

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TIANMA MICROELECTRONICS CO. LTD.,
Petitioner,

v.

JAPAN DISPLAY INC.,
Patent Owner.

IPR2021-01057
Patent 7,385,665 B2

Before JO-ANNE M. KOKOSKI, KRISTINA M. KALAN, and
ELIZABETH M. ROESEL, *Administrative Patent Judges*.

KALAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

Tianma Microelectronics Co. Ltd. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–4 of U.S. Patent No. 7,385,665 B2 (Ex. 1001, “the ’665 patent”). Japan Display Inc. (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 6, “Prelim. Resp.”). Pursuant to Board authorization, Petitioner filed a Reply (Paper 7, “Reply”) and Patent Owner filed a Sur-Reply (Paper 9, “Sur-Reply”).

We do not institute *inter partes* review unless the information presented in the Petition shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). For the reasons discussed below, after considering the parties’ submissions and the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the ’665 patent. Thus, we institute *inter partes* review.

A. Related Proceedings

The parties identify the following litigation involving the ’665 patent: *Japan Display Inc. f/k/a Hitachi Electronic Devices (USA), Inc. v. Tianma Microelectronics Co. Ltd.*, No. 2-20-cv-00285 (E.D. Tex.), consolidated with No. 2-20-cv-00283 (E.D. Tex.) (the “District Court litigation”). Pet. 81; Paper 5, 3.

B. Real Parties-In-Interest

Petitioner identifies itself as the real party-in-interest. Pet. 81. Patent Owner identifies itself as the real party-in-interest. Paper 5, 3.

C. The '665 Patent

The '665 patent is titled “Display Device,” and is directed to a device that “includes an effective display section, a flexible board which supplies a driving signal to the effective display section, a connection part at which the display panel and the flexible board are connected, and a plurality of connection wiring lines which connect the connection part and the effective display section.” Ex. 1001, codes (54), (57). The '665 patent relates more particularly to “an active-matrix display device” that “enables reduction in size of a picture-frame-shaped region and prevents defective connection of a flexible board.” *Id.* at 1:15–16, 1:65–67. The display device includes an effective display section that is connected to a driving signal source through a connection part that uses a combination of structural elements, including connection pads and dummy pads, to prevent defective connections. *Id.* at 2:1–19. Figure 4 of the '665 patent is reproduced below.

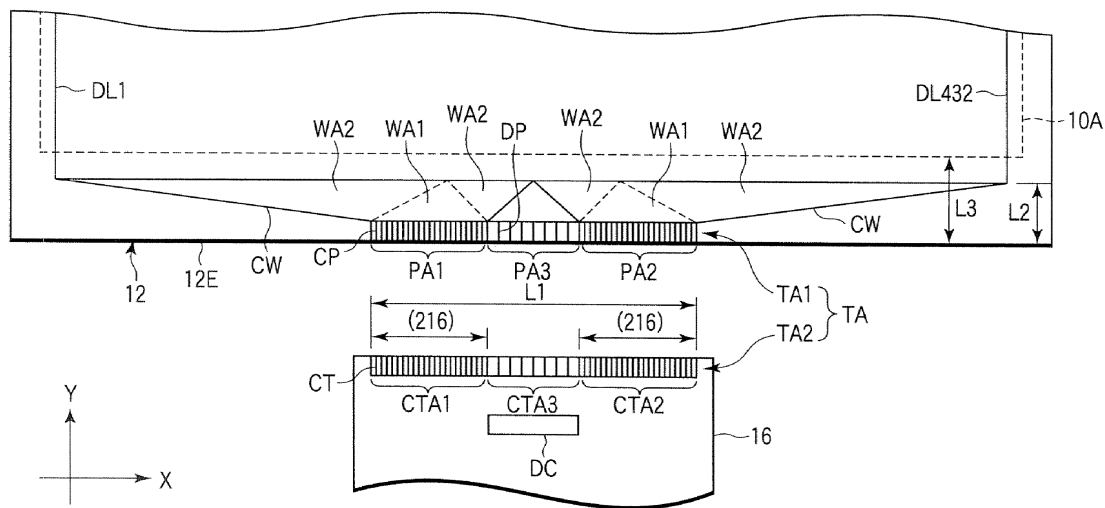


FIG. 4

Figure 4 of the '665 patent depicts an example of the structure of the connection part between array substrate 12 and flexible board 16 of the

liquid crystal display panel. *Id.* at 2:58–60, 4:27–33. On array substrate 12, a “plurality of dummy pads DP, which are not connected to the connection wiring lines CW, are disposed on the region” between first connection pad group PA1 and second connection pad group PA2 to form dummy pad group PA3. *Id.* at 5:11–22. On flexible board 16, a plurality of dummy terminals are “interposed between the first connection terminal group CTA1 and second connection terminal group CTA2” to form dummy terminal group CTA3. *Id.* at 5:23–31, 5:40–48.

D. Illustrative Claim

Claim 1 is the sole independent claim of the challenged claims, and is reproduced below:

- [1a] A display device comprising:
- [1b] a display panel which includes an effective display section on which an image is displayed;
- [1c] a driving signal source which supplies a driving signal to the effective display section;
- [1d] a connection part at which the display panel and the driving signal source are connected; and
- [1e] a plurality of connection wiring lines which connect the connection part and the effective display section,
- [1f.1] the connection part comprising:
 - a first connection section including at least two connection pad groups which are composed of connection pads that are connected to the effective display section via the connection wiring lines, and a dummy pad group which is disposed between the at least two connection pad groups and is composed of dummy pads; and
 - [1f.2] a second connection section including connection terminal groups which are composed of connection terminals corresponding to the connection pads, and a dummy terminal group which is composed of dummy terminals corresponding to the dummy pads.

Ex. 1001, 7:20–8:12 (bracketing with annotations added).

E. The Asserted Grounds of Unpatentability

Petitioner contends that claims 1–4 of the ’665 patent are unpatentable on the following grounds. Pet. 19–80.

Ground	References	Basis ¹	Claim(s) Challenged
1	Monzen, ² Hasegawa ³	§ 103	1, 2, 4
2	Monzen, Hasegawa, Maeda ⁴	§ 103	3

In support of its unpatentability arguments, Petitioner relies on the declaration of Dr. E. Fred Schubert. Ex. 1002. Patent Owner relies on the declaration of Thomas L. Credelle. Ex. 2003.

