

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CHONGQING HKC OPTOELECTRONICS  
TECHNOLOGY CO., LTD.,  
Petitioner,

v.

VIDA SENSE INNOVATION LTD.,  
Patent Owner.

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IPR2022-00108  
Patent 6,870,530 B2

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Before JO-ANNE M. KOKOSKI, NATHAN A. ENGELS, and  
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

KOKOSKI, *Administrative Patent Judge*.

DECISION  
Granting Institution of *Inter Partes* Review  
35 U.S.C. § 314, 37 C.F.R. § 42.4

## I. INTRODUCTION

Chongqing HKC Optoelectronics Technology Co., Ltd. (“Petitioner”) filed a Petition to institute an *inter partes* review of claims 1–18 (“the challenged claims”) of U.S. Patent No. 6,870,530 B2 (“the ’530 patent,” Ex. 1001). Paper 1. Vida Sense Innovation Ltd. (“Patent Owner”) did not file a Preliminary Response.

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 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 ’530 patent. Accordingly, for the reasons that follow, we institute an *inter partes* review of claims 1–18 of the ’530 patent.

### A. *Real Parties-in-Interest*

Petitioner identifies Chongqing HKC Optoelectronics Technology Co., Ltd., HKC Corporation Limited, and HKC Overseas Limited as the real parties-in-interest. Pet. 69; Paper 6, 1. Patent Owner identifies itself as the real party-in-interest. Paper 3, 1.

### B. *Related Matters*

The parties indicate that the ’530 patent is asserted in *Vida Sense Innovation Ltd. v. HKC Corporation Ltd.*, Case No. 1:20-cv-10825 (S.D.N.Y.). Pet. 69; Paper 3, 1.

### C. *The ’530 Patent*

The ’530 patent, titled “Method of Display in Which Frames Are Divided into Subframes and Assigned Driving Shift Voltages,” is directed

“to the method of display on a monitor by sub-frame driving.” Ex. 1001, code (54), 1:10–12. “The monitor has pixels arranged in an  $m \times n$  array, where  $m$  and  $n$  are integers.” *Id.* at 3:1–2. The monitor receives a frame signal for displaying a frame for a frame period, which is divided into  $k$  sub-frame periods. *Id.* at 3:6–8. The ’530 patent teaches that “a frame is displayed during  $k$  steps, and at each step a sub-frame is displayed for the corresponding sub-frame period,” and “[e]ach of the sub frames corresponds to a driving shift.” *Id.* at 3:8–11. The ’530 patent also teaches that “the sub-frame periods are not necessarily equal and  $k$  is an integer.” *Id.* at 3:11–13.

The ’530 patent describes an embodiment of the method of displaying a frame by sub-frame driving that uses a liquid crystal display (“LCD”) monitor, where each pixel includes a liquid crystal and the transparency is determined by a driving voltage. Ex. 1001, 3:14–17. The frame period is divided into a first sub-frame period that corresponds to a first driving shift and a second sub-frame period that corresponds to a second driving shift, so that the frame is displayed in two steps. *Id.* at 3:17–19. In particular, the first sub frame for the first sub-frame period is displayed at time  $t_{s0}$  and the second sub frame for the second sub-frame period is displayed at time  $t_{s1}$ . *Id.* at 3:26–29.

The ’530 patent teaches that, “[w]hile the first sub frame is displayed, the driving voltage is the over-drive voltage  $V_o$  generated from the target driving voltage  $V_D$ , derived from the pixel data, plus the first driving shift.” Ex. 1001, 3:30–33. The first driving shift is greater than zero and speeds up the response of the liquid crystal. *Id.* at 3:33–34. While the second sub frame is displayed, the driving voltage is the target driving voltage  $V_D$ , and the second driving shift is zero to maintain the transparency of the liquid crystal at the target transparency  $T_D$ . *Id.* at 3:34–39.

The '530 patent also teaches that the method can use more than two sub frames for a frame, and describes an embodiment with four sub frames per frame. *Id.* at 4:3–21.

*D. Illustrative Claim*

Petitioner challenges claims 1–18 of the '530 patent. Pet. 1. Claims 1, 8, and 14 are independent. Claim 1 is illustrative of the claimed subject matter, and is reproduced below.

1. A method for driving a display having pixels (i, j) arranged in an m\*n array, i, j, m and n being integers, the display receiving a frame signal for displaying a frame for a frame period, the frame signal including pixel data for each of the pixels of the display, the method comprising the steps of:
  - (a) dividing the frame into a sequence of k sub-frames and the frame period into a sequence of k sub-frame periods;
  - (b) displaying the pixel data continuously during the sequence of sub-frames, step (b) comprising displaying each pixel (i, j) of a p-th sub-frame by applying a driving voltage (i, j) to the pixel (i, j), the driving voltage (i, j) being a target driving voltage corresponding to the pixel data for the pixel (i, j) plus a driving shift voltage corresponding to the p-th sub-frame,

wherein  $1 \leq p \leq k$ ,  $0 < i \leq m$ ,  $0 < j \leq n$ , p, and k are integers.

