UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CMI CORP.

Petitioner

v.

PATENT OF YOSHIHARU HIRAKATA and

SHUNPEI YAMAZAKI

Patent Owner

CASE IPR 2013-00068

PATENT 8,068,204

PATENT OWNER PRELIMINARY RESPONSE

UNDER 37 CFR § 42.107

Contents

List of Exhibits

Exhibit 2001 – Complaint, *Semiconductor Energy Laboratory Co., Ltd. v. Chimei Innolux Corp., et al.*, Case No. SACV 12-0021-JST (C.D. Cal).

Exhibit 2002 – Defendants' Motion to Stay Litigation Pending Outcome of Inter Partes Review, *Semiconductor Energy Laboratory Co., Ltd. v. Chimei Innolux Corp., et al.*

Exhibit 2003 – Supplemental Declaration of Gregory S. Cordrey in Support of Defendants' Motion for Stay, *Semiconductor Energy Laboratory Co., Ltd. v. Chimei Innolux Corp., et al.*

Exhibit 2004 – Defendants' Reply in Support of their Motion to Stay, *Semiconductor Energy Laboratory Co., Ltd. v. Chimei Innolux Corp., et al.*

Exhibit 2005 – Defendant Westinghouse Digital's Notice of Joinder, *Semiconductor Energy Laboratory Co., Ltd. v. Chimei Innolux Corp., et al.*

Exhibit 2006 – Prosecution File History of U.S. application serial no. 13/009,980 (U.S. Patent No. 8,068,204) Excerpt - Prior Art considered by the Office

Exhibit 2007 – U.S. Patent No. 5,995,189 (Zhang)

Introduction

Patent Owner Semiconductor Energy Laboratory Co., Ltd. ("SEL") submits this Preliminary Response to the Petition seeking *inter partes* review ("IPR") of its U.S. Patent No. 8,068,204 ("the '204 patent") filed on November 30, 2012.

The Board appears to have incorrectly identified inventors Yoshiharu Hirakata and Shunpei Yamazaki as the Patent Owner in the caption of the NOTICE OF FILING DATE ACCORDED TO PETITION AND TIME FOR FILING PATENT OWNER PRELIMINARY RESPONSE mailed December 7, 2012. However, SEL is the Patent Owner and real party-in-interest, by virtue of an assignment recorded with the Patent and Trademark Office at reel 009581, frame 0943. *See*, MPEP § 306. Accordingly, the Patent Owner requests correction of the caption and that future mailings properly reflect SEL as the Patent Owner.

In the Petition, Petitioner Chimei Innolux Corp. ("CMI") attempts to smear the Patent Owner at pp. 4 and 5 of the Petition, referring to a case from 13 years ago. This case on an unrelated matter from over a decade ago has utterly no bearing on the merits of the Petition at bar. Petitioner raises another unrelated matter concerning how the Patent Owner allegedly derives its revenue. Petitioner's assertion is neither accurate nor relevant to any issue in this proceeding.

Moreover, Petitioner suggests that the Board intercede in another pending patent application of the Patent Owner, where the Office has sent a Notice of Allowance. In its Petition, Petitioner has not explained how the claims present in the Patent Owner's currently pending patent application are patentably indistinct from the challenged claims of the involved '204 patent. The rules do not permit Petitioner to interfere with a pending application that is not involved in the present request for IPR. Nor is it necessary for the Board to interject itself into a pending application with respect to this Petition.

Putting these issues aside, the Patent Owner respectfully requests that the Board deny the Petition. As will be explained in more detail *infra*, the Petition should be denied for failing to identify all the real parties-in-interest pursuant to 35 U.S.C. § 312 (a)(2) and because it does not meet the elevated "reasonable likelihood" standard[1] that at least one claim of the '204 patent is unpatentable.

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[1] In enacting the "reasonable likelihood" standard in 35 U.S.C. § 314, Congress set forth a substantially higher standard than the "substantial new question" under previous law, in order to deliberately reduce the number of *inter partes* requests that are ultimately granted. *See*, H.R. Rep. No. 112-98 (part 1), at 47 (2011) ("The threshold for initiating an inter partes review is elevated from 'significant new question of patentability'— a standard that currently allows 95% of all requests to be granted—to a standard requiring petitioners to present information showing that their challenge has a reasonable likelihood of success."). Thus, the new standard makes *inter partes* review unavailable but for exceptional cases where "serious doubts" about the patent's validity are raised and a "prima facie case" has been established by the petitioner. *See*, 157 Cong. Rec. S1375 (Mar. 8, 2011) (statement of Sen. Jon Kyl (D-Ariz)).

I. The Petition May Not Be Considered Because it Fails to Identify all Real Parties-in-Interest.

Because the Petition fails to identify all the real parties-in-interest, the Office lacks statutory authority to consider it under 35 U.S.C. § 312 (a)(2), which states:

> (a) REQUIREMENTS OF A PETITION.—A petition filed under section 311 ***may be considered only if***__...
>
> (2) the petition identifies all real parties in interest....

(Emphasis added). Further, the Office rules require that the petitioner provide certain mandatory notices, including of the real parties-in-interest. 37 C.F.R. § 42.8(b) ("Each of the following notices must be filed: (1) "Identify each real party-in-interest for the party."). Here, the Petition fails to identify any of the real parties-in-interest other than Petitioner itself.

Under 35 U.S.C. § 312(a)(2) and § 315(b), the term "real party-in-interest" generally means a party "that desires review of the patent." *See* Office Patent Trial Practice Guide, 77 Federal Register 48759 ("Real Party-in-Interest or Privy," stating that "the spirit of that formulation as to IPR and PGR proceedings means that, at a general level, the 'real party-in-interest' is the party that desires review of the patent."). One consideration in identifying a "real party-in-interest" is whether the non-party "'has the actual measure of control or opportunity to control that might reasonably be expected between two formal coparties.'" (Office Patent Trial Practice Guide, 77 Federal Register 48759, citing Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice & Procedure* §§ 4451).

This requirement of § 312(a)(2) is critically important "to assist members of the Board in identifying potential conflicts, and to assure proper application of the statutory estoppel provisions ... to protect patent owners from harassment via successive petitions by the same or related parties, to prevent parties from having a 'second bite at the apple,' and to protect the integrity of both the USPTO and Federal Courts by assuring that all issues are promptly raised and vetted." *Id.* As such, the statutory requirement to identify "all" real parties-in-interest is not a mere formality.

The Petition fails to identify the following real parties-in-interest: Acer America Corporation ("Acer America"); Chi Mei Optoelectronics USA, Inc. ("CMO USA"); ViewSonic Corporation ("ViewSonic"); VIZIO, Inc. ("VIZIO"); and Westinghouse Digital, LLC ("Westinghouse"). Petitioner CMI and each of these additional real parties-in-interest are co-defendants in a currently pending litigation for infringement of the '204 patent brought by the Patent Owner, *Semiconductor Energy Laboratory Co., Ltd. v. Chimei Innolux Corp., et al.*, Case No. SACV 12-0021-JST (C.D. Cal) (hereinafter the *"CMI* case"). *See*, Ex. 2001. All but Westinghouse are jointly represented in the *CMI* case by the same counsel, including Gregory Cordrey – named as Petitioner's Backup Counsel in the Petition. (*See*, Ex. 2002 and Ex. 2003). CMI and all of the foregoing co-

defendants joined with Petitioner in filing a motion to stay the *CMI* case.[2] *See* Defendants' Notice of Motion and Motion to Stay Litigation Pending Outcome of Inter Partes Review; Memorandum of Points and Authorities in Support of Motion and Declaration of Gregory S. Cordrey in Support Thereof (the "Motion to Stay") (Ex. 2002 and Ex. 2003).

All the defendants in the *CMI* case are real parties-in-interest because they all participated in filing the Petition. Thus, the co-defendants, in their joint Motion to Stay, collectively refer to an earlier Petition as "***their***" Petition that "***Defendants filed.***" (Ex. 2002, pp. 2, 5, and 6, emphasis added). Further, the defendants represented to the Court in the *CMI* case that the "Defendant***s*** ***have moved expeditiously to prepare and file*** a comprehensive petition for an IPR of the Asserted Patents." (Id. at 17) (emphasis added). As noted, one of the "Asserted Patents" in the *CMI* case is the '204 patent. *See* also Id. at 6 ("Defendant***s***' petitions for IPR..."); Id. at 8 ("Defendant***s*** have presented the PTO with prior art...") (emphasis added).

Furthermore, in Defendants' Reply in Support of Their Motion to Stay

[2] Although not included originally as one of the "Defendants" in the motion to stay, Westinghouse subsequently joined in the motion to stay, advising the Court that Westinghouse "hereby joins Defendants' motion to stay" and "[a]dditionally, in the event that the Court grants the Motion and stays the litigation, Westinghouse agrees to be bound by the PTO's determinations on the IPRs pursuant to the estoppel provisions of 35 U.S.C. § 315(e)(2)." (Ex. 2005, p. 2.)

Litigation Pending Outcome of *Inter Partes* Review ("Defendants' Reply"), they stated that "[t]o the extent there was any ambiguity on this issue, CMO USA, Acer, VIZIO, and ViewSonic hereby expressly confirm their agreement to be bound by the estoppel provisions of the IPRs proceedings." Defendants' Reply, at 2, n. 4; id. at 14 (Ex. 2004, pp. 2, 3, and 14). Thus, removing any possible doubt about their status, the defendants themselves have all expressly committed to be real parties-in-interest in order to obtain a stay of the co-pending *CMI* case.

The existence of unidentified real parties-in-interest is further evidenced by a declaration submitted by Petitioner's Backup Counsel, Gregory Cordrey, in support of Defendants' Motion to Stay, which stated that "[o]n November 30, 2012, Defendants filed with the U.S. Patent and Trademark Office ("PTO") its petition for IPR for U.S. Patent No. 8,068,204 ("'204 Patent")." (Ex. 2003, p. 3, emphasis added). The Declaration identifies the Petition at issue as the collective "Defendants' petition for IPR." (Id., emphasis added). Thus, Petitioner's Backup Counsel stated in his foregoing Declaration, "under penalty of perjury under the laws of the United States of America" (Id., p. 3), that on November 30, 2012, the Petition at issue here was filed on behalf of ***all*** the defendants. Thus, the Petition is not just CMI's petition, but also the *inter partes* review petition of all five other co-defendants in the pending *CMI* case. Each of the other five co-defendants, according to their representations to the Court in the *CMI* case, participated in the

preparation and filing of the Petition, while collectively seeking statutory rights (i.e., a stay of litigation) and acknowledging statutory estoppel based on their status as real parties-in-interest. At a minimum, these five co-defendants had the opportunity to control the content of the Petition.

Here, there is no concern that estoppel will apply against a party who was opposed to filing the Petition or had no control over the Petition.[3] As CMO USA, Acer America, VIZIO, ViewSonic, and Westinghouse advised the Court in the *CMI* case, the Petition is ***theirs*** and CMI's. They all are real-parties-in-interest not because they are co-defendants in a concurrent litigation, but because by virtue of it being ***their*** Petition, they each controlled or had the opportunity to control the content of the Petition, and they collectively caused the Petition to be filed.

Although CMO USA, Acer America, VIZIO, ViewSonic, and Westinghouse informed the Court in the *CMI* case that they agree to be bound by the estoppel provisions of the IPR proceedings, such statement to the Court is not the equivalent of, and is a woefully inadequate substitute for, such parties being named in the Petition as real parties-in-interest. For example, under 35 U.S.C. § 315(e)(1) and

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[3] *See, e.g., In re Arviv, et al.*, Reexamination Proceeding Control No. 95/001,526, pages 5 and 6 of Decision Dismissing §1.182 and §1.183 Petitions, mailed April 18, 2011 (The Office of Patent Legal Administration stated its concern that finding a co-defendant in a litigation to be *ipso facto* a real party in interest could result in estoppel against a party who was opposed to filing the request for reexamination or a party who had no control over the request for reexamination.)

