Trials@uspto.gov
571-272-7822

Paper 9
Date: March 9, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG ELECTRONICS, INC. AND HISENSE CO., LTD.,
Petitioner,

v.

POLARIS POWERLED TECHNOLOGIES, LLC,
Patent Owner.

IPR2020-01283
Patent 8,223,117 B2

Before PHILLIP J. KAUFFMAN, KALYAN K. DESHPANDE, and KARA L. SZPONDOWSKI, *Administrative Patent Judges.*

SZPONDOWSKI, *Administrative Patent Judge*.

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

I. INTRODUCTION

LG Electronics, Inc. and Hisense Co., Ltd. (collectively "Petitioner") filed a Petition (Paper 3, "Pet.") to institute an *inter partes* review of claims 1, 2, 4–7, 9, 15, and 16 of U.S. Patent 8,223,117 B2, issued July 17, 2012, (Ex. 1001, "the '117 patent"). Polaris PowerLED Technologies, LLC ("Patent Owner") filed a Preliminary Response (Paper 8, "Prelim. Resp.").

We have jurisdiction under 35 U.S.C. § 314.

Institution of *inter partes* review is authorized 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(a) (2018). Upon considering the evidence presented and the arguments made, we determine Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to at least one of the challenged claims. Accordingly, we do not institute *inter partes* review.

II. BACKGROUND

A. Real-Parties-in-Interest

Petitioner identifies LG Electronics, Inc., LG Electronics U.S.A., Inc., Hisense Co., Ltd., Hisense Electronics Manufacturing Co. of America Corp., Hisense Int'l Co., Ltd., Hisense Int'l (HK) Co., Ltd., Hisense Int'l (Hong Kong) America Investment Co. Ltd., Hisense USA Corp., and Qingdao Hisense Electronics Co. Ltd. as the real-parties in interest. Pet. 76.

B. Related Matters

The parties advise that the '117 patent is currently involved in the following proceedings:

Polaris PowerLED Techs., LLC v. Hisense Elecs. Mfg. Co. of Am. Corp. et al., No. 8:20-cv-00123 (C.D. Cal.);

Polaris PowerLED Techs., LLC v. LG Elecs. Inc. et al., No. 8-20-cv-00125 (C.D. Cal.);

Pet. 76; Paper 5, 1.

Petitioner advises that '117 patent was at issue in *Polaris PowerLED Techs., LLC v. VIZIO, Inc., et al.,* No. 8:18-cv-01571 (C.D. Cal.), which has been dismissed. Pet. 76; Paper 5, 1.

Two prior petitions for *inter partes* review were filed against the '117 patent: IPR2018-01262 and IPR2020-00043. Pet. 10, 76; Paper 5, 1. The Board denied institution in both cases. Pet. 10.

Petitioner also concurrently filed a second petition for *inter partes* review of the '117 patent in *LG Elecs., Inc. et al. v. Polaris PowerLED Techs., LLC*, IPR2020-01337 (PTAB). Paper 5, 1.

C. The '117 Patent (Ex. 1001)

The '117 patent is titled "Method and Apparatus to Control Display Brightness with Ambient Light Correction" and generally relates to "adjusting the brightness level to compensate for changes in ambient lighting" for "a visual information display system." Ex. 1001, code (54), 1:19–22. The '117 patent discloses an embodiment having a fully automated brightness adjustment mode that takes into account both ambient lighting conditions and user preference for brightness, as well as an embodiment allowing the user to switch between an automatic mode and a manual mode, which only takes into account user preference for brightness. *Id.* at 1:60–2:6, 2:17–30, 6:37–41.

In a fully automated mode, the '117 patent describes a user input, such as a dimming control, and a light sensor, which detects the ambient light level and generates a corresponding light sensor output. *Id.* at 4:45–52, 5:3–5, 5:15–20, Figs. 1, 2. In one embodiment, a multiplier outputs a combined signal that is the product of the user input and a scaled light sensor output. *Id.* at 5:20–22, Fig. 2. The product is added to a dark level bias, which is

used to maintain the brightness above a predetermined level when the ambient light level decreases to approximately zero, and adjusted to generate a brightness control signal for a display driver. *Id.* at 2:57–60, 4:49–51, 5:22–27, 5:39–41, Fig. 2.

D. Illustrative Claim

Among the challenged claims, claims 1 and 15 are independent. Petitioner challenges claims 1, 2, 4–7, 9, 15, and 16 of the '117 patent. Pet. 1. Independent claim 1, reproduced below with brackets noting Petitioner's identifiers, is illustrative of the claimed subject matter:

> 1. [1.Pre] A brightness control circuit with selective ambient light correction comprising:
>
> [1.A] a first input configured to receive a user signal indicative of a user selectable brightness setting;
>
> [1.B] a light sensor configured to sense ambient light and to output a sensing signal indicative of the ambient light level;
>
> [1.C] a multiplier configured to selectively generate a combined signal based on both the user signal and the sensing signal; and
>
> [1.D] a dark level bias configured to adjust the combined signal to generate a brightness control signal that is used to control a brightness level of a visible display such that the brightness control signal is maintained above a pre-determined level when the ambient light level decreases to approximately zero.

Ex. 1001, 12:28–43.

E. Prior Art

Petitioner relies on the following references (*see* Pet. 19–20), as well as the Declaration of Ralph V. Wilhelm (Ex. 1002).

Reference	Exhibit	Patent/Printed Publication
Yanagiuchi	1003	Japan Published Application No. H10-122071 to Yanagiuchi, published Nov. 16, 1999, filed May 1, 1998
Toffolo	1006	U.S. Patent No. 6,337,675 B1 to Toffolo et al., issued Jan. 8, 2002, filed Oct. 30, 1997
Fujimaki	1009	Japan Published Application No. H11-004005 to Fujimaki, published July 28, 2000, filed Jan. 11, 1999
Ottenstein	1012	U.S. Patent No. 5,270,818 to Ottenstein, issued Dec. 14, 1993, filed Sep. 17, 1992
Henry	1039	U.S. Patent No. 6,198,234 B1 to Henry, issued Mar. 6, 2001, filed June 9, 1999

F. Asserted Grounds

Petitioner asserts that claims 1, 2, 4–7, 9, 15, and 16 are unpatentable based upon the following grounds (Pet. 19–20):

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1, 2, 4, 5, 7, 15, 16	103(a)	Yanagiuchi
2	1, 2, 4, 5, 7, 9, 15, 16	103(a)	Yanagiuchi, Toffolo
3	1, 2, 4, 5, 7, 15, 16	103(a)	Fujimaki
4	1, 2, 7, 9, 15, 16	103(a)	Ottenstein, Fujimaki
5	6	103(a)	Yanagiuchi, Henry
6	6	103(a)	Yanagiuchi, Toffolo, Henry
7	6	103(a)	Fujimaki, Henry

III. ANALYSIS

A. Legal Standards

A claim is unpatentable under 35 U.S.C. § 103(a) if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

A patent claim "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. An obviousness determination requires finding "both 'that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.'" *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–68 (Fed. Cir. 2016); *see also KSR*, 550 U.S. at 418. A motivation to combine the teachings of two references can be "found explicitly or implicitly in market forces; design incentives; the 'interrelated teachings of multiple patents'; 'any need or problem known in the field of endeavor at the time of invention and addressed by the patent'; and the background knowledge, creativity, and common sense of the person of ordinary skill." *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013). Further, an assertion of obviousness "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 550 U.S. at 418; *In re NuVasive, Inc.*, 842 F.3d 1376,

1383 (Fed. Cir. 2016) (a finding of a motivation to combine "must be supported by a 'reasoned explanation'").

