

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG DISPLAY CO., LTD; SAMSUNG ELECTRONICS CO., LTD.; and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner

v.

POLARIS POWERLED TECHNOLOGIES, LLC,
Patent Owner

Case IPR2023-00771
U.S. Patent No. 7,259,521

**PATENT OWNER'S REQUEST FOR
REHEARING PURSUANT TO 37 CFR § 42.71(D)**

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
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I. INTRODUCTION

Patent Owner Polaris PowerLED Technologies, LLC (“Polaris”) requests rehearing of the Final Written Decision issued October 11, 2024 (“FWD”) because the Board’s decision overlooked and misapprehended arguments regarding the first and second instituted grounds. Specifically, the FWD fails to address—and thus overlooks—arguments explaining why the Kim reference does not disclose the claimed video driver of the ’521 patent.

II. LEGAL STANDARD

A party dissatisfied with a decision may request rehearing, which must identify all matters the party believes the Board misapprehended or over-looked, and where each matter was previously addressed. 37 C.F.R. § 42.71(d). Such requests are reviewed for abuse of discretion, *id.* at § 42.71(c), which “occurs when a court misunderstands or misapplies the relevant law or makes clearly erroneous findings of fact,” *Renda Marine, Inc. v. U.S.*, 509 F.3d 1372, 1379 (Fed. Cir. 2007).

III. ARGUMENT

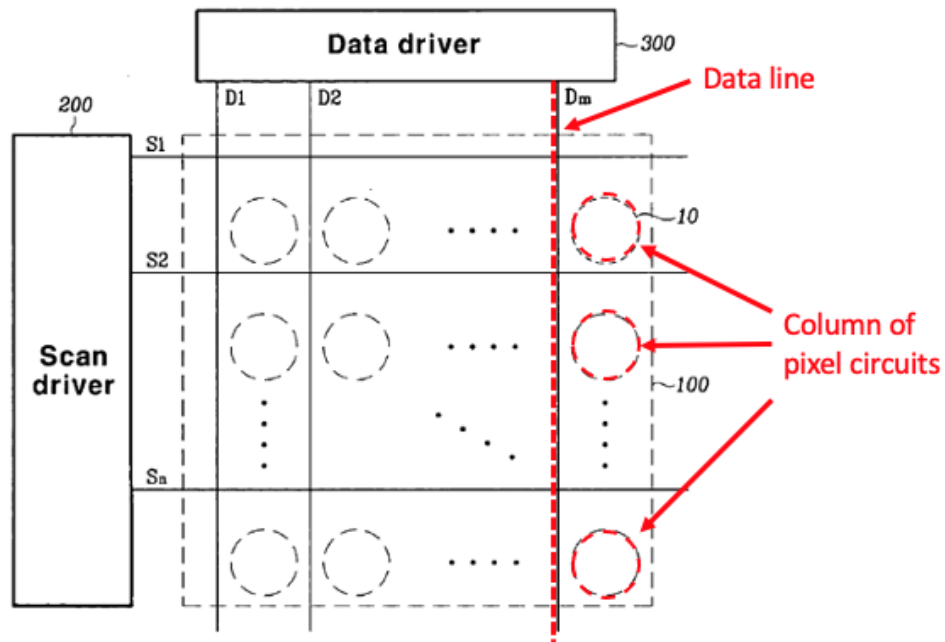
A. The Board overlooked Polaris’s arguments showing that Kim’s pixel circuit does not generate a video drive signal.

Claim 1 recites a “video driver ... generating a video drive signal[.]” In its POR, Polaris argued that the portion of Kim’s pixel circuit alleged to be the claimed “video driver” does not generate a video drive signal on the bases that it does not perform the functions of a video driver generating a video drive signal,

lacks components to generate a video drive signal, is designed to receive a video drive signal from data driver 300 rather than generate one, and makes only minor adjustments to an existing video drive signal. POR at 13-19. The Board rejected Polaris's argument, reasoning that the claimed "video driver" is not required to perform the functions or include the components that Polaris identified. FWD at 29-30. However, in reaching its incorrect determination, the Board completely overlooked Polaris's arguments that Kim's pixel circuit is designed to receive a video drive signal from data driver 300 rather than generate one, and makes only minor adjustments to an existing video drive signal.

As explained in the POR, Kim teaches an AMOLED display system with an allegedly novel pixel circuit design. POR at 8-11. In Kim's AMOLED display system, video data driver 300 generates a video drive signal and sends it to the pixel circuits via data lines connected to columns of pixels, as illustrated in Kim's Figure 3, annotated below. POR at 18. Thus, in Kim's system, the pixel circuit *receives* rather than *generates* a video drive signal. POR at 18.

