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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TIANMA MICROELECTRONICS CO. LTD.,
Petitioner,

v.

JAPAN DISPLAY INC. and PANASONIC LIQUID CRYSTAL DISPLAY CO., LTD.,
Patent Owner.

IPR2021-01028
Patent 9,793,299 B2

Before JO-ANNE M. KOKOSKI, KRISTINA M. KALAN, and ELIZABETH M. ROESEL, *Administrative Patent Judges.*

KOKOSKI, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Tianma Microelectronics Co. Ltd. ("Petitioner") filed a Petition to institute an *inter partes* review of claims 1–11, 15, and 16 (the "challenged claims") of U.S. Patent No. 9,793,299 B2 ("the '299 patent," Ex. 1001). Paper 2 ("Pet."). Japan Display Inc. and Panasonic Liquid Crystal Display Co., Ltd. (collectively, "Patent Owner") filed a Preliminary Response. Paper 7 ("Prelim. Resp."). With Board authorization, Petitioner filed a Reply to the Preliminary Response ("Reply," Paper 8), and Patent Owner filed a Sur-reply to Petitioner's Reply ("Sur-reply," Paper 10).

Institution of an *inter partes* review is authorized by statute when "the information presented in the petition . . . and any response . . . 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." 35 U.S.C. § 314 (2018); *see also* 37 C.F.R. § 42.4 (2021). Upon consideration of the Petition, the Preliminary Response, the Reply, the Sur-reply, and the evidence of record, we determine that Petitioner has established a reasonable likelihood of prevailing with respect to the unpatentability of at least one claim of the '299 patent, and we decline to exercise our discretion to deny institution. Accordingly, for the reasons that follow, we institute an *inter partes* review of claims 1–11, 15, and 16 of the '299 patent.

A. Real Parties-in-Interest

Each party identifies itself as the real party-in-interest. Pet. 72; Paper 6, 1.

B. Related Proceedings

The parties indicate that the '299 patent is asserted in *Japan Display Inc. and Panasonic Crystal Display Co., Ltd. v. Tianma Microelectronics*

Co. Ltd., No. 2:20-cv-00283 (E.D. Tex.) (the "District Court Action"). Pet. 72; Paper 6, 1.

C. The '299 Patent

The '299 patent, titled "Display Device and Hand-Held Electronic Device," relates to a liquid crystal display, and, in particular, "is concerned with a technique applicable effectively to a liquid crystal display (module) used in a hand-held electronic device such as a mobile telephone terminal." Ex. 1001, code (54), 1:30–34. The '299 patent explains that, "[i]n the liquid crystal display, when the thickness of the glass substrate used in the [thin film transistor ("TFT")] substrate or the counter substrate is reduced by polishing in order to reduce the thickness of the liquid crystal display panel," the strength of both the glass substrate and the liquid crystal display panel is deteriorated, and "poses the problem that it is difficult to attain both thickness reduction and ensuring of a sufficient strength." *Id*. at 2:8–17. The '299 patent further explains that using a plastic substrate instead of a glass substrate "poses the problem that the heat resistance and solvent resistance (chemicals resistance) of the plastic substrate are low in comparison with the glass substrate," handling the plastic substrate "in the step of forming TFT onto the glass substrate" is difficult, and unevenness in the display easily occurs when a glass substrate is used as the TFT substrate and a plastic substrate is used as the counter substrate "because the substrates differ in the amount of deformation caused by changes of environmental conditions such as temperature and humidity." *Id*. at 2:18–29. The '299 patent, therefore, seeks "to provide a technique able to attain both thickness reduction of a liquid crystal display panel and ensuring of a sufficient strength of the panel," and "to reduce the thickness of a hand-held electronic device such as a liquid crystal display (module)." *Id*. at 2:30–36.

Figure 2 of the '299 patent is reproduced below.