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1358, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012)); *see also Intelligent Bio-Sys.*, 821 F.3d at 1369 ("It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the 'evidence that supports the grounds for the challenge to each claim.'" (quoting 35 U.S.C. § 312(a)(3))). Therefore, to prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable. At this preliminary stage, we determine whether the information presented in the Petition shows there is a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious over the proposed combinations of prior art.

B. Discretion to Deny Institution of Inter Partes Review Under 35 U.S.C. §§ 314(a) and 325(d)[1]

Patent Owner contends that the current Petition should be denied under 35 U.S.C. § 314(a) as an improper follow-on petition under *General*

[1] Petitioner concurrently filed IPR2020-01337, challenging claims 1, 2, 4–7, 9, 15, 16, and 18 of the '117 patent. In that proceeding, Petitioner filed a Notice Ranking Petitions for *Inter Partes* Review of U.S. Patent No. 8,223,117 (Paper 4), and Patent Owner filed a Response to the Ranking Paper (Paper 10). We do not reach the issue of whether more than one petition is necessary for Petitioner's challenges to the '117 patent because we determine Petitioner has not established a reasonable likelihood of

Plastic Co. v. Canon Kabushiki Kaisha, IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017) (precedential) and *Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, Paper 11 (PTAB Apr. 2, 2019) (precedential) "*Valve I*"), based upon prior petitions IPR2018-01262 and IPR2020-00043 and concurrently filed petition IPR2020-01337. Prelim. Resp. 1–12. Patent Owner also contends that the current Petition should be denied under 35 U.S.C. § 325(d) under the *Advanced Bionics, LLC. v. Med-El Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8–9 (PTAB Feb. 13, 2019) (precedential) framework. *Id.* at 12–16. Given that we determine that Petition has not established a reasonable likelihood of showing that at least one of the claims challenged in this Petition or in concurrently filed petition IPR2020-01337, we need not reach the issue whether to exercise discretion to deny institution of *inter partes* review under 35 U.S.C. § 314(a) or 35 U.S.C. § 325(d).

C. Level of Ordinary Skill in the Art

Petitioner asserts a person of ordinary skill in the art "would have had at least a bachelor's degree in electrical engineering, physics, optics or a related field, and approximately three years of experience with field of visual displays, circuit design, and related technologies." Pet. 16 (citing Ex. 1002 ¶¶ 19–21). Patent Owner does not propose a level of ordinary skill in the art or oppose Petitioner's proposed level of ordinary skill in the art. *See generally* Prelim. Resp.

---

showing that at least one of the claims challenged in either proceeding is unpatentable. Our Decision on Institution in IPR2020-01337 is issuing concurrently with this Decision.

Petitioner's proposed definition is unopposed and is consistent with the level of ordinary skill in the art reflected by the prior art of record. *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)). We, therefore, adopt Petitioner's level of ordinary skill in the art for purposes of this Decision.

D. Claim Construction

Because this *inter partes* review is based on a petition filed after November 13, 2018, 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," the same standard used to construe the claim in a civil action. 37 C.F.R. § 42.100(b) (2019). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–1317 (Fed. Cir. 2005) (en banc)). There is a "heavy presumption," however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1313.

Petitioner applies the following constructions, which were previously construed by the Eastern District of Texas and/or the Central District of California. Pet. 17–19.

Term	Construction
"a first input configured to receive a user signal indicative of a user selectable brightness setting" (claim 1)	"first input actually programmed or implemented with hardware or software to receive a user signal indicative of a user selectable brightness setting" (Ex. 1038, pp. 7–8)
"a multiplier configured to selectively generate a combined signal based on both the user signal and the sensing signal" (claim 1) / "selectively multiplying the input signal with a sense signal to generate a combined signal, wherein the sense signal indicates an ambient light level" (claim 15)	"combined signal includes, but is not necessarily limited to, the product of the user signal and the sensing signal" (Ex. 1037, p. 29) (Eastern District of Texas) "multiplier configured to" means the multiplier must be "actually programmed or implemented with hardware or software" (Ex. 1035, p. 12) (Central District of California)
"a dark level bias configured to adjust the combined signal to generate a brightness control signal that is used to control a brightness level of a visible display" (claim 1) / "adjusting the combined signal with a dark level bias" (claim 15)	"dark level bias" means "a value that causes a deviation from the combined signal, where the value is a voltage value of an electrical signal or value of a software variable" (Ex. 1038, p. 34[2]) "a dark level bias actually programmed or implemented with hardware or software to adjust the combined signal to generate a brightness control signal that is used to control a brightness level of a

[2] Petitioner's citation does not refer to this construction. It appears the citation should be to Ex. 1035, p. 28.

	visible display" (Ex. 1035, p. 34)
"approximately zero" (claims 1, 15)	"zero or a level close enough to zero that a light sensor would measure zero or a corresponding sending signal would round to zero" (Ex. 1035, p. 35)
"an overdrive clamp circuit coupled to the brightness control signal to limit its amplitude to a predefined range" (claim 6)	"to limit its amplitude to a predefined range" means "limit the absolute value of the brightness control signal's amplitude to be less than a predefined level" (Ex. 1037, p. 30)
"second input configured to receive a selection signal to selectively operate the brightness control circuit in an auto mode or a manual mode" (claim 9)	"second input actually programmed or implemented with hardware or software to receive a selection signal to selectively operate the brightness control circuit in an auto mode or a manual mode" (Ex. 1038, pp. 7–8)

Patent Owner's Preliminary Response "applies Petitioner's constructions." Prelim. Resp. 1.

At this stage in the proceeding, we need only construe the claims to the extent necessary to determine whether to institute *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). After reviewing the parties' arguments and evidence, we determine that we do not need to expressly construe any term for purposes of this Decision.

E. Grounds 1 and 2: Obviousness Over Yanagiuchi, and Yanagiuchi in combination with Toffolo

Petitioner contends claims 1, 2, 4, 5, 7, 15, and 16 would have been unpatentable over Yanagiuchi and relies on the Declaration of Ralph V.

Wilhelm (Ex. 1002) in support. Pet. 20–46. Petitioner analyzes Grounds 1 and 2 together. *Id.* For the reasons that follow, we are not persuaded that the evidence sufficiently supports Petitioner's arguments and, therefore, Petitioner has not established a reasonable likelihood of prevailing with respect to these grounds.