II. ANALYSIS

A. Discretion Under 35 U.S.C. § 314(a) Due to Parallel Proceedings

Institution of *inter partes* review is discretionary. *See* 35 U.S.C. § 314(a) (authorizing institution of *inter partes* review under particular circumstances, but not requiring institution under any circumstances); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1356 (2018) (“[Section] 314(a) invests the Director with discretion on the question

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102, 103. Because the ’665 patent has an effective filing date prior to the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of § 103.

² US Pub. No. 2004/0036833 A1, published Feb. 26, 2004 (Ex. 1005).

³ JP Laid Open Patent Pub. No. 2002-215059, published July 31, 2002 (Ex. 1006).

⁴ JP Laid Open Patent Pub. No. 2002-357807, published Dec. 13, 2002 (Ex. 1007).

whether to institute review”); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.”).

The Board’s precedential decision in *Apple Inc. v. Fintiv Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”), identifies a non-exclusive list of factors parties may consider addressing, where there is a related, parallel district court action, to determine whether such action provides any basis for discretionary denial. *Fintiv* at 5–16. Those factors include:

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

Id. at 5–6. “These factors relate to whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.” *Id.* at 6. In evaluating these factors, we take “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* (citing Patent Trial and Appeal Board Consolidated Trial Practice Guide 58 (November 2019), *available at* <https://www.uspto.gov/TrialPracticeGuideConsolidated>).

1. *Whether a Stay Exists or Is Likely to Be Granted if a Proceeding Is Instituted*

Petitioner states that “a stay has been neither requested nor granted,” and this factor does not weigh for or against discretionary denial. Pet. 10.

Patent Owner argues that “any motion to stay related to this Petition would be considered premature until after an institution decision is made” in this proceeding. Prelim. Resp. 10. Patent Owner further contends that, “since neither party has requested a stay, this factor does not weigh in favor or against denial.” *Id.* at 11.

Petitioner does not appear to address *Fintiv* factor 1 in its Reply, but Patent Owner counters that “Petitioner appears to have abandoned its argument that factor 1 . . . ‘is, at best, neutral’ given that its motion to transfer was denied.” Sur-Reply 1.

There is no evidence in the record that a stay has been requested in the District Court litigation. We decline to speculate on how the court in the related proceeding would rule on a stay, if one were requested. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 12 (PTAB May 13, 2020) (informative) (explaining that factor 1 generally “does not weigh for or against discretionary denial” when neither party has requested a stay). Accordingly, this factor is neutral.

2. *Proximity of the Court’s Trial Date to the Board’s Projected Statutory Deadline*

Petitioner asserts that “the current docket control order (Ex. 1017) in the related district court litigation sets trial in February 2022,” but given Petitioner’s motion to transfer in that case, “that trial date is speculative.” Pet. 11.

Patent Owner contends that “with more than eleven months between trial and the Board’s final written decision, this factor weighs even more heavily towards a discretionary denial of institution” than in *Fintiv*. Prelim. Resp. 12. Patent Owner also notes that the Petitioner’s motion to transfer has been denied. *Id.*

Petitioner argues that the district court fully expects further narrowing of the issues in advance of trial, such that “it is entirely possible that the ’665 patent (or additional claims) will be withdrawn from the district court.” Reply 1 (citing Exs. 1021, 1022). Petitioner also cites cases in support of its argument that “the trial date is not determinative” and that Petitioner’s cited pre-2021 cases “do not involve a *Sotera*-type stipulation like here.” *Id.* at 2.

Patent Owner responds that Petitioner ignores the eleven full months between the district court trial date and the Board’s final written decision, and inappropriately relies on *Samsung Electronics Co., Ltd., v. Acorn Semi, LLC*, IPR2020-01183, Paper 17 at 38–39, 47 (PTAB Feb. 10, 2021). Sur-Reply 1. Patent Owner points out that, unlike in *Samsung*, (1) recent cases establish that *Sotera*-type stipulations are not always dispositive of institution; (2) *Fintiv* factor 6 is not strong in this case; and (3) here, there is an “extensive prior art products invalidity defense.” *Id.* at 1–2. Patent Owner also dismisses as “inappropriate speculation” the possibility that the ’665 patent will be withdrawn from the District Court litigation. *Id.* at 3.

For purposes of analyzing this factor, we assume trial will begin in the District Court litigation on February 28, 2022. Ex. 2012, 1 (Order from the District Court litigation indicating jury selection starts on February 28, 2022). This date falls approximately eleven months before our statutory deadline for issuing a final written decision in this case. 35 U.S.C. §§ 314,

316(a)(11); *see also* 37 C.F.R. § 42.100(c). We determine that this factor weighs in favor of exercising our discretion to deny institution. *See Fintiv* at 9 (“If the court’s trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny institution under *NHK*.”).

3. *Investment in the Parallel Proceeding by the Court and Parties*

Petitioner argues that “although there has been some investment by the parties in the related district court litigation,” based on the current docket control order, “a substantial portion of work and trial is yet to come after institution.” Pet. 12 (citing Ex. 1017). Petitioner also asserts that it was diligent in filing this petition “five months after Patent Owner served its infringement contentions” in the District Court litigation. *Id.* at 13.

Patent Owner disagrees, contending that by “the time an institution decision issues, fact and expert discovery will be complete; expert reports and dispositive motions will have been filed; and the parties will have filed their motions in limine and be preparing for trial.” Prelim. Resp. 14. Patent Owner questions Petitioner’s diligence, asserting that “Petitioner waited nine months from the filing of the complaint to file this Petition.” *Id.*

Petitioner replies that “Patent Owner refused to narrow the number of claims and issues until service of its infringement contentions” and, even then, “still asserted 135 claims from 15 patents against more than 2,400 accused products, imposing a vastly greater burden on Petitioner.” Reply 3. Petitioner maintains that “a substantial portion of work and trial is yet to come after institution.” *Id.* at 4.

Patent Owner maintains that this “petition was filed on July 2, 2021, ten months after the complaint was filed” and “four months after Petitioner

served its invalidity contentions in the district court case.” Sur-Reply 4. Patent Owner also faults Petitioner for discounting “the significant efforts and resources the parties have expended and will expend prior to the institution date of January 21, 2022,” and for failing “to provide any examples of the ‘substantial portion of work’ that will occur later,” apart from trial in February. *Id.* at 5.

