Trials@uspto.gov
571-272-7822

Paper 27
Entered: December 27, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG DISPLAY CO., LTD., FUNAI ELECTRIC CO., LTD., and TOSHIBA CORP.,
Petitioner,

v.

GOLD CHARM LTD.,
Patent Owner.

Case IPR2015-01416
Patent 5,850,275

Before KARL D. EASTHOM, MICHAEL R. ZECHER, and BRYAN F. MOORE, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318 and 37 C.F.R. § 42.73

I. INTRODUCTION

Petitioner, Samsung Display Co., Ltd., Funai Electric Co., Ltd., and Toshiba Corp. (collectively, "Petitioner"), filed a Petition requesting an *inter partes* review of claims 1, 2, and 4–10 of U.S. Patent No. 5,850,275 (Ex. 1001, "the '275 patent"). Paper 1 ("Pet."). In response, Patent Owner, Gold Charm Ltd., filed a Preliminary Response. Paper 8 ("Prelim. Resp."). On December 28, 2015, we instituted an *inter partes* review of all of the challenged claims on the following grounds alleged in the Petition:

Claims	Basis	Reference(s)
1, 2, 4–6, and 9	§ 103	Fujii
7 and 8	§ 103	Fujii and Nakamura
10	§ 103	Fujii and Tsutsui

Paper 12, 33 ("Institution Decision" or "Dec. on Inst."). Patent Owner filed a Patent Owner Response. Paper 16 ("PO Resp."). Petitioner filed a Reply. Paper 19 ("Pet. Reply"). The parties filed additional authorized briefing sought by Patent Owner to address a real party in interest issue. *See* Papers 9–11. Patent Owner filed a Motion to Exclude certain reply evidence—namely, U.S. Patent No. 5,870,163 (Ex. 1012, "the '163 patent"). Paper 22. Petitioner filed an Opposition to Patent Owner's Motion to Exclude. Paper 24 ("Mot. to Exclude"). The record includes a transcript of the Oral Hearing that occurred on September 27, 2016. Paper 26 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision issues pursuant to 35 U.S.C. § 318(a). Petitioner has shown by a preponderance of the evidence that claims 1, 2, and 4–10 of the '275 patent are unpatentable.

A. Related Matters

The '275 patent is involved in the following lawsuits: (1) *MiiCs & Partners, America, Inc., v. Toshiba Corp.*, No. 1:14-cv-00803-RGA (D. Del.); (2) *MiiCs & Partners, America, Inc., v. Funai Electric Co.*, No. 1:14-cv-00804-RGA (D. Del.); and (3) *MiiCs & Partners, America, Inc., v. Mitsubishi Electric Corp.*, No. 1:14-cv-00805-RGA (D. Del.) (dismissed on July 7, 2015). Pet. 1; Paper 5, 2–3. Petitioner also filed additional petitions challenging certain subsets of claims in other patents owned by Patent Owner.

B. The '275 Patent

The '275 patent relates to a method of improving image quality of an active matrix liquid crystal display (LCD) device. Ex. 1001, 1:5–8. The '275 patent also discloses other features of LCD panels, such as the properties of liquid crystal, active-matrix thin-film transistors (TFTs), backlighting assemblies, and the use of light shield layers. *Id*. at 1:10–2:35. The '275 patent characterizes the inventive concept as "light shield areas arranged between terminal groups and outgoing line groups." *Id*. at 2:44–46.

Figure 1, reproduced below, is a plan view of an LCD device of the '275 patent.

FIG. 1

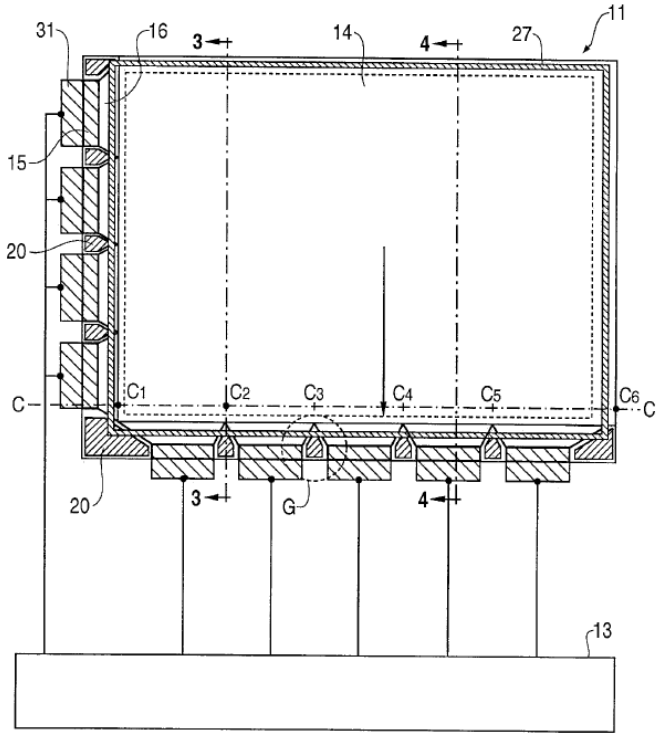

Figure 1 above shows light shield areas 20, terminal groups 15, and outgoing line groups 16. In a prior art LCD panel of a type similar to that represented in Figure 1, but that lacks light shield areas 20, light rays emanating from the backlight (and mainly intended to be transmitted through the display portion of the LCD) would be blocked by terminal groups 15 and outgoing line groups 16, while other light rays would pass through the exposed areas between the terminal and outgoing line groups causing undesirable uneven luminance across the frame edge portion. Ex. 1001, 1:67–2:14. By applying light shields to the exposed areas between terminal and outgoing line groups, the amount of light leakage through the exposed areas is more closely matched to the amount of light leakage

through the terminal areas, thus reducing or eliminating the problem of uneven luminance. *Id*. at 2:38–52.