1. Yanagiuchi (Ex. 1003)

Yanaguichi is titled "Automatic Dimmer for LCD Displays" and is generally directed to "[a]n automatic dimmer for controlling the luminance of an LCD display device based on ambient illuminance." Ex. 1003, code (54), claim 1. Yanagiuchi seeks "to provide an automatic dimmer for an LCD display device which enables a user to set the LCD luminance changing curve so that the LCD luminance can be performed along this curve." *Id.* ¶ 3. Figure 1, reproduced below, shows a schematic diagram of an automatic dimmer:

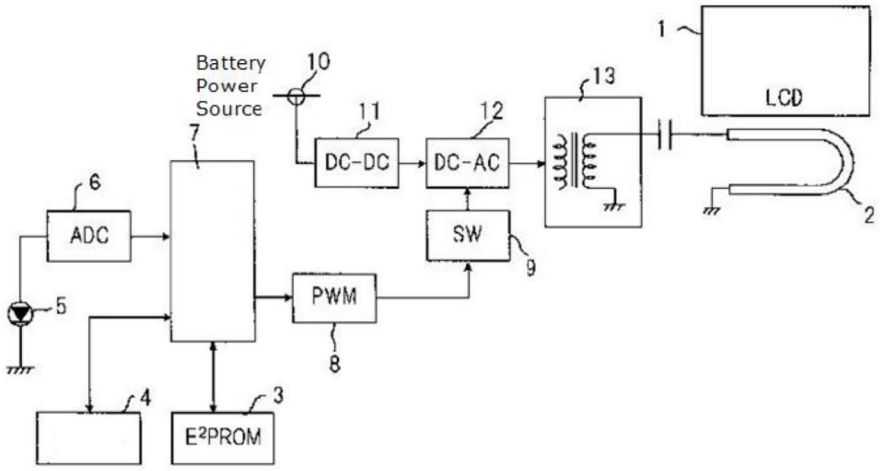


Figure 1 depicts LCD screen in an LCD display 1, and "a cathode fluorescent lamp (CFL) generating backlight for the LCD device 2, where the background luminance (LCD luminance) is controlled by PWM control

of the pulse width of the CFL drive waveform (CFL drive voltage)." *Id.* ¶ 6. Figure 1 also includes non-volatile memory 3, such as E^2PROM, which is "used to store a luminance changing curve indicating the relationship between ambient illuminance and LCD luminance," control panel 4, "for inputting discrete points to specify the luminance changing curve," photosensor 5, "for detecting the ambient luminance," microcomputer 7, which "stores the inputted luminance changing curve 51 in E^2PROM 3, determines the PWM value based on the current ambient illuminance using the linearly approximated luminance changing curve 51, and outputs the result," and unit 8 "for converting PWM values to a duty between 0 and 100 (%)." *Id.* ¶¶ 6–8.

Figure 2 of Yanagiuchi is reproduced below.

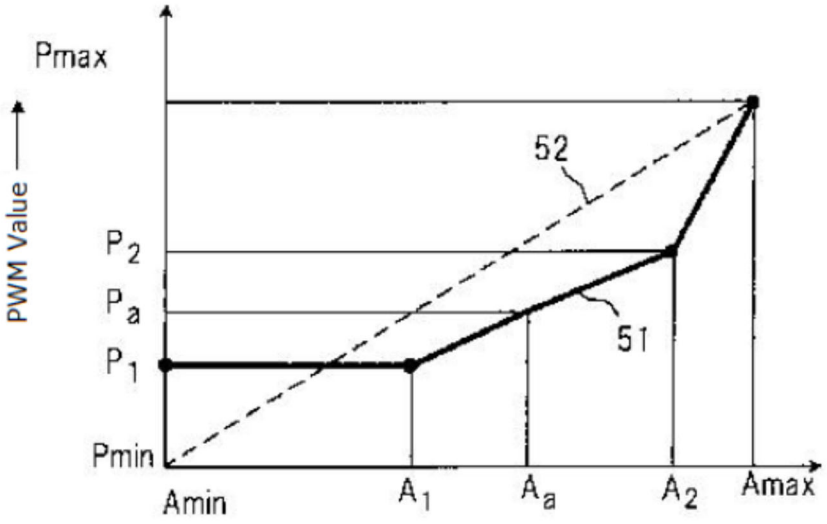


Figure 2 "is an example of a luminance changing curve, where solid line 51 is the luminance changing curve set by the present invention, dashed line 52 is a linear luminance changing curve of the prior art, the horizontal axis is the ambient luminance A (LUX), and the vertical axis is the pulse width of the CFL drive waveform based on LCD luminance, that is, the

PWM value determining the CFL drive voltage." *Id.* ¶ 6. "The luminance changing curve 51 is specified by start point (A_{min}, P_1), one or more breakpoints (A_1, P_1), (A_2, P_2), and an end point (A_{max}, P_{max})." *Id.*

Yanagiuchi states that "[t]he luminance changing curve 51 desired by the user (FIG. 2) using the control panel 4 is linearly approximated and stored via the microcomputer 7 in E^2PROM 3." *Id.* ¶ 8. "[T]he microcomputer 7 retrieves the ambient illuminance A_a detected by the photosensor 5 . . . and the PWM value P_a in response to the ambient illuminance [A_a] is calculated" using the following equation:

$$P_a = (A_a - A_1) \cdot (P_2 - P_1)/(A_2 - A_1) + P_1$$

Id. ¶¶ 7–8. Then, "the drive voltage waveform (or power) with a pulse width corresponding to the PWM value P_a is applied to the CFL 2 to generate backlighting for the LCD display at the luminance desired by the user." *Id.* ¶ 8.

2. Toffolo (Ex. 1006)

Toffolo is titled "Display System With Automatic and Manual Brightness Control" and generally relates to "[a] display system provid[ing] automatic and manual brightness control." *Id.* at codes (54), (57). Specifically, a "brightness controller" varies the luminance of a display between minimum and maximum luminance values, based on sensed ambient light. *Id.* at 1:21–40.

In an embodiment, "display system 20" includes "automatic input circuit 30" with "first user input device 32," "second user input device 34," and "photo sensor 36 for sensing the level of ambient light, or 'illuminance,' near the display 22." *Id.* at 1:58–2:4.

Figure 1 of Toffolo, reproduced below, shows "display system 20."

