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Paper 7
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHIMEI INNOLUX CORPORATION
Petitioner

v.

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.[1]
Patent Owner

Case IPR2013-00068(SCM)
Patent 8,068,204 B2

Before SALLY C. MEDLEY, KARL D. EASTHOM, and KEVIN F. TURNER, *Administrative Patent Judges.*

EASTHOM, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

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[1] *See* Paper 5 at 1-2 (counsel for Semiconductor Energy Laboratory Co., Ltd., referring to a USPTO recorded assignment of application number 09/165,628, at reel 009581, frame 0943, as evidence of ownership of the `204 patent).

I. BACKGROUND

Petitioner, Chimei Innolux Corp. ("CMI"), filed a Petition[2] to institute an *inter partes* review of claims 31, 33, 36, 38, 40, 43, 45, 46, 48, 51, 53, 54, 56, 59, 61, 63, 66, 68, 70, 73, 75, 76, 78, 81, and 83 of U.S. Patent 8,068,204 B2 owned by Semiconductor Energy Laboratory Co., Ltd. ("SEL"). *See* 35 U.S.C. § 311. In response, Patent Owner, SEL, filed a Preliminary Response.[3] The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a):

> THRESHOLD – The Director may not authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

Pursuant to the defined threshold under 35 U.S.C. § 314(a), the Board institutes an *inter partes* review of claims 31, 33, 36, 38, 40, 43, 45, 46, 48, 51, 53, 54, 56, 59, 61, 63, 66, 68, 70, 73, 75, 76, 78, 81, and 83 of the `204 patent.

A. The `204Patent

The `204 patent describes LCD (liquid-crystal display) devices having two opposing substrates bonded together with a sealant material. (*See* Ex. 1001, Abstract.) According to the `204 patent, prior art LCD devices have non-uniform seals which create an uneven gap between the two opposing substrates. The uneven gap ultimately results in deteriorated LCD image quality. (*See* Ex. 1001, Fig. 14A; col. 1, ll. 34-49; col. 2, ll. 53-63.) The uneven seal and consequent gap occur because peripheral drive circuits and conducting lines extend under the sealing region in a non-uniform manner, for example, only in some locations or

[2] *Petition for Inter Partes Review of U.S. Patent No. 8,068,204 Under 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 Et Seq.* (Nov. 30, 2012).
[3] *Patent Owner Preliminary Response Under 37 C.F.R. § 42.107* (Mar. 6, 2013).

with varying width and density. (*Id*. at Fig. 14A; col. 1, ll. 46-49; col. 2, l. 25 – col. 3, l. 3.) The `204 patent discloses a solution to the seal problem which includes employing adjustment wiring lines that have the same thickness, width, and spacing as external conducting lines and auxiliary lines. The lines extend under the sealant relatively uniformly in one or more of thickness, width, and spacing in order to render the seal and consequent gap between opposing substrates more uniform. (*Id*. at col. 3, ll. 52-57; col. 4, ll. 65-67; col. 6, ll. 24-40; and Figs. 4A, 4B.)

The `204 patent also describes connecting, through contact holes in a first insulating film, two conducting lines in parallel to minimize the total resistance of the lines. (*Id*. at col. 3, ll. 57-63; col. 8, ll. 42-51.) To accommodate for such lines extending under the sealant, the `204 patent describes using overlapping adjustment layers adjacent the conducting lines under the sealant. (*Id*. at col. 3, ll. 52-63; col. 9, ll. 20-46; Figs. 4A; 4B.)

Figures 4A and 4B, which follow, illustrate the parallel connected auxiliary and connection lines, and the adjustment layers:

FIG. 4A

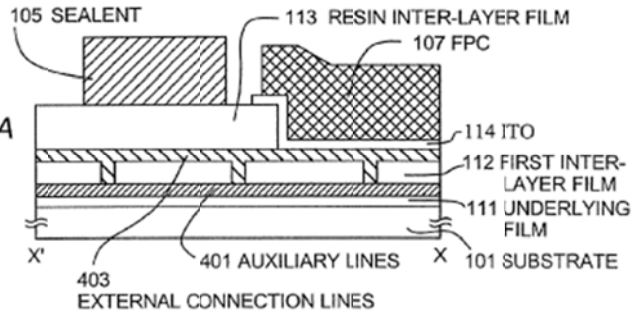


Figure 4A depicts external connection 403 and auxiliary 401 lines electrically connected together. As the figure shows, the lines extend under sealant 105. Figure 4A also depicts the flexible printed circuit 107 (FPC) electrically connected to an indium tin oxide (ITO) transparent conductive film 114 which is

connected through contact holes in insulating film layer 113 to external connection lines 403. (*Id*. at col. 8, ll. 52-60.)