We recognize that much work has been done by the parties and the court in the related District Court litigation. In the investment factor, however, *Fintiv* further addressed the matter of petition timing, noting that “notwithstanding that a defendant has one year to file a petition, it may impose unfair costs to a patent owner if the petitioner, faced with the prospect of a looming trial date, waits until the district court trial has progressed significantly before filing a petition at the Office.” *Fintiv* at 11. Patent Owner contends that “Petitioner waited nine months from the filing of the complaint to file this Petition,” and this “unexplained delay . . . also weighs in favor of the Board exercising discretion to deny institution.” Prelim. Resp. 14–15. Patent Owner filed its infringement contentions in the District Court litigation on January 6, 2021, and Petitioner filed this Petition six months later on July 2, 2021. Pet. 13–14; *see also* Ex. 1014 (infringement contentions served on January 6, 2021); Paper 3, 1 (according the Petition a filing date of July 2, 2021). Petitioner asserts that it “moved with speed and diligence in bringing the present—and six related IPRs—five months after Patent Owner served its infringement contentions,” because, even after Patent Owner filed its infringement contentions, “Patent Owner still asserted 135 claims from 15 patents against more than 2,400 accused

products, imposing a vastly greater burden on Petitioner to assess the dispute and evaluate for which patents to request IPR.” Reply 2–3.

We find that Petitioner’s diligence in filing the Petition approximately six months after receiving Patent Owner’s infringement contentions in the District Court litigation is a countervailing consideration to the amount of work done by the parties in the District Court litigation, considering that Patent Owner’s infringement contentions included 135 claims from 15 patents. *See Fintiv* at 11 (“If the evidence shows that the petitioner filed the petition expeditiously, such as promptly after becoming aware of the claims being asserted, this fact has weighed against exercising the authority to deny institution under *NHK*.”); *see also Samsung*, IPR2020-01183, Paper 17 at 40 (“[W]e also find, as a countervailing consideration, that Petitioner acted diligently in filing this and the other IPRs” less than four months after Patent Owner identified “the full set of claims being asserted in the District Court.”). For these reasons, we determine that this factor is neutral.

4. *Overlap between Issues Raised in the Petition and in the Parallel Proceeding*

Petitioner “stipulates that, if this IPR is instituted, it will not pursue in the related district court litigation any ground that it raised or reasonably could have raised in this Petition.” Pet. 15.

Patent Owner provides a table comparing the references asserted in the Petition with the references asserted in the invalidity expert report on the ’665 patent in the District Court litigation and argues that “all of the Petition’s grounds are also at issue in the district court litigation.” Prelim. Resp. 16–17.

Petitioner replies: “If the Board institutes, pursuant to Petitioner’s broad *Sotera*-type stipulation, Petitioner will withdraw, from the district court, all grounds it raised, or reasonably could have raised, in the present IPR.” Reply 5.

Patent Owner responds that the *Sotera*-type stipulation “will not serve to simplify the district court case,” because “only two of the fifteen patents” asserted there would be impacted by the stipulation. Sur-Reply 5–6.

Petitioner’s stipulation is similar to that provided in *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (PTAB Dec. 1, 2020) (precedential), which was found to mitigate concerns of duplicative efforts and possibly conflicting decisions between the Board and the district court, thus ensuring that the *inter partes* review is a “true alternative” to the district court proceeding. We also note that Patent Owner recently narrowed the claims of the ’665 patent that it is asserting in the District Court litigation to include only claims 1 and 3. Ex. 1020, 1; Ex. 1025, 1; *see also* Ex. 2010, 2–3 (ordering Patent Owner to narrow the number of patents and claims asserted in the District Action). Because the District Court litigation will not address all of the claims challenged in this proceeding, and Petitioner agrees to be bound by a stipulation substantively similar to that in *Sotera*, we find that this factor weighs strongly against exercising discretion to deny institution.

5. *Whether the Petitioner and the Defendant in the Parallel Proceeding Are the Same Party*

Petitioner does not address *Fintiv* factor 5 in the Petition. *See generally* Pet. Patent Owner argues that this factor favors discretionary denial because “Petitioner is the Defendant in the district court action and

the Patent Owner is the Plaintiff in the district court litigation.” Prelim. Resp. 18.

The same parties involved in the present proceeding are also involved in the District Court litigation and, thus, this factor weighs in favor of exercising our discretion to deny institution under § 314(a). *Fintiv* at 13–14.

6. Other Circumstances that Impact the Board’s Exercise of Discretion, Including the Merits

Petitioner contends that “the merits of this Petition are strong,” further favoring institution. Pet. 16; *see also* Reply 6 (“[F]actor 6 strongly favors institution because the merits of the present IPR are strong.”)

Patent Owner contends that “the merits of this Petition are not strong.” Prelim. Resp. 18; *see also* Sur-Reply 6–7 (“Patent Owner stands on the analysis provided in its preliminary response showing the merits of this Petition are weak.”). Patent Owner further contends that its Preliminary Response makes a lack-of-priority argument that weakens Petitioner’s case on the merits. Prelim. Resp. 18. Petitioner responds that Patent Owner’s lack-of-priority argument applies only to IPR2021-01029, “which is not relevant to this case.” Reply 6.

As the Board explained in *Fintiv*, we consider this factor as “part of a balanced assessment of all the relevant circumstances in the case.” *Fintiv* at 14. The goal of that assessment is to determine “whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* at 6. The assessment requires consideration of the “strengths or weaknesses regarding the merits,” but this “is not to suggest that a full merits analysis is necessary to evaluate this factor.” *Id.* at 15–16.

We discuss the merits of this case below, finding Petitioner’s evidence and arguments persuasive on this preliminary record and sufficient to meet our standard for instituting *inter partes* review.

In addition, we note that we have instituted *inter partes* review in related cases IPR2021-01028 and IPR2021-01058. We finds this weighs against exercising our discretion to deny institution. *See Apple Inc. v. Seven Networks, LLC*, IPR2020-00235, Paper 10 at 17 (PTAB July 28, 2020) (taking “into account the fact that the Office already has instituted proceedings challenging other patents in dispute in the co-pending parallel litigation” and acknowledging “that it would be inefficient to discretionarily deny institution of this Petition, which we find meets the statutory threshold for institution, after having instituted petitions challenging other patents in dispute in the parallel proceeding”).

Overall, on this record, we determine *Fintiv* factor 6 weighs against exercising our discretion to deny institution.

7. *Evaluating the Fintiv Factors*

We have considered the circumstances and facts before us in view of the *Fintiv* factors. Because our analysis is fact-driven, no single factor is determinative of whether we exercise our discretion to deny institution under § 314(a). We take “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review” when evaluating these factors. *Fintiv* at 6. Having evaluated all of the factors on this record, we determine that the circumstances presented here do not support exercising our discretion under § 314(a) to deny institution of *inter partes* review.

