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D. “[a] liquid crystal display device ... wherein ... liquid crystal molecules are driven by applying a voltage between the lower electrode and the upper electrode,” “display device ... used in a hand-held electronic device,” and “a reference electrode which causes an electric field controlling the liquid crystal molecule to form between the reference electrode and the pixel electrode” 24

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I. BACKGROUND

Plaintiff alleges infringement of eight U.S. Patents²: No. 7,385,665 (“’665 Patent”), No. 7,636,142 (“’142 Patent”), No. 7,936,429 (“’429 Patent”), No. 8,218,119 (“’119 Patent”), No. 9,715,132 (“’132 Patent”), No. 9,793,299 (“’299 Patent”), No. 10,018,859 (“’859 Patent”), and No. 10,139,687 (“’687 Patent”) (collectively, the “Asserted Patents”).

Each of the Asserted Patents claims to a Japanese patent application. The ’665 Patent states an earliest priority claim to a Japanese patent application filed on October 31, 2005. The ’142 Patent states an earliest priority claim to a Japanese patent application filed on February 26, 2007. The ’429, ’119, and ’687 Patents are related through continuation applications and each state an earliest priority claim to a Japanese patent application filed on September 7, 1999. The ’132 and ’859 Patents are related through continuation applications and each state an earliest priority claim to a Japanese patent application filed on December 18, 2000. The ’299 Patent states an earliest priority claim to a Japanese patent application filed on December 26, 2005.

In general, the Asserted Patents are directed to technology for electronic displays.

The abstract of the ’665 Patent provides:

A display device includes a display panel which includes an effective display section, a flexible board which supplies a driving signal to the effective display section, a connection part at which the display panel and the flexible board are connected, and a plurality of connection wiring lines which connect the connection part and the effective display section. The connection part includes a first connection section including at least two connection pad groups, which are composed of connection pads that are connected to the effective display section via the connection wiring lines, and a dummy pad group which is disposed between the connection pad groups, and is composed of dummy pads, and a second connection section including connection terminal groups, which are composed of connection terminals corresponding to the connection pads, and a dummy terminal group which is composed of dummy terminals corresponding to the dummy pads.

² Plaintiff alleges infringement of fifteen patents, but the parties present claim-construction disputes with respect to only eight of those fifteen. Dkt. No. 86 at 8.

The abstract of the '142 Patent provides:

A liquid crystal display device includes an upper electrode and a lower electrode interposing an insulation layer therebetween, wherein an electric field opening part for passing an electric field is formed in the upper electrode and liquid crystal molecules are driven by applying a voltage between the lower electrode and the upper electrode, wherein a window-shaped opening part formed by partially removing the lower electrode for connecting an upper electrode wiring and the upper electrode, which interpose an interlayer insulation film therebetween, together is disposed in a lower part of the lower electrode, and wherein one end portion of the electric field opening part in the longitudinal direction around the window-shaped opening part is disposed to be overlapped with the window-shaped opening part in a plan view.

The abstract of the '429 Patent provides:

A liquid crystal display includes a pair of transparent substrates opposed to each other with liquid crystal therebetween. One of the pair of transparent substrates has a plurality of drain signal lines and a plurality of gate signal lines, and a plurality of pixel regions defined by the drain signal lines and the gate signal lines. The pixel regions have a TFT element, a pixel electrode formed of a transparent electrode having a plurality of slits, and a counter electrode formed of a transparent electrode. The counter electrode is disposed between the pixel electrode and the one of the pair of transparent substrates in overlapping relationship with the transparent electrode of the pixel electrode and the gate signal line, and the counter electrode is connected with the counter electrode of an adjacent pixel region.

The abstract of the '119 Patent provides:

A liquid crystal display includes a pair of transparent substrates opposed to each other with liquid crystal therebetween, one of the pair of transparent substrates having a plurality of drain signal lines and a plurality of gate signal lines, and a plurality of pixel regions defined by the drain signal lines and the gate signal lines. The pixel region has a TFT element, a first electrode formed of a transparent electrode having a plurality of slits, a connection area that connects the first electrode to the TFT element, and a second electrode formed of a transparent electrode. The second electrode is disposed between the first electrode and the one of the pair of transparent substrates, the second electrode is connected with the second electrode of an adjacent pixel region, and the connected second electrode is arranged at a position overlapping with the gate signal line.

The abstract of the '132 Patent provides:

There is provided a liquid crystal display (LCD) device that prevents light leaks near spacers. The LCD device controls the optical transmissivity of a liquid crystal layer interposed between substrates disposed opposite each other, by means of an electric field generated in the layer-thickness direction of the liquid crystal layer.

The LCD device includes spacers on a liquid-crystal-side surface of one substrate, signal lines formed on a liquid-crystal-side surface of the other substrate, an insulating film formed to cover the signal lines, and electrodes on the insulating film's upper surface. Each electrode contributes to controlling the optical transmissivity of the liquid crystal layer. Each spacer has a vertex surface disposed opposite to the signal lines. A portion of each electrode extends to the upper surface of a corresponding signal line. The extended portion is opposite to a part of a spacer's vertex surface disposed opposite to the corresponding signal line.

The abstract of the '299 Patent provides:

An electronic device includes a liquid crystal display device having a first substrate, a second substrate bonded to the first substrate, with liquid crystal material held between the first substrate and the second substrate, and an upper polarizing plate affixed to the second substrate. A protective member is disposed over the upper polarizing plate, and an adhesive member is disposed between the protective member and the upper polarizing plate without an air layer between the protective member and the upper polarizing plate. The protective member is configured as a protective cover of the electronic device.

The abstract of the '859 Patent provides:

There is provided a liquid crystal display (LCD) device that prevents light leaks near spacers. The LCD device controls the optical transmissivity of a liquid crystal layer interposed between substrates disposed opposite each other, by means of an electric field generated in the layer-thickness direction of the liquid crystal layer. The LCD device includes spacers on a liquid-crystal-side surface of one substrate, signal lines formed on a liquid-crystal-side surface of the other substrate, an insulating film formed to cover the signal lines, and electrodes on the insulating film's upper surface. Each electrode contributes to controlling the optical transmissivity of the liquid crystal layer. Each spacer has a vertex surface disposed opposite to the signal lines. A portion of each electrode extends to the upper surface of a corresponding signal line. The extended portion is opposite to a part of a spacer's vertex surface disposed opposite to the corresponding signal line.

The abstract of the '687 Patent provides:

A liquid crystal display includes a first substrate and a second substrate opposed to each other with a liquid crystal layer between the first substrate and the second substrate. The first substrate has a plurality of drain signal lines and a plurality of gate signal lines, and a plurality of pixel regions are defined by the drain signal lines and the gate signal lines. Each of the pixel regions includes a first electrode having a plurality of strip-like portions extending in an extension direction of the drain signal lines, the strip-like portions having at least one bent portion so that extension directions of each two parts of the strip-like portions separated by the at least one bent portion are different from each other, and a second electrode formed

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