

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

GOLD CHARM LTD.,  
Patent Owner.

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Case IPR2015-01452  
Patent 7,460,190 B2

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Before KARL D. EASTHOM, BRYAN F. MOORE, and CHARLES J.  
BOUDREAU, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

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

## I. INTRODUCTION

Samsung Display Co., Ltd., Funai Electric Co., Ltd., and Toshiba Corp. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–14 of U.S. Patent No. 7,460,190 B2 (Ex. 1001, “’190 patent”). *See* Pet. 1. In response, Gold Charm Ltd. (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

For the reasons set forth below, we do not institute an *inter partes* review of claims 1–14 of the ’190 patent.

### A. *Related Proceedings*

Petitioner indicates that Patent Owner asserts the ’190 patent against various defendants in the District of Delaware. *See* Pet. 1–2.

### B. *The ’190 Patent*

The ’190 patent discloses an LCD display device having amorphous-silicon TFTs (thin-film-transistors). Ex. 1001, 1:18–20, 5:57–64, Fig. 2F. A disclosed TFT has a larger channel length at both the edge portions of the channel. *Id.* at Fig. 1 (reproduced below). For example, the embodiment represented in Figure 1 includes chamfers at the corners of source and drain electrodes, thereby exposing and creating a larger channel region length L2 at the corners of the electrodes relative to the center length L1. *See id.* at 5:35–41. According to the ’190 patent, this type of channel structure reduces leakage current caused by light incident onto the channel. *Id.* at Abstract, 5:47–51.

Figure 1 of the '190 patent is reproduced below:

