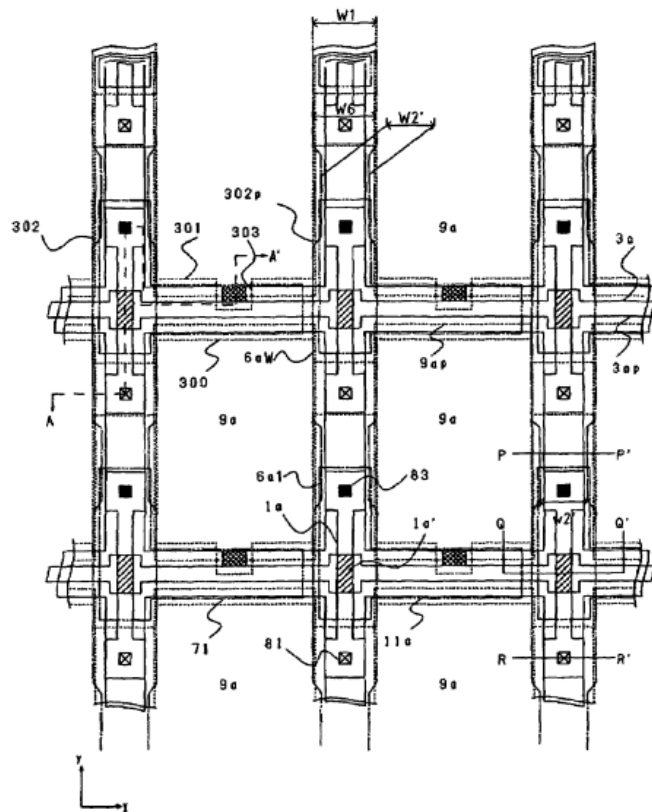


Figure 16 depicts “a plan view illustrating . . . a shape of the data line” that “includes a broad width portion 6aW of which a portion overlapping the TFT 30 is formed locally broad.” *Id.* at 22:51–53, 22:66–23:1. The “width W1 of a portion extending along the data line 6a1 in the capacitive line 300,” which is “the protruded portion 302 . . . is broader than a width W2’ of the portions except for the broad width portion 6aW in the data line 6a1.” *Id.* at 23:1–4. Figure 16 also depicts that “the broad width portion 6aW of the data line 6a1 is formed continuously from the portion overlapping the TFT 30 to the portion in which the contact hole 81 to connect the semiconductor layer 1a of the TFT and the data line 6a is provided.” *Id.* at 23:12–16.

The written description explains that “on the TFT 30, the light-shielding ability corresponding to the integrated value of their transmittances can be obtained” and the “light-shielding ability can be enhanced.” *Id.* at 23:33–40. The written description further explains that, “since triple light-shielding is implemented, it becomes more difficult for the light to enter the TFT 30.” *Id.* at 23:50–55. The written description summarizes that “the generation of the flicker and the like on the image due to the light leak current can be effectively suppressed, reduced or minimized.” *Id.* at 24:9–15.

D. CHALLENGED CLAIMS

The Petition challenges claims 1–3. Claims 1 and 2, which we reproduce below, are the independent claims challenged in the Petition and illustrate the subject matter of the invention.

1. An electro-optical device, comprising:

- a thin-film transistor having a channel area that extends in a direction and that intersects a predetermined direction that intersects the direction;
- a pixel electrode formed correspondingly to the thin-film transistor;
- a data line extending in the direction in which the channel area extends, the data line having a broad-width portion that overlaps the channel area in plan view;
- a scanning line extending in the predetermined direction and intersecting the data line and the channel area of the thin-film transistor, the scanning line having a broad-width portion in a portion overlapping the channel area of the thin-film transistor in plan view and a narrow width portion in another portion;
- a storage capacitor including a pixel-potential capacitor electrode, a fixed-potential capacitor electrode, and a dielectric film interposed between the pixel-potential capacitor electrode and the fixed-potential capacitor electrode;
- a capacitive line having a portion that serves as the fixed-potential capacitor electrode of the storage capacitor, the capacitive line having a portion extending along the scanning line and a portion extending along the data line, the portion extending along the data line having a width that is equal to or broader than a width of the data line; and
- a contact hole electrically connecting the data line and the thin film transistor, the contact hole being positioned at a portion of the broad-width portion of the data line that extends beyond the channel area in a direction extending from the channel area toward the contact hole.

Ex. 1001, 25:50–26:23.

2. An electro-optical device, comprising:

- a thin-film transistor having a channel area that extends in a direction and that intersects a predetermined direction that intersects the direction;

- a pixel electrode formed correspondingly to the thin-film transistor;
- a data line extending in the direction in which the channel area extends, the data line having a broad portion that overlaps the thin-film transistor and a non-broad portion that does not overlap the thin-film transistor, the broad portion being wider than the non-broad portion;
- a scanning line extending in the predetermined direction and intersecting the data line and the channel area of the thin-film transistor, the scanning line having a broad-width portion in a portion facing the channel area of the thin-film transistor and a narrow width portion in another portion;
- a storage capacitor including a pixel-potential capacitor electrode, a fixed-potential capacitor electrode, and a dielectric film interposed between the pixel-potential capacitor electrode and the fixed-potential capacitor electrode;
- a capacitive line having a portion that serves as the fixed-potential capacitor electrode of the storage capacitor, the capacitive line having a portion extending along the scanning line and a portion extending along the data line, the portion extending along the data line having a width that is narrower than the broad portion of the data line and that is wider than the non-broad portion of the data line.

Ex. 1001, 26:24–53.

E. ASSERTED GROUNDS OF UNPATENTABILITY

The Petition advances three grounds, each of which is based on obviousness under 35 U.S.C. § 103(a).³ We provide below a chart that sets forth the grounds identified in the Petition.