The Specification states that "any materials can be used for the light shield areas 20 of the present invention, only if the materials do not transmit light." *Id*. at 4:22–24. In particular, "opaque wiring materials such as molybdenum and aluminum as well as chrome are useful." *Id*. at 4:26–28. Moreover, the Specification states "it is more favorable that each light shield area 20 is as large as possible." *Id.* at 4:28–29.

The '275 patent describes two embodiments. In a first embodiment, a light shield area covering an exposed area may be solid across each exposed area, as shown in Figure 2, reproduced below.

FIG. 2

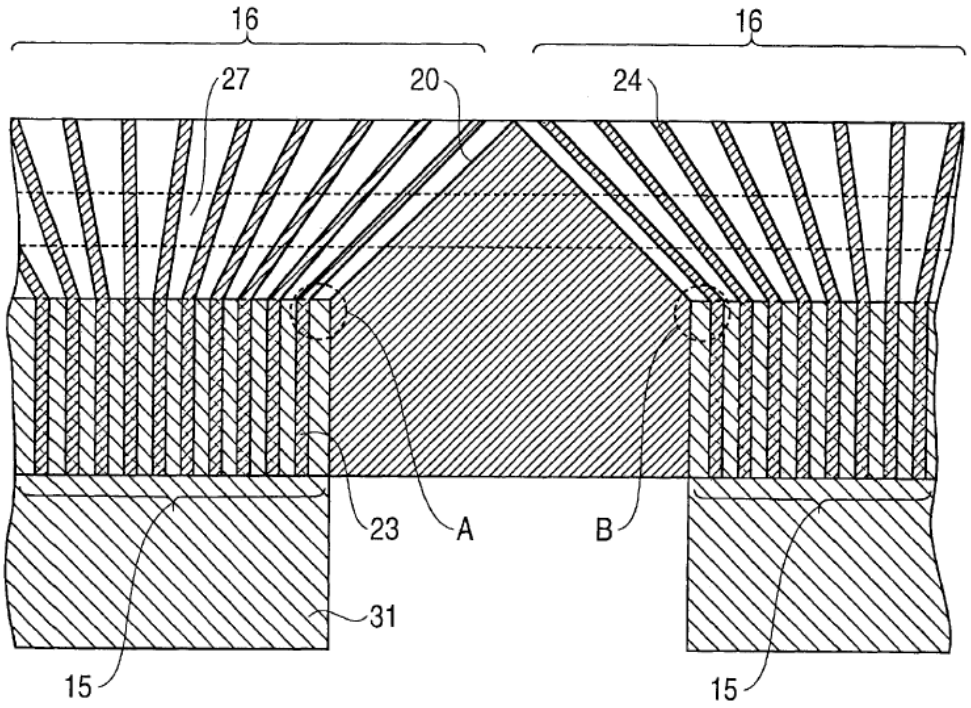

Figure 2 above shows an exemplary embodiment of the ’275 patent in which light shield area 20 is a solid mass. *See id*. at 2:59, 3:28. In a second embodiment, a light shield area covering an exposed area may be in strips across each exposed area, as shown in Figure 6, reproduced below.