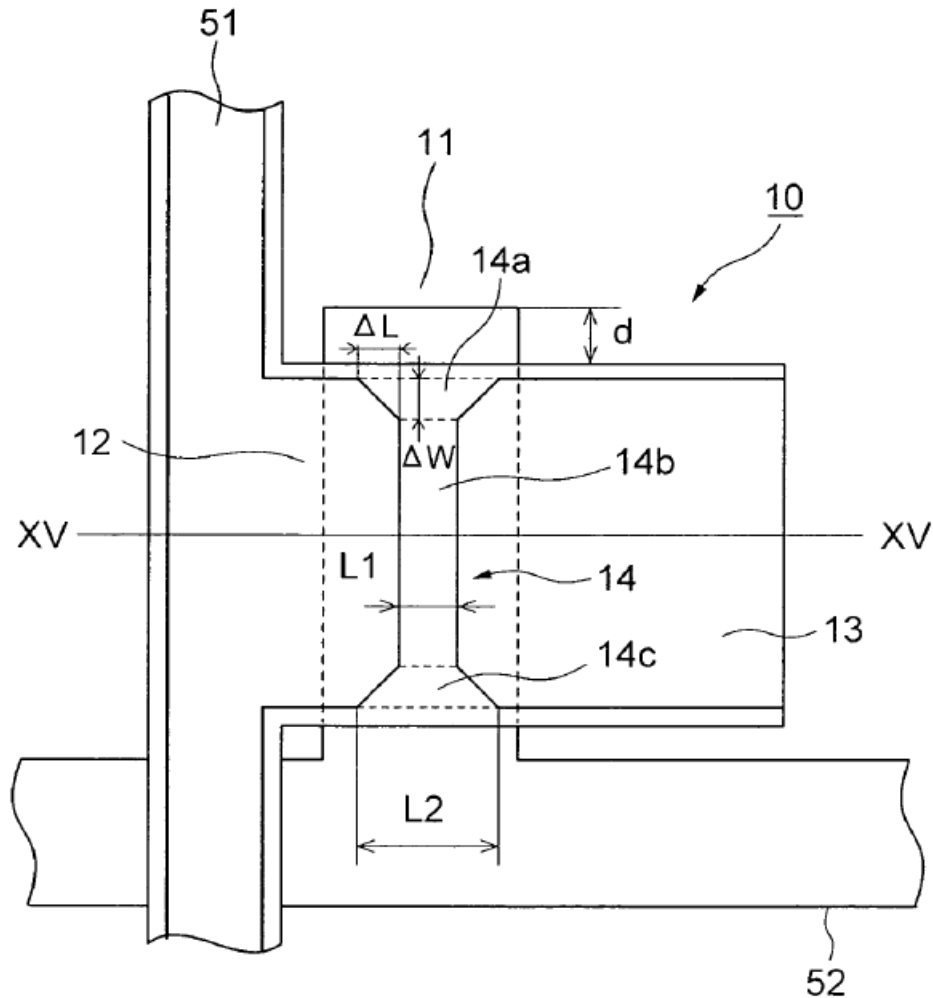


Figure 1 above depicts a larger channel length  $L2$  at edge portions 14a and 14c of channel 14 between drain 12 and source 13 electrodes, as compared to length  $L1$  at a center portion of channel 14. *Id.* at 5:32–51. “[T]he drain electrode 12 and the source electrode 13 oppose each other, with an intervention of the channel region 14 disposed therebetween in an a-Si layer, which underlie[s] the drain electrode 12 and the source electrode 13.” *Id.* at 5:32–35. This structure reduces “leakage current caused by the light reflected from the gate electrode 11 . . . due to the larger channel length”  $L2$  at the edges of the channel. *Id.* at 5:49–51.

*C. Illustrative Challenged Claim*

Claims 1, 9, and 13 are independent. Claim 1 follows.

1. A liquid crystal display (LCD) device comprising a TFT (thin-film-transistor) substrate mounting thereon a plurality of TFTs each having a channel in an ohmic contact layer and a semiconductor layer;

a counter substrate mounting thereon a black matrix;

a liquid crystal layer sandwiched between said TFT substrate and said counter substrate;

a backlight unit disposed at a rear side of said TFT substrate for irradiating said TFT substrate with backlight, said counter substrate mounting thereon a light shield overlapping said channel of said TFTs as view normal to said counter substrate; and

a rear shield film interposed between said channel of said TFTs and said backlight unit to overlap said channel of said TFTs as viewed normal to said TFT substrate,

said channel having a channel length larger at an edge portion of said channel adjacent to one of said pixels than at a central portion thereof, whereupon leakage current of said TFT at said edge portion is suppressed.

Ex. 1001, 10:18–36.

*D. Evidence of Record*

Petitioner relies on the following references and declaration:

<b>Reference or Declaration</b>	<b>Exhibit No.</b>
Declaration of George A. Melnik, Ph.D.	Ex. 1008
U.S. Patent No. 5,563,432 (Oct. 8, 1996) (“Miura”)	Ex. 1003
U.S. Patent No. 6,466,289 (Oct. 15, 2002) (“Lee”)	Ex. 1004

<b>Reference or Declaration</b>	<b>Exhibit No.</b>
Japanese Pub. Patent App. No. H2-216870 (Aug. 29, 1990) (“Hirikawa”)	Ex. 1005

See Pet. 4, 11–15.

*E. Asserted Grounds of Unpatentability*

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

<b>Claims Challenged</b>	<b>Basis</b>	<b>References(s)</b>
1–14	35 U.S.C. § 103(a)	Miura
1–14	35 U.S.C. § 103(a)	Lee and Miura
1–10 and 12–14	35 U.S.C. § 103(a)	Admitted Prior Art and Hirikawa

See Pet. 4.

**I. ANALYSIS**

*A. Claim Construction*

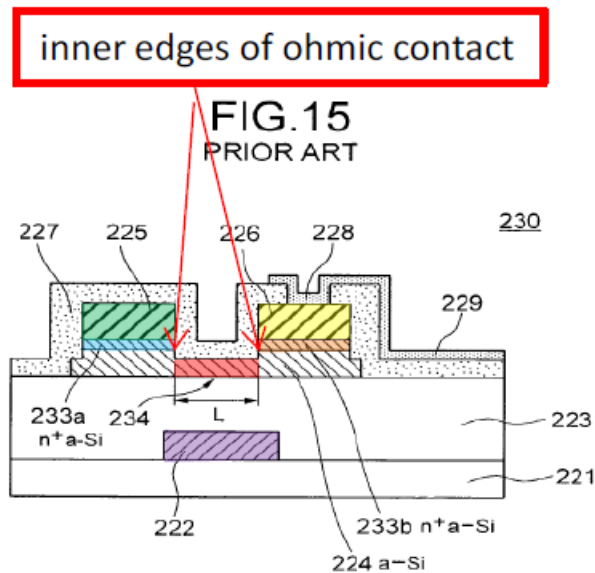
The claims of an unexpired patent are interpreted using the broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015).

If the scope of the claims cannot be determined without speculation, the differences between the claimed invention and the prior art cannot be ascertained. *BlackBerry Corp. v. MobileMedia Ideas, LLC*, Case IPR2013-00036, slip op. at 19–20 (PTAB Mar. 7, 2014) (Paper 65) (citing *In re Steele*, 305 F.2d 859, 862–63 (CCPA 1962) and reasoning that “the prior art grounds of unpatentability must fall, *pro forma*, because they are based on speculative assumption as to the meaning of the claims”). In other words, “[w]ithout ascertaining the proper claim scope, we cannot conduct a necessary factual inquiry for determining obviousness—ascertaining

differences between the claimed subject matter and the prior art.” *Id.* at 20 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)).