(2), not only the petitioner, but also "the real party-in-interest or privy of the petitioner" is bound by the estoppel provisions. First, the co-defendants' representation to the Court in the *CMI* case that they agree to be bound by the estoppel provisions of the IPR proceedings would not necessarily be known to the Office in future *inter partes* review proceedings involving the same patent. Therefore, the Office would have no practical way of enforcing the estoppel provisions of § 315(e)(1), which provides that no real party-in-interest may request or maintain a proceeding before the Office with respect to a claim in a patent that results in a final written decision under § 318(a) on any ground that the petitioner raised or reasonably could have raised during that *inter partes* review. Similarly, with respect to estoppel under § 315(e)(2) in future civil actions, the extent to which unidentified real parties-in-interest will actually be bound by their statement to the Court in the *CMI* case is unclear.

Moreover, unless real parties-in-interest are identified in the petition, potential conflicts of interest involving members of the Patent Trial and Appeal Board cannot readily be identified. The requirement to identify all real parties in interest pursuant to §312(a)(2) serves the same purpose as a similar requirement to identify interested parties in litigation pursuant to Federal Rule of Civil Procedure 7.1. It is critically important that the judges of the Patent Trial and Appeal Board not have a conflict created by a financial interest in the outcome of the cases under

their review. "[I]n the case of the Board, a conflict would typically arise when an official has an investment in a company with a direct interest in a Board proceeding. Such conflicts can only be avoided if the parties promptly provide information necessary to identify potential conflicts." *See* Rules of Practice for Trials Before the Patent Trial and Appeal Board and Judicial Review of Patent Trial and Appeal Board Decisions, 77 FR 48612, 48617 (Aug. 14, 2012). Thus, a prompt identification of all real parties-in-interest is required to allow judges of the Patent Trial and Appeal Board to recuse themselves from a proceeding that creates a conflict of interest.

As such, all the defendants in the *CMI* case, Acer America, CMO USA, ViewSonic, VIZIO, and Westinghouse, are real parties-in-interest with respect to the Petition. However, Section I(A) of the Petition merely states "Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies that CMI is the real party-in-interest" without identifying any other real parties-in-interest. Thus, the certification made in Section I(A) of the Petition is incorrect. As each of these additional parties has jointly acknowledged the collective effort to seek review of the '204 patent by filing their Petition, and all of them have represented to the Court in the *CMI* case that they moved expeditiously to prepare and file their Petition, they all are real parties-in-interest. Notwithstanding that each of the parties in the *CMI* case is a real party-in-interest with respect to the Petition, none of them except CMI was

identified in the Petition. As such, the Petition does not satisfy the requirement of § 312(a)(2) to identify all real parties-in-interest. Therefore, *inter partes* review of the Petition cannot be instituted. Accordingly, the Patent Owner respectfully requests that the Petition be denied on this ground.

II. The Invention of the '204 Patent

The '204 patent, entitled "Electronic Apparatus With A Flexible Printed Circuit And A Transparent Conductive Layer," relates to a liquid crystal display device. This invention provides a structure wherein the external connection lines such as 403 and auxiliary lines such as 401 overlap and are electrically connected in parallel. (Ex. 1001, col. 8, ll. 42-50 and Fig. 4A). One reason for, and result of, electrically connecting these lines is to lower electrical resistance. As explained in the '204 patent, even when the external connection lines 403 are made from a metal, the lines face a problem of high line resistance, which can cause propagation delay and deterioration of high frequency signals normally used in such LCD circuits and communicated via the flexible printed circuit referenced in the claim, thereby inhibiting optimal performance. (Id., col. 8, l. 61 - col. 9, l. 11). The above structure in the patent reduces this electrical resistance. (Id., col. 8, ll. 42-50 and Fig. 4A).

Furthermore, this invention provides a structure wherein the adjustment layer(s) such as 402/404 is provided under the sealant 105. The formation of an

adjustment layer(s) 402/404 reduces the height difference that is caused by the formation of auxiliary lines 401 and external connection lines 403, which leads to a favorable display. (Id., Fig. 4B, col. 9, ll. 12-51 and col. 14, ll. 36 - 41).

Moreover, in order to improve the reliability of an electronic apparatus by providing for the sealant 105 to have favorable adhesion, this invention provides a structure wherein the sealant 105 and the indium tin oxide ("ITO") film 114 do not overlap each other and the sealant 105 is in direct contact with the second insulating film such as resin inter-layer film 113. (Id., Fig. 4A). Generally, a sealant has poor adhesion to a transparent conductive layer made of ITO. The above structure in the '204 patent provides favorable adhesion of the sealant.

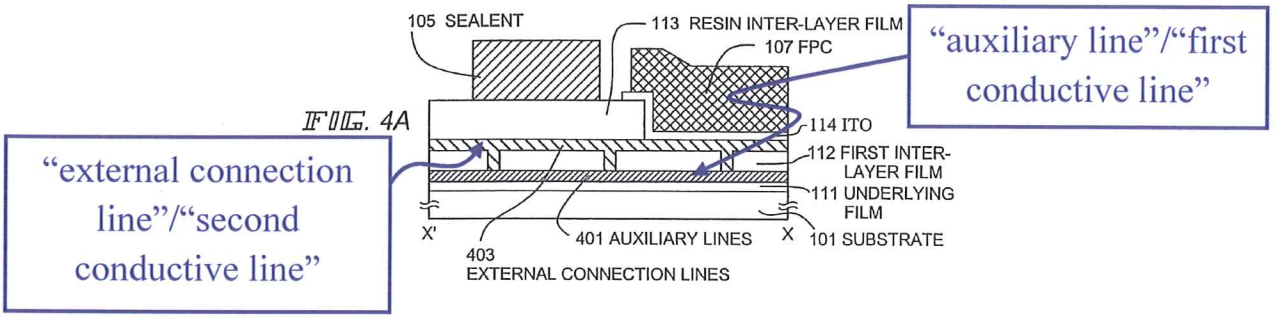
The structure of the '204 patent is further explained in detail below.

A. "External Connection Line" and "Auxiliary Line"

Fig. 4A of the '204 patent, which is reproduced below with annotations, is a cross sectional view of Fig. 1 of the '204 patent. As shown in annotated Fig. 4A, the invented display device includes a first conductive line (*e.g.*, auxiliary lines 401)[4] over a substrate 101, a first insulating film (*e.g.*, first inter-layer film 112) over the first conductive line and a second conductive line (*e.g.*, external

[4] Auxiliary lines such as 401 correspond to "auxiliary line" or "first conductive line" in the claims.

connection lines 403)[5] over the first insulating film. Petitioner agrees that the auxiliary lines 401 corresponds to the claimed "auxiliary line" and "first conductive line" and the external connection lines 403 corresponds to the claimed "external connection line" and "second conductive line." *See* Pet., p. 13.



The specification of the '204 patent states that "auxiliary lines 401 that extend along external connection lines 403 are provided under the first inter-layer film 112 and the external connection lines 403 and auxiliary lines 401 are electrically connected in parallel by forming contact holes in the first inter-layer film 112 to reduce the electrical resistance as shown in FIG. 4A." (Ex. 1001, col. 8, ll. 45-50). As made clear by the figures and the specification of the '204 patent, one aspect of the invention of the '204 patent is that the first conductive line (*e.g.*, auxiliary line) and the second conductive line (*e.g.*, external connection line) overlap and are in electrical contact in such a way as to reduce electrical resistance.

B. "Adjustment Layer"

As shown in Fig. 4B of the '204 patent, which is reproduced below with

[5] External connection lines such as 403 correspond to "external connection line" or "second conductive line" in the claims.

annotations, the invented display device includes a first conductive layer (*e.g.*, first adjustment layer 402) and a second conductive layer (*e.g.*, second adjustment layer 404).[6] Petitioner agrees that the adjustment layer 402 corresponds to the claimed "(first) adjustment layer," "(first) conductive layer" and "third conductive line" and the adjustment layer 404 corresponds to the claimed "(second) adjustment layer," "(second) conductive layer" and "fourth conductive line." *See* Pet., p. 13.

"(second) adjustment layer/(second) conductive layer/fourth conductive line"

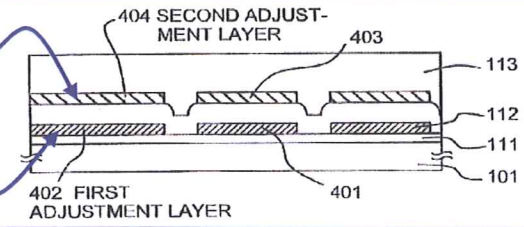


FIG. 4B

"(first) adjustment layer/(first) conductive layer/third conductive line"

The adjustment layer 402 and the adjustment layer 404 are formed from the same layer as the auxiliary line 401 and the external connection line 403, respectively. (Ex. 1001, col. 6, ll. 24-32 and col. 9, ll. 20-28). As shown in Fig. 1 of the 204 patent, the adjustment layers 402 and 404 are electrically isolated from the external connection line 403 and the auxiliary line 401. (Id., col. 4, ll. 45-52 and 59-64). These adjustment layers are intended to reduce a height difference

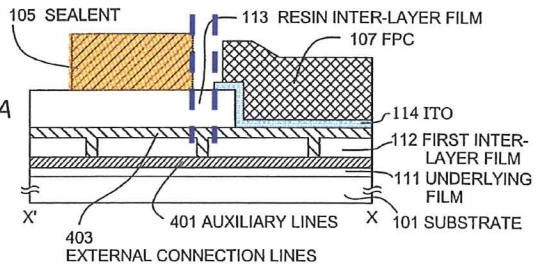
[6] As explained in Section III below, the first and second adjustment layers such as 402 and 404 are also called "third conductive line" and "fourth conductive line" or "first conductive layer" and "second conductive layer" in some of the claims of the '204 patent, respectively.

generated in the seal region by wirings formed in the seal region. (Id., col. 3, ll. 22-24 and col. 9, ll. 33-46). As made clear by the figures and the specification of the '204 patent, one aspect of the invention of the '204 patent is to reduce a height difference in the seal region by forming the adjustment layer(s).

C. Positional Relationship Between the Transparent Conductive Layer and the Sealant Over the External Connection Line

As shown in Fig. 4A of the '204 patent, which is reproduced below with annotations, the invented display device includes a second insulating film (*e.g.,* resin inter-layer film 113), a transparent conductive layer (*e.g.,* ITO film 114), a flexible printed circuit (*e.g.,* FPC 107) and a sealant (*e.g.,* sealant 105). (Ex. 1001, col. 8, ll. 33-60). As is clear from the reproduced Fig. 4A of the '204 patent below, the transparent conductive layer 114 (blue) and the sealant 105 (orange) are provided over the second conductive line (*e.g.,* external connection lines 403).

FIG. 4A



Further, since the FPC 107 is in electrical contact with the second conductive line 403 through the transparent conductive layer 114, the transparent conductive layer 114 is provided between the second conductive line 403 and the FPC 107. The sealant 105, on the other hand, is not formed between the second conductive line 403 and FPC 107; it is provided so as to directly contact the second insulating film 113. That is, the transparent conductive

layer 114 is formed between the second conductive line 403 and the FPC 107, and not formed between the second conductive line 403 and the sealant 105. In other words, as made clear by the figures and the specification of the '204 patent, this invention provides a structure wherein the transparent conductive layer 114 and the sealant 105 are formed in different regions that do not overlap each other, and the sealant 105 is in direct contact with the second insulating film 113. Generally, the sealant has poor adhesion to the transparent conductive layer made of ITO, and therefore, this structure improves the adhesion of the sealant.