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011), includes revisions to Section 103 that became effective on March 16, 2013. The ’079 patent issued on March 10, 2009; therefore, the AIA provisions do not apply in this proceeding. *See*

Ground	Claims Challenged	References
1	1–3	Kurashina ⁴ , Sato ⁵
2	1–3	Kurashina, Takahara ⁶
3	1–3	Murade-109 ⁷ , Murade-125 ⁸

Pet. 17, 26. The Petition is supported by the Declaration of Richard A. Flasck. Ex. 1002. The Preliminary Response is supported by the Declaration of Dr. E. Fred Schubert. Ex. 2001.

II. DISCUSSION

A. LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the art at the time of the invention is a factual determination that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)).

Petitioner argues that an ordinarily skilled artisan “would have had at least a bachelor’s degree in electrical engineering, computer science, physics, or a similar field and at least two years of experience designing semiconductor display devices, including LCD displays,” and “[a]dditional

Pet. 14; Ex. 1001, code (45).

⁴ JP 2002-90721A, published Mar. 27, 2002, with English Translation (Ex. 1008).

⁵ US Pub. 2002/0014627 A1, published Feb. 7, 2002 (Ex. 1009).

⁶ JP 2002-158360A, published May 31, 2002, with English Translation (Ex. 1010).

⁷ US Pub. 2001/0048109 A1, published Dec. 6, 2001 (Ex. 1011).

⁸ JP2001-331125A, published Nov. 30, 2001, with English Translation (Ex. 1012).

education could substitute for professional experience and vice versa.”

Pet. 26. Patent Owner “does not dispute the level of skill for a person of ordinary skill in the art” as “set forth in the Petition.” Prelim. Resp. 11.

For purposes of this Decision, we adopt Petitioner’s unopposed definition (Pet. 26) because, on this record, it is consistent with the specification. We take note that neither party indicated that the result would change under any different definition.

B. CLAIM CONSTRUCTION

In an *inter partes* review, the Board construes the terms of a patent claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Under that standard, claim terms generally are given their plain and ordinary meaning as would have been understood by the ordinarily skilled artisan at the time of the invention and within the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

We construe terms in controversy only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner discusses the terms a “data line having a *broad-width portion*” and a “scanning line having a *broad-width portion*” recited in claim 1, as well as a “data line having a *broad portion*” and a “scanning line having a *broad-width portion*” recited in claim 2. Petitioner cites the ’079 patent for “offering a lexicographic definition of the term ‘broad width’” to support the plain meaning interpretation of the terms “‘broad-width portion’

and ‘broad portion’ as *a portion that is broader than another portion of the subject element.*” Pet. 16. Patent Owner does not provide arguments directed specifically to Petitioner’s proposed claim constructions. *See* Prelim.

Resp. 10–11.

Taking account of the information presented, we determine that no claim term requires express construction for purposes of deciding whether to institute review. *Compare* Pet. 16 (addressing issues of claim construction, citing the ’079 patent for supporting the plain and ordinary meaning of “broad-width portion” and “broad portion” without demonstrating that an express construction is necessary to resolve whether to institute review), *with* Prelim. Resp. 10–11 (addressing the merits of Petitioner’s challenges, without asserting an express claim construction). To the extent that the scope of any claim term requires discussion, however, we provide it in the following analysis of the challenges.

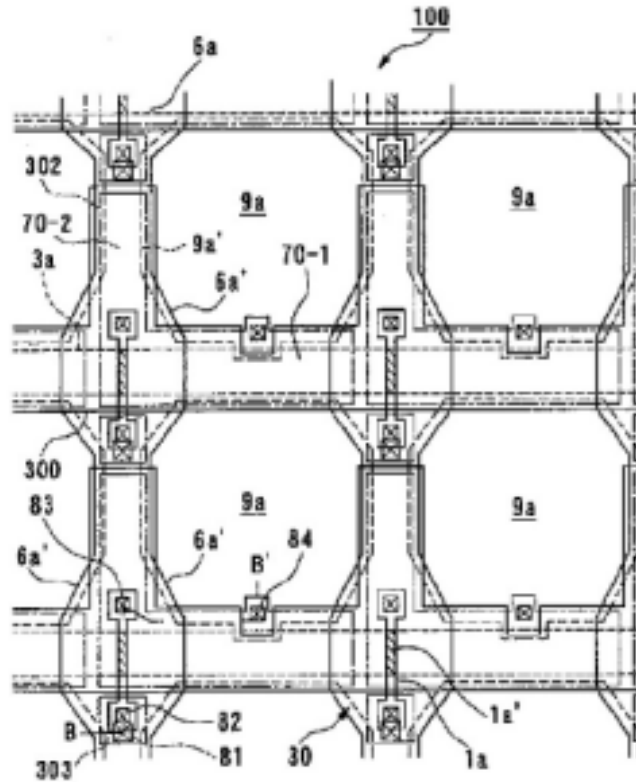
C. THE PATENTABILITY CHALLENGES

1. Asserted Obviousness based on Kurashima and Takahara

a. *Kurashina (Ex. 1008)*

Kurashina describes using “a data line or a capacitor line . . . as the light-shielding metal film between the transistor element and the liquid-crystal layer by being formed to a wide width in the corner portion of the pixel.” Ex. 1008, code (57). We reproduce below Figure 3 of Kurashina, which illustrates the structure of an element substrate for electro-optical devices. *Id.* ¶ 52.

FIG. 3



Id., Fig. 3. Figure 3 depicts “an enlarged plan view showing a plurality of mutually adjacent pixel groups of the element substrate for electro-optical devices on which data lines, scan lines, pixel electrodes, light-shielding films, and the like are formed.” *Id.* ¶ 52. Figure 3 shows “the data lines 6a running up and down in the paper plane are formed with a wide width in the vicinities of the TFTs 30.” *Id.*

b. Sato (Ex. 1009)

Sato describes an electro-optical device that includes, “on a TFT array substrate, pixel electrodes, TFTs connected to the pixel electrodes, a shading layer that covers at least the channel regions of the TFTs, and a light