FIG. 1

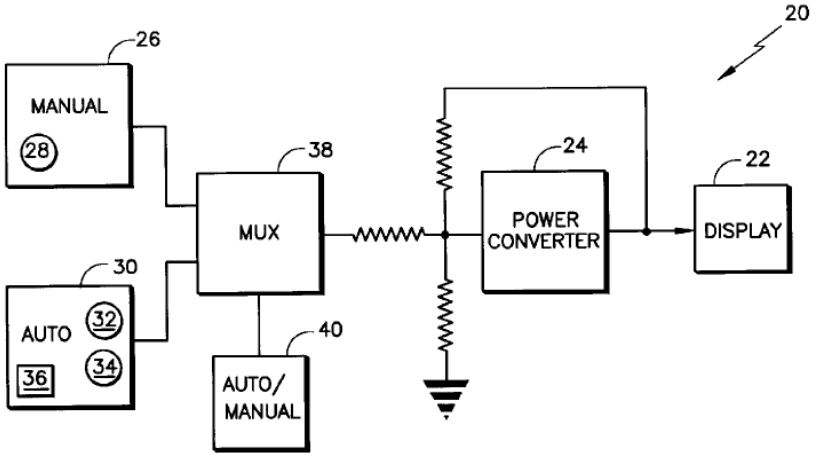


Figure 1 depicts "display system 20" for controlling the brightness of "display 22" in an embodiment of Toffolo, including "first input device 32," "second input device 34," "photosensor 36," and "display 22." *Id.* at 1:58–2:4, 49–50.

In operation, the "first user input device 32" is used to select a point "A" corresponding to "the illuminance at which display 22 displays its maximum luminance." *Id.* at 2:30–34. The "second user input device 34" is used to select at point "B" corresponding to "the luminance of the display 22 which is displayed at the minimum illuminance detectable." *Id.* at 2:38–40. Toffolo explains that

> When the photosensor 36 detects that the level of ambient light is below point B, the display 22 is displayed at a minimum luminance level, which is selected by the second user input device 34. When the photosensor 36 detects that the ambient light level is at or above that indicated at point A, as selected by user input device 32, the display 22 is displayed at a maximum luminance level, which is preferably the maximum luminance level that can be displayed by the display 22. When the photosensor 36 detects that ambient light level is between points A and B, the display 22 is displayed as a function of the illuminance between the light levels indicated at points A and B.

Id. at 2:49–61.

Figure 2 of Toffolo, reproduced below, shows how the display luminance of the "display 22" varies based on sensed illuminance for selected values of "A" and "B." *See id.* at 2:14–28.

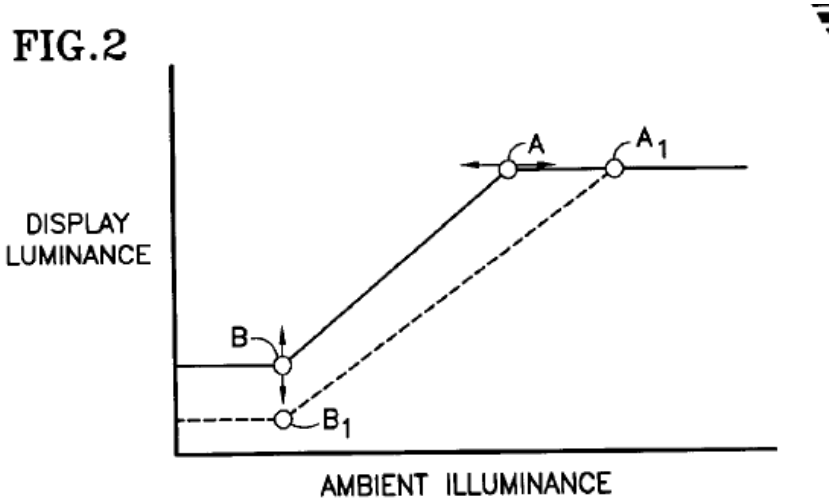


Figure 2 depicts a graph showing the relationship between luminance of "display 22" on the y-axis and illuminance as sensed by "photo sensor 36" on the x-axis. *Id.*

3. Independent Claims 1 and 15

Petitioner identifies the disclosures in Yanagiuchi and Toffolo that it contends teaches the limitations in independent claims 1 and 15. *See* Pet. 20–39, 45–46. Petitioner primarily relies on Yanagiuchi. *Id.*

Limitation 1[A] recites "a first input configured to receive a user signal indicative of a user selectable brightness setting." Ex. 1001, 12:30–31. Claim 15 recites a similar limitation. *Id.* at 13:36–37. Petitioner contends Yanagiuchi teaches this limitation. Pet. 29–32, 45. In particular, Petitioner contends the "user signal" is disclosed by "signals representing

digitized representations of user settings (A_{min}, $P_{[1]}$[3]), (A_1, P_1), (A_2, P_2), and (A_{max}, P_{max}), defining the luminance changing curve 51." *Id.* at 31 (citing Ex. 1003, Figs. 2, 5(a)–5(b), ¶¶ 6, 7). Petitioner further contends:

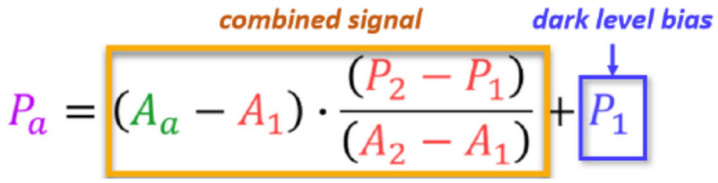
> The user signal is "indicative" of several "user selectable brightness setting[s]." A first setting is a "breakpoint" (A2, P2), reflecting, at least in part, Yanagiuchi's solution to the problem that users could not set luminance values "between the min-max values." Ex. 1003, ¶¶ [0003], [0006]. A second setting is the "start point" (Amin, P1), which solves the problem that users could not set the "minimum value min on the luminance changing curve." *Id*. The signals representing these user-defined points are indicative" of these user selectable brightness settings because they define the brightness curve by at least providing a start point, end points, and breakpoints. Ex. 1002, ¶ 102.

Pet. 31–32 (alteration in original).

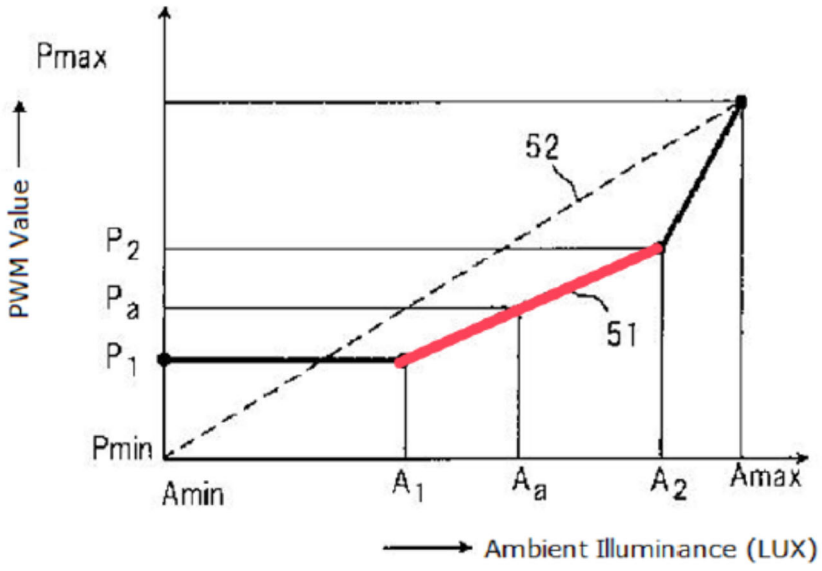
Limitation 1[D] recites "a dark level bias configured to adjust the combined signal to generate a brightness control signal that is used to control a brightness level of a visible display such that the brightness control signal is maintained above a pre-determined level when the ambient light level decreases to approximately zero." Ex. 1001, 12:38–43. Claim 15 recites a similar limitation. *Id.* at 14:4–9. Petitioner contends that Yanagiuchi teaches limitation 1[D]. Pet. 35–39, 46. Specifically, Petitioner contends that P_1 in Yanagiuchi teaches the "dark level bias." *Id.* at 35. Petitioner contends that Yanagiuchi "adds P1 to the combined signal as shown in the following expression, thereby adjusting the combined signal to