III. Claims of the '204 Patent

Petitioner contends that seven independent claims 31, 38, 46, 54, 61, 68, and 76 are invalid. (Pet., pp. 15-59).[7] Two representative independent claims, claims 31 and 54, of the '204 patent are recited below. Claims 38 and 46 are explained with reference to claim 31, and claims 61, 68 and 76 are explained with reference to claim 54.

Independent **claim 31** is recited in the following claim chart:[8]

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[7] The Petition also contends that dependent claims 33, 36, 40, 43, 45, 48, 51, 53, 56, 59, 63, 66, 70, 73, 75, 78, 81, and 83 are invalid. (Pet., pp. 18, 19, 21, 22, 26, 31, 33, 36, 38, 39, 43, 46, 47, 50, 51, 55, 56, 58, and 59).

[8] For convenience, the Patent Owner adopts the same element numbering system used in Petitioner's claim tables and will refer to various claim elements as "claim 31, row 10," "claim 31, element 10," or "31.10," or the like. Each element number of claims 38 and 46 is shown in the parentheses where it corresponds to the elements recited in claim 31.

Claim element number	Claim element
31.1 (38.1, 46.1)	A liquid crystal display device comprising:
31.2 (38.2, 46.2, 46.3)	a substrate having thin film transistors;
31.3 (38.3, 46.4)	pixel electrodes each electrically connected to one of the thin film transistors;
31.4 (38.4, 46.5)	a counter substrate facing the substrate;
31.5 (38.5, 46.6)	a liquid crystal material provided between the substrate and the counter substrate;
31.6 (38.6, 46.7)	a sealant provided between the substrate and the counter substrate, and surrounding the liquid crystal material;
31.7 (38.7)	an auxiliary line;[9]
31.8 (38.8, 46.10)	an external connection line[10] overlapping the auxiliary line with a first insulating film interposed therebetween,
31.9 (38.9, 46.8)	… of the external connection line and … the auxiliary line extending under the sealant;
31.10 (38.10, 38.12, 46.9)	an adjustment layer,[11] at least part of the adjustment layer extending under the sealant;
31.11 (38.13, 46.12)	a second insulating film interposed between the sealant and the external connection line; and
31.12	a flexible printed circuit over and in electrical contact with the

[9] In claim 46, "an auxiliary line" of 31.7 is referred to as "a first conductive line."

[10] In claim 46, "an external connection line" of 31.8 is referred to as "a second conductive line."

[11] In claim 38, there are two elements, "a first adjustment layer" and "a second adjustment layer." In claim 46, there are two elements, "a third conductive line" and "a fourth conductive line."

(38.14, 46.13)	external connection line through a transparent conductive film;
31.13 (38.15, 46.14)	wherein the sealant is in direct contact with the second insulating film;
31.14 (38.16, 46.17)	wherein the external connection line is electrically connected to the auxiliary line; and
31.15 (38.19, 46.18)	wherein the adjustment layer is electrically isolated from the auxiliary line, the external connection line, the thin film transistors and the flexible printed circuit.

Other than the above elements of claim 31, independent **claims 38 and 46** additionally recite:

"a second adjustment layer overlapping the first adjustment layer with the first insulating film interposed therebetween" (38.11, 46.10, 46.11);

"wherein the first adjustment layer is formed from a same layer as the auxiliary line;" (38.17, 46.15);

"wherein the second adjustment layer is formed from a same layer as the external connection line;" (38.18, 46.16).

Independent **claim 54** is recited in the following claim chart.[12]

Claim element number	Claim element
54.1 (61.1, 68.1, 76.1)	A liquid crystal display device comprising:
54.2 (61.2, 68.2, 76.2)	a substrate;
54.3	thin film transistors over the substrate;

[12] Each element number of claims 61, 68, and 76 is shown in the parentheses where it corresponds to the elements recited in claim 54.

(61.3, 68.3, 76.3)	
54.4 (61.4, 68.4, 76.4)	pixel electrodes each electrically connected to one of the thin film transistors;
54.5 (61.5, 68.5, 76.5)	a counter substrate facing the substrate;
54.6 (61.6, 68.6, 76.6)	a liquid crystal material provided between the substrate and the counter substrate;
54.7 (61.7, 68.7, 76.7)	a first conductive line[13] over the substrate;
54.8 (61.8, 68.8, 76.8)	a first insulating film over the first conductive line;
54.9 (61.9, 68.9, 76.9)	a second conductive line[14] over the first insulating film;
54.10 (61.10, 68.10, 76.10)	a second insulating film over the second conductive line;
54.11 (61.11, 68.11, 76.11)	a transparent conductive layer over a first region of the second conductive line;
54.12 (61.12, 68.12, 76.12)	a flexible printed circuit over the first region of the second conductive line;
54.13 (61.13, 68.13, 76.13)	a sealant over a second region of the second conductive line; and
54.14 (61.14)	a conductive layer[15] over the substrate;
54.15 (61.15, 68.16, 76.16)	wherein the sealant is in direct contact with the second insulating film;
54.16 (61.16, 68.17, 76.17)	wherein the second conductive line overlaps at least part of the first conductive line;
54.17 (61.17, 68.18, 76.18)	wherein the first conductive line and the second conductive line are in electrical contact;

[13] As explained in Section II.A, this element is supported by, for example, the auxiliary line 401 in Fig. 4A of the '204 patent.

[14] As explained in Section II.A, this element is supported by, for example, the external connection line 403 in Fig. 4A of the '204 patent.

[15] As explained in Section II.B, this element is supported by, for example, the adjustment layer 402 or 404 in Fig. 4B of the '204 patent. In claims 68 and 76, there are two elements, "a first conductive layer" and "a second conductive layer."

54.18 (61.18, 68.19, 76.19)	wherein the second conductive line and the flexible printed circuit are in electrical contact through the transparent conductive layer;
54.19 (61.19, 68.20, 76.20)	wherein the second conductive line and the transparent conductive layer are in direct contact through an opening in the second insulating film;
54.20 (61.20, 68.21, 76.21)	wherein the sealant overlaps at least part of the conductive layer; and
54.21 (61.21, 68.24, 76.24)	wherein the conductive layer is electrically isolated from the first conductive line, the second conductive line, the thin film transistors and the flexible printed circuit.

Other than the above elements of claim 54, independent **claims 68 and 76** additionally recite:

> "a first conductive layer formed from a same layer as the first conductive line over the substrate;" (68.14, 76.14);
>
> "a second conductive layer formed from a same layer as the second conductive line over the substrate;" (68.15, 76.15);
>
> "wherein the second conductive layer overlaps at least part of the first conductive layer;" (68.23, 76.23).

IV. The Petition Fails to Establish a Reasonable Likelihood that at Least One Challenged Claim Is Unpatentable Over Shiba in View of Watanabe and Sukegawa

The Petition has two, multi-page argumentative claim tables. The first combination raised in the Petition is Shiba (Ex. 1003) in view of Watanabe (Ex. 1004) and Sukegawa (Ex. 1005). *See* Pet., pp. 16-39 and Hatalis Declaration at ¶¶31-139 (Ex. 1007). According to the Petition, that combination invalidates 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. As explained below this proposed

combination does not disclose all the elements of the challenged '204 patent claims and is improper. Independent claims 31, 38, 46, 54, 61, 68, and 76 are discussed in depth below; dependent claims 33, 36, 40, 43, 45, 48, 51, 53, 56, 59, 63, 66, 70, 73, 75, 78, 81, and 83 are also patentably distinct over Shiba in view of Watanabe and Sukegawa on at least the same grounds, as they depend from their respective independent claims.

A. Shiba

Shiba illustrates in Fig. 1 (annotated below), for example, a first wiring line 127 extending along three sides 201b, 201c, and 201d of the substrate. (Ex. 1003, col. 6, ll. 47-49). Fig. 3 of Shiba (annotated below) illustrates an enlarged view of region A shown in Fig. 1. Fig. 4 of Shiba (annotated below) illustrates a cross-sectional view taken along a line a-a' shown in Fig. 3. As shown in Figs. 3 and 4, a common pad 751 is electrically connected to a wiring film 711. (Id., col. 5, ll. 64-67). As shown in Fig. 3 and described in the specification, the first wiring line 127 and the common pad 751 are formed from the same layer as one continuous pattern. (Id., col. 6, ll. 25-31). The one continuous pattern is formed in the same step of forming data lines Xi, scanning lines Yj or a two-layered structure of a layer of the data lines Xi and a layer of the scanning lines Yj so that the number of manufacturing steps does not increase. (Id., col. 6, ll. 25-38). Furthermore, Shiba discloses in Fig. 4 a structure in which the pixel electrode 251 (highlighted in blue)

is formed under the data lines Xi (source/drain electrodes 231/233, highlighted in green). (Id., col. 4, ll. 9-33). Shiba discloses that the pixel electrode 251 is made of ITO. (Id., col. 1, ll. 36-39). Shiba also discloses that the data lines Xi and the source/drain electrodes 231/233 are formed from the same layer. (Id., col. 4, ll. 20-33).

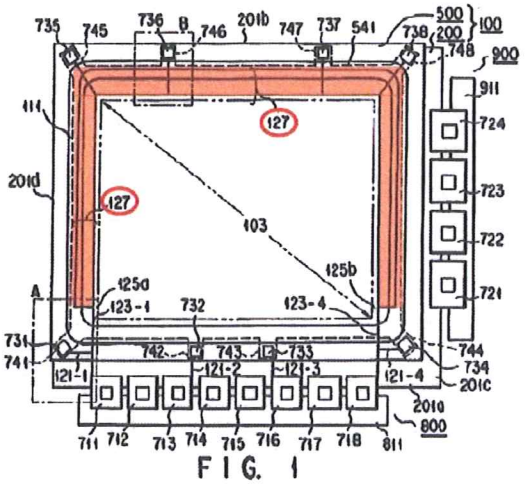

FIG. 1

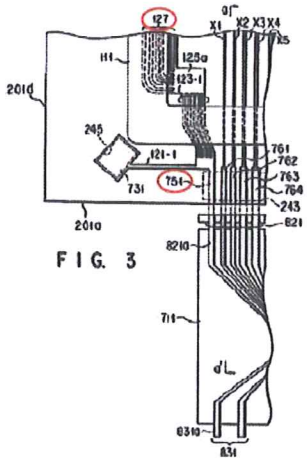

FIG. 3

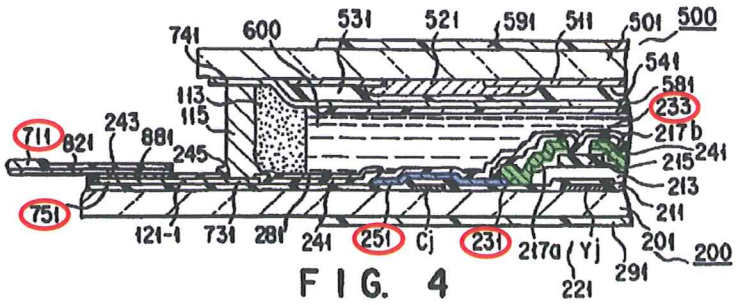

FIG. 4

B. The '204 Patent Differs From Shiba

1. Shiba Does Not Disclose an "Adjustment Layer"

All the challenged independent claims 31, 38, 46, 54, 61, 68, and 76 recite the elements of "adjustment layer" (claim elements 31.10, 38.10, and 38.11), "third/fourth conductive line" (claim element 46.9), or "conductive layer" (claim

elements 54.14, 61.14, 68.14, 68.15, 76.14, and 76.15). All these above elements correspond to "adjustment layer(s) 402/404" as described in the '204 patent. Furthermore, all the challenged independent claims recite that the adjustment layer is "electrically isolated" from "the auxiliary line, the external connection line, the thin film transistors and the flexible printed circuit" (claim elements 31.15 and 38.19) or "first conductive line, the second conductive line, the thin film transistors and the flexible printed circuit" (claim elements 46.18, 54.21, 61.21, 68.24, and 76.24).