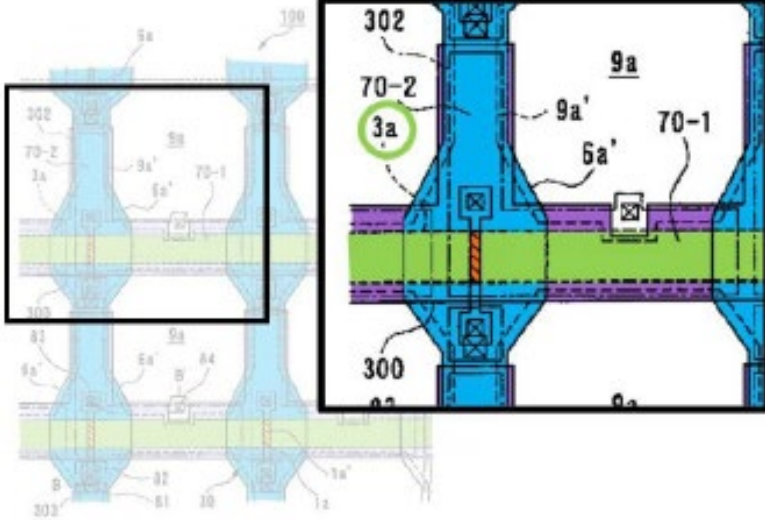
absorption layer interposed between the shading layer and the TFTs.” Ex. 1009, code (57). Sato describes that “the scanning lines 3a are widened at portions where they act as the gate electrodes.” *Id.* ¶ 91.

c. Assessment of the Challenge

Petitioner asserts that claims 1–3 are unpatentable as obvious over Kurashina and Sato. Pet. 27–53. A dispositive question arises, on this record, as to whether Petitioner’s information, directed to the reason to combine Kurashina and Sato, is sufficient to support institution of review. For the reasons that follow, we determine that Petitioner does not show sufficiently a reason to combine the references in the manner claimed, and on that basis, we deny institution on this ground.

Independent claim limitations 1[d] and 2[d] require a “scanning line having a broad-width portion in a portion facing⁹ the channel area of the thin-film transistor and a narrow width portion in another portion.” Ex. 1001, 26:3–6, 26:37–40. To teach this limitation Petitioner proposes combining Kurashina with Sato. Pet. 31. Petitioner presents an annotated version of Kurashina’s Figure 3, reproduced below. Pet. 32.

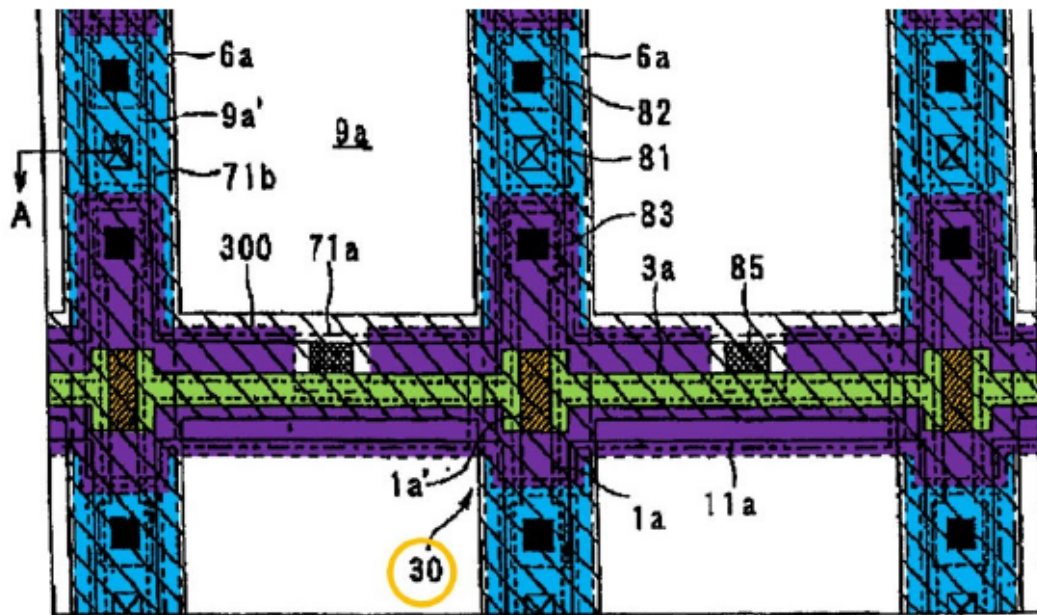
⁹ We understand that claim 1’s version of the referenced limitation uses the words “overlapping [...] in plan view” instead of the word “facing” like in claim 2. Ex. 1001, 26:3–6, 26:37–40. Petitioner’s Expert notes that “[t]hose differences in verbiage ... make no meaningful difference.” Pet. 50 (citing Ex. 1002 ¶ 162). Patent Owner’s Expert also agrees, “these slight differences in verbiage do not alter the analysis from claim 2.” Prelim. Resp. 34 (citing Ex. 2001 ¶ 73). Accordingly, failing to teach claim 2, as recited above, will also result in failing to teach claim 1.



Petitioner’s annotated version of Kurashina’s Figure 3 depicts “an enlarged plan view showing a plurality of mutually adjacent pixel groups of the element substrate for electro-optical devices on which data lines, scan lines, pixel electrodes, light-shielding films, and the like are formed.” Ex. 1008

¶ 52. Petitioner zooms in to emphasize scan line 70-1 (green) “extending horizontally” and “intersect[ing] the channel area of the thin film transistor [(orange)].” Pet. 32 (citing Ex. 1002 ¶ 129). However, Petitioner admits that Kurashina does not disclose a scanning line with a “broad-width portion” as Kurashina’s scanning line (green) is one continuous width. *Id.* (citing Ex. 1002 ¶ 130).

Petitioner proposes combining Sato with Kurashina to teach a scan line with a “broad-width portion.” *Id.* (citing Ex. 1002 ¶ 130). Petitioner cites to an annotated version of Sato’s Figure 2, reproduced below, to illustrate how Sato’s design includes the same general structure as Kurashina while also having a scan line (green) with a “broad-width portion.” Pet. 34–36 (citing Ex. 1002 ¶ 134–136).