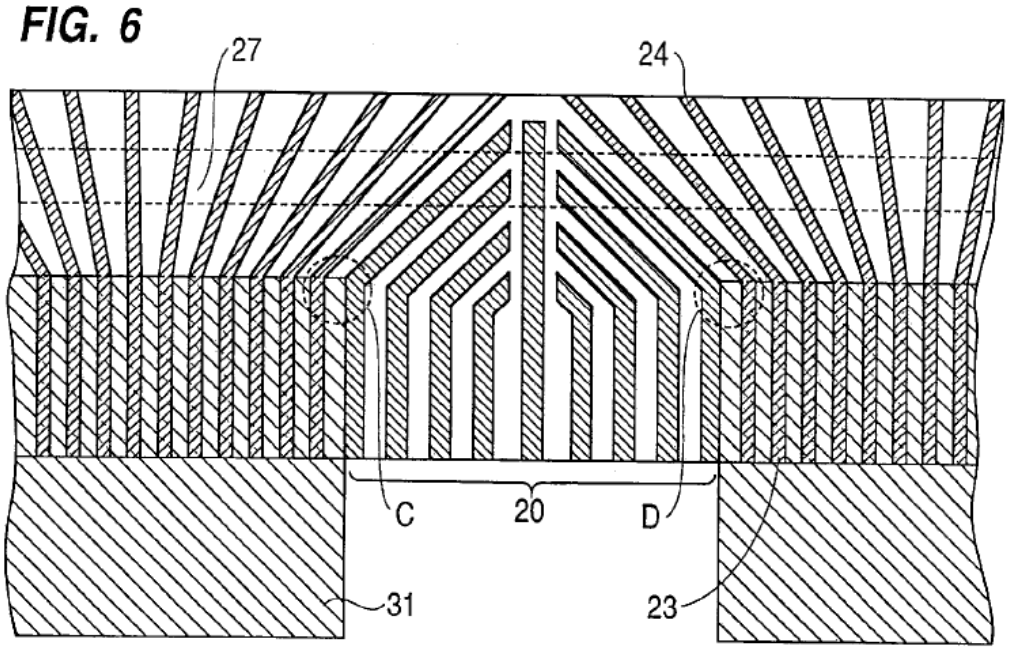

Figure 6 above shows an exemplary embodiment of the ’275 patent in which light shield area 20 is made of strips. *See id*. at 3:1–2, 4:36–40

C. Illustrative Claim

Of the challenged claims, claims 1, 5, and 10 are independent claims. Claims 2 and 4 depend ultimately from claim 1, and claims 6–9 depend ultimately from claim 5.

Claim 1, reproduced below, is illustrative.

1. A liquid crystal display, comprising:

> a plurality of transparent pixel electrodes,
>
> a first substrate having a plurality of terminal groups electrically connected to said transparent pixel electrodes via outgoing line groups,
>
> a second substrate having opposing electrodes opposite to said transparent pixel electrodes, and
>
> a liquid crystal sealed between said first and second substrates, and a light shield material provided on regions adjacent to but not touching said terminal groups and said outgoing line groups so as to form light shield areas.

Ex. 1001, 5:2–14.

D. Evidence of Record

Petitioner relies upon the following prior art references:

Fujii	US 5,757,450	May 26, 1998	(Ex. 1003)
Nakamura	US 5,467,417	Nov. 14, 1995	(Ex. 1005)
Tsutsui	JP H5-127181	May. 25, 1993	(Ex. 1006[1])

Petitioner also relies on the Declaration of Dr. Anne Chiang (Ex. 1008, "Chiang Declaration"). Patent Owner relies on the Declaration of Dr. Michael P.C. Watts. (Ex. 2023, "Watts Declaration").

[1] Exhibit 1007 is a certified English translation of Tsutsui.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 778 F.3d 1271, 1281–82 (Fed. Cir. 2015); *aff'd sub nom. Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard in an *inter partes* review proceeding). Under the broadest reasonable interpretation standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art, in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner does not offer a construction of the term "light shield area" besides indicating that this term should be accorded its plain and ordinary meaning. Pet. 9 (citing Ex. 1008 ¶ 31). In its Preliminary Response, Patent Owner asserts that "the broadest reasonable interpretation in light of the specification for the term 'light shield area' should be 'an area containing light shield material sufficient to adequately block light transmission through the area between the spaced-apart terminal groups and outgoing line groups.'" Prelim. Resp. 27. We determined, on the preliminary record, that "light shield area" should take its plain and ordinary meaning i.e. an "area that shields light." Dec. on Inst. 19.

In its Patent Owner Response, Patent Owner asserts that the broadest

reasonable interpretation in light of the Specification for the term "light shield area" should be "an area between the spaced-apart terminal groups and outgoing line groups containing light shield material sufficient to observably reduce light transmission in the area between the spaced-apart terminal groups and outgoing line groups." PO Resp. 18. Patent Owner further asserts "that the term 'light shield area' was [not] commonly known or used in the art at the time of the invention, and [thus the] plain and ordinary meaning" should not apply. *Id.* at 18–19.

In support of its argument that the term "light shield area" has no commonly understood meaning to one of ordinary skill in the art, Patent Owner quoted testimony from Petitioner's Declarant, Dr. Chiang, that she has not seen this term specifically construed. *Id.* at 19 (citing Ex. 2020, 109:22–110:1). For convenience, the relevant testimony from Dr. Chiang includes the following: "I've not found it specifically construed, but that's - - that's why it - - I think of it as common term." Ex. 2020, 109:25–110:1. "[S]imply because a phrase as a whole lacks a common meaning does not compel a court to abandon its quest for a common meaning and disregard the established meanings of the individual words." *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1372 (Fed. Cir. 2003) (citing *Tex. Dig. Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1206 (Fed. Cir. 2002) (construing "repeatedly substantially simultaneously activating"); *Hockerson–Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 955, (Fed.Cir.2000) (construing "central longitudinal groove"); *K–2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1363(Fed.Cir.1999) (construing "permanently

affixed")). Because the terms light, shield, and area each have common meanings, we are not persuaded by this argument.