The Petition only asserts that these claim elements are specifically disclosed in Watanabe, and thus admits at least tacitly that Shiba has no disclosure of these elements.[16] Indeed, Shiba does not disclose a component (an adjustment layer) which is electrically isolated from the first wiring line 127 and the common pad 751. (Ex. 1003, Figs. 1 and 3). In addition, Shiba does not disclose or suggest a component that has the function explained above in Section II.B.

Therefore, Shiba does not disclose, teach, or suggest the claimed "adjustment layer,"[17] the claimed "third/fourth conductive line,"[18] and the claimed

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[16] *See* the claim charts "Shiba in view of Watanabe and Sukegawa" for claim elements 31.10, 38.10, 38.11, 46.9, 54.14, 61.14, 68.14, 68.15, 76.14, and 76.15 in Section VI of the Petition and Hatalis Decl. at ¶¶58-63 and 93-98.

[17] Specifically, claim elements 31.10, 31.15, 38.10-38.13, and 38.17-38.19.

[18] Specifically, claim elements 46.9, 46.11, 46.12, 46.15, 46.16, and 46.18.

"conductive layer."[19]

2. Shiba Does Not Disclose a "Transparent Conductive Layer/Film"

All the challenged independent claims 31, 38, 46, 54, 61, 68, and 76 recite the elements of "a transparent conductive layer/film" (claim elements 31.12, 38.14, 46.13, 54.11, 61.11, 68.11, and 76.11). The Petition asserts that these claim elements, which recite a transparent conductive layer/film, are obvious in view of the common pad 751 disclosed in Shiba. For this assertion, the Petition cites to Figs. 3 and 4, and col. 6, ll. 37-42 of Shiba. *See,* Pet., pp. 17, 18, 20, 21, 25, 27, 28, 32, 34, and 37 and Hatalis Declaration at ¶¶52-57 and 66-71. However, the Patent Owner disagrees since Shiba does not disclose or suggest the claimed "transparent conductive layer/film" in the common pad 751.

Dr. Hatalis explains in ¶¶52-55 and 66-69 (Ex. 1007) that the common pad 751 in Shiba is formed by an extension of the first wiring line 127, which is made up of the layer formed in the step of forming the scanning lines Yj and the layer formed in the step of forming the data lines Xi, based on Fig. 3 (reproduced above at p. 21) and col. 6, ll. 37-42 of Shiba. Dr. Hatalis asserts that a person skilled in the art would understand that the common pad 751 serves as an external connection portion and also has a two-layered structure. In addition, Dr. Hatalis

[19] Specifically, claim elements 54.14, 54.20, 54.21, 61.14, 61.20, 61.21, 68.14, 68.15, 68.21, 68.23, 68.24, 76.14, 76.15, 76.21, 76.23, and 76.24.

argues that since transparent conductive layers such as ITO are well known to be materials that resist oxidation, a person skilled in the art would use a transparent conductive layer as the top layer of the pad having a two-layered structure so that reliable electrical connections can be formed.

The Petition's above argument is unclear. While Shiba has a two-layered structure which consists of the bottom conductive layer (formed in the step of forming the scanning lines Yj) and the top conductive layer (formed in the step of forming the data lines Xi), it is unclear whether the Petition is asserting that (i) the top conductive layer in the two-layered structure would be replaced with the transparent conductive layer or (ii) the transparent conductive layer would additionally be formed over the two-layered structure (that is, to make a three-layered structure). (*see, e.g.,* Hatalis Decl. ¶55). However, both arguments (i) and (ii) are without merit for the reasons explained below.

With respect to the above argument (i), Shiba only discloses that scanning lines Yj and data lines Xi may potentially form a two-layered structure of the first wiring line 127 and the common pad 751. (Ex. 1003, col. 6, ll. 36-38). Further, Shiba states that transparent conductive layers such as ITO are used to form a pixel electrode and a counter electrode. (Id., col. 1, ll. 36-39 and col. 5, ll. 24-28). Therefore, significantly, Shiba does not teach or suggest that the transparent conductive layer forms one layer of the two-layered structure.

Furthermore, Shiba states in col. 5, ll. 24-28, that "ITO has a relatively high resistance," and thus shows concern about the relatively high resistance of ITO. ITO is one of the transparent conductive layers, and the '204 patent employs ITO film 114 for the transparent conductive layer. (Ex. 1001, col. 8, ll. 52-60 and Fig. 4A). As Dr. Hatalis admits in Declaration ¶53, the common pad 751 and the first wiring line 127 in Shiba are continuous with each other. (Ex. 1003, col. 6, ll. 27-31 and Fig. 3). Therefore, if the top layer of the common pad 751 having a two-layered structure were formed of a transparent conductive layer, the top layer of the first wiring line 127 would also be formed of a transparent conductive layer, and the problem of relatively high resistance would be exacerbated. Accordingly, Shiba would not adopt a common pad 751 formed of a transparent conductive layer, and thus, Shiba does not disclose or suggest forming the common pad with a transparent conductive layer.

Moreover, with respect to the other claim elements,[20] the Petition regards the top conductive layer (formed in the step of forming the data lines Xi) of the two-layered first wiring line 127 and the common pad 751 as corresponding to the claim element "external connection line/second conductive line." Nevertheless, when asserting the disclosure of the "transparent conductive layer," the Petition

[20] *See,* Petitioner's claim chart "Shiba in view of Watanabe and Sukegawa" for claim elements 31.7, 31.8, 38.7, 38.8, 46.8, 54.7, 54.9, 61.7, 61.9, 68.7, 68.9, 76.7, and 76.9.

seems to replace the data lines Xi with the transparent conductive layer. If the data lines Xi (originally alleged in the Petition to be "external connection line/second conductive line") are replaced with a transparent conductive layer as in the argument (i), the alleged "external connection line/second conductive line" in Shiba would not exist in the first place. As such, it is not reasonable to regard the top conductive layer of the common pad 751 as corresponding to the claim element "transparent conductive layer/film" as well as to the claim element "external connection line/second conductive line."

With respect to the above argument (ii), Shiba would not adopt a three-layered structure including a transparent conductive layer as the top layer. As is apparent from Fig. 4 (reproduced above at p. 21) of Shiba, the pixel electrode 251, which is a transparent conductive layer in Shiba (Id., col. 1, ll. 36-39), is formed at a lower layer than data lines Xi (source electrode 231). That is, in order to form the transparent conductive layer without additional steps in the manufacturing steps disclosed in Shiba, the transparent conductive layer will be formed from the same layer as the pixel electrode 251. In such case, the transparent conductive layer will always be formed under, not over, the data lines Xi, which are formed from the same layer as the source electrode 231. Therefore, in order to make a transparent conductive layer as the top layer in Shiba, an additional step to form the transparent conductive layer after the data lines Xi are formed would be

required. That would conflict with the statement in Shiba that the structure of Shiba does not increase the number of manufacturing steps. (Id., col. 6, ll. 31-35). Therefore, a three-layered structure including a transparent conductive layer as the top layer would not be adopted in Shiba.

Even if a transparent conductive layer is formed as a top layer of the common pad 751 in Shiba as described in the above arguments (i) and (ii), it is unclear where to form the transparent conductive layer in the device disclosed in Shiba. The Petition and Declaration are silent as to this point. As described above in Section II.C, the region where the transparent conductive layer is formed is important to the invention of the '204 patent to improve the adhesion of the sealant by forming the sealant so as not to overlap with the transparent conductive layer. In Shiba, a transparent conductive layer is not disclosed or suggested other than for the pixel electrodes, and even if one were formed in the Shiba structure, the region of the formation would be unknown; therefore Shiba does not disclose the same effect of improved adhesion as the '204 patent.

For these reasons, Shiba does not disclose or suggest the claimed "a transparent conductive layer/film" found in the '204 patent claims.[21]

[21] Specifically, claim elements 31.12, 38.14, 46.13, 54.11, 54.18, 54.19, 61.11, 61.18, 61.19, 68.11, 68.19, 68.20, 76.11, 76.19, and 76.20.

3. Shiba Does Not Disclose "Direct Contact Through an Opening in the Second Insulating Film"

The challenged independent claims 54, 61, 68, and 76 recite the element of "second conductive line and the transparent conductive layer are in direct contact ***through*** an opening in the second insulating film" (claim elements 54.19, 61.19, 68.20, and 76.20, emphasis added). The '204 patent states "[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. 52-55, emphasis added). The ITO film 114 is the transparent conductive layer, and the external connection lines 403 are the second conductive lines. As shown in Fig. 4A and described in col. 8, ll. 52-55 of the '204 patent, 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.

In the context of the '204 specification and drawings, direct contact through the opening means that the contact occurs in the opening *because of* the opening, that is, the opening *enables* the contact to occur.

The Petition cites Fig. 3 of Shiba, identifying a slit 243 formed in the protective overcoat 241, as corresponding to an opening. *See* Pet., pp. 30, 33, 35 and 38, rows 54.19, 61.19, 68.20, and 76.20 and Hatalis Decl. at ¶¶112-115. Further, the Petition asserts that Shiba teaches the use of two-layered conductive

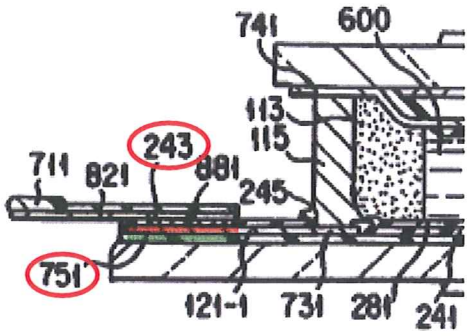
structures that can be used to form wiring lines, *e.g.*, first wiring lines 127, where the two layers are in direct contact through an opening in an insulating film. The Petition asserts still further that a person with ordinary skill in the art would understand that such two-layered structures can also be used to form external connections, and thus incorporate a transparent conductive layer on the pads in Shiba that would be in direct contact with the second conductive line through the disclosed opening in the second insulating film. *See* Hatalis Decl. at ¶113.

The Petition's above argument is unclear. While the Petition states that a slit 243 provided in the protective overcoat 241 corresponds to the opening, it does not specifically explain what wiring is in direct contact with which layer through the slit 243. As to this point, the Petition only states "a transparent conductive film on the pads … will be in direct contact with the second conductive line through the disclosed opening." *See* Hatalis Decl. at ¶113.

However, as explained in Section IV.B.2, Shiba, in the first place, does not form the transparent conductive layer in the common pad 751. Even if the transparent conductive layer is formed in the common pad 751 of Shiba, such layer cannot correspond to two claim elements, namely, the external connection line/second conduction line and the transparent conductive layer.

Claim elements 54.19, 61.19, 68.20, and 76.20 require the second wiring to be in direct contact with the transparent conductive layer ***through*** an opening in a

second insulating film. Shiba fails to show this. *See* Figs. 3 and 4 of Shiba. As is clear from Fig. 4 of Shiba (reproduced below with annotations), the common pad 751 (green region) is located under the slit 243 (red region) formed in the protective overcoat 241.



That is, even if a transparent conductive layer were formed at the top layer of the common pad 751 as the Petition alleges (arguments (i) and (ii) explained above in Section IV.B.2), such transparent conductive layer would be located *under* (i.e., not *in*) the slit 243 formed in the protective overcoat 241. Therefore, there would be contact between "second conductive line" and the "transparent conductive layer" below and not in the slit 243. Accordingly, the slit 243 of Shiba which the Petition regards as the "opening" does not provide the direct contact of the "second conductive line" and the hypothetical "transparent conductive layer." In other words, contact between the second conductive line and the hypothetical transparent conductive layer is not ***through*** the slit 243.