Petitioner’s annotated version of Sato’s Figure 2 illustrates a “plurality of transparent pixel electrodes 9a [...] formed on [a thin-film transistor (TFT)] array substrate of [an] electro-optical device.” Ex. 1009 ¶ 90. Further, “scanning lines 3a [(green)] are disposed to face the channel regions 1a’ [(orange)] [...], the scanning lines 3a are widening at portions where they act as gate electrodes.” *Id.* ¶ 91.

Petitioner contends that it would have been obvious to combine “*Sato*’s narrow scanning line having a widened gate portion” with Kurashina to teach a scan line with a “broad-width portion.” Pet. 37 (Ex. 1002 ¶ 139). Petitioner proposes four reasons for combining Sato and Kurashina. *Id.* at 37–38 (citing Ex. 1002 ¶¶ 139–140).

First, Petitioner contends that Sato’s device “is very advantageous” and “simplifies a manufacturing process thereof.” *Id.* at 37 (citing Ex. 1009 ¶¶ 26, 28; Ex. 1002 ¶ 139). This contention is insufficient to support the proposed combination, however, because Petitioner directs us to disclosure in Sato (¶¶ 26 and 28) that do not discuss scan lines.

To the contrary, Sato ¶ 26 discloses benefits to utilizing a specific “arrangement” of Sato, particularly, “data lines composed of an Al film.” Ex. 1009 ¶ 26.

[0026] With this arrangement, when data lines composed of an Al film, or the like, are provided with a function as a shading layer in addition to a function as wiring, it is possible to prevent a laminated structure from becoming complex by additionally forming a dedicated shading layer. Accordingly, this arrangement is very advantageous by simply arranging the electro-optical device, and simplifies a manufacturing process thereof.

Id. (emphasis added). Sato ¶ 26 is entirely silent on scan lines and clearly links the cited benefits to “this arrangement” of “data lines composed of an Al film.” *Id.* Importantly, Petitioner does not connect Sato’s disclosure, relating to benefits associated with a data line arrangement, to any particular arrangement of scan lines.

Sato ¶ 28 is equally deficient. Sato ¶ 28 also discusses benefits of utilizing a specific “arrangement,” namely, “capacitance lines formed of [a] metal film.” *Id.* ¶ 28.

[0028] With this arrangement, the provision of the function as the shading layer with the capacitance lines formed of the metal film, the polysilicon film, or the like, in addition to the function as the wiring, as well as the provision of the function as the light absorption layer with the capacitance electrodes formed of the polysilicon film, or the like, in addition to the function as electrodes, prevents the laminated structure from becoming complex by additionally forming a dedicated shading layer and a dedicated light absorption layer. Accordingly, this arrangement is very advantageous by simply arranging the electro-optical device, and simplifies a manufacturing process thereof.

Id. (emphasis added). Here again, Sato ¶ 28 is entirely silent on scan lines and clearly links the cited benefits to “this arrangement” of “capacitance lines formed of metal film.” *Id.* Petitioner does not bridge the gap in its rationale to combine by attempting to explain why an ordinarily skilled artisan would have extrapolated benefits, pertaining to an arrangement of capacitance lines, to a similar arrangement of scan lines.

Petitioner’s witness, Dr. Flasck, provides no further insight as to how or why Sato ¶¶ 26 and 28 would have been understood to apply to scan lines. Dr. Flasck’s comments on Sato ¶¶ 26 and 28 merely repeat, nearly verbatim, the Petition’s conclusory contentions. *See* Ex. 1002 ¶ 139 (Dr. Flasck declaring “*Sato* specifically teaches that its device ‘is very advantageous by simply arranging the electro-optical device, and simplifies a manufacturing process thereof.’”); Pet. 37. Dr. Flasck does not cite to any additional supporting evidence other than Sato ¶¶ 26 and 28. Ex. 1002 ¶ 139.

Second, Petitioner cites to Kurashina ¶ 22 and asserts that “simply changing the patterning shape when the capacitor lines and the data lines are formed” would be a “straightforward modification” not needing “any special process.” Pet. 37 (citing Ex. 1008 ¶ 22; Ex. 1002 ¶ 139). However, like Sato ¶¶ 26 and 28, Petitioner’s cited portion of Kurashina ¶ 22 does not discuss scan lines. *See id.* Instead, Kurashina ¶ 22 only discloses benefits specific to capacitor lines and data lines. *See* Ex. 1008 ¶¶ 21–22. Additionally, Dr. Flasck’s supporting testimony merely repeats, nearly verbatim, the Petition’s conclusory contentions and is silent on Kurashina’s scan lines. *Compare* Ex. 1002 ¶ 139, *with* Pet. 38. Dr. Flasck does not cite to any additional supporting evidence other than Kurashina ¶ 22 or provide any technical reasoning in support of his statement. Ex. 1002 ¶ 139.

Patent Owner’s annotated version of Kurashina’s Figure 3 shows “an enlarged plan view [...] for electro-optical devices on which data lines, scan lines, pixel electrodes, light-shielding films, and the like are formed.” Ex. 1008 ¶ 52.

Referencing the image above, Dr. Schubert explains that Kurashina’s capacitor line 302 (purple, bordered light orange) sets Kurashina’s aperture ratio (white space outlined by light orange) and not the scan line (green) as Petitioner claims. Prelim. Resp. 26 (citing Ex. 2001 ¶ 68). Dr. Schubert further indicates that an ordinary artisan would not have been motivated to reduce the width of the scan line because doing so would not impact the pixel aperture ratio. *Id.* at 28 (citing Ex. 2001 ¶ 70). Dr. Schubert’s opinions, unlike those of Dr. Flasck, are supported by the cited disclosures of the asserted prior art references.

Lastly, Petitioner contends that combining the teachings of Kurashina and Sato “would have required no more than ordinary skill” because both Kurashina and Sato already disclose a scan line. Pet. 38 (citing Ex. 1002 ¶ 140). Petitioner further contends that this combination would be straightforward and yield predictable results “given [Kurashina’s and Sato’s] overall similarities” and “overlap in functionality.” *Id.* (citing Ex. 1002 ¶ 140). Those statements, however, do not demonstrate sufficiently a reason to combine the references in the manner claimed.