Patent Owner also argues that the construction of the term "light shield area" in the Institution Decision is inconsistent with the Specification. PO Resp. 18–19. Patent Owner states that the problem presented by the '275 patent is uneven brightness in the display portion. *Id.* at 20 (citing Ex. 1001, 1:58–2:14, Fig. 12). Patent Owner further asserts that the solution presented by the '275 patent is "blocking the light leakage penetrating obliquely from the display portion vicinity." *Id.* (citing Ex. 1001, 2:39–53, 3:66–4:10).[2] Specifically, Patent Owner argues that "any light leakage from areas between the terminal groups 15 is inhibited and unevenness of brightness on the display portion 14 is reduced so as to obtain a favorable display condition." *Id.* (citing Ex. 1001, 4:16–20). Thus, according to Patent Owner, the light shield area must have an observable effect on the quantity of light leakage in order to improve the quality of the display to the user. *Id.* Ultimately, Patent Owner asserts that "[our] construction of 'light shield area' cannot be reasonable in light of the Specification if such a construction encompasses embodiments that fail even remotely to provide the solution achieved by the invention of the '275 Patent." *Id.* at 22. Nevertheless, "[t]he characterization of a feature as 'an object' or 'another object,' or even as a 'principal object,' will not always rise to the level of

[2] This language as used by Patent Owner here is the same as that in the "thereby" clause in claim 10.

disclaimer." *Pacing Techs., LLC v. Garmin Int'l, Inc.*, 778 F.3d 1021, 1025 (Fed.Cir.2015).

In essence, Patent Owner's construction of the term "light shield area" as requiring an observable effect on the quantity of light leakage in order to improve the quality of the display to the user imports a term of degree into claims that recite this feature. "When a 'word of degree' is used [in a claim], . . . the patent [must provide] 'some standard for measuring that degree.'" *Enzo Biochem v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010) (citing *Seattle Box Co., Inc. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984)). "The claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). "When a claim term 'depend[s] solely on the unrestrained, subjective opinion of a particular individual purportedly practicing the invention,' without sufficient guidance in the specification to provide objective direction to one of skill in the art, the term is indefinite." *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1260 (Fed. Cir. 2014) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005)).

The phrases "observable" and "quality to the user" are highly subjective and, on their face, provide little guidance to one of skill in the art. These phrases are not recited explicitly in the claims themselves. Patent Owner has not directed us to any disclosure in the written description, nor can we find such a disclosure, relevant to determining a standard for

measuring the necessary degree of observability or quality.[3] Consequently, we decline to adopt Patent Owner's construction of the term "light shield area" because it would inject unnecessary ambiguity into the claims that recite this feature. Instead, we maintain our initial determination that "light shield area" should be accorded its plain and ordinary meaning (i.e. area that shields light), which, in our view, is a broad, yet reasonable construction in light of the Specification and claims of the '275 patent.

B. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of four underlying factual determinations: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art;

---

[3] During the Oral Hearing, Patent Owner discussed the possibility of using an optical meter or using the light leakage levels shown in the graph in Figure 12 of the '275 patent. Tr. 77:13–81:18. Patent Owner asserts "[F]igures 5 and 7 show what happens when you implement the invention. And [F]igure 12 is kind of your starting point, when you have absolutely nothing in between the terminal groups." *Id.* at 81:11–14. However, to the extent Patent Owner relies on Figure 12 for this particular argument, Patent Owner does not explain adequately in the Patent Owner Response how Figure 12 can be used to determine the degree of observability or quality. *See* PO Resp. 6–7, 20–21.

(3) the level of ordinary skill in the art; and (4) when in the record, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). An obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418.

The level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978). We analyzed the asserted grounds of patentability with these principles in mind.

C. Obviousness Over Fujii

Petitioner asserts that claims 1, 2, 4–6, and 9 are unpatentable under 35 U.S.C. § 103 as obvious over Fujii and Shibata. Pet. 18. For reasons detailed in the Institution Decision, we instituted this ground solely based on obviousness over Fujii. Dec. on Inst. 21–27. To support its contentions, Petitioner provides detailed explanations as to how Fujii purportedly meets each claim limitation. Pet. 18–31. Petitioner also relies upon the Declaration of Dr. Chiang to support its positions. Ex. 1008.

Fujii relates to liquid crystal displays, and in particular the terminals at the frame edge portion of an LCD panel. Ex. 1003, Abstract.

1. Claims 1, 2, and 4

As to claim 1, Petitioner contends that Fujii describes a plurality of transparent pixel electrodes. Pet. 21; Ex. 1003, 1:22–29. Petitioner also contends that Fujii describes a first substrate having a plurality of terminal groups electrically connected to said transparent pixel electrodes via outgoing line groups and a second substrate having opposing electrodes opposite to said transparent pixel electrodes and a liquid crystal sealed between said first and second substrates. Pet. 21–23; Ex. 1003, 1:22–33, 1:44–51, 6:32–37, 14:63–15:5, Figs. 1, 7B, 17. Petitioner also contends that Fujii describes a light shield material provided on regions adjacent to, but not touching, said terminal groups and said outgoing line groups so as to form light shield areas. Pet. 18–21, 23; Ex. 1003, 11:20–43, 17:64–66.

a. light shield area

Petitioner relies on Fujii's metal auxiliary electrodes 56 to meet the limitation in claim 1 directed to a light shield area, and to meet the limitation in claim 5 directed to an opaque material. Pet. 23, 27. Patent Owner asserts that, according to Fujii, the purpose of metal auxiliary electrodes 56 is to maintain a consistent gap between the top and bottom substrates. PO Resp. 25. Patent Owner maintains that "Fujii expressly states that the metal auxiliary electrodes 56 of a certain width cause problems because they block light" and, thus, "Fujii therefore provides its metal auxiliary electrode 56 at a maximum width (˜20 μm) that is **intentionally designed to avoid blacking light**." *Id.* Patent Owner argues that "[w]ith this amount of coverage in the areas between the terminal and outgoing line groups, there would be no observable reduction in luminance." *Id.*