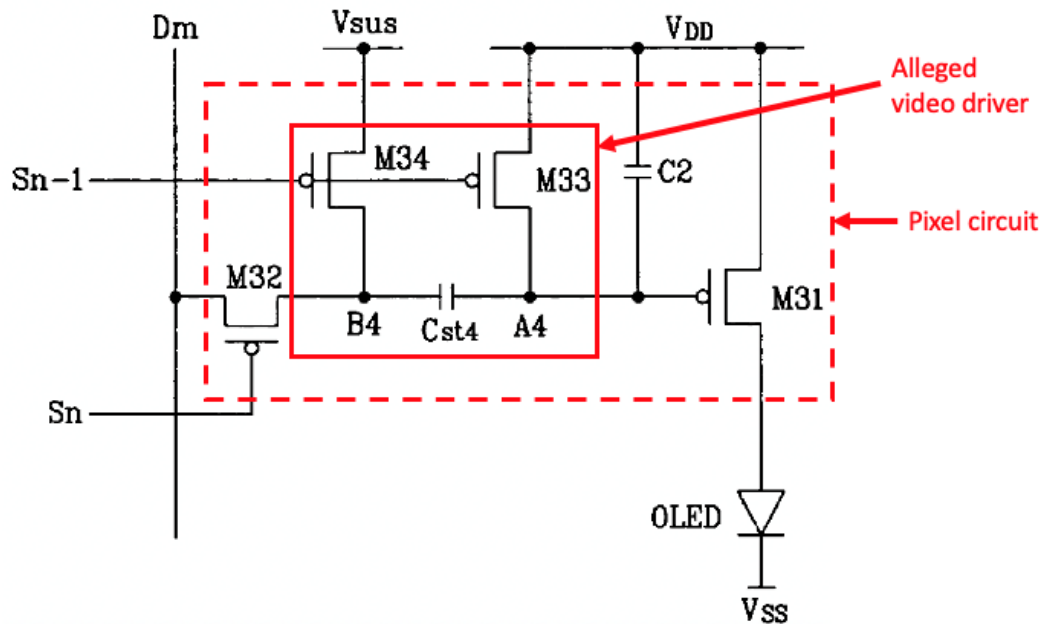
FIG.3



EX1007, FIG. 3 (annotated).

The POR further explains that Kim's pixel circuit, having received the video drive signal from data driver 300, merely makes minor adjustments to the video drive signal. POR at 19. Kim's alleged "video driver" is a portion of the pixel circuit that functions as a compensation circuit. POR at 19 (citing EX1007, FIGs. 4, 10).

FIG.10



EX1007, FIG. 10 (annotated).

Specifically, when the previous select line Sn-1 is set to low, switching transistor M34 turns on and compensation voltage Vsus flows to electrode B4 of capacitor Cst4. POR at 19 (citing EX1007, ¶[0107]). Switching transistor M33 also turns on and charges electrode A4 of capacitor Cst4 with the power supply voltage VDD. *Id.* When the current select line Sn becomes low, switching transistor M32 turns on and video signal Dm is applied to electrode B4 of capacitor Cst4. EX1007, ¶[0108]. The change in voltage applied to B4 causes the voltage of electrode A4 of capacitor Cst4 to vary by the same amount as the difference between

Vsus and Dm. *Id.* A POSITA would have understood that the operation of switching transistors M33 and M34 and capacitor Cst4 described above makes a local correction to the analog voltage supplied by the video driver to the drive transistor but does not *generate* the video drive signal. POR at 19 (citing EX2011, ¶91). Yet the FWD’s analysis failed to address and thus overlooked these arguments. FWD at 27-31.

Overlooking these arguments was an error that undermines the Board’s analysis. Because the video driver in Kim, data driver 300, does not generate a video driver signal referenced to the positive power supply voltage, Samsung instead asserted that the pixel circuit is a video driver. But calling a portion of Kim’s pixel circuit a video driver is contrary to a POSITA’s understanding of AMOLED display concepts. EX2011, ¶¶32-51, 90-91. In short, based on a proper analysis of Kim’s AMOLED display system, the portion of Kim’s pixel circuit identified by Samsung does not disclose the claimed “video driver.”

B. The Board overlooked Polaris’s arguments showing that Kim’s pixel circuit is not a “video driver.”

Claim 1 recites an “AMOLED display system comprising: a video driver ... generating a video drive signal ... referenced to a positive power supply voltage of the AMOLED display panel.” In distinguishing the Kim reference with respect to instituted grounds 1 and 2, Polaris’s POR explained that, in AMOLED display systems, the video driver and pixel circuits are distinct components. POR at 19-27.