[3] Petitioner states (A_{min}, P_a), but Yanagiuchi discloses (A_{min}, P_1) (*see* Ex. 1003 ¶¶ 6, 7, Fig. 2), and further below in the Petition, Petitioner correctly refers to (A_{min}, P_1), so we presume this is a typographical error. P_a refers to the PWM value for ambient illuminance A_a. Ex. 1003 ¶ 7.

generate a 'brightness control signal' (Pa)." *Id.* at 35–36. Petitioner provides the following color coded expression:



Id. The expression and corresponding color coding is P_a (pink) = (A_a (green) – A_1 (red)) · (P_2 – P_1)/(A_2 – A_1) (red) + P_1 (purple).[4] Petitioner further contends that a person of ordinary skill in the art would have understood that this expression is for the segment of Yanagiuchi's Figure 2 shown below in red:



[4] Petitioner does not specify, but based on Petitioner's contentions, the red appears to refer to the "user signal," the green to the "sensing signal," and the "pink" to the "brightness control signal."

Pet. 35–36. Annotated Figure 2, as provided by Petitioner, depicts luminance changing curve 51, where the line between breakpoints (P_1, A_1) to (P_2, A_2) is colored red. *Id.*

Patent Owner argues, among other things, that Petitioner has not sufficiently shown that Yanagiuchi teaches limitations 1[A] and 1[D] because: (1) Petitioner improperly contends that P_1 is both a "user [input] signal," and a "dark level bias"; and (2) Petitioner does not explain how P_1 can be both a "signal" and a "value." Prelim. Resp. 19–27, 35–47. Patent Owner contends that the "user [input] signal," and "dark level bias," are separate claim limitations that are distinct and cannot be the same structure. *Id.* at 35–38. Patent Owner also identifies certain portions of and Figures in the Specification of the '117 patent, as well as dependent claims 2–4, to support its arguments that these are distinct limitations. *Id.* at 38–41.

We focus our analysis on the claim limitations that are dispositive for purposes of this Decision. On the record before us, we determine that Petitioner has not shown a reasonable likelihood of prevailing in demonstrating that Yanagiuchi discloses limitations 1[A] and 1[D], and, accordingly, has not shown a reasonable likelihood it will prevail in demonstrating that claims 1 and 15 are unpatentable over Yanagiuchi, or the combination of Yanagiuchi and Toffolo.

As discussed above, Petitioner relies on "signals representing digitized representations of user settings (A_{min}, $P_{[1]}$) (A_1, P_1) (A_2, P_2) (A_{max}, P_{max})" to teach the "user [input] signal indicative of a user selectable brightness setting." Pet. 31. Yanagiuchi describes these as "discrete points [input via the control panel by the user] to specify the luminance changing curve 51." Ex. 1003 ¶ 7. As Petitioner explains, "[a] first setting is a

'breakpoint' (A_2, P_2), reflecting, at least in part, Yanagiuchi's solution to the problem that users could not set luminance values 'between the min-max values.'" Pet. 31. Petitioner further explains "[a] second setting is the 'start point' (Amin, P_1), which solves the problem that users could not set the 'minimum value min on the luminance changing curve.'" *Id.* In other words, Petitioner asserts that P_1 is the point on luminance changing curve 51 that corresponds to minimum ambient luminance A_{min}, and is set by the user. *See* Ex. 1003 ¶ 6, Fig. 2. We agree with Patent Owner that Petitioner improperly relies on P_1 as disclosing both the "user [input] signal" and the "dark level bias."

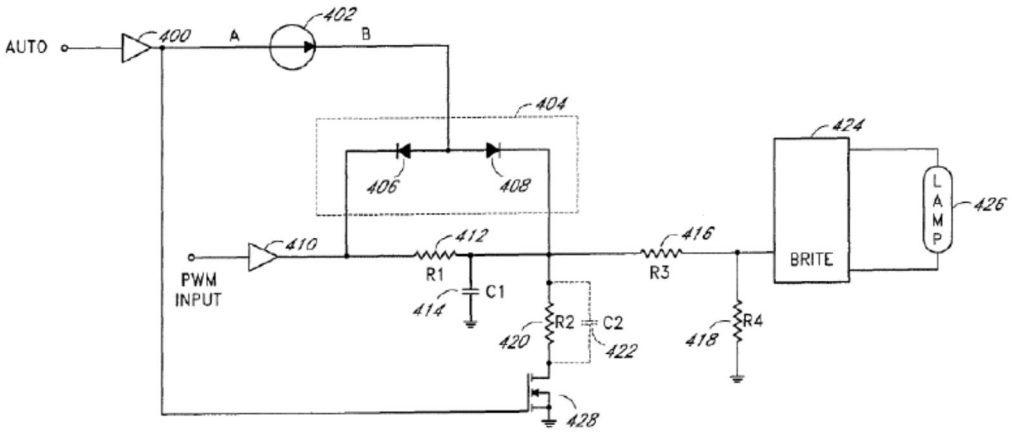
"Where a claim lists elements separately, 'the clear implication of the claim language' is that those elements are 'distinct component[s]' of the patented invention." *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (alteration in original) (quoting *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004)); *HTC Corp. v. Cellular Commc'n. Equip. LLC*, 701 F. App'x 978, 982 (Fed. Cir. 2017) ("The separate naming of two structures in the claim strongly implies that the named entities are not one and the same structure.").

Claims 1 and 15 recite the "user [input] signal" and the "dark level bias" as separate and distinct elements of the claimed "brightness control circuit" and method. Claim 1 recites "a first input configured to *receive a user signal* indicative of a user selectable brightness setting," with "a multiplier configured to selectively *generate a combined signal based on both the user signal and the sensing signal*," and "a *dark level bias configured to adjust the combined signal* to generate a brightness control signal . . ." Ex. 1001, 12:30–43. Claim 15 recites similar limitations in

method form. *Id.* at 13:36–14:9. In other words, the dark level bias adjusts a combined signal that is generated based on both the user signal and the sensing signal.