B. “channel,” independent claims 1, 9, and 13

As Petitioner contends, “[a]ll of the independent claims include a ‘channel.’” Pet. 13. Addressing the channel, Petitioner reproduces and annotates Figure 15 from the ’190 patent, as follows:



*Id.* (Petitioner annotating Ex. 1001, Fig. 15). As color-coded by Petitioner, Figure 15 represents ohmic contact 233a (sky blue), ohmic contact 233b (orange), drain electrode 225 (green), source electrode 226 (yellow), gate 222 (purple), and an a-Si (amorphous silicon) layer 224 (red and uncolored hatched regions) in a sectional view of a TFT. *See* Ex. 1001, 1:24–25, 1:49–50, 2:8–13; Pet. 13–14. According to Petitioner, the red portion 234 of a-Si layer 224, marked as having a length “L,” constitutes a “‘channel’ region” corresponding to the channel recited in the claims. *See* Pet. 13–14; Ex. 1001, 2:12–13 (“length of the channel region 234 is ‘L’ as shown in” Fig.

15); *see also supra* Fig. 1 (similar channel 14 in top plan view, including regions 14a, 14b, 14c).

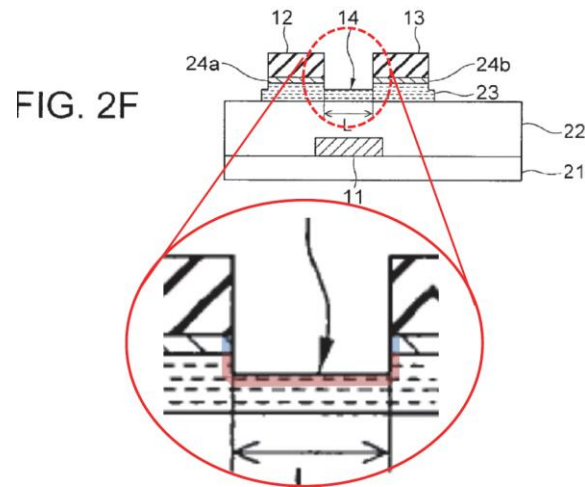
Petitioner explains that “[t]he ohmic contacts [233a, 233b] are where the semiconductor layers [224] are electrically contacted by the source and drain electrodes [225, 226] through the ohmic contact layers.” Pet. 13–14 (citing Ex. 1008 ¶ 30). Based on the ’190 patent Specification and testimony by Dr. Melnik (Ex. 1008), Petitioner concludes that “a POSA would have understood ‘channel’ to include a portion of the semiconductor layer between two regions where the semiconductor layer is electrically connected to the source and drain electrodes and overlies the gate electrode.” Pet. 14.

Patent Owner disagrees with Petitioner’s proposed claim construction, but agrees with the underlying facts about the location of the channel—i.e., it resides in an a-Si region and does not include ohmic contact layers. For example, Patent Owner contends that

*[t]he channel region (channel) 14 is the part of the a-Si semiconductor layer 23 which is between the source electrode 13 and the drain electrode 12. The region that is turned on and off by the gate electrode 11 (i.e., the channel) is in the a-Si semiconductor layer 23, and does **not** include the ohmic contact layer 24a or 24b.*

Prelim. Resp. 24 (emphases in italics added).

To support its position, Patent Owner reproduces and annotates Figure 2F from the '190 patent, as follows:



*Id.* (Patent Owner annotating Ex. 1001, Fig. 2F). Figure 2F portrays channel 14 in semiconductor region 23 in a sectional view of a TFT. Ex. 1001, 4:36–37, 6:7–10; *see also supra* Fig. 1 (channel 14 in top plan view). Based on its assertion concerning the knowledge of an ordinarily skilled artisan viewing the '190 patent, Patent Owner contends that a “channel” should be construed as “a region of a TFT between a source electrode and a drain electrode that overlies the gate electrode and through which charge carriers flow when the TFT is in an ON state.” Prelim. Resp. 28.

Despite the two proffered constructions, which differ, the parties agree that the claimed channel “does *not* include the ohmic contact layer.” Prelim. Resp. 24; *accord* Pet. 13 (“a channel cannot be formed in an ohmic contact layer but it can be so formed in a semiconductor layer”) (citing Ex. 1008 ¶¶ 21, 29).