Figure 4B, below, depicts first and second adjustment layers 402 and 404 employed to render the sealant height and consequent substrate-to-substrate gap more uniform as explained *supra*.

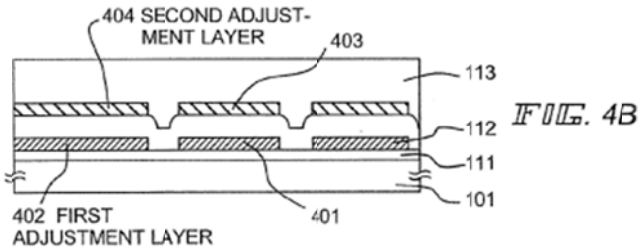
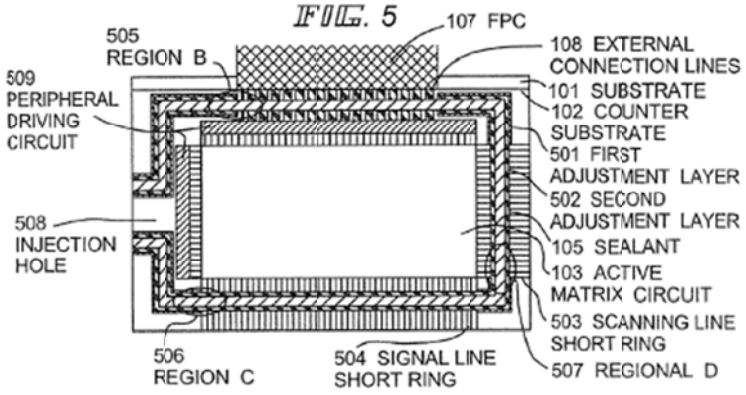


FIG. 4B

The adjustment layers 402 and 404 may be electrically isolated from the electrically connected auxiliary 401 and external connection 403 lines. (*Id*. at col. 4, ll. 45-48.)

Figure 5 represents another view which employs the same connection scheme represented in Figures 1, 4A, and 4B and depicts the FPC 107 connected to external connection lines 108 which extend under the sealant 105 and connect to the peripheral driving circuit 509 and active matrix circuit 103. (*See id*. at col. 9, ll.55-65.)

FIG. 5



B. Illustrative Claim

Claim 31 follows:

31. A liquid crystal display device comprising:

a substrate having thin film transistors;

pixel electrodes each electrically connected to one of the thin film transistors;

a counter substrate facing the substrate;

a liquid crystal material provided between the substrate and the counter substrate;

a sealant provided between the substrate and the counter substrate, and surrounding the liquid crystal material;

an auxiliary line;

an external connection line overlapping the auxiliary line with a first insulating film interposed therebetween, at least part of the external connection line and at least part of the auxiliary line extending under the sealant;

an adjustment layer, at least part of the adjustment layer extending under the sealant;

a second insulating film interposed between the sealant and the external connection line;

and a flexible printed circuit over and in electrical contact with the external connection line through a transparent conductive film;

wherein the sealant is in direct contact with the second insulating film;

wherein the external connection line is electrically connected to the auxiliary line;

and wherein the adjustment layer is electrically isolated from the auxiliary line, the external connection line, the thin film transistors and the flexible printed circuit.

C. Related Proceedings

The `204 patent and several other related CMI patents are the subject of in *inter partes* review filings before the PTAB and are also alleged by SEL to be infringed by CMI and several other co-defendants in litigation as styled as *Semiconductor Energy Laboratory Co., Ltd. v. Chimei Innolux Corp., et al.*, SACV12-0021-JST (C.D. Cal.) (filed Jan. 5, 2012) [hereinafter the CMI Case]. (*See* Pet. 1-2; Prelim. Resp. 4.)

D. The Asserted Grounds

CMI asserts the following obviousness grounds of unpatentability under 35 U.S.C. § 103:

Claims 31, 33, 36, 38, 40, 43, 45, 46, 48, 51, 53, 54, 56, 59, 61, 63, 66, 68, 70, 73, 75, 76, 78, 81, and 83 based on Shiba, U.S. 5,684,555 (Nov. 4, 1997), Watanabe, U.S. 5,504,601 (Apr. 2, 1996), and Sukegawa, U.S. 5,636,329 (June 3, 1997).

Claims 31, 33, 36, 38, 40, 43, 45, 46, 48, 51, 53, 54, 56, 59, 61, 63, 66, 68, 70, 73, 75, 76, 78, 81, and 83 based on Zhang, H9-179130 (July 11, 1997)[4] and Sukegawa.

(Pet.14-15.)

[4] CMI and SEL refer to this patent publication document as Zhang, which the Board adopts for consistency. However, the translation lists the inventor as Hiroisa Hari. (*See* Ex. 1006, 1.)