Patent Owner relies on *Allergan* for the proposition that Fujii's criticism of blocking light means that it cannot be relied on as prior art in this case. PO Resp. 26 (citing *Allergan, Inc. v. Sandoz Inc.* 796 F.3d 1293, 1305-06 (Fed. Cir. 2015)). Patent Owner asserts that, "[i]n *Allergan*, the court found that the prior art criticized the claimed formulation [BAK] because the reference taught one of ordinary skill in the art to minimize the amount of a particular claimed element in order to avoid certain problems. PO Resp. 26 (citing *Allergan*, 796 F.3d at 1305–06.). However, Patent Owner does not explain that, in *Allergan*, "the prior art taught that BAK should be minimized in ophthalmic formulations to avoid safety problems." *Allergan*, 796 F.3d at 1305. In *Allergan*, "the prior art [also] taught that BAK would not increase the permeability of bimatoprost, but might instead decrease it." *Id. at 1306.* Thus, in *Allergan,* the prior art taught that the formulation at issue caused safety problems and caused the opposite effect than the one desired by the patent at issue. Here, in contrast, Fujii teaches that the metal auxiliary terminals will cause the exact effect desired (or intended result) in the '275 patent, even though that same effect, i.e. blocking light, is disfavored by the Fujii inventors. In fact, Fujii suggests that the light blockage above the maximum width would block light and "darken[] the screen." Ex. 1003, 16:11–32. This disclosure is Fujii is supported by the testimony of Dr. Chiang. Ex. 1008 ¶ 52 (testifying that chromium wiring materials disclosed in Fujii may be used as opaque light shield areas used to darken a screen).

Also relevant to Patent Owner's argument presented here is its' assertion in its claims construction argument that light shield areas must have an observable effect or "there would be no point in providing the light shield areas." PO Resp. 20. Were we to accept that logic, then we would also apply the same logic here that there would be no point in reducing darkening in Fujii unless the darkening described was an observable effect.

"A finding that two inventions were designed to resolve different problems . . . is insufficient to demonstrate that one invention teaches away from another." *Nat'l Steel Car, Ltd. v. Canadian Pac. Ry., Ltd.*, 357 F.3d 1319, 1339 (Fed. Cir. 2004). While Fujii suggests limiting the width of the metal auxiliary electrodes to avoid darkening of the screen and maintaining a consistent gap between the top and bottom substrates, it also teaches one of ordinary skill that widening of the metal auxiliary electrodes shields light to the screen. *See, e.g.*, Ex. 1003, 16:29–33 (disclosing that "[w]hen the width of the metal auxiliary electrode 56 is increased to further reduce the wiring resistance, the display opening factor of the liquid crystal device is reduced darkening the screen").

Finally, in our claim construction section above, we construed "light shield area" to have its plain and ordinary meaning of an area that shields light. *See supra* Section II.A. In our view, Fujii's disclosure of metal auxiliary electrodes 56 that are described explicitly as being capable of blocking at least some light between the terminals 41-n and linear wirings 42-n would, nonetheless, meet the limitation directed to a "light shield area" as required by claim 1.

b. active matrix

Patent Owner also argues that

> [c]laim 1 of the [']275 patent is directed to an active matrix LCD, as evidenced by the separate recitation of "a plurality of transparent pixel electrodes" *that are located on the first substrate*. (Ex. 1001 at cl. 1). As previously explained, there are no discrete pixel electrodes in a simple matrix LCD, but rather there are a series of linearly extending, strip-shaped, transparent electrodes located on *both* substrates that form 'effective display regions' or 'pixel' areas where they overlap as viewed normal
> to the display surface.

PO Resp. 27. We agree with Patent Owner in this regard.

Petitioner, however, argues that because claim 1 recites opposing electrodes (plural), as opposed to claims 5 that recite a counter electrode (singular), claim 1 is directed to passive matrix displays. Pet. Reply 12. Additionally, Petitioner argues that claim 1 does not refer to TFTs (associated with an active matrix display) in contrast to claims 5 and 10, which do refer to TFTs. *Id.* at 12–13. Petitioner cites to testimony by both party's Declarants indicating that a single electrode refers to a passive matrix, whereas multiple electrodes indicates an active matrix. Pet. Reply. 13. According to Petitioner, this difference in claim language indicates a difference in claim scope. On one hand, Petitioner does not cite to evidence from the Specification to support this theory. On the other hand, Patent Owner's Declarant cites to the fact that "[s]pecification only discusses a thin-film transistor device" and that claim 1 uses the phrase "transparent pixel electrodes," which is associated with active matrix devices. Ex. 1011,

27:15–28:11. Neither Petitioner nor Patent owner provides evidence that the Specification disclaims passive matrix devices as to claims 1, 5, and 10. Further, Petitioner's claim differentiation argument ignores the fact that each of the claims at issue use the transitional phase "comprising," which allows for additional electrodes. We also note that Petitioner's arguments appear to concede that claims 5 and 10 are directed to active matrix devices. *See generally* Pet. Reply 12–16.

