

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHIMEI INNOLUX CORPORATION
Petitioner

v.

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.¹
Patent Owner

Case IPR2013-00066 (SCM)
Patent 7,876,413 B2

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

EASTHOM, *Administrative Patent Judge*.

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

¹ See Paper 7 at 1-2 (counsel for Semiconductor Energy Laboratory Co., Ltd., referring to a USPTO recorded assignment of application number 09/165,628, at reel 009581, frame 0943, as evidence of ownership of the '413 patent).

I. BACKGROUND

Petitioner, Chimei Innolux Corp. (“CMI”), filed a Petition² to institute an *inter partes* review of claims 1, 2, 4-7, 9-11, 13-18, 20-22, 24, 25, and 27-29 of U.S. Patent 7,876,413 owned by Semiconductor Energy Laboratory Co., Ltd. (“SEL”). *See* 35 U.S.C. § 311. In response, Patent Owner, SEL, filed a Preliminary Response.³

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a):

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

Pursuant to the defined threshold under 35 U.S.C. § 314(a), the Board institutes an *inter partes* review of claims 1, 2, 4-7, 9-11, 13-18, 20-22, 24, 25, and 27-29 of the `413 patent.

A. The `413 Patent

The `413 patent describes LCD (liquid-crystal display) devices having two opposing substrates bonded together with a sealant material. One substrate carries an active matrix display circuit and peripheral driving circuits, and the other substrate carries a counter electrode. (*See* Ex. 1001, Abstract.) According to the `413 patent, prior art LCD devices have non-uniform seals which create an uneven gap between the two opposing substrates. The uneven gap ultimately results in deteriorated LCD image quality. The uneven seal and consequent gap occur

² *Petition for Inter Partes Review of U.S. Patent No. 7,876,413 Under 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 Et Seq.* (Nov. 30, 2012).

³ *Preliminary Response of the Patent Owner Under 37 C.F.R. § 42.107* (Mar. 4, 2013).

because peripheral drive circuits and conducting lines on the active matrix substrate extend under the sealing region in a non-uniform manner, for example, only in some locations or with varying width and density. (Ex. 1001, Fig. 14A, 14B, col. 1, ll. 40-48; col. 2, ll. 51-61.)

The `413 patent discloses a solution to the seal problem which includes employing adjustment wiring lines that have approximately the same thickness, width, and spacing as external conduction lines and auxiliary lines. The lines extend under the sealant relatively uniformly in one or more of thickness, width, and spacing in order to render the seal and consequent gap between opposing substrates more uniform. (*Id.* at Abstract, col. 2, l. 62 – col. 3, l. 18; col. 3, ll. 51-62; and Figs. 4A, 4B.)

The `413 patent also describes connecting, through contact holes in a first insulating layer, two conducting lines in parallel to minimize the total resistance of the lines. (*Id.* at col. 3, ll. 57-62; col. 8, ll. 42-51.) To accommodate for such lines extending under the sealant, the `413 patent describes using overlapping adjustment layers adjacent the conducting lines under the sealant. (*Id.* at col. 3, ll. 51-62; col. 9, ll. 20-46; Figs. 4A; 4B.)

Figures 4A and 4B, which follow, illustrate the parallel connected wiring lines and other disclosed features:

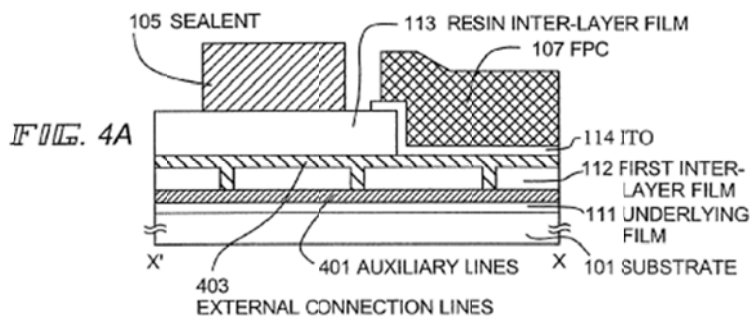


Figure 4A depicts external connection and auxiliary lines 403 and 401

connected in parallel to minimize the total line resistance. As the figure shows, the lines extend under sealant 105. Figure 4A also depicts flexible printed circuit (FPC) 107 electrically connected to an indium tin oxide (ITO) film 114 which is connected through contact holes in a second insulating film 113 to external connection lines 403. (*Id.* at col. 8, ll. 52-60.)

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

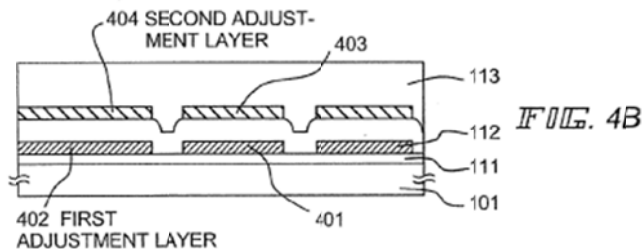
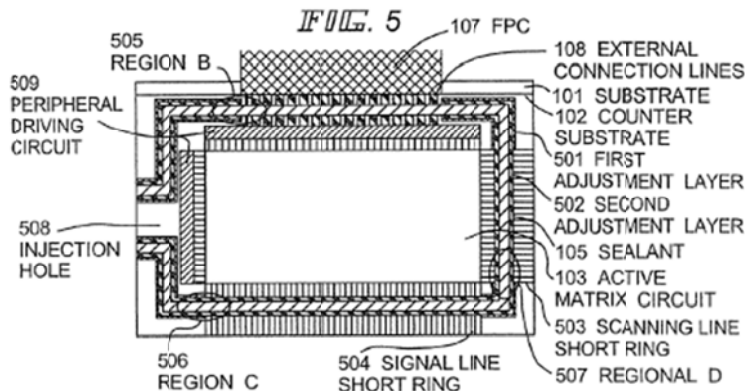


Figure 5, below, represents another view which employs the same connection scheme represented in Figures 1, 4A, and 4B and shows the FPC 107 connected to external connection lines 108 which extend under sealant 105 and connect to the peripheral driving circuit 509 and active matrix circuit 103. (*See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



B. Illustrative Claim

Challenged claims 1, 7, 10, 17, 22, and 24 are independent. Each of the independent claims, except for claim 10, contains the three highlighted limitations appearing below in claim 1. Claim 10 recites the first and second highlighted limitations appearing below in claim 1. In challenging the claims, SEL primarily relies on the same arguments with respect to the limitations in controversy as represented by claim 1.

Claim 1 follows:

1. A liquid crystal display device comprising:
 - a first wiring over a substrate;
 - a first insulating film over the first wiring;
 - a second wiring over the substrate and the first insulating film;
 - a second insulating film over the second wiring;
 - a transparent conductive layer over a first region of the second wiring;
 - a flexible printed circuit over the first wiring and the first region of the second wiring; and
 - a sealant over the first wiring and a second region of the second wiring,*
 - wherein the sealant is in direct contact with the second insulating film;*
 - wherein the second wiring overlaps at least part of the first wiring;
 - wherein the first wiring and the second wiring are in electrical contact through an opening in the first insulating film;
 - wherein the second wiring and the flexible printed circuit are in electrical contact through the transparent conductive layer; and
 - wherein the second wiring and the transparent conductive layer are in direct contact through an opening in the second insulating film.*

C. Related Proceedings

The `413 patent and several other related CMI patents are the subject of *inter partes* review filings before the PTAB and are also alleged by SEL to be

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