II. ANALYSIS

A. Preliminary Request

CMI requests the Board to intercede in SEL's pending patent application, 13/304,660, an application that is a progeny of the `204 patent for which CMI seeks *inter partes* review, and other related SEL applications, and further encourages the Board to "take immediate jurisdiction over all involved [SEL] applications." (Pet. 2.) "To this end, the Petitioner requests that the PTAB issue a standing order in this proceeding, once instituted. . . . [which] would require the Patent Owner to provide written notice in all pending continuation/divisional or reissue applications of the existence of a related IPR proceeding (within 30 days of institution)." (Pet. 4.) CMI also requests that the standing order "require the Patent Owner to provide a written reminder to the Examiner with each such submission as to the estoppel impact of a finally refused or cancelled claim in this proceeding." (*Id*.)

We treat the request as a motion.[5] The motion is DENIED.

As SEL points out, CMI does not show that the claims in the pending application (or other applications) are patentably indistinct from claims at issue here. (*See* Prelim. Resp. 2.) Without such a showing, CMI fails to show why the Board should intercede. The Board has considered and denied a similar request by CMI in a related proceeding. (*See* IPR2013-00038, Paper No. 7, *Decision – CMI Motion – 37 C.F.R. § 42.3(a)*.) That decision is incorporated and adopted herein by reference. Primarily, as the decision explains, the pending patent applications

[5] The Board exercises its discretion to treat the request as a motion. *See* 37 C.F.R. §§ 42.1(b) and 42.5(b). Ordinarily, a party requesting relief must seek Board authorization to file a motion. 37 C.F.R. § 42.20(b).

specifically and generally mentioned by SEL are not "involved" under 37 C.F.R. § 42.2, and as such, the Board lacks jurisdiction over those applications.

Notwithstanding CMI's characterization of SEL's conduct in unrelated proceedings which transpired over thirteen years ago, CMI has not shown that such past conduct establishes a "history of especially egregious conduct" that would warrant the standing order CMI requests. CMI has not shown persuasively that a standing order is necessary based on the facts presented. (*See* Pet. 4.)

B. Statutory Threshold Issues

1. Prosecution History of the `204 *Patent*

SEL contends that CMI's Petition for *Inter Partes* Review of the `204 patent is improper under 35 U.S.C. § 325(d) because during prosecution of the application leading to the `204 patent, the PTO examiner who allowed the `204 patent to issue previously considered two of the same prior art references under consideration here, Shiba and Sukegawa. (*See* Prelim. Resp. 38.)

That the documents were considered as prior art listed in the prosecution record of the `204 patent application is a factor which the Board "may take into account" according to 35 U.S.C. § 325(d). However, SEL does not show that the examiner of the `204 patent application considered "substantially the same . . . arguments," as CMI presents here, another factor which the Board "may take into account" according to 35 U.S.C. § 325(d).

Absent a showing of "substantially the same . . . arguments," *id*., and considering that CMI includes evidence not considered before the `204 patent examiner, including Watanabe and the declaration of Miltiadis Hatalis, Ph.D. ("Hatalis Declaration") (Ex. 1007), SEL does not show that the *inter partes* review of the `204 patent would be improper under 35 U.S.C. § 325(d).

2. Real Parties-In-Interest

SEL also contends that this review should be denied because the Petition fails to identify all of the real parties-in-interest as required by 35 U.S.C. § 312 (a)(2) and 37 C.F.R. § 42.8(b)(1). (Prelim. Resp. 3-10.) The *Trial Practice Guide* provides guidance regarding factors to consider in determining whether a party is a real party-in-interest. As SEL acknowledges, a primary consideration includes whether a non-party exercises control over a petitioner's participation in a proceeding. (*See* Prelim. Resp. 3, citing *Office Patent Trial Practice Guide*, 77 Fed. Reg. 48756, 48759 (August 14, 2012).) Other considerations may include whether a non-party, in conjunction with control, funds the proceeding and directs the proceeding. (*Trial Practice Guide* at 60.)

SEL asserts that co-defendants with CMI, "CMO USA," "Acer America," "ViewSonic," "VIZIO," and "Westinghouse", in the pending CMI Case (*see supra* § IC), represented to the district court in the CMI Case (*see* section IC *supra*) that the co-defendants all participated in filing the instant Petition in support of a district court motion to stay, and that the co-defendants all agreed to be bound by the *inter partes* review. (*See* Prelim. Resp. 4-9.) SEL focuses on statements to the district court in which the co-defendants refer to "'**their**'" Petition which "'Defendant**s** **have moved expeditiously to prepare and file**.'" (Prelim. Resp. 5 (quoting CMI Case motion, Ex. 2002 at 2, 17, emphasis by SEL).)

Notwithstanding SEL's assertions, SEL does not set forth persuasive evidence that the district court co-defendants CMO USA, Acer America, ViewSonic, VIZIO, and Westinghouse necessarily have any control over this proceeding. The statements that SEL refer to do not show that these other co-defendants had control over the Petition or will exert control over the proceeding.