B. Claim Construction

We apply the claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). 37 C.F.R. § 42.100(b) (2021). Under *Phillips*, claim terms are afforded “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner proposed a construction for the term “connection part” in the District Court litigation, and Patent Owner asserted in the same litigation that no construction of that term is necessary. Pet. 9. Petitioner states that “the Board need not address the construction in this proceeding.” *Id.* at 10. Patent Owner does not appear to address claim construction directly. *See generally* Prelim. Resp. On this record, we determine that no claim terms require express construction.

C. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art “would have had at least a four-year undergraduate degree in electrical engineering or physics or a closely related field and four years of experience in the design and implementation of flat panel display devices or components thereof,” and that additional education “could substitute for professional experience and significant work experience could substitute for formal education.” Pet. 8–9 (citing Ex. 1002 ¶ 53). Patent Owner does not propose a definition of one of ordinary skill in the art. *See generally* Prelim. Resp.

In light of the record before us, we adopt Petitioner’s proposal regarding the level of one of ordinary skill in the art. The level of ordinary skill in the art is also reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

D. Asserted Obviousness Based on Monzen and Hasegawa (Ground 1)

Petitioner argues that claims 1, 2, and 4 would have been obvious over Monzen and Hasegawa. Pet. 19–68.

1. Monzen

Monzen is a patent application publication titled “Flexible Substrate, LCD Module Using Same, and Manufacturing Method of Same.” Ex. 1005, code (54). Monzen features a flexible substrate with a plurality of terminal blocks, each with a plurality of electrode terminals, arranged such that it is “possible to connect the electrode terminals of the flexible substrate with electrode terminals of an LCD without misalignment,” i.e., “to match positions of the terminals of the flexible substrate with positions of the terminals of the LCD, so as to inhibit imperfect connection due to the misalignment caused after the thermal compression bonding.” *Id.* at code (57). Monzen’s Figure 1 is reproduced below.

FIG. 1

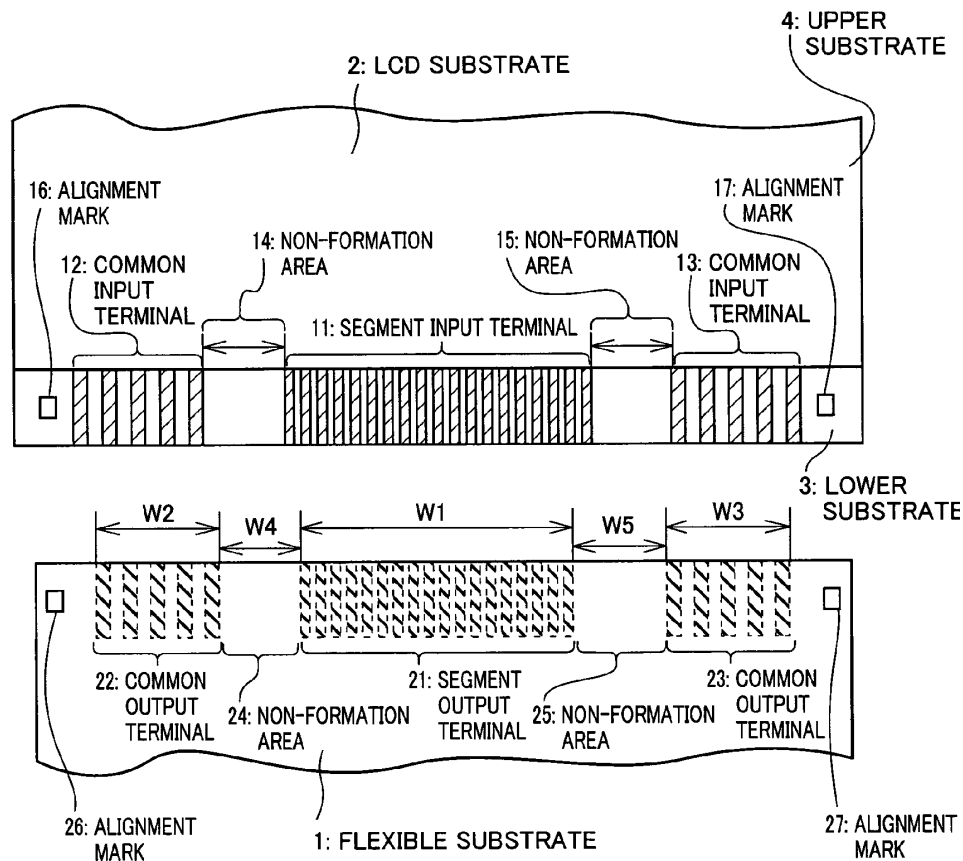


Figure 1 of Monzen is “a plan view illustrating connecting portions of the flexible substrate and of an LCD substrate of one embodiment of the present invention. With the connecting portions, the flexible substrate and the LCD substrate are to be connected.” *Id.* ¶ 20. Monzen’s Figure 2 is reproduced below.

FIG. 2

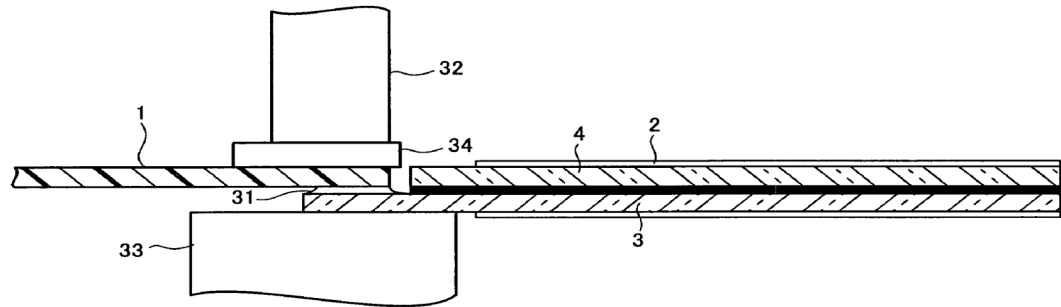


Figure 2 of Monzen is a side view illustrating how flexible substrate 1 and LCD substrate 2 are connected by thermal compression bonding. *Id.* ¶¶ 21, 30.