FIG. 2

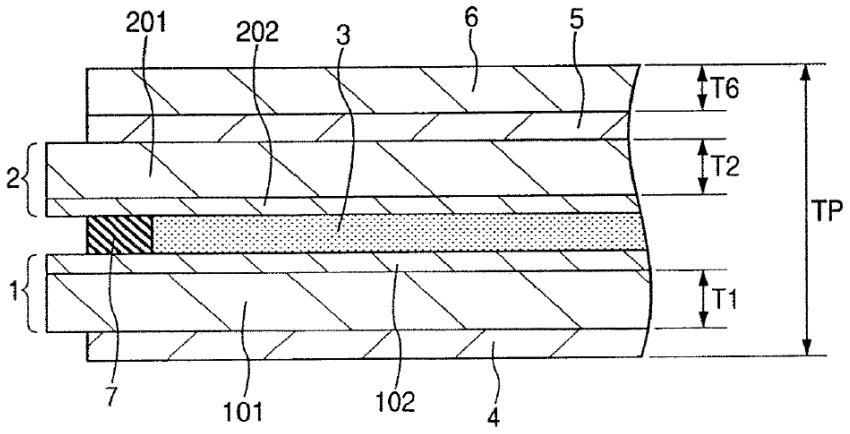

Figure 2 is a sectional view of a configuration of a liquid crystal display panel according to one embodiment described in the '299 patent. *Id.* at 8:66–67. The liquid crystal display panel includes TFT substrate 1, counter substrate 2, and liquid crystal material 3, polarizing plates 4, 5, and resin film 6. *Id.* at 10:14–21. Annular sealing member 7 bonds TFT substrate 1 to counter substrate 2, and liquid crystal material 3 "is sealed and held within the space enclosed by the TFT substrate 1, counter substrate 2 and sealing member 7." *Id.* at 10:23–27. TFT substrate 1 includes glass substrate 101 and multi-thin film layer 102, which "is a laminate of plural insulating layers, conductive layer, semiconductor layer and the like." *Id.* at 10:42–46. Counter substrate 2 includes glass substrate 201 and multi-thin film layer 202, which "is a laminate of plural insulating layers and conductive layer, forming a color filter for example." *Id.* at 10:50–54. A pressure-sensitive adhesive affixes lower polarizing plate 4 to glass substrate 101, upper polarizing plate 5 to glass substrate 201, and resin film 6 to upper polarizing plate 5. *Id.* at 11:3–8, 11:29–31.

The '299 patent teaches that "resin film 6 is a film member disposed on the most front side viewed from the observer side," and "it is preferable that a film with a high light transmittance, especially a colorless, transparent film be used as the resin film 6" that preferably has "a thickness, T6, of 0.2 mm or more and 1.0 mm or less." *Id*. at 11:24–34. "If the thickness T6 of the resin film 6 is 0.2 mm or more, a sufficient strength of the liquid crystal panel can be ensured" even if glass substrate 101 and glass substrate 201 "are each made as thin as 0.5 mm or less." *Id*. at 11:34–39. Therefore, according to the '299 patent, sufficient strength in the liquid crystal display panel "can be ensured even if the total panel thickness, TP, is 2 mm or less." *Id*. at 11:39–41.

D. Illustrative Claim

Petitioner challenges claims 1–11, 15, and 16 of the '299 patent. Pet. 2–3. Claims 1 and 6 are independent. Claim 1 is illustrative of the claimed subject matter, and is reproduced below.

> 1. A display device comprising display area and used in a hand-held electronic device comprising:
>
> [a] a TFT substrate;
>
> [b] a counter substrate;
>
> [c] a multi-thin layer film;
>
> [d] a liquid crystal layer;
>
> [e] a seal member;
>
> [f] a polarizing plate;
>
> [g] an adhesive member;
>
> [h] a protective member;
>
> [i] wherein the multi-thin film layer disposed on the TFT substrate,
>
> [j] wherein the liquid crystal layer disposed on the multi-thin layer;

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