Ex. 1001, 4:37–53.

*E. Prior Art and Asserted Grounds*

Petitioner asserts that claims 1–18 would have been unpatentable on the following grounds:

| Claims Challenged                   | 35 U.S.C. § <sup>1</sup> | Reference(s)/Basis            |
|-------------------------------------|--------------------------|-------------------------------|
| 1, 2, 5–7                           | 102 and/or 103           | AAPA <sup>2</sup>             |
| 1–3, 5–9, 11–14, 16–18 <sup>3</sup> | 102 and/or 103           | Katoh <sup>4</sup>            |
| 4, 10, 15                           | 103                      | Katoh, Yasunishi <sup>5</sup> |
| 1–3, 5–9, 11–14, 16–18 <sup>6</sup> | 102 and/or 103           | Koyama <sup>7</sup>           |
| 4, 10, 15                           | 103                      | Koyama, Yasunishi             |
| 1, 3–8, 10–18                       | 102 and/or 103           | Yasunishi                     |
| 2, 3, 9                             | 103                      | Yasunishi, Koyama             |

Petitioner relies on the Declaration of Carl Sechen, Ph.D. (“Sechen Declaration,” Ex. 1002) in support of its contentions.

## II. ANALYSIS

### *A. Level of Ordinary Skill in the Art*

Petitioner contends that a person having ordinary skill in the art would have had “either a bachelor’s degree in electrical or computer engineering

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<sup>1</sup> The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102 and 103 that became effective on March 16, 2013. Because the ’530 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions of §§ 102 and 103.

<sup>2</sup> Petitioner relies on portions of the ’530 patent as the applicant-admitted prior art (“AAPA”). *See* Pet. 13 (citing Ex. 1001, 1:13–2:6), 16–20 (applying AAPA).

<sup>3</sup> In a table titled “Specific Grounds,” Petitioner includes claim 10 in this ground. Pet. 11. Because Petitioner’s analysis does not address claim 10 (*id.* at 21–35), we do not understand Petitioner to be challenging claim 10 as being anticipated by, or obvious over, Katoh.

<sup>4</sup> Katoh, US 7,110,008 B2, issued Sept. 19, 2006 (Ex. 1005).

<sup>5</sup> Yasunishi, US 6,094,243, issued July 25, 2000 (Ex. 1008).

<sup>6</sup> Petitioner includes claim 10 in this ground in its “Specific Grounds” table. Pet. 11. Because Petitioner’s analysis does not address claim 10 (*id.* at 38–51), we do not understand Petitioner to be challenging claim 10 as being anticipated by, or obvious over, Koyama.

<sup>7</sup> Koyama, US 6,590,581 B1, issued July 8, 2003 (Ex. 1006).

with three years of experience in the field of display technology or a master's degree with one year of experience in the field of display technology.” Pet. 11–12 (citing Ex. 1002 ¶¶ 39–42). Petitioner's unopposed proposed definition is consistent with the cited prior art and the disclosure of the '530 patent, and we adopt it for purposes of this Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required “where the prior art itself reflects an appropriate level and a need for testimony is not shown” (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985))).

### *B. Claim Construction*

We construe each claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Under this standard, claim terms are generally given their plain and ordinary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). Only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Realtime Data LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner states that “dividing the frame into a sequence of k sub-frames” and “displaying the pixel data continuously during the sequence of sub-frames” as recited in claim 1 lack written-description support in the '530

patent. Pet. 12. Petitioner contends, however, “that the Board need not provide a specific construction for any particular term as the prior art renders the claims unpatentable under any reasonable interpretation of the terms.”

*Id.*

For purposes of this Decision, based on the record before us, we determine that no claim term requires an explicit construction.