Monzen proposes to solve the problem of defective connections between its input and output terminals in a number of ways, such as providing a “plurality of dummy terminals 54 and 55 in non-formation areas 24 and 25, respectively,” of the flexible substrate and forming these dummy terminals with “the same terminal pitch as the SEGMENT output terminals 21,” “the same terminal pitch as the COMMON terminals 22 and 23,” or “an arbitrary terminal pitch.” *Id.* ¶¶ 40, 41, Fig. 4 (showing dummy terminals 54 and 55 on flexible substrate 51).

2. Hasegawa

Hasegawa is a Japanese published patent application titled “Electro-Optical Device.” Ex. 1006, code (54). Hasegawa relates to improving the structure of the electro-optical device’s terminals electrically connected to a flexible wiring board formed on a substrate, resulting in no “offsets occurring in the pressure bonding of the substrate and the flexible wiring board.” *Id.* at code (57). Hasegawa achieves this by using terminals 91 and dummy terminals 93 on substrate 20, “corresponding to a positioning

structure for electrodes 82 and dummy electrodes 81 on flexible wiring board 8.” *Id.* Hasegawa’s Figure 6 is reproduced below:

Fig. 6

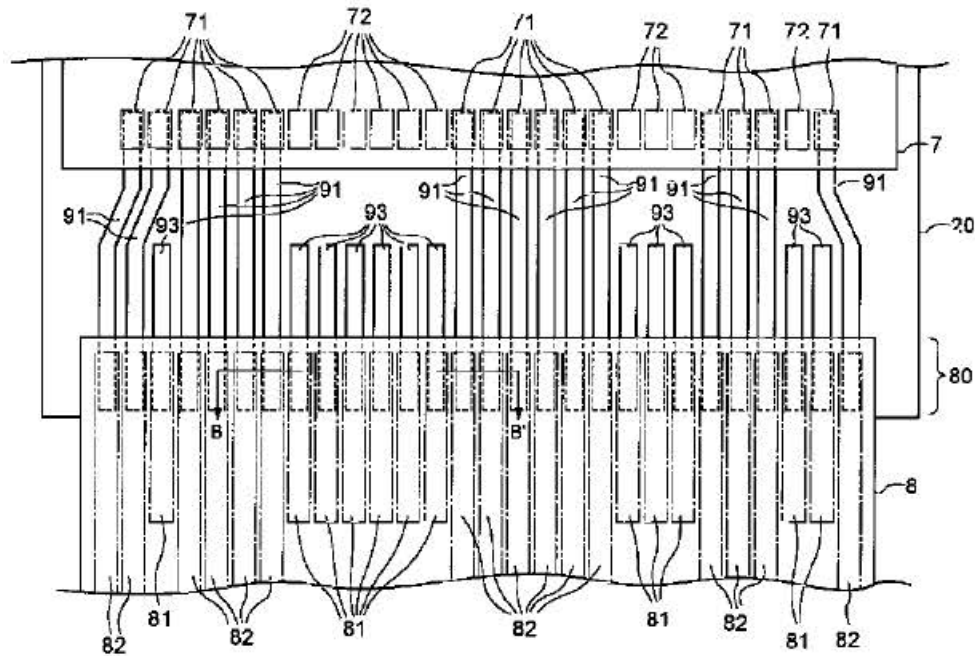


Figure 6 of Hasegawa shows a “partial plan view of a liquid crystal device pertaining to the embodiment, explaining the connecting structure close to flexible wiring substrate connecting region 80.” *Id.* at 20.

3. Petitioner’s Arguments

Petitioner argues that, in view of Hasegawa, one of ordinary skill in the art “would have been motivated and would have found it obvious to add dummy pads on *Monzen*’s LCD substrate, in a one-to-one relationship to the dummy terminals on the FCB [flexible circuit board], such that sagging of the FCB during thermal press-bonding can be alleviated.” Pet. 35.

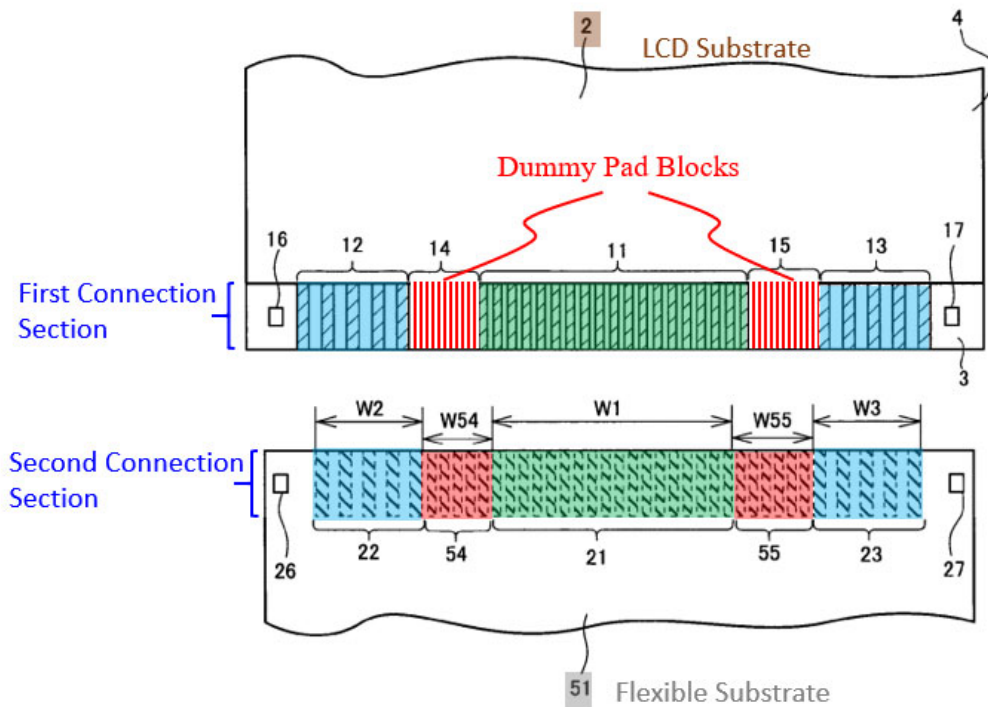
First, Petitioner argues that *Monzen* and Hasegawa are directed to solving the same problem, namely, the “heat” and “pressure” issues associated with thermal-press bonding, and are in the same field of

endeavor. *Id.* at 35–36, 38. More particularly, Petitioner argues that one of ordinary skill in the art “would be motivated to eliminate both the ‘heat’ and ‘pressure’ issues in thermal press-bonding, by combining the teachings of *Monzen* and *Hasegawa*.” *Id.* at 40–41 (citing Ex. 1002 ¶ 84).