The statements made in connection with the *joint* motion to stay may have been a short-hand explanation (e.g., speaking as one unified voice as opposed to explaining in great length who controlled the contents of the Petition, etc.) to the district court of the events leading up to the filing of the instant Petition. Toward that end, only lead counsel for CMI, Scott A. McKeown, signed the Petition (*see* Pet. 5, 60) which "certifies that CMI is the real party-in-interest" (Pet. 1). Accordingly, the collective filing of a motion to stay and other assertions do not prove control by each party.

SEL has not shown, for example, that the co-defendants CMO USA, Acer America, ViewSonic, VIZIO, and Westinghouse necessarily co-authored the Petition or otherwise exerted control over its contents, or will exert any control over the remaining portions of this proceeding. SEL has failed to provide persuasive evidence that each of the co-defendants in the CMI Case provided funding for the instant Petition, let alone exercised control and funding. That the co-defendants agreed to be bound by the decision of this *inter partes* review insofar as the co-pending litigation is concerned does not dictate that each of the co-defendants are real parties-in-interest in this proceeding. Accordingly, SEL has not demonstrated that CMI has failed to list all the real parties-in-interest under 35 U.S.C. § 312 (a)(2) and 37 C.F.R. § 42.8(b).

C. Claim Construction

The Board interprets each claim in an *inter partes* review using the "broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b). *See also Patent Trial Practice Guide*, 77 Fed. Reg. at 48766 (*Claim Construction*). "Generally speaking, we indulge a 'heavy presumption' that a claim term carries its ordinary and customary meaning." *See CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.

Cir. 2002). Tempering the presumption, "claims 'must be read in view of the specification, of which they are a part. . . .' [T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term."' *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Circ. 2005) (en banc) (citations omitted).

The following phrase carries an ordinary meaning which is consistent with the `204 patent specification.

"Contact through an opening" - the phrase at issue appears in claims 54, 61, 68, and 76: "the second conductive line and the transparent conductive layer are in direct *contact through an opening* in the second insulating film."

SEL maintains that in light of the `204 patent, the phrase "contact through an opening" carries an ordinary meaning of contact "*because of* the opening, that is, the opening *enables* the contact to occur." (Prelim. Resp. 28.) SEL points to the opening in interlayer insulation film 113 (Fig. 4A) and states that "the external connection lines 403 would not be in direct contact with ITO film 114 *but for* the opening shown in resin inter-layer film 113." (Prelim. Resp. 28.)

CMI does not explicitly propose a definition. The term "through" has several ordinary definitions:

> 1. In one side and out the opposite or another side of. 2. Among or between; in the midst of: *a walk through the flowers*. 3. By way of. 4. By the means or agency of: "*they preserved their individuality through men and not by opposition to them*" (F. Scott Fitzgerald). 5. Here and there in; around: *a tour through France*. . . . 9. Because of . . . .

The American Heritage Dictionary of the English Language, 1341 (1975).

SEL's proposed definition of "through" as meaning "enabling" or "because of" is consistent with at least the third, fourth and ninth definitions quoted *supra*. SEL's proposed definition is also consistent with the `204 patent specification. For

example, Figure 4A of the `204 patent (*see supra*) shows an opening or contact hole in the second insulating film 113 which facilitates electrical contact between the ITO metal film 114 and external connection line 403. As described in the `204 patent, "[r]eferring to FIG. 4A, the external connection lines 403 are electrically connected to an FPC (flexible printed circuit) 107 through contact holes provided in the resin inter-layer film 113 through an ITO (indium tin oxide film) 114." (Ex. 1001, col. 8, ll. 52-60.)

Alternatively, the ordinary meaning of "through," according to the definitions listed *supra*, tempered by its use in the `204 patent specification and claim 54 phrase at issue, "electrical contact through an opening," does not preclude the "electrical contact" from occurring between the vertical limits of the claimed opening or through-hole defined by the surrounding insulation layer. Figure 4A of the `204 patent depicts electrical contact between the ITO film 114 and line 403 as occurring at the bottom boundary of the opening in the resin inter-layer film 113, such that "between" includes that bottom boundary of the opening. Accordingly, "contact through an opening" means contact which occurs because of or by virtue of the opening, or which occurs between the vertical limits of the opening.

The parties do not contend that any claim terms or phrases, including those discussed *supra*, should be given a meaning other than the ordinary and customary meaning that the terms or phrases would have to a person of ordinary skill in the art in light of the `204 patent specification. *See Ayst Technologies Inc. v. Emap, Inc*., 268 F.3d 1364, 1369 (Fed. Cir. 2001) (there is "no reason to depart from the position consistently taken on this issue by the parties").