The Board relied on a passage in the '521 specification that states that the video driver and other components of the AMOLED display system can be integrated into a single integrated circuit to reject Polaris's argument. FWD at 33-34. However, the POR explained that merely being part of the same integrated circuit does not mean that a POSITA would have understood that the video driver and pixel circuits are not distinct components, which they are. POR at 25-27; EX2011, ¶¶32-40, 92-102. The FWD rejected PO's argument without analysis and ignored the substance of Polaris's argument. FWD at 34. This error undermines the Board's conclusion that Kim discloses the claimed "video driver" of limitation [1-A].

There is no dispute that the claimed "video driver" of claim 1 is part of an AMOLED display system. The Petition identified a portion of the pixel circuit taught by Kim as disclosing the claimed "video driver." Pet. at 27-28. In the POR, Polaris explained that the identified portion of Kim's pixel circuit cannot be the claimed video driver because, in AMOLED displays, video drivers and pixel circuits are distinct components. POR at 19-27; EX2011, ¶¶32-40, 92-102.

The Board rejected Polaris's argument, stating the following:

As shown above, the '521 patent discloses that the *video driver circuit may be integrated with other circuitry of the AMOLED display panel*, and the claim language includes a "plurality of . . . pixel elements" as part of the display panel. The '521 patent further discloses that the video driver circuit can be integrated on the same integrated circuit with the

OLED pixel elements of the AMOLED display panel, and that the video drivers may be integrated with the AMOLED display panel. *Id.* We, therefore, disagree with Patent Owner that that the '521 patent does not describe that the video driver can be part of (i.e., integrated with) the pixel circuit. *See* Sur-reply 7. That Patent Owner has identified examples from den Boer and the Onoyama¹⁶ paper where the alleged video driver, scan driver, and pixel circuits are distinct components integrated with the display panel or incorporated on an integrated circuit (see PO Resp. 25–26) is not persuasive, in light of this disclosure in the '521 patent.

FWD at 33-34 (emphasis original).

Thus, the FWD relied on the statement in the '521 patent's specification that "the video driver circuit may be integrated with other circuitry of the AMOLED display panel" to find that a portion of Kim's pixel circuit disclosed the claimed "video driver." The language of the FWD shows that the Board failed to address the patent's disclosure and Polaris's argument. The '521 patent's discussion of potential embodiments in which components are integrated reads as follows:

The video driver circuit of the present invention described above with reference to FIGS. 2-4 can be implemented using discrete components. Alternately, the video driver circuit of the present invention can be implemented as an integrated circuit to be incorporated in the AMOLED display system. Furthermore, the video driver circuit of the present invention can be integrated with other circuitry of the AMOLED display panel into a single integrate circuit. For instance, the video driver of the

present invention can be integrated on the same integrated circuit with the current driver and the OLED pixel elements of the AMOLED display panel. In FIGS. 2-4, the video drivers are shown as being formed outside of the AMOLED display panel 30. The embodiments in FIGS. 2-4 are illustrative only and are not intended to require the video driver to be formed outside of the AMOLED display panel. The video driver of the present invention can be integrated with the AMOLED display panel when desired to reduce the component count and size of the PC board space used.

EX1001, 7:52-8:2 (quoted by FWD at 33).

The above passage in the '521 patent specification relied on in the FWD refers to a specific manner in which the video driver can be integrated with the other components of the AMOLED display system, namely as a single integrated circuit. EX1001, 7:57-59. The FWD's analysis quotes only the first part of this sentence, implying that the specification disclosed that the video driver could be integrated with the AMOLED display panel generally, in any number of ways. But the full sentence reads: "Furthermore, the video driver circuit of the present invention can be integrated with other circuitry of the AMOLED display panel ***into a single integrate circuit.***" EX1001, 7:57-59 (emphasis added).

The POR specifically addressed this disclosure in the '521 patent. The POR explained that the '521 patent's discussion of a possible embodiment where the

claimed “video driver of the present invention can be integrated on the same integrated circuit with ... the AMOLED display panel” does not eliminate the requirement that the claimed video driver be distinct from the pixel circuits. POR at 25-27 (citing EX1001, 7:59-62; EX2011, ¶100). This is because the defining features of an *Active Matrix* OLED display are distinct pixel circuits for each OLED pixel, a video driver that sends a video drive signal to columns of pixel circuits, and a scan driver that selects which row of pixel circuits is active. POR at 25 (citing EX2011, ¶100; EX2012, 79:11-16). *See Neville v. Found. Constructors, Inc.*, 972 F.3d 1350, 1357 (Fed. Cir. 2020) (rejecting claim interpretation that renders claims “facially nonsensical”). The POR explained that even if the video driver and display panels were integrated in an integrated circuit, a POSITA would have understood that the display would still have distinct pixel circuits and video drivers. POR at 25 (citing EX2011, ¶100).