Second, Petitioner argues that the combination of *Monzen* and *Hasegawa* would yield a predictable result, and that “the modified electrical terminal structure is simply a combination of known features from the same prior-art structures.” *Id.* at 41–42. Petitioner states that the proposed combination “would not increase the cost or complicate the process of making the LCD devices.” *Id.* at 46. Finally, Petitioner argues that the proposed modification to *Monzen* does not require changing the location of *Monzen*’s driver integrated circuit (“IC”), but nevertheless, “changing the location of the driver IC from the LCD substrate (like *Hasegawa*) to the FCB (like *Monzen*), or vice versa, was routine, conventional, and common in the art.” *Id.* at 48 (citing Ex. 1002 ¶ 89).

Petitioner asserts that *Monzen* discloses every element of claim 1 apart from elements [1f.1] and [1f.2], which Petitioner asserts are found in the combination of *Monzen* and *Hasegawa*. *Id.* at 60–65. Petitioner relies on an annotated version of Figure 4 of *Monzen*, reproduced below, to illustrate its contentions:

FIG. 4



Annotated Figure 4 of Monzen applies Petitioner’s annotations to a “plan view illustrating connecting portions of the flexible substrate and of an LCD substrate of another embodiment of the present invention.” Ex. 1005 ¶ 23; Pet. 63. Petitioner’s annotations to Monzen’s Figure 4 illustrate Petitioner’s proposed modified connection part between a first connection section and a second connection section. Pet. 60–65. Petitioner states that its proposed “first connection section includes a dummy pad block disposed between the COMMON input terminals 12 and SEGMENT input terminals 11, and another dummy pad block disposed between the SEGMENT input terminals 11 and COMMON input terminals 13.” *Id.* at 61. Petitioner also states that its proposed “second connection section includes dummy terminals 54 disposed between the COMMON output terminals 22 and

SEGMENT output terminals 21, and dummy terminals 55 disposed between the SEGMENT output terminals 21 and COMMON output terminals 23.”

Id. at 63–64.

Regarding claim 2, which recites that “a pitch of arrangement of the dummy pads is equal to, or greater than, a pitch of arrangement of the connection pads,” Petitioner argues that Monzen in view of Hasegawa renders these limitations obvious, because the dummy pads’ pitch in the proposed combination may be equal to the pitch of the COMMON input terminals 12 and 13. *Id.* at 66–67; Ex. 1001, 8:13–15.

Regarding claim 4, which recites that “the display panel includes a pair of mutually opposed substrates, and a liquid crystal composition which is held between the pair of substrates,” Petitioner argues that Monzen discloses this structure with its opposed substrates 3 and 4 sandwiching a liquid crystal. Pet. 67–68; Ex. 1001, 8:23–26.

4. Patent Owner’s Arguments

Patent Owner argues that the combination of Monzen and Hasegawa does not render claim 1 obvious, because Hasegawa “fails to disclose the claimed dummy pad group and dummy pads (among other elements) and, therefore, cannot cure the deficiencies in Monzen.” Prelim. Resp. 19–20. According to Patent Owner, Petitioner “mistakenly identifies terminals 91” of Hasegawa “as the claimed ‘connection pads’ and dummy terminals 93 as the claimed ‘dummy pads.’” *Id.* at 21. Patent Owner also argues that Petitioner’s identification of the claimed “connection wiring lines” “further confirms that the analysis in the Petition is incorrect.” *Id.* at 22. Furthermore, Patent Owner argues, “Hasegawa’s failure to disclose a ‘connection pad’ is also fatal to the issue of whether other elements—whose

configurations are related to the claimed ‘connection pads’—are disclosed.” *Id.* at 25. In sum, Patent Owner faults as hindsight bias Petitioner’s analysis that “essentially seeks to extract the ‘dummy terminal’ element from Hasegawa and places it in a desired location in Monzen without regard to the context or teaching of either reference.” *Id.*

5. *Analysis*

Petitioner appears to adequately demonstrate on this record that Monzen and Hasegawa disclose each of the limitations of the challenged claims. Pet. 49–68. Patent Owner’s arguments that Hasegawa fails to disclose certain elements, for example, connection wiring lines or connection pads (Prelim. Resp. 22, 25) overlook that Petitioner appears to rely on Monzen to supply those elements. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (nonobviousness cannot be shown by attacking references individually where the rejections are based on combinations of references).

Petitioner appears to rely primarily on Monzen to meet the limitations of the challenged claims (Pet. 49–68), and argues that, “in view of *Hasegawa*,” it would have been “obvious to add dummy pads on *Monzen*’s LCD substrate, in a one-to-one relationship to the dummy terminals on the FCB.” Pet. 35–49, 60–68. Regarding limitation [1e], Petitioner appears to rely primarily on Monzen to disclose “a plurality of connection wiring lines which connect the connection part and the effective display section.” Pet. 58–60 (“*Monzen* teaches this limitation.”). Patent Owner, in alleging that Hasegawa does not provide the “connection wiring lines” element, points to Petitioner’s general summary of the prior art. Prelim. Resp. 22 (citing Pet. 29–30 (discussing Hasegawa generally, including its Figs. 2

and 3)). In its general summary of Hasegawa, Petitioner reviews the Hasegawa reference (Pet. 26–34) before beginning the Petition’s discussion of motivation to combine (*id.* at 35–49) and before identifying where each limitation of the challenged claim is taught or suggested in Monzen and/or Hasegawa (*id.* at 49–68). As noted above, Petitioner relies primarily on Monzen, not Hasegawa, to meet limitation [1e] and its “connection wiring lines” and, thus, Patent Owner’s allegation that the “connection wiring lines” shown in Hasegawa’s Figure 3 are insufficient to meet limitation [1e] does not directly address Petitioner’s argument.