The '275 patent states that "[t]he present invention relates to . . . an active matrix liquid crystal display." Ex. 1001, 1:6–8. When a patentee "describes the features of the 'present invention' as a whole," he alerts the reader that "this description limits the scope of the invention." *Regents of Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013). "[U]se of the phrase 'the present invention' does not 'automatically' limit the meaning of claim terms in all circumstances, and that such language must be read in the context of the entire specification and prosecution history." *Netcraft Corp. v. eBay, Inc.*, 549 F.3d 1394, 1398 (Fed. Cir. 2008). Here, the Specification does not refer to or describe structures associated specifically with passive matrix devices. *See generally* Ex. 1001; *see also* Ex. 1011, 27:23–28:4 (Dr. Watts testifies that the '275 patent describes thin film transistors, thus suggesting an active matrix device.). Given the Specification's focus on active matrix devices, we determine that all the challenged claims are limited to such devices.

Patent Owner asserts that Fujii's description of its applicability to such active matrix displays is "woefully insufficient in terms of suggesting,

to one of ordinary skill in the art, how to adapt [Fujii's] passive-matrix teachings to an active matrix display." PO Resp. 28. In making that argument, Patent Owner raises a number of points in an attempt to show the relative complexity of active matrix displays versus passive displays. *Id.* at 27–35. Petitioner counters that, with one exception, the complexities that Patent Owner points to are irrelevant to the disclosures of Fujii. Pet. Reply 18. We agree with Petitioner that the majority of the differences between active and passive matrix displays relied on by Patent Owner are relevant to the display area, rather than the periphery of the display where the light shield areas are implemented according to the '275 patent. *Id*. at 18–21.

The one exception noted by Petitioner in its Reply is Patent Owner's reliance on a response to a question posed to Petitioner's Declarant, Dr. Chiang, during cross-examination. For convenience, the question and Dr. Chiang's answer is listed as follow: Question. "If there were no ITO electrode, there would be no need for an auxiliary metal electrode to increase its conductivity?" Answer. "You got it." PO Resp. 35 (citing Ex. 2020 at 83:8–17.) We accept that Fujii's metal auxiliary electrodes 56 are not necessary for decreasing resistance. However, "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference" (*In re Keller*, 642 F.2d 413, 425 (CCPA 1981), but rather whether "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention," *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). Regardless whether or not one would need an

auxiliary metal electrode to increase its conductivity, Fujii teaches that using such an electrode can darken the screen. Ex. 1003, 16:29–33.

We find that Fujii explicitly states that "the invention [of Fujii] can also be applied to an active matrix liquid crystal display," and further states that the electrodes could be replaced by "scanning signal . . . or video signal lines." Ex. 1003, 1:7–12, 12:54–67. As mentioned previously, Fujii states that the auxiliary electrodes may cause a darkening of the panel. *Id.* at 16:29–33. This is the same effect that the inventors of the '275 patent were trying to achieve. Ex. 1001, 2:39–43. "[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR*, 550 U.S. at 417. A person of ordinary skill is a person of ordinary creativity, not an automaton. *Id.* at 421. Thus, because Fujii explicitly contemplates that its teachings may be applied to an active matrix liquid crystal display, and Fujii shares a common objective with the inventors of the '275 patent—namely, resolving uneven brightness or darkening of a panel—Fujii provides sufficient teachings such that one of ordinary skill in would implement the claimed light shield areas in an active matrix crystal display. Pet. 19; Pet. Reply 9.

Patent Owner does not address separately Petitioner's contentions and supporting evidence with respect to claims 2 and 4, which depend from claim 1. We have reviewed Petitioner's proposed ground of obviousness by Fujii against claims 1, 2, and 4, and we agree with and adopt Petitioner's

analysis. Based on the record developed during trial, Petitioner has shown by a preponderance of the evidence that claims 1, 2, and 4 would have been obvious over Fujii.

2. Claims 5, 6, and 9

As to claim 5, Petitioner contends that Fujii describes a first substrate provided with a plurality of TFTs and a plurality of pixel electrodes connected to said TFTs, said first substrate having a plurality of terminal groups electrically connected to said TFTs via outgoing line groups, said terminal groups being spaced apart from each other along a side portion of said first substrate so as to provide an exposed area therebetween; a second substrate with a counter electrode opposing to said first substrate; and a liquid crystal layer sandwiched between said first substrate and said second substrate. Pet. 25–29; Ex. 1003, 1:22–33, 1:44–51, 6:32–37, 12:58–61, 14:63–15:5, Figs. 1, 7B, 17. Petitioner also contends that Fujii describes an opaque material formed on said exposed area without touching said terminal groups and said outgoing line groups. Pet. 18–21, 27–28; Ex. 1003, 10:38–41, 10:52–53, 16:48–52, 18:2–5, Fig. 17.

We note that the limitation in claim 5 regarding "opaque material" has no requirement as to an amount of light shielding it much achieve. Petitioner asserts—and we agree—that Fujii's metal auxiliary electrodes 56 are composed of aluminum and chromium, both of which are opaque and shield light. Pet. 18. Ex. 1003, 16:48–56, 18:2–5; Ex. 1008 ¶47.

Thus, for the reasons discussed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Fujii meets the limitations of "opaque material," as recited in claim 5.