D. Asserted Grounds of Unpatentability

1. Shiba, Watanabe, and Sukegawa

CMI relies on the Hatalis Declaration (Ex. 1007), Shiba (Ex. 1003), Sukegawa (Ex. 1005), and Watanabe (Ex. 1004) to set forth its obviousness challenge to the claims. (*See* Pet. 15-38.) In response, SEL focuses attention on "[t]wo representative independent claims, claims 31 and 54." (Prelim. Resp. 15.)

CMI persuasively shows that Shiba discloses or renders obvious a liquid crystal display device comprising a substrate having thin film transistors, pixel electrodes, a counter substrate, a liquid crystal material, a sealant, an auxiliary line, an external connection line, first and second insulating layers, an adjustment layer, and a flexible printed circuit board primarily as set forth in representative claim 31. Representative claim 54 recites similar elements and an additional limitation discussed further below. (*See* Pet. 16-18; 26-31.) SEL contends that the prior art combination of Shiba, Watanabe, and Sukegawa does not render obvious certain structural relationships between the claim elements as discussed below.

A. Adjustment Layer

SEL contends that Shiba does not disclose an adjustment layer as set forth in claim 31 because Shiba's adjustment layer is not "'electrically isolated'" from "'the auxiliary line, the external connection line, the thin film transistors and the flexible printed circuit.'" (Prelim. Resp. 21-22.) SEL acknowledges that CMI relies on Watanabe to teach electrically isolated adjustment layers. (*Id*. at 22.) SEL also argues that Watanabe's connection lines and Shiba's connection lines extend in different directions across a sealant, thereby undermining a valid reason for employing Watanabe's connection layers with Shiba's external connection lines. (*See* Prelim. Resp. 33.)

CMI's Petition reproduces Watanabe's Figure 5 which shows electrically isolated adjustment layers extending along external connection lines of a display device. (Pet. 18 (also citing Hatalis Decl., Ex. 1007 at ¶¶ 122-126).) As Dr. Hatalis explains, Watanabe teaches that the gap adjusting layers should be isolated to prevent short circuiting of the scanning and signal lines. (Ex. 1007, ¶ 123 (citing Watanabe).)

Watanabe also teaches using such gap adjusting layers to form "an equal gap between two substrates so as to improve display image quality." (Ex. 1004, Abstract.) In a fashion similar to the `204 patent, Watanabe generally teaches creating a uniform surface with uniformly spaced adjustment layers under a sealant surrounding four sides of a liquid display substrate to accommodate different conducting line thicknesses crossing under the sealant and which otherwise would render a substrate-to-substrate bonding gap uneven. (*See* Ex. 1004, Abstract, col. 2, ll. 30-55.; col. 3, ll. 40-52; col. 5, l. 8 to col. 6, l. 27; Figs. 1, 4.)

Watanabe's general teachings, directed toward uniformity of the sealant bonding surface, are not limited by specific relative directions of the external conducting lines which cross under the sealant. For example, Watanabe teaches that the gap adjusting layers may be "in parallel with or perpendicular to the [conducting] lines," (*id*. at col. 5, ll. 13-14) and that "any pattern may be used" (*id*. at l. 23), provided that if the gap adjusting layer is "formed of a conducting material, it should be patterned so that it is not short-circuited with the scanning lines and signal lines" (*id*. at ll. 54-56).

While these teachings relate specifically to all types of patterns of gap adjusting layers, they also do not place a restriction on the relative directions in which the scanning lines or signal lines extend relative to the direction in which the sealant extends. As an example, Watanabe's Figure 1 shows adjustment layers 21

and 23 running perpendicularly to the leads 13 and 15. As another example, Watanabe's Figure 5 shows portions of lines 17 crossing the sealant in both directions, that is, parallel and orthogonal to the long side of the rectangular-shaped sealant region. Similar to Watanabe's conducting lines, Shiba's conducting lines cross sealant 111 in a similar fashion, both parallel and orthogonal to long sides of the rectangular-shaped sealant region. (*See* Ex. 1003, Fig. 3.)

Accordingly, Watanabe suggests employing electrically isolated gap adjusting layers along conducting lines in similar display devices such as Shiba's in order to render the substrate-to-substrate gap more even and consequently to improve image quality.

B. Transparent Conductive Film

SEL contends that Shiba does not disclose a transparent conductive film as set forth in claim 31. (Prelim. Resp. 25.) The claim 31 limitation in dispute follows: "a flexible printed circuit over and in electrical contact with the external connection line through a transparent conductive film." CMI relies on the Hatalis Declaration and the combination of Shiba and Sukegawa to show that the disputed claim phrase would have been obvious. (Pet. 17-18 (reproducing Shiba's Figs. 3, 4 and citing Shiba's col. 6, ll. 37-42; reproducing Sukegawa's Fig. 2C; citing Ex. 1007 at ¶¶ 66-71).)