*C. Grounds Based on AAPA*

“A petitioner in an *inter partes* review may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications.” 35 U.S.C. § 311(b). On August 18, 2020, the Director of the United States Patent and Trademark Office (“USPTO”) issued a Memorandum<sup>8</sup> setting forth the “USPTO’s interpretation of § 311(b) in relation to statements of the applicant” and whether a petitioner may raise a ground on the basis of statements of the applicant, i.e., AAPA. Memorandum, 1. In particular, the Memorandum sets forth that the “basis” (i.e., the “foundation or starting point”) of every *inter partes* review (“IPR”) must be “prior art consisting of patents or printed publications.” *Id.* at 1 (quoting 35 U.S.C. § 311(b)), 6. The Memorandum explains that “statements of the applicant in the challenged patent do not qualify as ‘prior art consisting of patents or printed publications’” because “[a] patent cannot be prior art to itself . . . [and, therefore,] the challenged patent itself, or any statement therein, cannot be the ‘basis’ of an IPR.” *Id.* at 2–4. Consequently, AAPA “standing alone

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<sup>8</sup> Available at [https://www.uspto.gov/sites/default/files/documents/signed\\_aapa\\_guidance\\_memo.pdf](https://www.uspto.gov/sites/default/files/documents/signed_aapa_guidance_memo.pdf)

cannot be used as the basis for instituting an IPR, under either § 102 or § 103.” *Id.* at 4.

Acknowledging this guidance, the Federal Circuit recently held that AAPA in the challenged patent cannot “be the basis of a ground in an *inter partes* review, because it is not contained in a document that is a prior art patent or prior art printed publication.” *Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1375 (Fed. Cir. Feb. 1, 2022). The Federal Circuit further stated that this does not mean that “AAPA is categorically excluded from an *inter partes* review,” and that “a petitioner may rely on evidence beyond prior art documents in an *inter partes* review, even if such evidence itself may not qualify as the ‘basis’ for a ground set forth in a petition.” *Id.* For example, the Federal Circuit noted that “a patentee’s admissions about the scope and content of the prior art provide a factual foundation as to what a skilled artisan would have known at the time invention” and, therefore, “AAPA may be used in similar ways in an *inter partes* review.” *Id.* at 1376.

Here, Petitioner asserts that claims 1, 2, and 5–7 are anticipated by, or would have been obvious over, “[t]he ’530 patent’s own description of the prior art,” and Petitioner relies on this AAPA as teaching or disclosing all of the elements of claims 1, 2, and 5–7. Pet. 16–20. Accordingly, Petitioner’s reliance on AAPA alone as the basis for challenging claims 1, 2, and 5–7 in these grounds is impermissible under 35 U.S.C. § 311(b). *Qualcomm*, 24 F.4th at 1375; Memorandum at 2–4, 7.

*D. Alleged Anticipation by, or Obviousness over, Yasunishi*

Petitioner contends that claims 1, 3–8, and 10–18 are anticipated by, or would have been obvious over, Yasunishi. Pet. 54–66.

1. *Overview of Yasunishi*

Yasunishi “relates to a liquid crystal display device and a method for driving a liquid crystal display device.” Ex. 1008, 1:7–9. Yasunishi describes a liquid-crystal panel that includes column electrodes arranged to intersect row electrodes in a matrix. *Id.* at 4:32–39. A liquid-crystal layer is interposed between the row and column electrodes, with the liquid-crystal layer at each intersection corresponding to a respective pixel. *Id.* at 6:44–46. The optical state of the liquid-crystal layer at each pixel changes in response to an effective value of a driving voltage applied across the row and column electrodes to conduct a display. *Id.* at 6:48–51.

Yasunishi teaches performing a plurality of scanning operations for each row of electrodes in one frame period of the input image data. Ex. 1008, 3:42–44. “The selection period corresponds to a total period during which the scanning signals are applied to the row electrode by the plurality of scanning operations.” *Id.* at 3:44–47. The selection period for each row electrode in one frame is divided into subframes of a number equal to or greater than the number of gray-scale bits that represent the gray-scale levels of input image data. *Id.* at 4:39–43. The widths of the selection period are also divided and the respective subframe period is set independently for each subframe. *Id.* at 4:45–47.

Binary display data is then generated by associating respective binary data with each subframe according to the gray-scale bits. Ex. 1008, 4:47–49. The binary display data is transformed by setting a voltage amplitude independently for each subframe “so as to generate a display signal having a respective voltage value set independently for each subframe.” *Id.* at 4:49–54. The scanning signal is applied to the corresponding electrode in synchronization with the application of the display signal to the plurality of

row electrodes. *Id.* at 4:54–57. In this way, according to Yasunishi, “effective voltages according to the gray-scale bits of the input image data are applied to the liquid crystal display layer so as to conduct a gray-scale display for the input image data.” *Id.* at 4:57–60.