Regarding limitation [1f.1], Petitioner relies on Monzen and Hasegawa to teach “a first connection section including at least two connection pad groups which are composed of connection pads that are connected to the effective display section via the connection wiring lines,” and “a dummy pad group which is disposed between the at least two connection pad groups and is composed of dummy pads.” Pet. 60–61 (“*Monzen* in view of *Hasegawa* teaches this limitation.”). Patent Owner, in asserting that “Petitioner mistakenly identifies [Hasegawa’s] terminals 91 as the claimed ‘connection pads’” (Prelim. Resp. 21), and that “terminals 91 do not meet the limitation for the claimed ‘connection pads’” (*id.*), cites to the “motivation to combine” section of the Petition, in which Petitioner provides overviews of both Monzen and Hasegawa in discussing its rationale for the combination of the references. Prelim. Resp. 21 (citing Pet. 44–45 (discussing Hasegawa Fig. 6 in the context of motivation to combine, such that the resulting combination has “corresponding dummy terminals and dummy pads disposed on the FCB and LCD panel respectively”)). In its motivation to combine section, Petitioner discusses Hasegawa in this

motivation to combine context (*see, e.g.*, Pet. 41–49) before turning to its identification of where Petitioner believes each limitation of the challenged claim is taught or suggested by the references (*see, e.g., id.* at 49–68).

There, it appears that Petitioner relies on Monzen, not Hasegawa, to meet the “connection pads” limitation. *Id.* at 60–61 (relying on annotated Monzen Fig. 4 to show “at least three connection pad groups”); *id.* at 58–60 (relying on annotated Monzen Figs. 6(a) and 6(b) to show the connection wiring lines connecting the connection part to the effective display section). Thus, Patent Owner’s allegation that the “connection pads” shown in Hasegawa’s Figure 6 are insufficient to meet limitation [1f.1] does not directly address Petitioner’s argument. Regarding Patent Owner’s “connection” argument that Hasegawa’s “terminals 91 are connected to drive IC 7, not the effective display section” (Prelim. Resp. 21), this suffers from the same flaw articulated above. Pet. 58–60 (relying on annotated Monzen Figs. 6(a) and 6(b) to show the connection wiring lines connecting the connection part to the effective display section).

On this record, and based on Petitioner’s identification of the limitations in the Monzen-Hasegawa combination and its rationale for the combination, we find Petitioner’s analysis using the “dummy terminal” of Hasegawa in the desired location in Monzen sufficient. Pet. 35–49, 60–68. On this record, Petitioner does not appear to have overlooked “the context or teaching of either reference” (Prelim. Resp. 25), and provides sufficient reasoning and explanation for why one of ordinary skill in the art would

have been motivated to combine Monzen and Hasegawa with a reasonable expectation of success.

Having reviewed Petitioner's arguments with respect to claims 1, 2, and 4 based on obviousness over Monzen and Hasegawa, and Patent Owner's counterarguments, we are persuaded at this point in the proceeding that Petitioner has demonstrated a reasonable likelihood of prevailing on its obviousness contentions as to these claims.

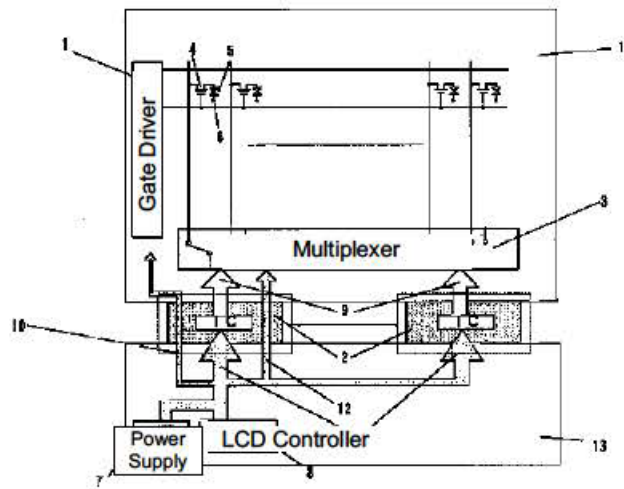
E. Asserted Obviousness Based on Monzen, Hasegawa, and Maeda (Ground 2)

Petitioner argues that claim 3 would have been obvious over Monzen, Hasegawa, and Maeda. Pet. 68–80.

1. Maeda

Maeda is a Japanese published patent application titled “Liquid Crystal Display Device.” Ex. 1007, code (54). Maeda states that “liquid crystal display devices have been developed in which, to reduce the number of these source drivers, circuits called multiplexers are formed on the same glass substrate as the pixel.” *Id.* ¶ 4. A multiplexer is “a circuit in which multiple signal electrodes are provided for a single source driver output so that, by switching with a switch, multiple pixels can be driven by a single source driver output.” *Id.* Figure 1 of Maeda is reproduced below:

Fig. 1



Maeda’s Figure 1 shows a liquid crystal display device with multiplexer 3, in which a “liquid crystal panel and a printed circuit board 13 constituted by a power supply portion 7 or LCD controller 8 are connected via multiple source drivers 2 using a TAB mounting.” *Id.* ¶ 9.