Patent Owner does not address separately Petitioner's contentions and supporting evidence with respect to claims 6 and 9, which depend from claim 5. We have reviewed Petitioner's proposed ground of obviousness by Fujii against claims 5, 6 and 9, and we agree with and adopt Petitioner's analysis. Based on the record developed during trial, Petitioner has shown by a preponderance of the evidence that claims 5, 6, and 9 would have been obvious over Fujii.

D. Obviousness of Claims Over Fujii and Nakamura

Petitioner asserts that claim 7 and 8 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Fujii and Nakamura. Pet. 31. To support its contentions, Petitioner provides detailed explanations as to how the combination of Fujii and Nakamura purportedly meets each claim limitation. *Id.* at 31–35. Petitioner also relies upon a Declaration of Dr. Chiang to support its positions. Ex. 1008.

Nakamura teaches the use of reflector plate 2 to reflect light from light tube 1 into lightguide plate 3. Ex. 1005, 3:26–29. Light emitted from light tube 1 is reflected off of reflector plate 2 and into the side of lightguide plate 3, which, in turn, redirects the light towards liquid crystal element 7. Ex. 1005, 4:44–56, Fig. 2.

Claim 7 recites a back light provided behind said first substrate; and claim 8 recites that the back light comprises a fluorescent tube, a reflector

for reflecting light from said fluorescent tube in a same direction, and a light guiding plate for radiating said light toward said liquid crystal layer through said first substrate. Ex. 1001, 6:5–11. Patent Owner does not address separately Petitioner's contentions and supporting evidence with respect to claims 7 and 8. *See generally* PO Resp. 38. We have reviewed Petitioner's proposed ground of obviousness over Fujii and Nakamura against claims 7 and 8, and we agree with and adopt Petitioner's contention that Nakamura describes such a backlight and the additional limitations of these claims. Pet. 31–35; Ex. 1005, 3:26–30, 4:44–56, Fig. 2.

As to a rationale to combine the teachings of Fujii and Nakamura, Petitioner states

> [a] POSA [person of ordinary skill in the art] implementing the invention of Fujii would be aware that light can escape from a light tube in multiple directions. (Ex. 1008, ¶73.) Such a person would have reason to consider ways to direct that light in a desired direction, in this case towards the light guide plate so that it can be directed towards the liquid crystal display. (Ex. 1008, ¶73.) A POSA would have recognized that redirecting light in the desired direction would decrease the amount of wasted light and energy consumed by backlighting. (Ex. 1008, ¶74.) A POSA would have readily looked to Nakamura for details on implementing a backlight assembly for an LCD and specifically redirecting light towards a light guide plate because it is advantageous to decrease the amount of wasted light and energy, which in turn decreases excessive heating in the device. (Ex. 1008, ¶74.) Nakamura's disclosure of the use of a reflector to reflect light into a light guide plate, combined with the LCD of Fujii, would have yielded the predictable result of providing a reflector for reflecting light in a back light assembly of an LCD. (Ex. 1008, ¶75.)

Pet. 32. We agree with and adopt Petitioner's analysis because the teachings of Nakamura would decrease the amount of wasted light and energy in the Fujii device. Patent Owner does not address this rationale to combine the teachings of Fujii and Nakamura.

Based on the record developed during trial, Petitioner has shown by a preponderance of the evidence that claims 7 and 8 would have been obvious over Fujii and Nakamura.

E. Obviousness Over Fujii and Tsutsui

Petitioner asserts that claim 10 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Fujii and Tsutsui. Pet. 35. To support its contentions, Petitioner provides detailed explanations as to how the combination of Fujii and Tsutsui purportedly meets this claim's limitations. *Id.* at 35–42. Petitioner also relies upon a Declaration of Dr. Chiang to support its positions. Ex. 1008.

Tsutsui teaches that in an LCD terminal electrodes absorb light and, therefore, "differences arise in light transmittance and transmission spectra between sections containing electrodes and those that are devoid of electrodes." Ex. 1007 ¶¶ 1, 5. To solve the problem of uneven transmission, Tsutsui discloses the use of dummy electrodes 2 to match the transmittance of original electrodes 1. *Id.* ¶ 11. Tsutsui discloses that this can be accomplished using various combinations of dummy electrode strip patterns, as shown in Figures 1 and 2. *Id.* ¶¶ 13–14. Tsutsui's dummy electrodes are made from a transparent material (ITO) in a passive matrix LCD panel. *Id.* ¶¶ 6, 7, 14. By selecting the pattern of the dummy electrode

group, the pattern of transmittance "can be matched virtually completely." *Id.* ¶ 11.

Claim 10 recites, in relevant part, "thereby decreasing a difference of a quantity of light leakage penetrating obliquely from a vicinity of a display portion into the display portion caused by a difference between said exposed area and said terminal groups." Ex. 1001, 6:35–39. The remaining limitations of claim 10 are essentially the same as those required by claims 5 and 8. *Compare id.* at 5:2–14 *with id.* at 6:17–35. The present record supports the contention that Fujii describes those limitations for the reasons stated above in Sections II.B– C. *See also* Pet. 35–42.