2. *Claims 1, 3–8, and 10–18*

Petitioner asserts, with supporting testimony from Dr. Sechen, that independent claims 1, 8, and 14 are unpatentable as anticipated by, or obvious over, Yasunishi. Pet. 54–64; Ex. 1002 ¶¶ 175–199. Petitioner alleges that Yasunishi teaches or suggests every limitation of claim 1 as follows:

Preamble: “A method for driving a display having pixels (i, j) arranged in a  $m \times n$  array, i, j, m, and n being integers, the display receiving a frame signal for displaying a frame for a frame period, the frame signal including pixel data for each of the pixels of the display, the method comprising the steps of” (Pet. 54–55 (relying on Ex. 1008, code (57), 4:30–32, 11:45–57));

Element 1(a): “(a) dividing the frame into a sequence of k sub-frames and the frame period into a sequence of k sub-frame periods;” (Pet. 55 (relying on Ex. 1008, code (57), 11:61–65, 14:17–25));

Element 1(b): “(b) displaying the pixel data continuously during the sequence of sub-frames, step (b) comprising displaying each pixel (i, j) of the p-th sub-frame by applying a driving voltage (i, j) to the pixel (i, j), the driving voltage (i, j) being a target driving voltage corresponding to the pixel data for the pixel (i, j) plus a driving shift voltage corresponding to the p-th sub-frame,” (Pet. 55–58 (relying on Ex. 1008, Fig. 9, Fig. 12B, 11:46–57, 15:15–26, 21:67–22:9, 23:1–5));

Element 1(c): “wherein  $1 \leq p \leq k$ ,  $0 < i \leq m$ ,  $0 < j \leq n$ , and  $p$  and  $k$  are integers.” (Pet. 57–58 (relying on Ex. 1008, Fig. 12B, 11:46–57, 21:67–22:9, 23:1–5)).

Petitioner contends that Yasunishi teaches or suggests all of the limitations of independent claim 8 for the same reasons as claim 1. Pet. 59–61. Petitioner also relies on its analysis of claim 1 with respect to all of the limitations of independent claim 14 except for the “displaying a first sub-frame during the first sub-frame period and a second sub-frame during the second sub-frame period” limitation of claim 14. *Id.* at 61–63. Petitioner points to Yasunishi’s description of a method where six subframes are provided for 5-bit input image data, and “[t]he input data determines independently for each subframe whether voltage is applied during the subframe resulting in effective voltage values obtained across the 6-subframe period” as meeting this limitation of claim 14. *Id.* at 62 (relying on Ex. 1008, Fig. 9, 15:15–26).

Having reviewed Petitioner’s contentions regarding independent claims 1, 8, and 14, as well as the cited portions of Yasunishi and the Sechen Declaration, we determine that Petitioner has demonstrated a reasonable likelihood of establishing that independent claims 1, 8, and 14 are anticipated by, or would have been obvious over, Yasunishi. We have also considered the arguments and evidence with respect to dependent claims 3–7, 10–13, and 15–18. At this stage of the proceeding, based on the record before us, we are persuaded that Petitioner establishes a reasonable likelihood of prevailing as to claims 3–7, 10–13, and 15–18 as well.

#### *E. Remaining Grounds*

Petitioner contends that: (1) claims 1–3, 5–9, 11–14, and 16–18 are anticipated by, or would have been obvious over, Katoh; (2) claims 4, 10,

and 15 would have been obvious over the combined teachings of Katoh and Yasunishi; (3) claims 1–3, 5–9, 11–14, and 16–18 are anticipated by, or would have been obvious over, Koyama; (4) claims 4, 10, and 15 would have been obvious over the combined teachings of Koyama and Yasunishi; and (5) claims 2, 3, and 9 would have been obvious over the combined teachings of Yasunishi and Koyama.<sup>9</sup> Pet. 21–54, 66–68. Having determined that Petitioner establishes a reasonable likelihood of showing that at least one of the challenged claims is unpatentable, we institute an *inter partes* review with respect to these grounds as well. *See Guidance of the Impact of SAS on AIA Trial Proceedings* (April 26, 2018) (explaining that “the PTAB will institute as to all claims or none” and “if the PTAB institutes a trial, the PTAB will institute on all challenges raised in the petition”).

### III. CONCLUSION

Based on the arguments in the Petition and the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that it will prevail on its challenge to at least one challenged claim of the ’530 patent. Thus, we institute an *inter partes* review of all challenged claims on all the grounds presented.

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<sup>9</sup> Petitioner contends that Katoh and Koyama qualify as prior art “under at least pre-AIA 35 U.S.C. § 102(e)” and that the ’530 patent is not entitled to the priority date of its foreign application. Pet. 7–10. Although we do not reach these issues at this stage of the proceeding, we note that Petitioner has the burden of persuasion to prove unpatentability based on the asserted prior art, including the initial burden of going forward with evidence that the asserted references qualify as prior art. *See Dynamic Drinkware, LLC, v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1379–80 (Fed. Cir. 2015).

#### IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that an *inter partes* review of claims 1–18 of the '530 patent is instituted with respect to the grounds asserted in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which shall commence on the entry date of this Decision.

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