In an *inter partes* review, the petitioner has the burden from the outset to show with particularity why a challenged patent claim is unpatentable. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). As part of that initial burden, the petition must identify “with particularity” the “evidence that supports the grounds for the challenge to each claim.” 35

U.S.C. § 312(a)(3). Petitioner fails to explain with particularity why a skilled artisan would combine “Sato’s narrow scanning line having a widened gate portion” with Kurashina. Pet. 37.

In a nutshell, Petitioner argues that Sato has some advantageous aspects. But none of those aspects is shown, on this record, to relate to the part of Sato that Petitioner proposes to combine with Kurashina, namely, the scan line. To the contrary, Petitioner directs us to disclosures in Sato that do not discuss scan lines. *See id.* Petitioner’s reliance on conclusory opinion testimony, advanced without reasoning or citations to objective evidence, similarly is insufficient to support institution of review. *See* Pet. 37–38. Patent Owner casts further doubt on the sufficiency of Petitioner’s evidence, moreover, by providing arguments and opposing witness testimony that is supported by citations to the prior art. Prelim. Resp. 26–28. Finally, Petitioner’s assertions that the combination would be “straightforward” and “simple” do not, alone, adequately establish that an ordinarily skilled artisan would have been motivated to combine Sato’s scan line with Kurashina in the manner claimed. Pet. 38.

Accordingly, on this record, we find that Petitioner does not show sufficiently that Kurashina and Sato would have suggested to an ordinarily skilled artisan a scanning line having a “broad-width portion” as specified by claims 1 and 2. Ex. 1001, 26:3–4, 26:37–38.

d. Dependent Claim 3

Claim 3 depends directly from claim 2. Ex. 1001, 26:54. Our reasoning above, regarding the insufficiency of Petitioner’s motivation to combine Sato’s narrow scanning line with Kurashina as specified in claim 2, applies with equal force to claim 3, which depends therefrom.

On this record, therefore, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that the subject matter of claim 3 would have been obvious over Kurashina and Sato.

2. Asserted Obviousness over Kurashina and Takahara

a. *Takahara (Ex. 1010)*

Takahara describes an electro-optical device that includes, “on a TFT array substrate (10), a pixel electrode (9a), a TFT (30) connected thereto, and a scan line (3a) connected thereto.” Ex. 1010, code (57). Takahara describes that “[t]he scan line has a main-body portion, which extends in a direction that crosses a longitudinal direction of a channel region of the TFT and includes a gate electrode of the TFT, which overlaps the channel region in plan view, and a protruding portion that protrudes on a side of a channel-adjacent region, viewed in plan view, in the longitudinal direction of the channel region from the main-body portion.” *Id.*

b. *Assessment of the Challenge*

Petitioner asserts that claims 1–3 are unpatentable as obvious over Kurashina and Takahara. Pet. 53–62. Independent claim limitations 1[d] and 2[d] require a “scanning line having a **broad-width portion** in a portion **facing**¹⁰ the channel region of the thin-film transistor and **a narrow width portion** in another portion.” Ex. 1001, 26:3–6, 26:37–40 (Board’s emphasis).

¹⁰ We understand that claim 1’s version of the referenced limitation uses the words “overlapping [...] in plan view” instead of the word “facing” like in claim 2. Ex. 1001, 26:3–6, 26:37–40. Petitioner’s witness, Dr. Flasck, notes that “[t]hose differences in verbiage ... make no meaningful difference.” Pet. 61 (citing Ex. 1002 ¶ 185). Patent Owner’s witness, Dr. Schubert, also agrees, “these slight differences in verbiage do not alter the analysis from claim 2.” Prelim. Resp. 34 (citing Ex. 2001 ¶ 73). Accordingly, failing to teach claim 2, as recited above, will also result in failing to teach claim 1.

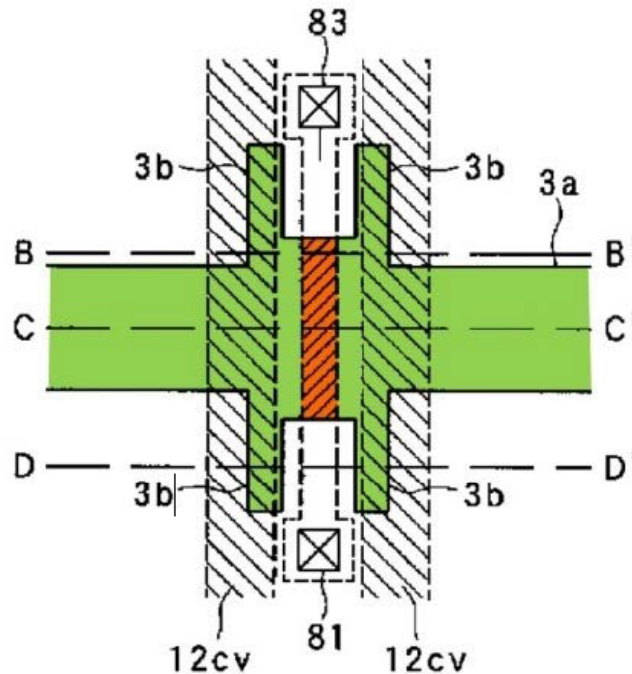
Unlike in ground 1, where Petitioner proposes combining narrow and broad-width portions of Sato’s scan line with Kurashina’s design, Petitioner here proposes implementing Takahara’s “**widened** scanning line portions” in “Kurashina’s design.” *Compare* Pet. 59 (Petitioner declaring, “It would have been obvious [...] to implement *Kurashina*’s design with *Takahara*’s **widened** scanning line portions) (Board’s emphasis), *with* Pet. 37 (Petitioner declaring, “It would have been obvious [...] to implement *Kurashina*’s design with *Sato*’s narrow scanning line having a widened gate portion.”).

Critical to our analysis, however, Kurashina’s scanning lines are the same width as its channel region. Ex. 1008, 1 (Figure). Petitioner does not show sufficiently how or why the addition of Takahara’s portions, which admittedly **widen** the scanning line, would have resulted in a first “broad-width portion in a portion facing the channel region” and “a narrow width portion in another portion.” Ex. 1001, 26:3–6, 26:37–40; *see supra* n.10.