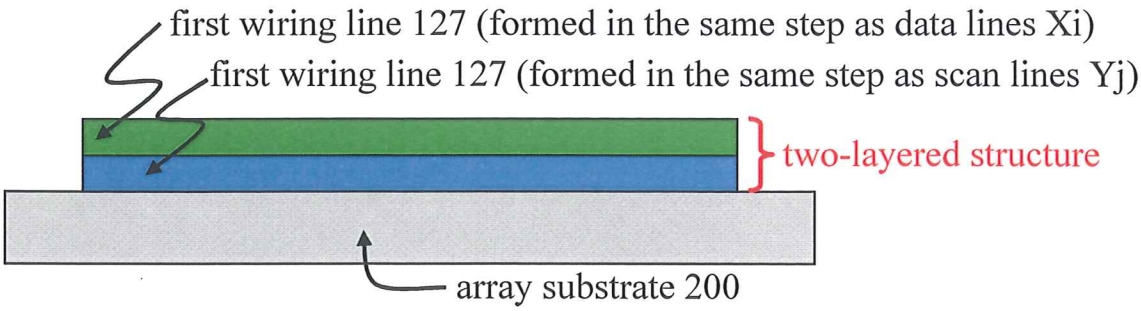
For these reasons, Shiba's structure does not satisfy the claim limitation "direct contact ***through*** an opening in the second insulating film," as required by claim elements 54.19, 61.19, 68.20, and 76.20.

4. Shiba Does Not Disclose a "First Insulating Film"

All the challenged independent claims 31, 38, 46, 54, 61, 68, and 76 recite the elements of "a first insulating film" (claim elements 31.8, 38.8, 46.10, 54.8, 61.8, 68.8, and 76.8).

The Petition asserts that these claim elements which recite "a first insulating film" are obvious. For this assertion, the Petition cites to Figs. 3 and 4, col. 4, ll. 15-17 and col. 6, ll. 37-42 of Shiba. *See,* Pet., pp. 16, 19, 23, 24, 27, 32, 34, and 37 and Hatalis Decl. at ¶¶47-51.

However, these descriptions are insufficient to disclose these claim elements. Shiba states at col. 6, ll. 37-40, "[m]oreover, the first wiring lines 127 may be formed in the step of forming the scanning lines Yj and the data lines Xi, respectively, thereby constituting a two-layered structure." From this cited portion of Shiba, 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). Therefore, "a two-layered structure" disclosed by Shiba may be a wiring made up of the bottom layer of the first wiring line 127 and the top layer of the first wiring line 127, sequentially stacked, as shown in the figure below.



For these reasons, Shiba does not disclose or suggest the claimed "first insulating film" found in the '204 patent claims.[22]

C. A Person of Ordinary Skill in the Art Would Not Combine Shiba With Watanabe and Sukegawa

There are no proper or sufficient reasons, in the references themselves or in the knowledge generally available to one of the skill in the art, to modify Shiba, Watanabe and Sukegawa or to combine the teaching of these references to achieve the invention, for at least the following reasons.

1. One Would Not Combine Shiba With Watanabe

The Petition asserts that claim elements, which include "adjustment layer," "third/fourth conductive line," and "conductive layer," would have been obvious by combining Shiba with Watanabe.[23] However, the Patent Owner disagrees, since,

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[22] Specifically, claim elements 31.8, 38.8, 38.11, 46.10, 54.8, 54.9, 61.8, 61.9, 68.8, 68.9, 76.8, and 76.9.

[23] *See* Pet., pp. 16, 18-21, 23-26, and 29-39, specifically, Petition claim chart "Shiba in view of Watanabe and Sukegawa" for claim elements 31.10, 31.15, 38.10-38.13, 38.17-38.19, 46.9, 46.11, 46.12, 46.15, 46.16, 46.18, 54.14, 54.20, 54.21, 61.14, 61.20, 61.21, 68.14, 68.15, 68.21, 68.23, 68.24, 76.14, 76.15, 76.21,

among other reasons, these figures teach away from their combination.

The Petition reproduces Figs. 2B and 5 of Watanabe in the claim chart. In addition, the Declaration only states that there are gap adjusting layers 25 and 27 in Watanabe referring to Fig. 5 and col. 12, ll. 52-59 of Watanabe. The Petition and Declaration are silent with respect to any specific combination of Shiba and Watanabe, and more specifically, how or why one of ordinary skill in the art would combine the disclosures of Shiba and Watanabe to obtain the claimed "adjustment layer," "third/fourth conductive line," and "conductive layer."

As is apparent from Fig. 1 of Shiba, the first wiring line 127 is provided along the seal region 111 so as to surround the display area 103. (Ex. 1003, col. 6, ll. 5-13 and 47-49). On the other hand, Fig. 5 of Watanabe plainly shows that lead portions 13 and 17 are provided so as to cross sealing member region 19, and the gap adjusting layers 25 and 27 are provided between these lead portions. (Ex. 1004, col. 12, ll. 41-48). Therefore, the wiring layout of seal region 111 in Shiba differs from that of the sealing member region 19 in Watanabe.

Therefore, the Patent Owner respectfully submits that the Petition fails to demonstrate why one of ordinary skill in the art would modify Shiba and Watanabe or combine the teachings of these references to obtain the claimed "adjustment

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76.23 and 76.24 in Section VI of the Petition and Hatalis Decl. at ¶¶47-51, 58-63, 81-84, 93-98, and 116-126.

layer," "third/fourth conductive line," and "conductive layer."

2. One Would Not Combine Shiba With Sukegawa

The Petition asserts that claim elements, which include "a transparent conductive layer/film," would have been obvious by combining Figs. 3 and 4 of Shiba and Fig. 2C of Sukegawa.[24] However, the Patent Owner disagrees, since, among other reasons, these figures teach away from their combination.

First, as explained in Section IV.B.2, a person of ordinary skill in the art would not employ a transparent conductive layer such as ITO for the common pad 751 in Shiba because of the relatively high resistance of such material. (*See* Ex. 1003, col. 5, ll. 24-28). In Sukegawa, on the other hand, transparent conductive film 8 is formed at the terminal portion. (*See* Ex. 1005, col. 6, ll. 9-20). For this reason, a person of ordinary skill in the art would not combine common pad 751 of Shiba with the terminal portion of Sukegawa, which employs ITO.

Next, the stacked structure of wirings shown in Fig. 2C of Sukegawa (reproduced below with annotations at p. 36) consists of, in ascending order: lower layer metal wiring 2 formed from the same layer as the gate electrode 2a; upper layer metal wiring 7 formed from the same layer as the data signal wiring 7a, drain

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[24] *See* Pet., pp. 17, 18, 20, 21, 25, 27-30, 32, 35, 37, and 38, specifically, Petition claim chart "Shiba in view of Watanabe and Sukegawa" for claim elements 31.12, 38.14, 46.13, 54.11, 54.18, 54.19, 61.11, 61.18, 61.19, 68.11, 68.19, 68.20 and 76.11, 76.19, and 76.20 and Hatalis Decl. at ¶¶52-57, 66-71, and 108-115.

electrode 7b and source electrode 7c; and transparent conductive film 8 formed from the same layer as the pixel electrode 8a.

In addition, Sukegawa describes (at col. 2, ll. 22-30 and col. 6, ll. 9-20) the importance of preventing corrosion in the metal wiring without additional manufacturing steps by having a structure in which the upper layer metal wiring 7 is covered with the transparent conductive film 8 which is covered with the protective film 9 in the terminal portion. Further, in Fig. 3C of Sukegawa, pixel electrode 8a is formed over source electrode 7c. (Ex. 1005, col. 5, ll. 6-13). On the other hand, as described in Section IV.A, Shiba discloses in Fig. 4 (reproduced above at p. 21) a structure in which the pixel electrode 251 (highlighted in blue) is formed under the data lines Xi (source electrode 231, highlighted in green). Accordingly, as explained in Section IV.B.2, additional steps are required when transparent conductive layer of Sukegawa (i.e., a transparent conductive layer formed over a data signal wiring) is combined with the structure of Shiba (i.e., a transparent conductive layer formed under data lines), which is contrary to the description in the specification of Shiba. *See* Ex. 1003, col. 6, ll. 31-35. For this reason also, a person of ordinary skill in the art would not combine common pad 751 of Shiba with the terminal portion of Sukegawa.

Further, Sukegawa teaches away from using the prior art structure shown in Fig. 2C, because Sukegawa itself indicates that this structure increases cost and

makes checking connections at the terminal portion impossible. (Ex. 1005, col. 3, ll. 54-67). The foregoing problems with the structure in Fig. 2C of Sukegawa, are another reason why there is no motivation for a person of ordinary skill in the art to combine the structure of Fig. 2C of Sukegawa with Shiba.

D. Even Combined, Shiba, Watanabe, and Sukegawa Would Not Meet the '204 Patent Claim Elements

Even if Shiba, Watanabe, and Sukegawa were combined, since neither Shiba, Watanabe, nor Sukegawa discloses that "the second conductive line and the transparent conductive layer are in direct contact through an opening in the second insulating film," these references do not disclose claim elements 54.19, 61.19, 68.20, and 76.20.

The Petition contends that these claim elements would have been obvious, relying on col. 4, l. 66 to col. 5, l. 1 of Shiba and Fig. 2C of Sukegawa. (Pet., pp. 30, 33, 35, and 38, Hatalis Decl. at ¶¶112-115). Specifically, the Petition contends that Fig. 2C of Sukegawa corresponds to these claim elements. The Petition contends that an area below a horizontal red arrow and between dashed vertical red lines in an annotated Fig. 2C of Sukegawa (*see* left), corresponds to the "opening" recited in the claims. (*See* Pet., pp. 30, 33, 35, and 38 and Hatalis Decl. at ¶114). These red markings added by Petitioner appear to designate a region where the protective

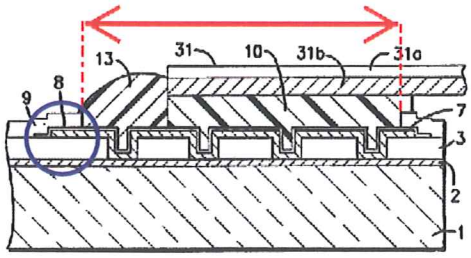


FIG. 2C
PRIOR ART

insulating film 9 is absent.

However, the claim element requires the second conductive line to be in direct contact with the transparent conductive layer ***through*** an opening in a second insulating film. The connection is made in the opening and is made *possible by* (or by virtue of) the opening. This claim element is not disclosed in Sukegawa. Instead, Sukegawa discloses that the entire upper layer metal wiring 7 (the alleged second conductive line) is covered with the transparent conductive film 8 (the alleged transparent conductive layer). (*See* Ex. 1005, col. 3, ll. 21-23). Fig. 2C shows both upper layer metal wiring 7 and transparent conductive film 8 extending ***under*** the second insulating film (protective insulating film 9) (*see* blue circle in above Fig. 2C). Thus, the upper layer metal wiring 7 is not connected to the transparent conductive film 8 ***through*** an opening in the protective insulating film 9.

Also, there is contact between upper layer metal wiring 7 and transparent conductive film 8 outside the alleged opening (red lines). As such, the "opening" designated by red lines in the Petition has nothing to do with providing the direct contact of the second conductive line and the transparent conductive layer. Therefore, Sukegawa's transparent conductive film 8 is not in direct contact "***through*** an opening in the second insulating film," and it is distinctly different from Fig. 4A of the '204 patent. Thus, this limitation of claim elements 54.19,

61.19, 68.20, and 76.20 is not disclosed in Sukegawa.

In addition, as described in Section IV.B.3 above, Shiba does not disclose or suggest claim elements 54.19, 61.19, 68.20, and 76.20. Accordingly, even if Shiba were combined with Sukegawa, as the Petition asserts, these claim elements would not have been obvious.

Moreover, as is clear from Fig. 5 of Watanabe, Watanabe does not teach the above missing elements. In fact, the Petition and Declaration do not refer to Watanabe regarding these claim elements.