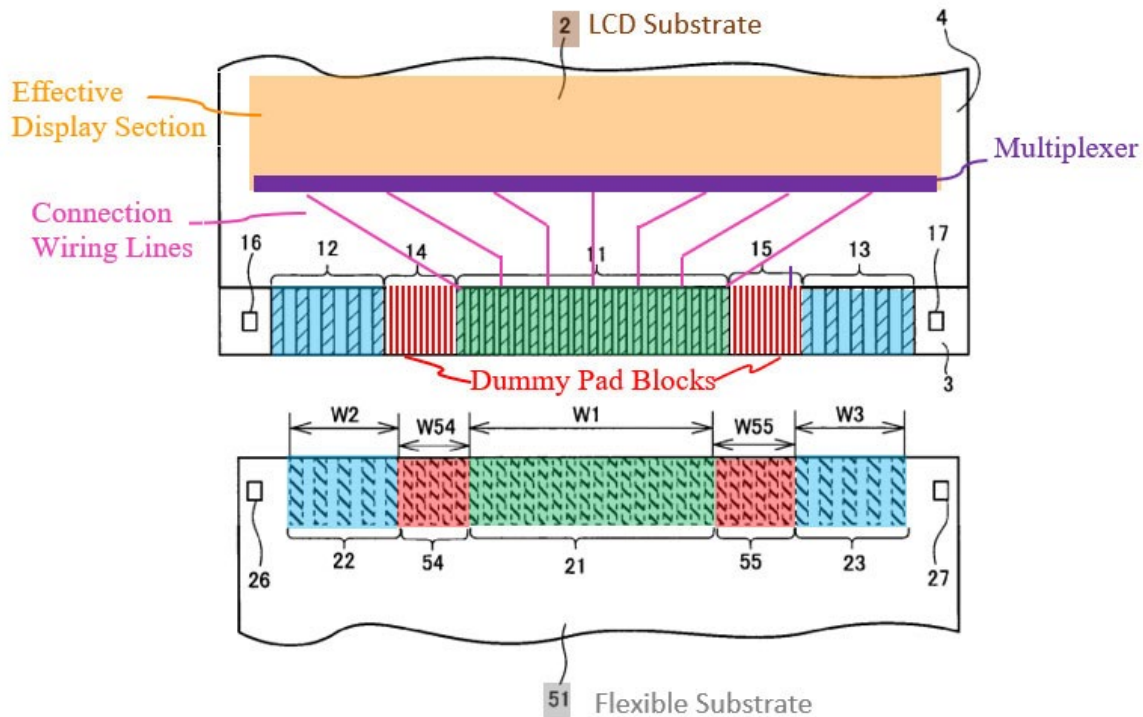
2. *Petitioner's Arguments*

Petitioner argues that one of ordinary skill would have found it obvious to apply Maeda’s teachings to the combination of Monzen and Hasegawa, because Maeda is directed to solving a wiring problem in LCD devices that use the tape automated bonding (“TAB”) mounting in Monzen and Hasegawa. Pet. 72. Petitioner argues that one of ordinary skill in the art “would realize at least three advantages associated with using the multiplexer disclosed by *Maeda*”: (1) using the multiplexer can reduce the number of needed driver ICs; (2) using the multiplexer allows a driver IC to drive multiple pixels; and (3) the driver ICs operate at a high speed, whereas the pixels in the effective display sections are driven by slow electrodes, so it is desirable to place a multiplexer between the two to reconcile their

different processing speeds. *Id.* at 72–73 (citing Ex. 1002 ¶ 129). The combination would have had a “predictable result,” argues Petitioner, and one of ordinary skill in the art “would have a reasonable expectation for such combination to succeed.” *Id.* at 73–75 (citing Ex. 1002 ¶¶ 130, 135). Petitioner argues that there would be no “extra structural or fabrication burden,” because applying Maeda to the Monzen-Hasegawa combination (1) “does not require any extra flexible substrate, and thus would not ‘increas[e] labor hours and cost’”; and (2) “does not cause crossing of signal lines.” *Id.* at 75–76.

Regarding the limitations of claim 3, Petitioner argues that Maeda’s multiplexer could be added to the Monzen-Hasegawa combination, between the effective display section and the connection wiring lines. *Id.* at 77–80 (relying on annotated Fig. 4 of Monzen and annotated Fig. 2 of Maeda). Annotated Figure 4 of Monzen is reproduced below:

FIG. 4



Annotated Figure 4 of Monzen shows the proposed **multiplexer** between the **effective display section** and the flexible substrate, with the **connection wiring lines** provided on the **lower glass substrate** to connect the **SEGMENT connection terminals 11** and the **multiplexer**. Pet. 73–74. Petitioner further argues that Maeda teaches polysilicon switching elements. *Id.* at 79–80.

3. Patent Owner's Arguments

Patent Owner argues that “Monzen and Maeda do not address the same problems” and, thus, one of ordinary skill in the art would not be motivated to combine Monzen and Maeda. Prelim. Resp. 27. Patent Owner further argues that in a passive matrix LCD such as in Monzen, “there is no need for a multiplexer and no polycrystalline silicon TFTs to implement such a multiplexer.” *Id.* Patent Owner also argues that, of Petitioner’s three

identified advantages associated with using the multiplexer in Maeda, the first two deal with reduction in size and “Petitioner has improperly imported his understanding of the problems addressed in the ’665 patent to support his conclusion that a POSITA would combine Maeda and Monzen.” *Id.* at 28–29. Patent Owner also asserts that “Petitioner’s proposed modification of Monzen to include Maeda’s multiplexer is not supported by the teachings in Maeda.” *Id.* at 29.

4. *Analysis*

As noted above, Patent Owner’s arguments against Maeda individually, rather than in combination with the other prior art, are ordinarily not sufficient to rebut a showing of obviousness. *See In re Keller*, 642 F.2d at 426; *In re Merck*, 800 F.2d at 1097. After considering both parties’ arguments, we find that Petitioner’s reasons for the combination of Maeda with Monzen and Hasegawa are sufficient to support institution. Petitioner provides a plausible explanation for why one of ordinary skill in the art would have been motivated to combine the references with a reasonable expectation of success (Pet. 72–76), supported by expert testimony (Ex. 1002 ¶¶ 128–135). Although Patent Owner argues that “Maeda provides no motivation to combine the multiplexer” (Prelim. Resp. 28), the motivation need not come from Maeda directly, and even if it did, Petitioner points to Maeda’s teaching that using the multiplexer can beneficially reduce the number of needed driver ICs and allow a driver IC to drive multiple pixels (Pet. 72–73 (citing Ex. 1005 ¶ 4)) and that Maeda’s solution decreases labor hours and cost for the mounting step (Pet. 69 (citing Ex. 1005 ¶ 5)).

We do, however, appreciate Patent Owner's concerns about the differences between passive matrix LCDs and active matrix LCDs and whether there would have been a need for a multiplexer in the Monzen-Hasegawa combination. Prelim. Resp. 27 ("there is no need for a multiplexor and no polycrystalline silicon TFTs to implement such a multiplexor" in the passive matrix LCD of Monzen-Hasegawa). The Petition provides reasoning for using the multiplexer of Maeda in the Monzen-Hasegawa combination, but it does not address Patent Owner's concerns about the necessity or feasibility of the combination. Pet. 68–80.

Having reviewed Petitioner's arguments with respect to claim 3 based on asserted obviousness over Monzen, Hasegawa, and Maeda, and Patent Owner's counterarguments, we are persuaded that Petitioner has sufficiently demonstrated a reasonable likelihood of prevailing on its obviousness contentions as to this claim on this ground. As directed by *SAS, supra*, we institute *inter partes* review on all grounds raised in a petition, and, thus, Petitioner's obviousness ground based on Monzen, Hasegawa, and Maeda will be part of the trial.

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim of the '665 patent. Thus, we institute *inter partes* review on all challenged claims and on all grounds presented.

At this preliminary stage of the proceeding, we have not made a final determination as to the patentability of any challenged claim or any factual or legal issue underlying the patentability inquiry. Any final determination will be based on the record developed during trial. We place Patent Owner

on express notice that any argument not asserted in a timely-filed Response to the Petition, or in another manner permitted during trial, shall be deemed waived, even if that argument was presented in the Preliminary Response.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review is instituted on all grounds presented in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which shall commence on the entry date of this decision.

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