The Specification of the '117 patent supports that the "user [input] signal" is a distinct, separately identifiable element from the "dark level bias." For example, as Patent Owner explains, the equations accompanying Figures 4, 8, and 9 of the Specification show these as separate elements. *See* Prelim. Resp. 38–41. Patent Owner provides an annotated version of Figure 4 and its accompanying equation, set forth below:

FIG. 4



User Signal — Dark Level Bias

$$BCS1 = dutycycle \times \left[\left(\frac{VCC \times R2 \times R4}{[(R1+R2)\times(R3+R4)]+(R1\times R2)}\right) + \left(\frac{ISRC \times R1 \times R2 \times R4}{[(R1+R2)\times(R3+R4)]+(R1\times R2)}\right)\right]$$

Sensing Signal

Id. at 39. Figure 4 depicts a schematic diagram of one embodiment of a brightness control circuit with a multiplier circuit to combine a light sensor output with a user adjustable PWM logic signal. Ex. 1001, 4:23–25. Patent Owner's annotated version of the equations of Figure 4 highlight the user signal in red, the dark level bias in green, and the sensing signal in blue. Prelim. Resp. 39. In reference to Figure 4 and its equations, the Specification explains:

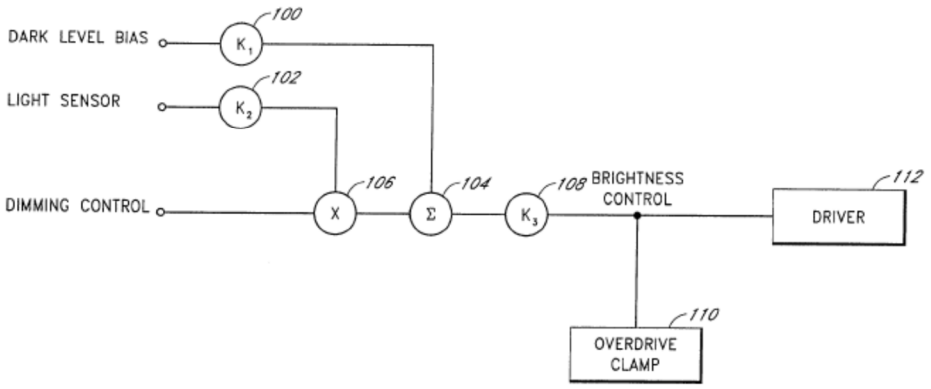
> *The term "dutycycle" corresponds to the duty cycle of the user adjustable PWM logic signal.* The term "VCC" corresponds to the logic high output from the input buffer circuit 410. The term "ISRC" corresponds to the sensor current signal. *The first major term within the brackets corresponds to a scaled dark bias level of the brightness control signal in total ambient darkness.* The second major term within the brackets introduces the effect of the visible light sensor 402. *The network of resistors 412,420 416, 418 helps to provide the dark bias level and to scale the product of the sensor current signal and the user adjustable PWM logic signal.*

Ex. 1001, at 7:24–35 (emphasis added).

Patent Owner provides similar support and annotations for Figures 8 and 9, which likewise support that the "user [input] signal" and "dark level bias" are distinct components. Prelim. Resp. 40–41.

Similarly, Figures 1 and 2 distinguish between the user input (DIMMING CONTROL) and the dark level bias. Figure 2, reproduced below, depicts an embodiment of a brightness control circuit with ambient light correction and is reproduced below. Ex. 1001, 4:19–20.

FIG. 2



The Specification states:

> FIG. 2 is a block diagram of another embodiment of a brightness control circuit with ambient light correction. A light sensor output (LIGHT SENSOR) is adjusted by a scalar circuit (k2) 102 and then provided to a multiplier circuit 106. *A user input (DIMMING CONTROL) is also provided to the multiplier circuit 106.* The multiplier circuit 106 outputs a signal that is the product of the user input and Scaled light sensor output. *A Summing circuit 104 adds the product to a dark level bias (DARKLEVEL BIAS) that has been adjusted by scalar circuit (k1) 100.* An output of the summing circuit 104 is adjusted by scalar circuit (k3) 108 to generate a bright ness control signal (BRIGHTNESS CONTROL) for a display driver 112.

Id. at 5:15–27 (emphasis added). The Specification goes on to state that "In FIG. 2, the scaled dark level bias is added to the output of the multiplier circuit 106 to provide the predefined level of brightness in this case. *This feature may be desired to prevent a user from using the brightness control circuit to turn off a visual information display system.*" *Id.* at 5:38–43 (emphasis added). We note this is different than one of the problems

Yanagiuchi seeks to solve – namely, where "the user cannot set . . . the minimum value min on the luminance changing curve . . . [so] there is no degree of freedom in luminance control." Ex. 1003 ¶ 3.

The Specification does not indicate that the "user [input] signal" and the "dark level bias" may be the same thing. In addition, Petitioner does not offer evidence or argument suggesting that the general presumption that these different terms have different meanings would not apply to the claim terms "user [input] signal" and "dark level bias." Even Petitioner's own description of the '117 patent, including Figures 2, 4, 8, and 8, describe the "user [input] signal" and "dark level bias" as distinct components. *See* Pet. 3–7. Similarly, the constructions submitted by Petitioner for the claim limitations also indicate that these are distinct components. *See id.* at 17–18.

Further, dependent claim 3, which recites "wherein the multiplier multiplies a sum of the *user signal* and the sensing signal by the *dark level bias* to generate an output signal corresponding to the brightness control signal," likewise supports that the user signal and dark level bias are distinct components. Ex. 1001, 12:48–51. Additionally, with reference to Figure 3, the '117 patent states "[t]he brightness control signal near zero lux is a function of a dark bias level and also depends on the user setting." *Id.* at 6:10–12. In other words, dark level bias and user setting (or input) are distinct components.

Thus, we determine that the claim language, figures, and written description of the '117 patent demonstrate that the "user [input] signal" and "dark level bias" are separate components. Petitioner has not provided any explanation or argument as to why these separate claim elements can be satisfied by P_1 in Yanagiuchi. Therefore, Petitioner has not provided

sufficient explanation or argument as to its reliance on Yanagiuchi's "start point" as disclosing two separate and distinct claim elements, i.e., the user (input) signal and the dark level bias.

Moreover, in so relying, Petitioner's contentions lack sufficient explanation and consistency in other ways. For example, Petitioner asserts that the "user signal" is disclosed by "signals representing digitized representations of user settings (A_{min}, $P_{[1]}$), (A_1, P_1), (A_2, P_2), and (A_{max}, P_{max}). Pet. 31. However, Yanagiuchi discloses that these are points stored in memory. E.g., Ex. 1003 ¶ 4, 6; *see* Prelim. Resp. 20–21. For the dark level bias, Petitioner's construction states that "dark level bias" means "a value that causes a deviation from the combined signal, where the value is a voltage value of an electrical signal or value of a software variable." Pet. 18. Petitioner does not explain how P_1 can be both "signals representing digitized representations of user settings" and "a value that causes a deviation from the combined signal, where the value is a voltage value of an electrical signal or value of a software variable."