C. “each [TFT] having a channel in an ohmic contact layer and a semiconductor layer”

The agreed understanding between the parties about the location of the channel underlies and highlights a clarity problem, because the challenged independent claims specifically recite contrary structure: “each [TFT] having a *channel in an ohmic contact layer* and a semiconductor layer.” Claim 1 (emphasis added); *accord* claims 9, 13 (similar recitation). Recognizing the problem with this phrase, both parties essentially propose rewriting it: Petitioner contends that “the only reasonable interpretation of the phrase ‘channel in an ohmic contact layer and a semiconductor layer’ is . . . ‘an ohmic contact layer and a channel in a semiconductor layer.’” Pet. 13. On the other hand, Patent Owner contends “an artisan would clearly understand that ‘a channel in an ohmic contact layer[]’ simply means “a region *formed by the ohmic contact layer* and the semiconductor layer *in a channel etching process*.” Prelim. Resp. 25 (emphases added) (arguing also that “the channel would not be formed if the central portion of the ohmic contact layer was not etched away”).

Neither party cites proper legal authority for what amounts to rewriting the claim phrase in one of manners proposed. Both proposals cannot be correct, and therefore point to an effective material change, as the parties disagree over the claim construction. *See Ultimax Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1353 (Fed. Cir. 2009) (courts can correct obvious typographical errors “if the correction is not subject to reasonable debate . . . and the prosecution history does not suggest a different interpretation”). Further exemplifying the materiality of the disputed construction, Patent Owner relies on its construction and argues

that Miura does not teach or suggest the “**channel etching process.**”

Prelim. Resp. 38, *see also id.* at 33 (arguing, based on “Patent Owner’s proper claim construction of ‘channel,’” that “Miura’s TFT is not a region of a TFT between a source electrode and a drain electrode through which charge carriers (e.g., electrons) flow when the TFT is in an ON state”).

Patent Owner’s arguments reduce to the assertion that a skilled artisan knew that the disputed claim phrase meant something other than what it plainly recites. *See* Prelim. Resp. 21–25.<sup>1</sup> For its part, Petitioner contends that “there are several limitations throughout the claims that violate 35 U.S.C. §112,” and “[w]hile Petitioners have provided a broadest reasonable claim construction for such claim limitations, that should not be

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<sup>1</sup> Noting that Applicant added the disputed claim phrase in claim amendments during prosecution, Patent Owner argues that “the Examiner did not raise any indefiniteness issues” and “knew exactly what this feature referred to,” because the Examiner read the feature onto prior art Figure 15 of the ’190 patent. *See* Prelim. Resp. 21–22 (citing Ex. 1002, 131, 144, 255). That the Examiner failed to reject the claims for indefiniteness does not show clarity. The argument merely highlights that the phrase was not at issue during prosecution. *See* Ex. 1002, 46–47, 131–132. The record indicates that the Examiner reasoned that the most of the claim structure (i.e., apart from the channel length recitations), as amended, must read on the admitted prior art structure as disclosed in the ’190 patent, because the admitted prior art structure is similar to other disclosed structure (i.e., structure upon which claims typically find support). *See, e.g.*, Ex. 1002, 46–47 (relying on admitted prior art, “AAPA,” as teaching everything except the “channel length” feature), 74–75 (same); 120–126 (Applicant amending the claims without presenting arguments directed to the disputed phrase); Ex. 1001, 1:14–3:40 (modifying known prior art LCD displays by altering an a-Si channel structure to decrease leakage current); Pet. 6–10 (discussing Examiner’s reliance on AAPA). Moreover, the prosecution Examiner did not have the benefit from this record of the proposed claim constructions and arguments by the parties.

construed as waiver to challenge validity under §112 in an appropriate venue for such challenges.” Pet. 12.

Contrary to Patent Owner’s assertion, “it is of no moment that the contradiction is obvious: semantic indefiniteness of claims ‘is not rendered unobjectionable merely because it *could* have been corrected.’” *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002) (citation omitted) (“Allen argues that one of skill in the art would understand that the term ‘perpendicular’ in the claim should be read to mean ‘parallel.’ Allen stretches the law too far. It is not our function to rewrite claims to preserve their validity.”); *see also Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1375 (Fed. Cir. 2004) (“we have repeatedly declined to rewrite unambiguous patent claim language” even if “otherwise the patented process could not perform the function the patentees intended”); *Elekta Instrument S.A. v. O.U.R. Scientific Int’l, Inc.*, 214 F.3d 1302, 1308 (Fed. Cir. 2000) (“unambiguous language of the amended claim controls over any contradictory language in the written description”); *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357 (Fed. Cir. 1999) (“we must construe the claims based on the patentee’s version of the claim as he himself drafted it”).