The POR also discussed extrinsic sources to explain the precise meaning, as it would be understood by a POSITA, of the ’521 patent’s statement that “the video driver circuit of the present invention can be integrated with other circuitry of the AMOLED display panel ***into a single integrate circuit.***” EX1001, 7:57-59 (emphasis added). The POR cited figure 4.16 in the den Boer textbook, which shows an AMOLED display with the video drivers and the viewing area (the matrix of

OLED pixels and pixel circuits) integrated on a single piece of glass. POR at 25-26 (citing EX1011, 102-104; EX2012, 48:2-50:11; EX2011, ¶100).

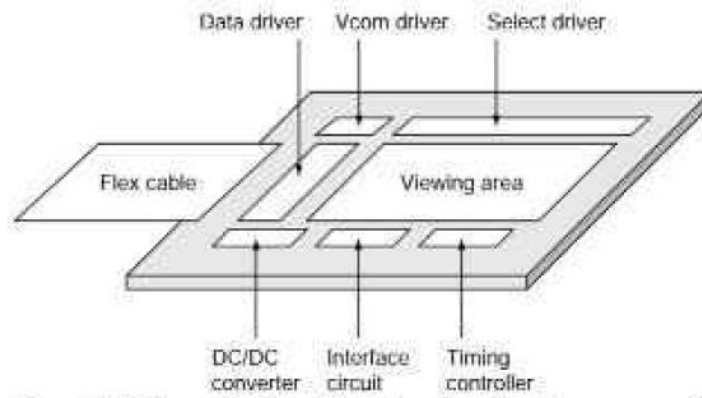


Figure 4.16: Example of configuration for a "system-on-panel."

EX1011, 104 (FIG. 4.16).

The POR also cited the Onoyama article, which illustrates a design where the drivers and pixel circuits are integrated on a single piece of semiconductor substrate (*i.e.*, in a single integrated circuit). POR at 27. The POR explained that AMOLED display systems where the video driver, scan driver, and pixel circuits are incorporated into an integrated circuit have been implemented. POR at 26-27 (citing EX2011, ¶101). The figure below illustrates that, in these designs, the video driver, scan driver, and pixel circuits are distinct components built on a single semiconductor substrate. POR at 26-27 (citing EX2011, ¶101; EX2010, 1, 3).

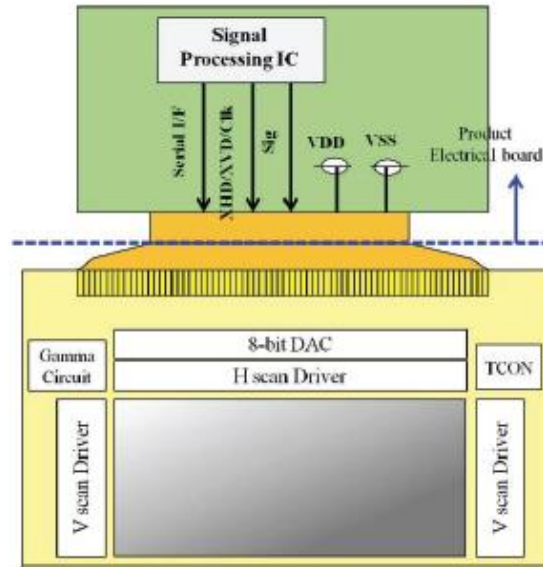


Figure 6. Block diagram of driving circuit

EX2010, 3 (FIG. 6).

Thus, the '521 patent's disclosure that the video driver can be integrated with other components of the AMOLED display "*in a single integrated circuit*" does not undermine basic principles of AMOLED displays. In particular, this statement does not mean that there is no distinction between video drivers and pixel circuits. The Board overlooked and did not address this argument. This error undermines the Board's conclusion that the identified portion of Kim's pixel circuit discloses the claimed "video driver."

IV. CONCLUSION

The Board overlooked critical arguments that Patent Owner proffered during trial, which led to erroneous conclusions regarding claims 1, 2, and 7. The Board should reconsider and reverse the FWD.

Respectfully submitted,

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CERTIFICATE OF PAGE COUNT (37 C.F.R. § 42.24(d))

1. This Patent Owner's Request for Rehearing complies with the 15-page limit for requests for rehearing, excluding the parts exempted by 37 C.F.R. § 42.24(c).

2. This Patent Owner's Request for Rehearing complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2016 in 14-point Times New Roman font.

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CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e))

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