Therefore, even if Shiba, Watanabe, and Sukegawa were combined, these claim elements would not have been obvious.[25]

E. Shiba and Sukegawa Have Already Been Considered by the Office

Shiba and Sukegawa were submitted to the Office by the Patent Owner in an Information Disclosure Statement ("IDS") received by the Office on January 20, 2011 and were considered by the Examiner on March 1, 2011. (*See* Ex. 2006, pp. 1 and 2). Therefore, the Office has already considered the primary reference Shiba and secondary reference Sukegawa during the prosecution of the '204 patent application. The claims of the '204 patent were allowed and patented over these cited references.

[25] Specifically, claim elements 54.19, 61.19, 68.20, and 76.20.

V. The Petition Fails to Establish a Reasonable Likelihood that at Least One Challenged Claim Is Unpatentable Over Zhang in View of Sukegawa

The second combination raised in the Petition is Zhang (Ex. 1006) in view of Sukegawa (Ex. 1005). *See* Pet., pp. 39-59 and Hatalis Decl. at ¶¶140-251. According to the Petition, this combination invalidates 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. As explained below, this proposed combination does not disclose all the elements of the challenged '204 patent claims and is improper. Independent claims 31, 38, 46, 54, 61, 68, and 76 are discussed in depth below; dependent claims 33, 36, 40, 43, 45, 48, 51, 53, 56, 59, 63, 66, 70, 73, 75, 78, 81, and 83 are also patentably distinct over Zhang in view of Sukegawa on at least the same grounds, as they depend from their respective independent claims.

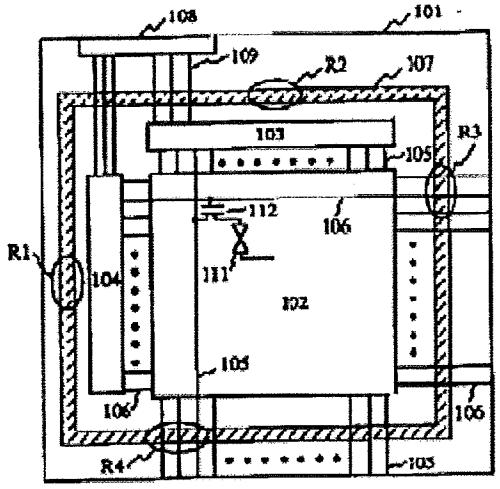
A. Zhang

Fig. 1 of Zhang, which is reproduced below, is a top view of the substrate (element substrate 101) of an active matrix type liquid crystal display device. (Ex. 1006, ¶27). As shown in Fig. 1, pixel part 102 is disposed on the element substrate 101, and around the pixel part 102, a signal line drive circuit 103 is provided on the top side, and a scan line drive circuit 104 is provided on the left side. In addition, external terminal 108 is provided at the top edge of the element substrate 101. (Id., ¶29). The signal line drive circuit 103 and the scan line drive circuit 104 are

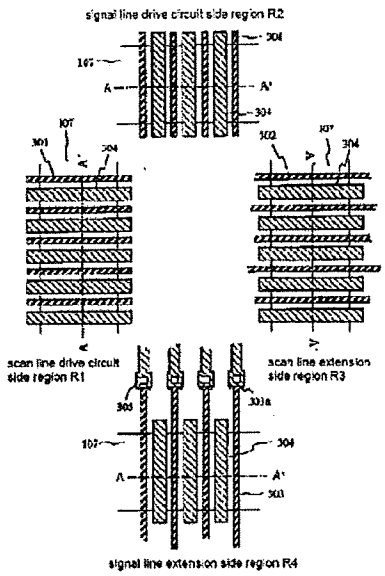
connected to the pixel part 102 by signal lines 105 and scan lines 106, respectively. (Id., ¶27). The external terminal 108 is connected to the signal line drive circuit 103 and the scan line drive circuit 104 by wiring lines 109. (Id., ¶29). Further, in sealant formation region 107, dummy wirings formed of starting films of signal lines 105 and scan lines 106 are disposed. (Id., ¶30).

Fig. 4 of Zhang, which is reproduced below, is an enlarged view of regions R1 through R4 in the sealant formation region 107 of Fig. 1. The following wirings are formed in the regions R1 through R4: dummy wiring line 301 formed of a starting film of the first layer, such as a silicon film; dummy wiring line 304 formed of a starting film of the second layer such as a film of titanium/aluminum/titanium; and wiring lines 302 and 303, which are formed of a starting film of the first layer and cross the sealant formation region 107. (Id., ¶¶36, 43, 50, 51, 53, and 55). The wiring line 303, at a connection end 303a, connects with wiring line 305, which is formed of a starting film of the second layer extending from the pixel part 102. Further, the wiring line 303 crosses the sealant formation region 107 and extends to the edge of the element substrate 101. (Id., ¶¶38-40 and 53). That is, in Zhang, the wiring line 305, which is formed of the second layer extending from the pixel part 102, is switched to the wiring line 303 formed of the first layer at the connection end 303a. (*See* region R4 in Fig. 4 of Zhang).

[FIG. 1]



[FIG. 4]



B. The '204 Patent Differs From Zhang

1. Zhang Does Not Disclose an "Auxiliary Line" and an "External Connection Line"

All the challenged independent claims 31, 38, 46, 54, 61, 68, and 76 recite the elements of "auxiliary line" (claim elements 31.7 and 38.7), "first conductive line" (claim elements 46.8 54.7 61.7, 68.7, and 76.7), "external connection line" (claim elements 31.8 and 38.8), or "second conductive line" (claim elements 46.8, 54.9, 61.9, 68.9, and 76.9).

Referring to Zhang (Ex. 1006) at Figs. 4 and 6, the Petition alleges that the claim elements of "auxiliary line" in claims 31 and 38 and "first conductive line" in claims 46, 54, 61, 68, and 76 are disclosed in Zhang by contending that **the wiring line 303** in Zhang is an "auxiliary line" and "first conductive line." (Pet., pp. 39, 40, 44, 47, 48, 51, 52, 56, and 59, and Hatalis Decl. at ¶¶156-163).

In addition, referring to Zhang (Ex. 1006) at Figs. 4 and 6, the Petition alleges that the claim elements of "external connection line" in claims 31 and 38 and "second conductive line" in claims 46, 54, 61, 68, and 76 are disclosed in Zhang by contending that **the wiring line 305** is an "external connection line" and "second conductive line." (Pet., pp. 40, 44, 47, 48, 52, 56 and 59, and Hatalis Decl. at ¶¶156-163). The Patent Owner respectfully disagrees.

The '204 patent claims require that the "auxiliary line/first conductive line" and the "external connection line/second conductive line" are formed so that they overlap and are electrically connected. As explained above in Section II.A, this structure provides the advantageous effect of reducing the wiring resistance. (*See* Ex. 1001, col. 4, ll. 14-19, col. 8, ll. 42-51, and Fig. 4A).

In order for the wiring line 303 and the wiring line 305 of Zhang to correspond to the claimed "auxiliary line/first conductive line" and "external connection line/second conductive line," respectively, as the Petition contends, these items would need to satisfy the "overlap" and "electrical contact" requirements of the claims.[26] However, Fig. 4 of Zhang shows a top view of a

[26] Specifically, claim elements "external connection line overlapping the auxiliary line with a first insulating film interposed therebetween" (claim elements 31.8 and 38.8); "the external connection line is electrically connected to the auxiliary line" (claim elements 31.14 and 38.16); "a first conductive line and a second conductive line stacked in this order over the substrate and extending under the sealant" (claim element 46.8); "the first conductive line is electrically connected to the second conductive line" (claim element 46.17); "the second conductive line overlaps at

structure, in which the signal to be transmitted is merely transferred from the wiring line 305 to the wiring line 303 in the connection end 303a (*see* Ex. 1006, ¶53), wherein the wiring line 305 does not overlap the wiring line 303. This structure shown in Zhang is completely different from the structure of Fig. 4A of the '204 patent in which the signal is transferred by two overlapping layers of (1) the auxiliary line/first conductive line and (2) the external connection line/second conductive line, whereby the wiring resistance is reduced. Since the wiring line 303 (the alleged "auxiliary line/first conductive line") and the wiring line 305 (the alleged "external connection line/second conductive line") are merely electrically connected (serially) in the connection end 303a, and wiring lines 303 and 305 do not overlap one another as shown in Fig. 4 of Zhang, there is no structure to reduce wiring resistance, and therefore, this advantageous effect of the '204 patent is not obtained. Therefore, in contrast to the claim language, in Zhang, it is apparent that the wiring line 303 is not overlapped by and in electrical contact with the wiring line 305, such that the electrical resistance of wiring line 303 and wiring line 305 is not reduced. Because the relationship between the wiring line 303 and the wiring line 305 of Zhang does not correspond to the relationship of the claimed "auxiliary line/first conductive line" and the claimed "external connection line/second

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least part of the first conductive line ..." (claim elements 54.16, 61.16, 68.17, and 76.17); and "the first conductive line and the second conductive line are in electrical contact" (claim elements 54.17, 61.17, 68.18, and 76.18).

conductive line," the wiring line 303 and the wiring line 305 do not correspond to the claimed "auxiliary line/first conductive line" and the claimed "external connection line/second conductive line," respectively.

For these reasons, Zhang does not disclose or suggest the claim elements, which recite "auxiliary line/first conductive line" and "external connection line/second conductive line" found in the '204 patent claims.[27]

2. Zhang Does Not Disclose a "Transparent Conductive Layer/Film"

All the challenged independent claims 31, 38, 46, 54, 61, 68, and 76 recite the elements of "a transparent conductive layer/film" (claim elements 31.12, 38.14, 46.13, 54.11, 61.11, 68.11, and 76.11). The Petition asserts that the claim elements, which recite "transparent conductive layer/film," would have been obvious over Fig. 1 and ¶¶29, 60 and 61 of Zhang. (Pet., pp. 41, 42, 45, 49, 52, 53, 56, and 59 and Hatalis Decl. at ¶¶164-168). Patent Owner respectfully disagrees.

Initially, Zhang does not disclose or suggest the claimed transparent conductive layer/film. The only transparent conductive layer disclosed in Zhang is used only as a material for pixel electrode 228. (Ex. 1006, ¶ 61). If one tries to form the transparent conductive layer in Zhang other than for a pixel electrode, it is

[27] Specifically, claim elements 31.7-31.9, 31.11, 31.12, 31.14, 31.15, 38.7-38.9, 38.13, 38.14, 38.16-38.19, 46.8, 46.10, 46.12, 46.13, 46.15-46.18, - 54.7-54.13, 54.16-54.19, 54.21, 61.7-61.13, 61.16-61.19, 61.21, 68.7-68.15, 68.17-68.20, 68.24, 76.7-76.15, 76.17-76.20, and 76.24.

unclear where to form the transparent conductive layer in the device disclosed in Zhang. The region where to form the transparent conductive layer is important to the invention of the '204 patent, as described above in Section II.C.

In contrast to this disclosure in Zhang, the Petition contends that the claimed transparent conductive layer is disclosed in Zhang by relying on Fig. 1 and ¶¶29, 60 and 61 of Zhang and Hatalis Decl. at ¶166. However, this contention in the Petition is incorrect. Specifically, Dr. Hatalis states that "Zhang discloses that a two-layered structure can be used to form wirings. A person having ordinary skill in the art would recognize that two-layered structures can also be formed using a transparent conductive film as the top layer, as it was well known that a transparent conductive film resists oxidation and corrosion," referring to Fig. 1 and ¶¶29, 60 and 61 of Zhang. This portion of the Declaration appears to assert that a two-layered structure can be used to form the wiring pattern 109 and that the top layer of the two-layered structure can be formed from a material of pixel electrode 228.