We also agree with Patent Owner that Petitioner does not sufficiently explain why any of the points (A_{min}, Pa), (A_1, P_1), (A_2, P_2), and (A_{max}, P_{max}) are signals. For example, Mr. Wilhelm testifies that "[t]he user signal is a signal indicating points set by the user including, for example, user signal may reflect one or more of the points (A_{min}, Pa), (A_1, P_1), (A_2, P_2), and (A_{max}, P_{max}) which collectively define the luminance changing curve 51." Ex. 1002 ¶ 101. This testimony is not sufficiently supported on this record. *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1329 (Fed. Cir. 2001) (holding that conclusory statements offered by experts are not evidence). As discussed above, Yanagiuchi describes that these are points are stored in

memory that are input by the user via the control panel. *E.g.*, Ex. 1003 ¶ 4, 6; Fig. 1. Nowhere does Yanagiuchi describe, nor does Petitioner provide sufficient explanation, that these are "signals."

Petitioner thus fails to meet the burden required to support institution of *inter partes* review of independent claims 1 and 15, and, for the same reasons, dependent claims 2, 4, 5, 7, 9, and 16 based on obviousness by Yanagiuchi or Yanagiuchi and Toffolo[5]. *Harmonic*, 815 F.3d at 1363(quoting 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim") (internal quotations omitted)); *cf. Intelligent Bio-Systems*, 821 F.3d at 1369 (quoting 35 U.S.C. § 312(a)(3)) (addressing "the requirement that the initial petition identify 'with particularity' the 'evidence that supports the grounds for the challenge to each claim'"). Accordingly, Petitioner fails to demonstrate a reasonable likelihood that it would prevail on these grounds of unpatentability.

F. Ground 3: Obviousness Over Fujimaki

Petitioner, alternatively, contends claims 1, 2, 4, 5, 7, 9, 15, and 16 would have been unpatentable over Fujimaki. Pet. 47–59. For the reasons that follow, we are not persuaded that the evidence sufficiently supports Petitioner's arguments and, therefore, Petitioner has not established a reasonable likelihood of prevailing with respect to this ground.

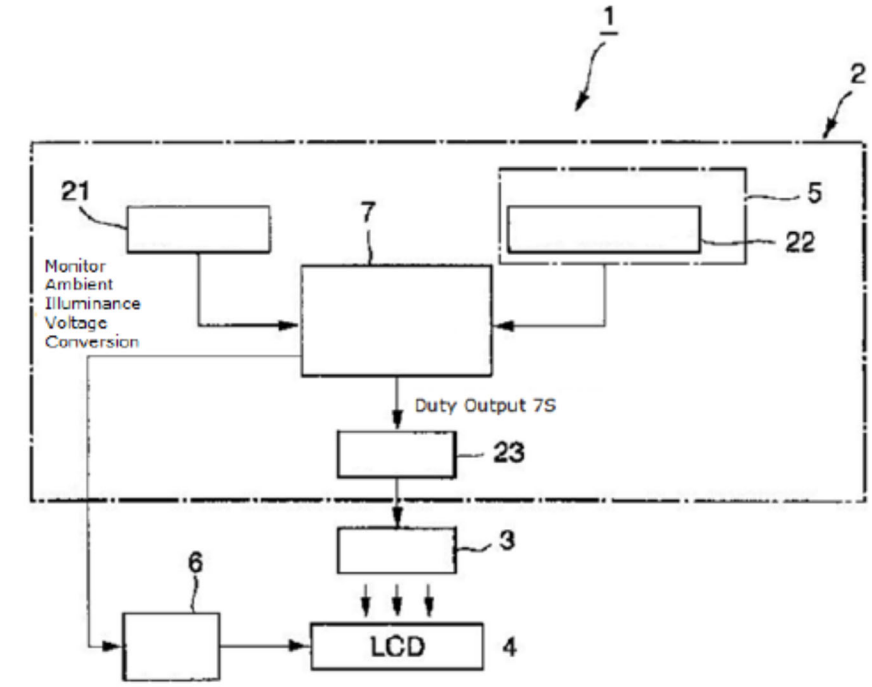
1. Fujimaki (Ex. 1009)

Fujimaki is titled "Dimming Method and Display Device," and is generally directed to "a display device using a dimming method that is able

[5] Petitioner does not rely on Toffolo to teach the "user [input] signal" or the "dark level bias." *See* Pet. 29–32, 35–39.

to control display luminance according to the ambient illuminance using a control mode based on user preferences." Ex. 1009, codes (54), (57). Fujimaki provides that "a user with a general preference for brighter illumination may set the minimum brightness higher" and "a user with a general preference for darker illumination may set the minimum brightness lower." *Id.* ¶ 9.

Figure 1, depicted below, is a block diagram of a liquid crystal device.



3: Fluorescent lamp
7: Control circuit
21: Ambient light sensor
22: Minimum luminance setting key
23: Inverter

Figure 1 shows liquid crystal display device 1 with dimmer device 2, fluorescent lamp 3 for panel illumination whose luminance is controlled by dimmer device 2, a liquid crystal display panel 4 illuminated by lamp 3, and control panel 5. *Id.* ¶ 18. "The LCD 4 is controlled by a control circuit 7 via

a display driver 6." *Id.* Dimmer device 2 includes "ambient light sensor 21 for detecting the ambient illuminance surrounding the liquid crystal display device, a minimum luminance input key 22 for setting the minimum luminance of the lamp 3," and "a control circuit 7 for outputting predetermined drive pulse signals (duty output) 7S based on signals supplied by the ambient light sensor 21 and the input key 22." *Id.* ¶ 19.

Figure 2, reproduced below, "is a graph showing the control line for lamp luminance calculated by the control circuit 7." *Id.* ¶ 22.

[FIG. 2]