Shiba does not disclose a transparent conductive film connected to a flexible printed circuit, while Sukegawa does as explained further below. Dr. Hatalis explains that Shiba discloses flexible printed circuit 711 connected to pad 751 through anisotropic film 881. (Ex. 1007, ¶ 67 (citing Shiba Figs. 3, 4).) Figure 3, reproduced further below, indicates that the pad 751 is exposed through a slit 243 in top insulating film 241. (*See* Prelim. Resp. 28-29 (discussing slit 243, film 241, and pad 751 of Shiba).)

Shiba's Figure 4, illustrating the connection, follows:

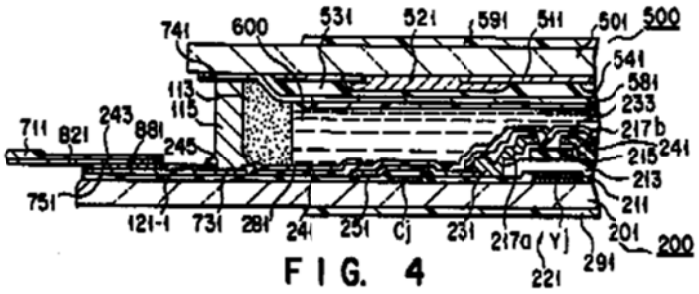


FIG. 4

Figure 4 shows anisotropic film 881 (on the left) extending from flexible printed circuit 711 through slit 743 in insulating layer 741, thereby attaching the printed circuit to pad 751. Shiba describes a connection to similarly situated pads as follows: "As shown in FIG. 3, the data line pads 761 to 764 are exposed through a slit 243 formed in the protective overcoat 241. The data line pads 761 to 764 electrically connected to output leads 821 of a wiring film 711 via an anisotropic film 881 (FIG. 4)." (Ex. 1003, col. 4, l. 66 to col. 5, l.3.)

Shiba's Figure 3 (from which the cross-sectional view of Figure 4 *supra* is taken along line a-a'), shows the output pad 751 side-by-side in the slit 243 with the above-described data pads 761-764:

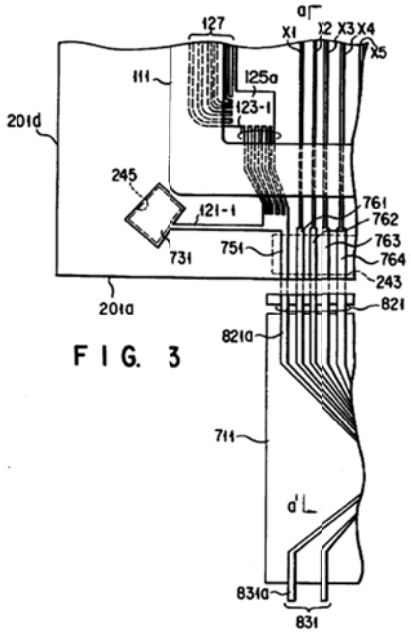


FIG. 3

Turning to Sukegawa's flexible printed board connection, Dr. Hatalis explains that Sukegawa's Figure 2C depicts a flexible printed wiring circuit connected to an underlying display substrate "through a transparent conductive film that provides connectivity and a layer of protection against corrosion." (Ex. 1007, ¶ 70.) Based on Shiba and Sukegawa, Dr. Hatalis opines that "[o]ne of ordinary skill in the art would have included the transparent conductive film of Sukegawa in the common pad [751] of Shiba, thus creating a reliable electrical connection as the transparent conductive film was well known to form a layer of protection from oxidation." (Ex. 1007, ¶ 71.)

Notwithstanding SEL's argument (*see* Prelim. Resp. 25 (citing Ex. 1003 at col. 5, ll. 24-28)) that a transparent ITO electrode 541 has a relatively high resistance (as compared to other materials) which would render a transparent contact layer unobvious, and other related arguments about hypothetical double or triple layers in Shiba's contact pad (*see* Prelim. Resp. 23-27), the record supports Dr. Hatalis's opinion. While Shiba does describe "a counter electrode 541 made of ITO [which] has a relatively high resistance" (Ex. 1003, col. 5, ll. 26-27), Shiba, nonetheless, employs the ITO transparent material for that electrode, and Sukegawa employs the same transparent material as a contact material.

Further, Sukegawa's system connects a flexible printed circuit board to an anisotropic film 10 using such a transparent conductive film 8 which attaches to an underlying metal film 7, thereby protecting the underlying metal film from corrosion. (Ex. 1005, col. 6, ll. 9-26.) Therefore, using Sukegawa's transparent film to connect, via the anisotropic attachment film, Shiba's similar flexible printed circuit via to a pad on a display substrate, amounts to using a known contact material for its intended purpose of making a reliable contact connection.