However, Zhang ¶29 only describes a connection of drive circuits 103 and 104 to external terminal 108 is made with a wiring pattern 109. Further, Zhang ¶60 only describes the structure of the wiring pattern 109 where the wiring pattern formed of the starting film of the wiring of the first layer is connected to the wiring pattern formed of the starting film of the wiring of the second layer. As explained above in Section V.A, in Zhang, the starting film of the wiring of the first layer is a

silicon film (Ex. 1006, ¶¶36, 43, and 51), and the starting film of the wiring of the second layer is a titanium/aluminum/titanium layer. (Id., ¶¶50, 53, and 55). Therefore, Zhang has no teaching, disclosure, or suggestion of the transparent conductive layer/film required by the claims.

Likewise, the Petition relies on Zhang ¶61, but Zhang ¶61 only discloses using a transparent conductive layer as a material of pixel electrode 228.

Furthermore, as explained in Section V.B.1, with respect to the other claim elements, the Petition regards the wiring line 303 and the wiring line 305 as corresponding to the claim element "auxiliary line/first conductive line" and the claim element "external connection line/second conductive line," respectively.[28] As explained in Section V.A, the wiring line 303 is formed of the starting film of the wiring of the first layer and the wiring line 305 is formed of the starting film of the wiring of the second layer. (Ex. 1006, ¶¶51 and 53). That is, the Petition regards the first layer in Zhang as the claim element "auxiliary line/first conductive line" and regards the second layer as the claim element "external connection line/second conductive line." Nevertheless, the Petition appears to replace the

[28] *See* Petition's second claim chart "Zhang in view of Sukegawa et al." for claim elements 31.7-31.9, 31.11, 31.12, 31.14, 31.15, 38.7-38.9, 38.13, 38.14, 38.16-38.19, 46.8, 46.10, 46.12, 46.13, 46.15-46.18, 54.7-54.13, 54.16-54.19, 54.21, 61.7-61.13, 61.16-61.19, 61.21, 68.7-68.15, 68.17-68.20, 68.24, 76.7-76.15, 76.17-76.20, and 76.24 and Hatalis Decl. at ¶¶156-163, 164-168, 176-179, 191-200, 203-227, and 234-238.

second layer with a transparent conductive layer in the argument regarding the "transparent conductive layer." If the second layer (originally alleged in the Petition to be the "external connection line/second conductive line") is replaced with a transparent conductive layer, there will be no alleged "external connection line/second conductive line" in Zhang in the first place. As such, it is not reasonable to argue that the top layer of two-layered structure corresponds to the claim element "transparent conductive layer/film" as well.

For these reasons, Zhang does not disclose or suggest the claim elements which recite "transparent conductive layer/film" found in the '204 patent claims.[29]

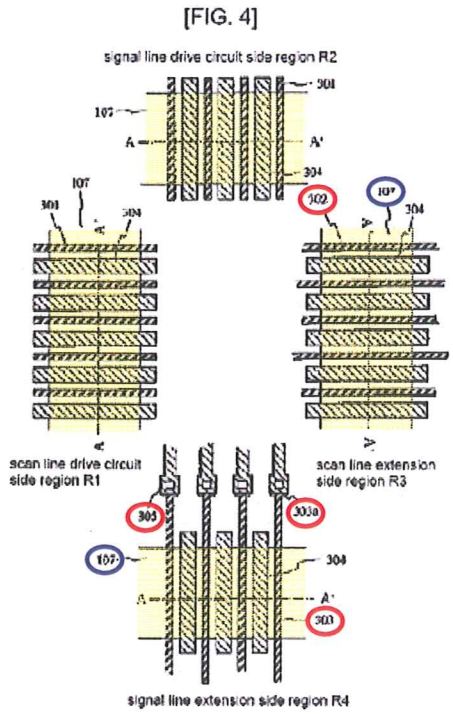
3. Zhang Does Not Disclose an "External Connection Line Under the Sealant" and a "Sealant Over a Second Region of the Second Conductive Line"

All the challenged independent claims 31, 38, 46, 54, 61, 68, and 76 recite the elements of "at least part of the external connection line and at least part of the auxiliary line extending under the sealant" (claim elements 31.9 and 38.9), "a first conductive line and a second conductive line stacked in this order over the substrate and extending under the sealant" (claim element 46.8), "the second conductive line overlaps at least part of the first conductive line under the sealant" (claim elements 61.16 and 76.17), or "a sealant over a second region of the second

[29] Specifically, claim elements 31.12, 38.14, 46.13, 54.11, 54.18, 54.19, 61.11, 61.18, 61.19, 68.11, 68.19, 68.20, 76.11, 76.19, and 76.20.

conductive line" (claim elements 54.13, 61.13, 68.13, and 76.13). These claim elements are not taught or suggested in Zhang.

In its second claim chart, the Petition asserts in rows 31.9, 38.9, and 46.8 that these claim elements are disclosed in Figs. 4, 6, 12, and 13 and ¶¶88-90 of Zhang. (Pet., pp. 40, 41, 44, 47, 48 and Hatalis Decl. at ¶¶156-163). In addition, the Petition asserts in rows 61.16 and 76.17 that these claim elements are disclosed in Figs. 4, 12, and 13 and ¶40 in Zhang. (Pet., pp. 56 and 59 and Hatalis Decl. at ¶¶213-216). Further, the Petition asserts in rows 54.13, 61.13, 68.13, and 76.13 that this claim element is disclosed in Figs. 4, 12, and 13 and ¶40 in Zhang. (Pet., pp. 53, 56, and 59 and Hatalis Decl. at ¶¶184-187). Specifically, Dr. Hatalis asserts that a person of ordinary skill in the art would understand that by applying



the wiring line 303 to the auxiliary line/first conductive line and applying the wiring line 305 to the external connection line/second conductive line in the region R4 in Fig. 4 of Zhang (reproduced on the left with annotations), the wiring line 303 and the wiring line 305 overlap like the dummy wiring line 301 and dummy wiring line 601 in Fig. 12 of Zhang so that the wiring line 305 extends to the sealant formation region 107.

(Hatalis Decl. at ¶¶157-160, 185, 186, 214, and 215).

Contrary to the Petition's assertions regarding these claim elements, Zhang does **not** disclose a structure in which a stacked layer wiring, formed of the auxiliary line/first conductive line and the external connection line/second conductive line, extends under the sealant. Referring to Fig. 4 of Zhang above, it is clear that the wiring line 305 (which the Petition argues is the external connection line/second conductive line) does not extend to the sealant formation region 107 (yellow area). In addition, with reference to Fig. 4 and ¶¶40, 51, and 53 of Zhang, Zhang explains that in the signal line extension side region R4 in Fig. 4, the wiring line 305 formed of "the starting film of the wiring of the second layer" extending from the pixel part is connected in the connection end 303a to the wiring line 303 formed of "the starting film of the wiring of the first layer" so that the wiring line 303 intentionally crosses the sealant formation region 107. Zhang states that the wiring lines 303 are formed so as to cross the sealant formation region 107 in order to equal the level difference in the sealant formation region 107. (*See* Ex. 1006, ¶¶40-42 and 95). This structure is also disclosed in Fig. 8 of Zhang.

Accordingly, in Zhang, the wiring line 303 formed of the starting film of the wiring of the first layer is intentionally used as the wiring that crosses the sealant formation region 107 and the wiring line 305, which the Petition argues is the external connection line/second conductive line, **is not used** to cross the sealant

formation region 107 as required by the claim language.

In addition, if the wiring line 305 in the region R4 extends to the sealant formation region 107 as the Petition argues, the dummy wiring line 304 exists in the same layer as the wiring line 305 in the sealant formation region 107 (Ex. 1006, ¶¶50 and 53), and accordingly, there is a possibility that the extended wiring lines 305 adjacent to each other with the dummy wiring line 304 interposed between them will short-circuit. A person skilled in the art would not have been motivated to form the structure argued in the Petition, especially where there is a possibility of a short-circuit.

Therefore, Zhang contains no teaching, disclosure, or suggestion (or motivation) regarding the above claim elements.[30]

4. Zhang Does Not Disclose "Direct Contact Through an Opening in the Second Insulating Film"

The challenged independent claims 54, 61, 68, and 76 recite the element of "second conductive line and the transparent conductive layer are in direct contact ***through*** an opening in the second insulating film" (claim elements 54.19, 61.19, 68.20, and 76.20, emphasis added). Zhang does not teach or suggest these claim elements.

The Petition asserts that the claim elements in its second claim chart are

[30] Specifically, claim elements 31.9, 38.9, 46.8, 54.13, 61.13, 61.16, 68.13, 76.13, and 76.17.

disclosed only in Fig. 2C of Sukegawa and tacitly admits that Zhang does not disclose these claim elements. (Pet., pp. 54, 56, 57, and 59 and Hatalis Decl. at ¶¶224-227). While Dr. Hatalis states that "Zhang discloses connectivity to an external terminal," he is silent about what connectivity supposedly is specifically disclosed in Zhang. (Hatalis Decl. at ¶225).

Further, as explained above in Section V.B.2, Zhang does not disclose the claimed "transparent conductive layer." Thus, Zhang does not disclose an opening for connection between the second conductive line and the "transparent conductive layer." Therefore, Zhang fails to teach, suggest, or disclose the above elements.

C. A Person of Ordinary Skill in the Art Would Not Combine Zhang With Sukegawa

As explained above in Section V.B, Zhang lacks certain elements in the claims of the '204 patent, and the Petition attempts to cure such lack by combining Sukegawa with Zhang.

Specifically, the Petition asserts that claim elements, which include "external connection line/second conductive line," would have been obvious by combining Fig. 4 of Zhang and Fig. 2C of Sukegawa.[31] For example, as suits its needs,

[31] *See* Pet., pp. 41, 42, 45, 49, 52-54 and 56-59, specifically, Petition claim chart in Section VI, "Zhang in view of Sukegawa et al." at 31.7-31.9, 31.11, 31.12, 31.14, 31.15, 38.7-38.9, 38.13, 38.14, 38.16-38.19, 46.8, 46.10, 46.12, 46.13, 46.15-46.18, 54.7-54.13, 54.16-54.19, 54.21, 61.7-61.13, 61.16-61.19, 61.21, 68.7-68.15, 68.17-

Petitioner contends at various points that the "external connection line/second conductive line" corresponds to the wiring line 305 in Zhang and at other points that the "external connection line/second conductive line" corresponds to the upper layer metal wiring 7 in Sukegawa. (*See* Pet., pp. 40-42, 44, 47-48, 52-54, 56, and 59, and Hatalis Decl. at ¶¶156-168, 176-179, and 224-227). Petitioner cannot have it both ways. Furthermore, the two references cannot be combined because they ***teach away*** from one another based on the significantly different uses of the wiring line 305 in Zhang and the upper layer metal wiring 7 in Sukegawa.

More specifically, as explained in Section V.A, the wiring line 305 in Zhang, which extends from the pixel part 102, is connected to the wiring line 303 which extends from the sealant formation region 107, thereby connecting the pixel part 102 to other circuits. A path of a signal applied to the wiring line 305 is changed from the wiring line 305 to the wiring line 303 at the connection end 303a. (*See* Ex. 1006, ¶¶ 22, 39, 40, 52, and 53, and Fig. 4). In other words, the wiring line 305 is a wiring provided between the pixel part 102 and wiring line 303 to transmit the signal in a *horizontal* direction.

In contrast, as shown in Fig. 2C of Sukegawa, the upper layer metal wiring 7 is formed only in the terminal portion to transmit signals from the flexible wiring

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68.20, 68.24, 76.7-76.15, 76.17-76.20, and 76.24 and Hatalis Decl. at ¶¶156-168, 176-183, 191-200, 203-208, 209-227, and 234-238.

substrate 31 to the lower layer metal wiring 2, which is located below the upper layer metal wiring 7. (*See* Figs. 1A and 2C of Sukegawa reproduced below in Section V.D. at p. 55). In other words, contrary to the foregoing wiring line 305 in Zhang, the signals from the flexible wiring substrate 31 are transmitted in a *vertical* direction when the signals pass through the upper layer metal wiring 7 to the lower layer metal wiring 2.