Further, according to Patent Owner, Petitioner’s proposed construction results in a structure that “is not the structure that Applicant chose to claim.” *See* Prelim. Resp. 25. On the other hand, Patent Owner’s proposal similarly amounts to rewriting the claimed structure—by removing a portion of the ohmic contact layer via a product-by-process step of etching—a step that is not claimed. *See id.* (“the channel would not be

formed if the central portion of the ohmic contact layer was not etched away”).

D. *“said channel having a channel length larger at an edge portion of said channel adjacent to one of said pixels than at a central portion thereof, whereupon leakage current of said TFT at said edge portion is suppressed”*

Claims 1, 9, and 13 each recite a “channel” phrase that refers back to the “channel” recited in the problematic disputed phrase. That is, claim 1 recites *“said channel having a channel length larger at an edge portion of said channel adjacent to one of said pixels than at a central portion thereof, whereupon leakage current of said TFT at said edge portion is suppressed.”* Claims 9 and 13 recite a similar phrase. As explained above, the disputed phrase requires the recited channel to include the ohmic contact layer. Yet nothing in the original ’190 patent Specification clearly refers to “a channel length” in an ohmic contact layer (and adjacent to a pixel).<sup>2</sup> Rather, as the parties essentially contend, the ’190 patent Specification focuses on channel lengths L (including L1, L3, L5, etc.) in a length of silicon (a-Si) that does not include the ohmic contact layer, wherein the channel length spans through an a-Si layer between a source and drain electrode. *See* Ex. 1001, Fig. 1 (channel length L1); Fig. 2F (channel length L); Fig. 4 (channel length L3); Fig. 8 (channel length L5); Prelim. Resp. 24–28, 35; Pet. 12–14.

Accordingly, in addition to the lack of clarity regarding the meaning of “channel” as recited in the disputed phrase, the recited “channel length” lacks a meaningful frame of reference from which to ascertain the claimed

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<sup>2</sup> In claim 1, “said pixels” lacks antecedent basis, raising another clarity problem with respect to challenged claims 1–8. As disclosed, a “pixel” electrode connects to a source electrode: “The source electrode 226 is connected to the pixel electrode 229 via a through hole 228.” Ex. 1001, 2:1–2 (describing prior art Fig. 15).

length. For example, the channel may or may not begin in, traverse, or end, in an ohmic contact layer. *See, e.g.*, Ex. 1001, Fig. 2F. In addition, with respect to claim 1, the channel starts “adjacent” to an unclaimed pixel, the location of which is not clear. *See supra* note 2.

As explained at the outset, determining if the prior art renders the claims obvious necessarily requires resolving facts and determining the scope of the claims. *See BlackBerry*, Case IPR2013-00036 (Paper 65, 19–20). Based on the foregoing discussion, “the prior art grounds of unpatentability must fall, *pro forma*, because they [would be] based on speculative assumption as to the meaning of the claims.” *See id.* at 20 (citing *In re Steele*, 305 F.2d at 862–63). Therefore, we decline to institute an *inter partes* review of claims 1–14.

#### *E. Remaining Contentions*

The above determination makes it unnecessary to resolve any other disputes, including Patent Owner’s assertion that Petitioner failed to list all the real parties-in-interest. *See* Prelim. Resp. 5–15.

### II. CONCLUSION

For the foregoing reasons, we determine that the information presented does not show that there is a reasonable likelihood that Petitioner would prevail at trial with respect to at least one claim of the ’190 patent, based on any grounds presented in the Petition. We deny the Petition for *inter partes* review of claims 1–14.

### III. ORDER

Accordingly, it is

ORDERED that that the Petition is DENIED as to all challenged claims, and no trial is instituted.

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For PETITIONER:

Jay Alexander  
jalexander@cov.com

Andrea Reister  
areister@cov.com

Gregory Discher  
gdischer@cov.com

Paul Meiklejohn  
meiklejohn.paul@dorsey.com

Clinton Conner  
conner.clint@dorsey.com

Adam Floyd  
floyd.adam@dorsey.com

Steven Kelber  
skelber@labgoldlaw.com

Marc Labgold  
mlabgold@labgoldlaw.com

For PATENT OWNER:

Aaron Ettelman  
aettelman@panitchlaw.com

Jeffrey Gluck  
jgluck@panitchlaw.com

John D. Simmons  
jsimmons@panitchlaw.com

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Frederick Tecce  
ftecce@panitchlaw.com

Clark Jablon  
cjablon@panitchlaw.com

Dennis Butler  
dbutler@panitchlaw.com

Stephen Murray  
smurray@panitchlaw.com