SEL also argues that the prior art combination does not render obvious a related claim recitation appearing in claim 54, "wherein the second conductive line and the flexible printed circuit are in electrical contact through the transparent conductive layer." (Prelim. Resp. 29-30.) SEL maintains that if a transparent conductive layer were formed at the top layer of the Shiba's conductive pad 751, it "would be located under (i.e., not in) the slit 243 formed in the protective overcoat 241. . . . In other words contact between the second conductive line and the hypothetical transparent conductive layer is not **through** the slit 243." (Prelim. Resp. 30.)

SEL's argument relies on an ordinary definition of "through" in light of the `204 patent as discussed *supra* in the claim construction section. Nonetheless, at the time of the invention, skilled artisans knew how to make through-hole contacts as Sukegawa's Figure 3B verifies by showing contact between metal wiring layers 7 and 2 through holes in an insulation layer 3. (*See* Ex. 1005.) While Sukegawa shows the transparent layer 8 under the hole in the top insulation layer 9, the transparent layer extends through the holes in insulation layer 3. Therefore, CMI shows that it would have been obvious to employ the known contact structure as set forth in representative claim 54, for example, by forming Sukegawa's transparent ITO layer 8 through Shiba's slit 243 to create a reliable circuit board to substrate contact between an anisotropic layer and an underlying pad as described *supra*.

C. External Connection and Auxiliary Line

Claim 31 further defines structural relationships between the "external connection line" and the "auxiliary line," as follows: the "external connection line overlap[s] the auxiliary line with a first insulating film interposed therebetween," at least part of each line "extend[s] under the sealant," and an "electrical

connection" exists between the two lines. CMI relies on Shiba's two-layered wiring lines 127 as described at column 6, lines 37-42 to show how Shiba teaches or renders obvious the listed limitations. (*See* Pet. 16-18) (copying Shiba Fig. 3 and citing the Hatalis Declaration).) At the cited portion in column 6, Shiba describes the wiring lines 127 as "formed in the step of forming the scanning lines Y_j and the data lines X_i, respectively, thereby constituting a two-layered structure. In this case, if the layers are partially connected to each other, the wiring defect can be prevented and the manufacturing yield can be improved." (Ex. 1003, col. 6, ll. 37-42.)

SEL responds that "[f]rom this cited portion of Shiba [i.e., column 6, quoted *supra*], a person of ordinary skill in the art does not know whether an insulating film (first insulating film) is formed between the bottom layer of the first wiring line 127 (formed in the step of forming the scanning lines Yj) and the top layer of the first wiring line 127 (formed in the step of forming the data lines Xi)." (Prelim. Resp. 31.) According to SEL, Shiba's "'two-layered structure'" might be "sequentially stacked" without an insulating layer therebetween. (*Id*.) As noted, claim 31 requires such an intervening insulating layer.

SEL's argument is not persuasive. Shiba implies or suggests that the two wiring layers in the two-layered structure 127, formed in the same manner as the two-layered scanning and data lines as the quoted passage shows, have an insulating layer therebetween just like the scanning and data lines. (*See* Pet. 16 (also citing Ex. 1003 at col. 4, ll. 15-17 which describes an gate dielectric layer 211; Figure 4); Ex. 1007, Hatalis Decl. ¶ 48 (reading Shiba's gate dielectric layer 211 on the "first insulating film").) Also, "if the layers are *partially* connected to each other" (emphasis added to quote *supra* from Shiba, col. 6), then it follows that portions thereof are not connected in a direct manner, further implying or

suggesting that portions thereof would have the same intervening insulating layer therebetween as the signal and scanning lines. Skilled artisans also would have understood that overlapping portions readily could have been "partially connected" together by known methods, including using a connecting hole through such an insulating layer. (*See* Ex. 1005, Fig. 3B (depicting through-hole connections in insulation layer 3 to electrically connect overlapping metal layers 7 and 2); Ex. 1007, Hatalis Decl. ¶ 113 (stating that "the two layers are in contact through an opening in an insulating film").)

Because the two-layered structure in Shiba's lines 127 connect to pad 751, SEL maintains that under various hypothetical scenarios, pad 751 also must have a two-layered structure, and as such, with Sukegawa's transparent layer modified to be on Shiba's pad as CMI proposes in its ground of unpatentability, the pad structure would become a three-layered structure. SEL maintains that such a three-layered structure would have been unobvious because of the implicitly high resistance of such a structure and also because of an unwarranted increase in manufacturing steps associated with adding the transparent layer. (*See* Prelim. Resp. 23-29, 34-36.) SEL also argues that the Petition inconsistently conflates or interchanges Sukegawa's transparent layer and the top layer of Shiba's two-layered wiring structure 127, and thereby fails to show how the combination renders obvious the external connection line and transparent conductive film as recited in claims 31 and 54. (*See* Prelim. Resp. 25-26.)