Petitioner advances reasons to combine Kurashina and Takahara that leave no doubt that the proposed combination is based on applying Takahara’s “widened scanning line portions” to Kurashina’s scan lines, which are the **same width** as the channel region. Pet. 59. Importantly, Petitioner supplies no argument or rationale for **narrowing** Kurashina’s scan lines, relative to the channel region, as shown in Takahara. *Id.* at 59–61.¹¹

¹¹ We properly limit our analysis to the arguments actually advanced in the Petition, which are based on Petitioner’s view that it would have been obvious “to implement Kurashina’s design,” in which the scanning line is the same width as the channel region, “with Takahara’s **widened** scanning line portions.” Pet. 59 (Board’s emphasis); *see* Prelim. Resp. 20 (arguing that “Kurashina’s scan line is already sized to the channel area and making it any wider would compromise device performance”); Ex. 1008, 1 (Figure).

In support of the proposed combination, Petitioner directs us to an annotated version of Takahara's Figure 4, reproduced below. Pet 57.

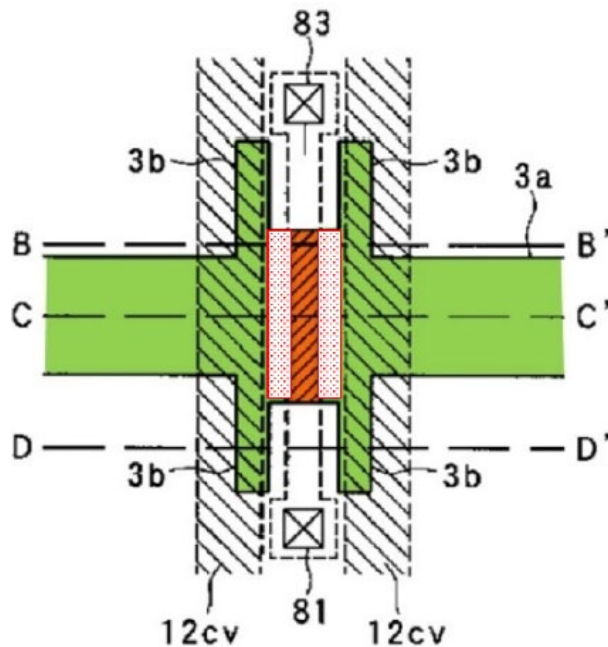


Petitioner's annotated version of Takahara's Figure 4 shows a "scan line 3a [(green)] disposed such that it opposes channel region 1a' [(orange)], [...] the scan line 3a is formed with a wide width at the location at which it becomes the gate electrode, and has protruding portions 3b, which protrude, from the portion at which the wide width is formed." Ex. 1010 ¶ 53.

Petitioner acknowledges that Kurashina does not disclose a scanning line with a "broad-width portion" because Kurashina's scanning line is one continuous width. Pet. 32 (citing Ex. 1002 ¶ 130). Petitioner, therefore, looks to Takahara to teach that limitation. Pet. 59. Specifically, Petitioner contends that Takahara discloses a scan line (green, above) that includes two "broad-width portions." Pet. 56–57 (citing Ex. 1002 ¶¶ 174–175). Petitioner identifies protruding portion 3b as a first "broad-width portion in a portion

facing the channel” (orange, above) “while the remainder of the scanning line is ‘a narrow width portion in another portion.’” *Id.* at 56.

To be clear, for the element in Takahara that corresponds to the “narrow width portion in another portion” of claims 1[d] and 2[d], Petitioner identifies portions in Takahara’s Figure 4 that fall between the protruding regions of element 3b and the channel region (orange, above). *See id.* (citing Ex. 1002 ¶¶ 174–175). Patent Owner provides an annotated version of Takahara’s Figure 4, which denotes in red hatching the area of the scanning line that represents this asserted narrow width portion in Takahara.

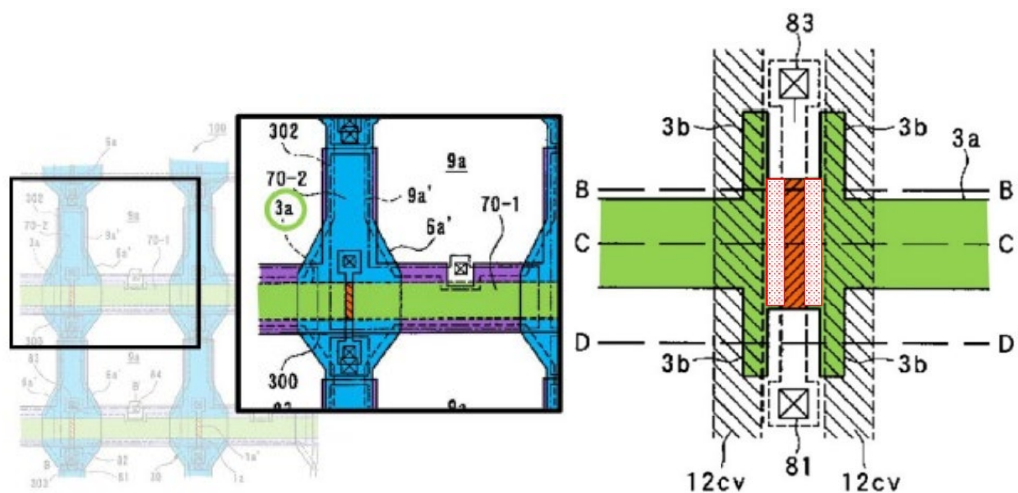


Prelim. Resp. 32. Patent Owner’s annotated version of Takahara’s modified Figure 4 shows a “scan line 3a [(green)] disposed such that it opposes channel region 1a’ [(orange)], [...] the scan line 3a is formed with a wide width at the location at which it becomes the gate electrode, and has protruding portions 3b, which protrude at the portion at which the wide width is formed.” Ex. 1010 ¶ 53. Patent Owner adds two boxes with red

hatching to Figure 4, which Petitioner identifies as the “narrow width portion” feature of Takahara’s the scanning line. Prelim. Resp. 32.