Given the language used, the "thereby" clause recited in claim 10 is reasonably interpreted to identify the intended result when opaque material is formed on the exposed area without touching the terminal groups and the outgoing line groups. Thus, the "thereby" clause at issue is akin to a "whereby" clause that merely states an intended result. Our reviewing court has concluded that "[a] 'whereby' clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim." *Compare Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1172 (Fed.Cir. 1993) (finding the whereby clause "merely describe[s] the result of arranging the components of the claims in the manner recited in the claims.") *with Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1329 (Fed. Cir. 2005) ("'a a whereby clause in a method claim is not given weight when it simply expresses the intended result of a process step positively recited' . . . [h]owever, when the 'whereby' clause states a

condition that is material to patentability, it cannot be ignored in order to change the substance of the invention."). Here, the light shield material limitation causes the result obtained in the whereby clause and there is no evidence that the substance of the whereby clause was a condition that was material to gaining the patentability of claim 10.

In light of this controlling case law, we find that the language in claim 10 following the "thereby clause"—namely, "decreasing a difference of a quantity of light leakage penetrating obliquely from a vicinity of a display portion"—is not entitled to patentable weight because it is a result of providing opaque material on the exposed area. Petitioner does not rely on Tsutsui for any limitation other than the "thereby clause." *Id.* at 35–42. In essence, because the "thereby clause" is not limiting, the teachings of Tsutsui are unnecessary for this ground. In any event, to the extent that the language following the "thereby clause" is limiting, we maintain our initial determination that Tsutsui teaches decreasing a difference of a quantity of light leakage penetrating obliquely from a vicinity of a display portion, as recited in claim 10. Pet. 36, 40–42 (citing Ex. 1007 ¶ 5).

As to a rationale to combine the teachings of Fujii and Tsutsui, Petitioner states

> [a] POSA would readily combine the teaching of Tsutsui with Fujii. Both Tsutsui and Fujii describe the terminal areas of LCD's and specifically the uses of dummy electrodes disposed between terminal groups to solve problems involving the uneven transmittance of light. (Ex. 1008, ¶78.) A POSA therefore would have reason to employ Tsutsui's teaching of using dummy electrodes to decrease, virtually completely, differences in light transmittance penetrating obliquely from a

> vicinity of the display portion into the display portion in the device of Fujii in order to achieve a uniformly lit display without uneven brightness caused by differences in light transmittance caused by the terminals and leadout wirings. (Ex. 1008, ¶79.)

Pet. 36. We agree with and adopt Petitioner's analysis because the teachings of Tsutsui would address Fujii's stated objective of dealing with uneven brightness. Patent Owner does not argue that Fujii and Tsutsui cannot be combined, rather Patent Owner reiterates its' argument that the combination of Fujii and Tsutsui would result in a passive matrix device with metal auxiliary electrodes that are unnecessary for active matrix devices. PO Resp. 39–41. We are not persuaded by this argument for the same reasons stated above.

We have reviewed the proposed ground of obviousness over Fujii and Tsutsui against claim 10, we agree with and adopt Petitioner's analysis. Based on the record developed during trial, Petitioner has shown by a preponderance of the evidence that claim 10 is would have been obvious over Fujii and Tsutsui.

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude the '163 patent introduced by Petitioner with its Reply as improper reply evidence and as irrelevant. Mot. to Exclude 1. Petitioner relies on the '163 patent to support Dr. Watts's purported admission that "in the embodiment of the '275 patent where light shield areas are comprised of strips of light shield material (as shown in blue

coloration in Figure 6), the strips are on the order of 10–20 microns wide." Pet. Reply 11 n.2. This issue is moot because this Final Written Decision does not cite to or rely upon the '163 patent. In addition, we do not rely on any assertion by Petitioner that light shield material in the '275 patent is on the order of 10–20 microns wide. For that reason, we do not address the matter on the merits and dismiss Patent Owner's Motion to Exclude as moot.

IV. CONCLUSION

Based on the complete record, Petitioner has demonstrated by a preponderance of the evidence that: (1) claims 1, 2, 4–6, and 9 of the '275 patent would have been obvious over Fujii; (2) claims 7 and 8 would have been obvious over Fujii and Nakamura; and (3) claim 10 would have been obvious over Fujii and Tsutsui.

V. ORDER

For the foregoing reasons, it is

ORDERED that claims 1, 2, and 4–10 of the '275 patent are held to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is DISMISSED; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

PETITIONER:

Jay Alexander
Andrea Reister
Gregory Discher
COVINGTON & BURLING LLP
jalexander@cov.com
areister@cov.com
gdischer@cov.com

Paul Meiklejohn
Clinton Conner
Adam Floyd
DORSEY & WHITNEY LLP
meiklejohn.paul@dorsey.com
conner.clint@dorsey.com
floyd.adam@dorsey.com

Marc Labgold
Steven Kelber
LAW OFFICES OF MARC R. LABGOLD, P.C.
mlabgold@labgoldlaw.com
skelber@labgoldlaw.com

PATENT OWNER:

Aaron Ettelman
John D. Simmons
Dennis J. Butler
Stephen E. Murray
PANITCH SCHWARZE BELISARIO & NADEL LLP
aettelman@panitchlaw.com
jsimmons@panitchlaw.com
dbutler@panitchlaw.com
smurray@panitchlaw.com