Notwithstanding SEL's arguments, claims 31 and 54 do not require an initial two-layered *pad* structure. Shiba teaches that the pad 751 is connected to, or an extension of, the top layer of the two-layered wiring structure 127, but Shiba does not require the pad to be a two-layered structure. (*See* Ex. 1003, Fig. 3.) In any event, even if Shiba suggests a two-layered pad, SEL does not show, and the

record does not reflect, that any increase in resistance or manufacturing costs redounds to an unobvious modification or outweighs the anti-corrosion benefit of using a transparent ITO film to connect a circuit board to a pad as Sukegawa suggests.

As discussed *supra*, Dr. Hatalis states that skilled artisans would have employed a transparent conductive film such as Sukegawa teaches as a top layer of Shiba's pad, based on Sukegawa's teaching that such a transparent film forms a reliable electrical connection. (*See* Hatalis Decl. ¶ 55.) Without the transparent layer, the top layer of wiring structure 127 and its extension pad 751 correspond to the recited external connection line recited in claim 31. (*See* Ex. 1007, Hatalis Decl. ¶ 113.) Sukegawa's transparent conductive film, a separate layer added to Shiba's pad 751, corresponds to the "transparent conductive film" recited in the phrase, the "flexible printed circuit over and in electrical contact with the external connection line through a transparent conductive film" as recited in claim 31. Shiba's pad 751 connects to and is part of the top layer of Shiba's two-layered wiring film 127, the top layer of which corresponds to the recited "external connection line," and the bottom layer of which corresponds to the recited "auxiliary line." (*See* Pet. 16-17; Ex. 1007, Hatalis Decl. ¶¶ 47-51, 53-56.)

Shiba's Figure 3 also depicts the wiring line 127 crossing under the sealant 113 in sealant region 111. CMI and Dr. Hatalis maintain that both layers of Shiba's two-layered structure 127, which correspond to the recited "external connection line" and the recited "auxiliary line," cross under the sealant as claim 31 requires. (*See* Pet. 16; Ex. 1007, ¶ 48.) SEL does not contend otherwise.

As to the remaining challenged claims, CMI similarly relies on Shiba, Watanabe, Sukegawa, and the Hatalis Declaration, and shows persuasively that the prior art combination teaches or renders obvious the additional recited limitations

in those claims, and those limitations similar to, or the same as, the limitations recited in claims 31 and 54. (*See* Pet. 19-39.) As noted *supra*, SEL's arguments are directed to representative claims 31 and 54, and SEL does not contest the specific limitations in the other challenged claims with separate arguments. Pursuant to the foregoing discussion, the Petition establishes a reasonable likelihood of prevailing on the asserted ground of unpatentability of claims 31, 33, 36, 38, 40, 43, 45, 46, 48, 51, 53, 54, 56, 59, 61, 63, 66, 68, 70, 73, 75, 76, 78, 81, and 83 as obvious under 35 U.S.C. § 103 based on the combination of Shiba, Watanabe, and Sukegawa.

2. Zhang and Sukegawa

CMI's asserted obviousness ground of unpatentability involving the combination of Zhang and Sukegawa is redundant to the obviousness ground involving the combination of Shiba, Watanabe, and Sukegawa. The Board declines to consider further the redundant ground involving the combination of Zhang and Sukegawa.

III. SUMMARY

CMI's Petition demonstrates a reasonable likelihood of prevailing on the obviousness ground of unpatentability of the challenged claims based on the combination of Shiba, Watanabe, and Sukegawa.

IV. ORDER

In consideration of the foregoing, it is hereby

ORDERED that the Petition is granted as to the `204 patent claims 31, 33, 36, 38, 40, 43, 45, 46, 48, 51, 53, 54, 56, 59, 61, 63, 66, 68, 70, 73, 75, 76, 78, 81, and 83 on the obviousness ground based on the combination of Shiba, Watanabe, and Sukegawa;

FURTHER ORDERED that the Petition is denied as to the other ground set

forth in the Petition;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the `204 patent is hereby instituted with trial commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of the trial;

FURTHER ORDERED that the trial is limited to the ground identified immediately above and no other ground is authorized for the `204 patent claims 31, 33, 36, 38, 40, 43, 45, 46, 48, 51, 53, 54, 56, 59, 61, 63, 66, 68, 70, 73, 75, 76, 78, 81, and 83 ; and

FURTHER ORDERED that an initial conference call with the Board is scheduled for 2:00 PM ET on May 21, 2013. The parties are directed to the *Office Trial Practice Guide*, 77 Fed. Reg. 48756, 48765-66 (Aug. 14, 2012) for guidance in preparing for the initial conference call, and should be prepared to discuss any proposed changes to the Scheduling Order entered herewith and any motions the parties anticipate filing during the trial.

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