In Patent Owner’s view, neither of the two “broad-width portions” that Petitioner identifies in Takahara’s Figure 4 satisfy claim limitations 1[d] and 2[d] when combined with Kurashina’s design, in which the scan line is the same width as the channel region. Prelim. Resp. 29–33. Turning to Takahara’s protruding portion 3b (green, above), which Petitioner identifies as a first “broad-width portion,” Patent Owner contends that protruding portion 3b, when incorporated into Kurashina’s device, would not face the channel region (orange, above) as required by claims 1[d] and 2[d]. Prelim. Resp. 31 (citing Ex. 2001 ¶ 77).

We agree that implementing Takahara’s protruding portion 3b to Kurashina’s scan line (which is the same width as Kurashina’s channel region) would not result in a scanning line having a “broad-width portion facing the channel region” as required by the challenged claims. That is evident from a comparison of Petitioner’s annotated version of Kurashina’s Figure 3 (below left) and Patent Owner’s annotated version of Takahara’s Figure 4 (below right).



Pet. 32; Prelim. Resp. 32. Kurashina’s Figure 3 (annotated, left) shows channel region (orange), “data lines, scan lines [(green)], pixel electrodes, light-shielding films, and the like.” Ex. 1008 ¶ 52. Takahara’s Figure 4 (annotated, right) shows a “scan line 3a [(green, right)] disposed” such that it “opposes channel region 1a [(orange)].” Ex. 1010 ¶ 55.

Specifically, Patent Owner argues, and we agree, that protruding portions 3b would be “displaced” from the channel region in the modified design of Kurashina, where Kurashina’s design is based on a scanning line (green) that is the same width as the channel region (orange). Prelim. Resp. 32. As Patent Owner correctly points out, “the portion of Kurashina’s scan line that actually faces the channel area would be no wider, because the protruding portions in Takahara do not face the channel area.” *Id.* (citing Ex. 2001 ¶ 78). On this record, therefore, we determine that Petitioner does not show sufficiently that the proposed combination would have resulted in “a scanning line having a broad-width portion in a portion facing the channel region.” Ex. 1001, 26:3–6, 26:37–40; *see supra* n. 10.

We next turn to Petitioner’s identification of a second “broad-width portion” in Takahara, denoted by the red hatching added by Patent Owner to Figure 4 (above). *Compare* Pet. 56–57; Ex. 1002 ¶ 174, *with* Prelim. Resp. 31–32; Ex. 2001 ¶¶ 77, 78. Petitioner submits that addition of this second broad-width portion to Kurashina’s scan line would result in “a narrow width portion in another portion.” Pet. 57.

To the contrary, however, like the red hatched areas in Takahara’s Figure 4 (annotated, above), “Kurashina’s scan line [(green)] is already sized to the channel area [(orange)].” Prelim. Resp. 20. It is not clear, on this record, and Petitioner does not adequately explain, how or why adding a

second “protruding” portion to Kurashina’s scan line would result in a narrow width portion. Pet. 58. Petitioner’s witness, Dr. Flasck, provides no additional insight. *See* Ex. 1002 ¶¶ 175, 185. Petitioner’s failure to show sufficiently that the proposed combination would have resulted in “a narrow width portion” as required by claims 1 and 2 provides an alternative, independent reason that fully supports our conclusion that Petitioner fails to meet the evidentiary threshold necessary to support institution of review.

In summary, Petitioner proposes that an ordinarily skilled artisan would have been led to “implement Kurashina’s design with Takahara’s widened scanning line portions” (Pet. 59), but does not show sufficiently that this endeavor would have resulted in a “scanning line having a broad-width portion in a portion facing the channel region of the thin-film transistor and a narrow width portion in another portion.” Ex. 1001, 26:3–6, 26:37–40. Given that Kurashina’s design employs a scanning line that is the same width as its channel region, tacking on Takara’s two “widened” scanning line portions would not result in an apparatus that meets those limitations of claims 1 and 2. Pet. 59.

c. Dependent Claim 3

Claim 3 depends directly from claim 2. Ex. 1001, 26:54. Our reasoning above, regarding the insufficiency of Petitioner’s explanation as to how the combined references would have resulted in an apparatus that meets claim 2, applies with equal force to claim 3, which depends therefrom. On this record, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that the subject matter of claim 3 would have been obvious over Kurashina and Takahara.

3. *Asserted Obviousness based on Murade-109 and Murade-125*

a. *Murade-109 (Ex. 1011)*

Murade-109 describes “[i]n a substrate, a portion for forming wiring extending to a connection terminal is provided with a recess,” and the “connection terminal and the wiring are covered by an interlayer insulating film, and an opening is provided in a portion corresponding to the connection terminal.” Ex. 1011, code (57). In Murade-109, “data line 114 extends in the Y direction and the scanning line 112 extends in the X direction,” and “[t]he capacitor line 175 extends in the X direction close to and in parallel to the scanning line 112, and at the section intersecting with the data line 114, the capacitor line 175 protrudes.” *Id.* ¶ 137.

b. *Murade-125 (Ex. 1012)*

Murade-125 describes an electro-optical device comprising “a TFT (30), a data line (6a), a scan line (3a), a capacitor line (3b), a first intermediate conductive layer (80), a second intermediate conductive layer (180), and a pixel electrode (9a) on a substrate.” Ex. 1012, code (57). Murade-125 also describes “[a] first contact hole (8a) connecting a drain of the TFT and the first intermediate conductive layer is formed at a location overlapping the data line as seen in plan view.” *Id.*

c. *Assessment of the Challenge*

Petitioner asserts that claims 1–3 are unpatentable as obvious over Murade-109 and Murade-125. Pet. 62–86. A dispositive question arises, on this record, as to whether Petitioner shows sufficiently, for purposes of instituting trial, a reason to combine Murade-109 and Murade-125 in the manner claimed. For the reasons that follow, we determine that Petitioner

does not present an adequate rationale for the proposed combination, and on that basis, we deny institution on this ground.