Therefore, the technical use of upper layer metal wiring 7 is totally different from that of the wiring line 305 in the Zhang. As the uses of the two wirings are different, a person of ordinary skill in the art would not be taught, motivated, or led to combine Zhang's wiring line 305 with Sukegawa's upper layer metal wiring 7. The art does not suggest such a combination.

Further, with respect to the prior art shown in Fig. 2C, Sukegawa itself indicates that there are problems with this structure of an increase in cost and of the impossibility of checking connections at the terminal portion. (Ex. 1005, col. 3, ll. 54-67). Therefore, there is no motivation for a person of ordinary skill in the art to combine Fig. 2C of Sukegawa, which has inherent problems, with Zhang.

D. Even Combined, Zhang and Sukegawa Would Not Meet the '204 Patent Claim Elements

Even if the two references were combined, neither Zhang nor Sukegawa discloses the claim elements as discussed in Sections V.B.1, 3, and 4.

First, as explained above in Section V.B.1, because the wiring line 303 and

the wiring line 305 of Zhang do not correspond to the claimed "auxiliary line/first conductive line" and "external connection line/second conductive line," respectively, Zhang does not disclose the claimed "auxiliary line/first conductive line" and "external connection line/second conductive line."

Sukegawa does not cure Zhang's lack of disclosure of these claim elements. In the '204 patent, the auxiliary lines 401 (auxiliary line/first conductive line) and external connection lines 403 (external connection line/second conductive line) overlap one another and are electrically connected in parallel to reduce the electrical resistance. (Ex. 1001, col. 8, ll. 45-50). In other words, the reduction in electrical resistance can be obtained when the auxiliary line/first conductive line and the external connection line/second conductive line are in such a position that they transmit signals in a parallel direction. Contrary to the foregoing wiring relationship in the '204 patent, as shown in Fig. 2C of Sukegawa (reproduced below with annotations), the upper layer metal wiring 7 (blue region) is formed only in the terminal portion, so that the upper layer metal wiring 7 is formed to transmit signals from the FPC to the lower layer metal wiring 2 (red region), which is located below the upper layer metal wiring 7. On the other hand, the lower layer metal wiring 2 extends away from the terminal portion to the display portion, so that the lower layer metal wiring 2 is formed to transmit signals from the FPC via the upper layer metal wiring 7 to the display portion. Further, referring to Fig. 1A

of Sukegawa (reproduced below with annotations), which is a planar view of Fig. 2C, it is apparent that the upper layer metal wiring 7 (blue region) is formed only at the terminal portion in an island-shape as opposed to the lower layer metal wiring 2 (red region) which extends to the display portion.

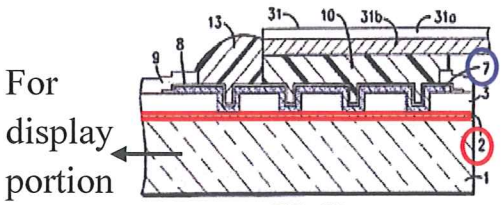

FIG. 2C
PRIOR ART

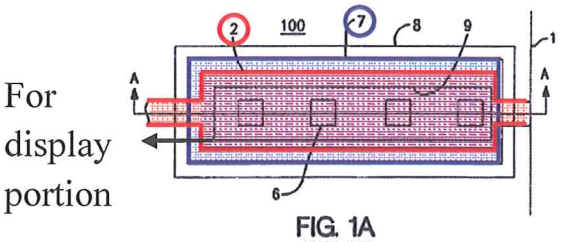

FIG. 1A
PRIOR ART

Contrary to the foregoing wiring relationship in the '204 patent, as shown in Figs. 1A and 2C of Sukegawa, the upper layer metal wiring 7 electrically conducts the signals transmitted from the FPC to the lower layer metal wiring 2, which is located below the upper layer metal wiring 7, that is, the signals from the FPC are transmitted in a *vertical* direction when the signals pass through the upper layer metal wiring 7 to the lower layer metal wiring 2. That is, the upper layer metal wiring 7 functions merely to electrically connect between the FPC and the lower layer metal wiring 2 in a vertical direction.

Therefore, since the lower layer metal wiring 2 is not a wiring that reduces electrical resistance of the upper layer metal wiring 7 as auxiliary lines 401 reduce the electrical resistance of external connection lines 403 in the '204 patent, the relationship between the lower layer metal wiring 2 and the upper layer metal

wiring 7 of Sukegawa does not correspond to the relationship of the claimed "auxiliary line/first conductive line" and the claimed "external connection line/second conductive line." Thus, Sukegawa does not disclose the claimed "auxiliary line/first conductive line" and "external connection line/second conductive line."

Therefore, even if the two references were combined, neither Zhang nor Sukegawa discloses claim elements that recite "auxiliary line/first conductive line" and "external connection line/second conductive line."[32]

Second, as explained above in Section V.B.3, Zhang does not disclose an "external connection line extending under the sealant" and "a sealant over a second region of the second conductive line." Sukegawa does not cure Zhang's lack of disclosure of these claim elements.

The Petition does not contend that Sukegawa discloses sealant over any portion of upper layer metal wiring 7, which the Petition alleges is an "external connection line/second conductive line." Instead, the Petition cites to Zhang's disclosure of sealant formation region 107. (*See*, Pet., pp. 40, 41, 44, 47, 48, 53, 56, and 59 and Hatalis Decl. at ¶156-163, 184-187, and 213-216). Thus, the Petition

[32] Specifically, claim elements 31.7-31.9, 31.11, 31.12, 31.14, 31.15, 38.7-38.9, 38.13, 38.14, 38.16-38.19, 46.8, 46.10, 46.12, 46.13, 46.15-46.18, 54.7-54.13, 54.16-54.19, 54.21, 61.7-61.13, 61.16-61.19, 61.21, 68.7-68.15, 68.17-68.20, 68.24, 76.7-76.15, 76.17-76.20, and 76.24.

acknowledges that Sukegawa does not disclose upper layer metal wiring 7 extending under the sealant and a sealant over a second region of upper layer metal wiring 7.

Indeed, it is evident from Figs. 2C and 3D (reproduced below) of Sukegawa, that Sukegawa does not disclose upper layer metal wiring 7 extending under the sealant and a sealant over upper layer metal wiring 7.

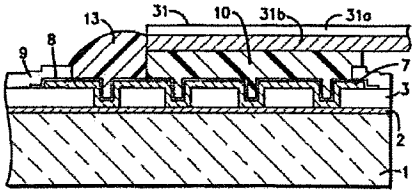

FIG. 2C
PRIOR ART

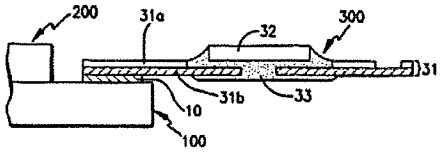

FIG. 3D

Fig. 3D shows the attachment to active matrix substrate 100 of tape-carrier package 300 (i.e. the FPC) via flexible wiring substrate 31 and via anisotropic conductive film 10. (Ex. 1005, col. 5, ll. 28-44). The sealant is used to seal the liquid crystal material in the gap between color filter substrate 200 and active matrix substrate 100. Thus, the sealant is located between color filter substrate 200 and active matrix substrate 100, which Fig. 3D shows is located a distance away from the terminal portion where the FPC is attached and electrically connected to the active matrix substrate 100. (*See* Id., col. 5, ll. 30-34 and Figs. 2C and 3D).

Additionally, Sukegawa indicates that the liquid crystal material is sealed in the gap between the active matrix substrate 100 and the color filter substrate 200. (*See* Id., col. 5, ll. 30-34 and Fig. 3D). The sealant is necessarily positioned

between the active matrix substrate 100 and the color filter substrate 200 in order to seal in the liquid crystal material. Since the upper layer metal wiring 7 shown in Fig. 2C of Sukegawa does not extend to the region where the active matrix substrate 100 and the color filter substrate 200 are attached to each other (*see*, also Fig.1A of Sukegawa, which is a planar view of Fig. 2C showing that the upper layer metal wiring 7 is an island-shaped pattern provided only in the terminal portion), it is apparent that the upper layer metal wiring 7 does not exist under the sealant.

Therefore, even if the two references were combined, neither Zhang nor Sukegawa discloses these claim elements.[33]

Finally, as explained above in Section V.B.4, Zhang does not disclose "direct contact through an opening in the second insulating film" (claim elements 54.19, 61.19, 68.20, and 76.20). The Petition asserts that this claim element would have been obvious over Fig. 2C of Sukegawa. (Pet., pp. 54, 56, 57, and 59 and Hatalis Decl. at ¶¶224-227). However, because the "***through***" limitation discussed above in Section IV.D is not met by the structure in Fig. 2C, Sukegawa does not disclose this claim element.

Therefore, even if the two references were combined, neither Zhang nor

[33] Specifically, claim elements 31.9, 38.9, 46.8, 54.13, 61.13, 61.16, 68.13, 76.13, and 76.17.

Sukegawa discloses claim elements 54.19, 61.19, 68.20, and 76.20.

For these reasons, even if the two references were combined, Zhang and Sukegawa do not disclose the claim elements, "auxiliary line/first conductive line," "external connection line/second conductive line," "external connection line extending under the sealant," "a sealant over a second region of the second conductive line," and "direct contact through an opening in the second insulating film."[34]

Therefore, for these further reasons, even if Zhang was combined with Sukegawa, none of the challenged independent claims 31, 38, 46, 54, 61, 68, and 76 would not have been obvious.

E. The Counterpart U.S. Patent of Zhang and Sukegawa Have Already Been Considered by the Office

Although Zhang was not itself submitted to the Office in an IDS, its U.S. counterpart, U.S. Patent No. 5,995,189 (Ex. 2007), was submitted to the Office in an IDS received by the Office on January 20, 2011. Further, U.S. Patent No. 5,995,189 identifies Zhang in the Foreign Application Priority Data section. Sukegawa was also submitted to the Office in an IDS received by the Office on January 20, 2011. The Examiner considered these references on March 1, 2011.

[34] Specifically, claim elements 31.7-31.9, 31.11, 31.12, 31.14, 31.15, 38.7-38.9, 38.13, 38.14, 38.16-38.19, 46.8, 46.10, 46.12, 46.13, 46.15-46.18, 54.7-54.13, 54.16-54.19, 54.21, 61.7-61.13, 61.16-61.19, 61.21, 68.7-68.15, 68.17-68.20, 68.24, 76.7-76.15, 76.17-76.20, and 76.24.

(Ex. 2006, pp. 1 and 2). Therefore, the claims of the '204 patent were allowed and patented over these cited references.

VI. CONCLUSION

For the foregoing reasons, this Board should deny the Petition and not institute *inter partes* review of the '204 patent.

Respectfully submitted,

Mark J. Murphy, Reg. 34,225 Mark.murphy@huschblacksell.com
Edward D. Manzo, Reg. 28,139 Edward.manzo@huschblackwell.com
HUSCH BLACKWELL LLP
120 So. Riverside Plaza, #2200
Chicago, IL 60606 312-655-1500

March 6, 2013

CERTIFICATE OF SERVICE

I certify that the foregoing PRELIMINARY PATENT OWNER RESPONSE UNDER 37 C.F.R. §42.107 was served on the Petitioner by Federal Express Standard Overnight at the following addresses on March 6, 2013.

Scott A. McKeown
Oblon, Spivak, McClelland, Maier & Neustadt, L.L.P.
1940 Duke Street
Alexandria, VA 22314

Gregory S. Cordrey
Jeffer Mangels Butler & Mitchell LLP
3 Park Plaza, Suite 1100
Irvine, CA 92614-2592