Independent claim limitations 1[f] and 2[f] generally require a capacitor line with a specific sizing in relation to a data line. *See* Pet. 85; Ex. 1001, 26:12–17, 26:46–53. Petitioner proposes combining Murade-109 and Murade-125 to teach a capacitor line meeting the above limitations. Pet. 84 (citing Ex. 1002 ¶ 232). Petitioner specifically seeks to apply “Murade-125’s capacitor line protruding portion” to Murade-109’s capacitor line. *Id.* at 76. In support, Petitioner lists a variety of reasons why an ordinarily skilled artisan would have been motivated to combine the references. *Id.* at 76–79. We address each motivation in turn.

First, Petitioner asserts that combining Murade-125’s capacitive line teachings with Murade-109 would result in improved light protection for sensitive components because Murade-125 discloses using its capacitor line as a light shielding layer. *Id.* at 76 (citing Ex. 1002 ¶ 214; Ex. 1012 ¶ 42). Petitioner cites a portion of Murade-125 ¶ 42 for support, which explains “widening the capacitive line relative to the data line [...] ‘attenuates multiply reflected light caused by internal reflection.’” *Id.* (citing Ex. 1002 ¶ 214; Ex. 1012 ¶ 42). However, Patent Owner argues, and we agree on this record, that Murade-125 does not teach utilizing the capacitive line as a light shielding layer and that Petitioner is “simply wrong” in asserting so. Prelim. Resp. 41.

Patent Owner points out that Murade-125 teaches utilizing an intermediate conductive layer and a data line for light shielding but not a capacitive line as asserted by Petitioner. *Id.* at 40–41 (citing Ex. 1012 ¶ 42). Patent Owner reproduces a portion of Murade-125 ¶ 42, which Petitioner

cites for support, and argues that ¶ 42 explicitly states that light shielding properties come from the intermediate conductive layer and the data line, not the capacitive line:

[a]ccording to this configuration, it becomes possible to provide two-fold shielding against incident light from the opposing substrate [] using the data line and the intermediate conductive layer.

Ex. 1012 ¶ 42 (alteration added by Patent Owner).

Second, Petitioner contends that by widening the capacitor line according to Murade-125's teachings, "a larger storage capacitor can be constructed using the capacitor electrode and the intermediate conductive layer." Pet. 76 (citing Ex. 1002 ¶ 214). In Patent Owner's view, however, "it would be impossible to make a larger storage capacitor in Murade-109 out of a capacitive line and an intermediate conductive layer" because Murade-109 does not disclose an intermediate conductive layer. Prelim. Resp. 41 (referencing Pet. 35–38).

Petitioner provides other reasons to combine including, (a) both Murade-125 and Murade-109 are from the same field of endeavor and Murade-125 offers "additional features," such as light shielding, to make "desirable improvements" to Murade-109; (b) implementing Murade-125 to Murade-109 would have been straightforward because the two references are structurally similar; (c) Murade-125's design improvements would be additive to Murade-109 amounting to a simple design choice; and (d) combining the two references would have required no more than ordinary skill. Pet. 128–131 (citing Ex. 1002 ¶¶ 216–221).

In an *inter partes* review, the petitioner has the burden from the outset to show with particularity why a challenged patent claim is unpatentable.

Harmonic Inc., 815 F.3d at 1363. As part of that initial burden, the petition must identify “with particularity” the “evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3). Petitioner does not explain with particularity why an ordinarily skilled artisan would have been led to combine “Murade-125’s capacitor line protruding portion” with Murade-109’s capacitor line. Pet. 76.

For the first motivation to combine, Petitioner’s citation to Murade-125 ¶ 42 does not discuss or even mention benefits associated with capacitive lines. *See* Ex. 1012 ¶ 42. We agree, on this record, with Patent Owner’s arguments that ¶ 42 discusses benefits only related to the intermediate conductive layer and data line. Prelim. Resp. 40–41. For the second motivation, Petitioner claims that a larger storage capacitor could be constructed utilizing an intermediate conductive layer and a widened capacitive line; however, Murade-109 does not disclose an intermediate conductive layer nor does Petitioner propose applying Murade-125’s conductive layer to Murade-109. *See* Pet. 62–86; Ex. 1011.

Petitioner’s remaining motivations fare no better. The motivations identified above as (a)–(d) (*supra* 29) relate to whether an ordinarily skilled artisan *could* feasibly combine features of Murade-125 with Murade-109, but do not address adequately, if at all, *why* the artisan *would* have been led specifically to combine Murade-125’s capacitance line projections with Murade-109. *See* Pet. 128–131 (citing Ex. 1002 ¶¶ 216–220).

Accordingly, on this record, we find that Petitioner does not show sufficiently, for purposes of instituting review, that Murade-109 and Murade-125 would have suggested to an ordinarily skilled artisan a

capacitance line with a specific sizing in relation to a data line as required by claims 1 and 2. *See* Ex. 1001, 26:12–17, 26:46–53.

d. Dependent Claim 3

Claim 3 depends directly from claim 2. Ex. 1001, 26:54. Our reasoning above, regarding the insufficiency of Petitioner’s explanation as to how the combined references would have resulted in an apparatus that meets claim 2, applies with equal force to claim 3, which depends therefrom. On this record, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that the subject matter of claim 3 would have been obvious over Murade-109 and Murade-125.

III. CONCLUSION

For the above reasons, we *deny* the Petition and do not institute an *inter partes* review. 35 U.S.C. § 314(a)(1).

IV. ORDER

It is

ORDERED that the Petition is *denied* and no *inter partes* review is instituted.

IPR2024-00976
Patent 7,502,079 B2

For PETITIONER:

Joshua Goldberg
James Barney
Qingyu Yin
Sydney Kestle
Tyler Akagi
Kevin Rodkey
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, LLP
joshua.goldberg@finnegan.com
james.barney@finnegan.com
qingyu.yin@finnegan.com
sydney.kestle@finnegan.com
tyler.akagi@finnegan.com
kevin.rodkey@finnegan.com

For PATENT OWNER:

Cy Morton
Samuel LaRoque
ROBINS KAPLAN LLP
cmorton@robinskaplan.com
slaroque@robinskaplan.com