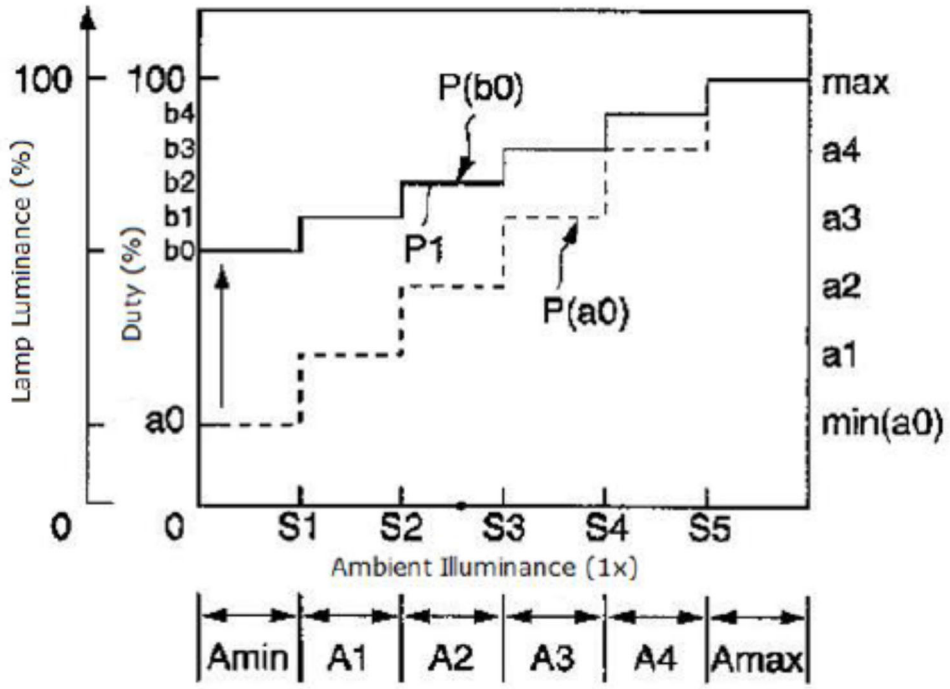


Figure 2 depicts ambient illuminance on the x-axis and duty (%) on the y-axis. *Id.* ¶ 23. "[T]he standard control line P(a0) in [Figure 2] divides the ambient illuminance into six ranges (a minimum illuminance range Amin, illuminance ranges A1 to A4, and a maximum illuminance range

Amax) in five equal ascending steps S1 to S5." *Id.* "Each of these illuminance ranges is assigned a minimum duty a(min), intermediate duties a(1) to a(4), and a maximum duty a(max) which increase equally in steps." *Id.* Control circuit 7 performs calculations using the following equation to change the lamp luminance in the steps shown:

Ln = Lmin + (Lmax – Lmin)/N)n, where:

Ln: Duty of nth step (n = 1, 2, 3 . . .)

Lmin: Minimum duty (setting)

Lmax: Maximum duty

N: Variable number of steps (= 1, 2, 3 …)

Id. ¶¶ 22, 23. Fujimaki explains that "the user can operate a minimum luminance input key 22 to set a minimum luminance for the lamp luminance." *Id.* ¶ 25; *see also id.* ¶ 30. "Control lines corresponding to minimum luminances may be stored beforehand in the memory, and the control line corresponding to an inputted minimum luminance may be retrieved from memory and used." *Id.* ¶ 26.

2. Independent Claims 1 and 15

Petitioner identifies the disclosures in Fujimaki that it contends teaches the limitations in independent claims 1 and 15. *See generally* Pet. 49–54.

Limitation 1[A] recites "a first input configured to receive a user signal indicative of a user selectable brightness setting." Ex. 1001, 12:30–31. Claim 15 recites a similar limitation. *Id.* at 13:36–37. Petitioner contends that Figure 1 of Fujimaki shows "the user signal indicates user selectable brightness settings such as 'a changeable range defined by a minimum luminance inputted by the input means.'" Pet. 49 (citing Ex. 1009

¶ 8). Petitioner also relies on claim 1 of Fujimaki, which recites "an input means for setting and inputting a luminance range changeable by the luminance control means." *Id.* at 50 (citing ¶¶ 8, 21, 23 (luminance range "Lmax-Lmin")).

Limitation 1[B] recites "a light sensor configured to sense ambient light and to output a sensing signal indicative of the ambient light level." Ex. 1001, 12:32–34. Claim 15 recites a similar limitation. *Id.* at 13:36–37. Petitioner contends that Fujimaki's ambient light sensor 21 teaches this limitation. Pet. 50. Petitioner contends that "[t]he ambient light sensor outputs a sensing signal indicative of ambient light level (e.g., corresponding to a sensed, nth step) to control circuit 7." *Id.* (citing Ex. 1009 ¶ 19, 23 ("nth step (n = 1, 2, 3)"), ¶ 32 ("the signal detected by the ambient light sensor 21 is retrieved")).

Limitation 1[C] recites "a multiplier configured to selectively generate a combined signal based on both the user signal and the sensing signal." Ex. 1001, 12:35–37. Claim 15 recites a similar limitation. *Id.* at 14:1–3. Petitioner contends that Fujimaki teaches a "multiplier [that] generates a combined signal based on both the user signal (luminance range (Lmax – Lmin)) (*id.* ¶ [0023]), and the sensing signal (represented by 'n' – the nth step of ambient illuminance) (*id.*)." Pet. 50–51 (citing Ex. 1002 ¶¶ 155–156). Petitioner identifies the disclosure in the context of Fujimaki's calculation:

$$Ln = Lmin + \frac{1}{N}(Lmax - Lmin) \times n$$

User signal

Sensing signal indicative of ambient light level

Id. (citing Ex. 1002 ¶ 157). Specifically, Petitioner identifies (Lmax – Lmin) in Fujimaki's calculation as teaching the "user signal," (colored in red) and *n* in Fujimaki's calculation as teaching the "sensing signal" (colored in green). *Id.* Petitioner contends that "when sensing signal falls within the range A2 [of Figure 2], 'duty b(2) is generated as drive pulse signal (duty output).'" *Id.* (citing Ex. 1009 ¶ 28).

Limitation 1[D] recites "a dark level bias configured to adjust the combined signal to generate a brightness control signal that is used to control a brightness level of a visible display such that the brightness control signal is maintained above a pre-determined level when the ambient light level decreases to approximately zero." Ex. 1001, 12:38–43. Claim 15 recites a similar limitation. *Id.* at 14:4–9. Petitioner contends Lmin corresponds to the "dark level bias," because it "corresponds to a minimum amount of display luminance, which is shown as either of a(0) or b(0) in [Figure] 2." Pet. 52. Petitioner contends that "Fujimaki discloses the microcomputer of the control circuit 7 adjusts the combined signal by adding Lmin to the combined signal (Lmax – Lmin) x n." *Id.* at 53. Petitioner provides the following annotated calculation:

$$Ln = Lmin + \frac{1}{N}(Lmax - Lmin) \times n$$

Dark level bias — User signal — Sensing signal indicative of ambient light level

Id. Petitioner identifies (Lmax – Lmin) in Fujimaki's calculation as teaching the "user signal," (colored in red), *n* in Fujimaki's calculation as teaching the "sensing signal" (colored in green), and Lmin in Fujimaki's calculation as teaching the "dark level bias" (colored in purple). *Id.* Petitioner, therefore, contends that "[t]he dark level bias, Lmin, is a value that is retrieved from memory and added to the combined signal to maintain the brightness control signal, Ln, above a predetermined level when a sensed amount of ambient light approaches zero." *Id.* at 54.

Patent Owner contends that "(Lmax-Lmin) x n" does not disclose the claimed "combined signal." Prelim. Resp. 58. Patent Owner contends "Fujimaki is clear and unambiguous that 'n' represents the step number and not the 'sensing/sense signal' indicative of the ambient light level." *Id.* at 58–59. Patent Owner argues that Petitioner's contentions as to Fujimaki's calculation are "a gross misunderstanding of Fujimaki." *Id.* at 59–60; *see id.* at 61–62. In addition, Patent Owner argues that Petitioner has not shown multiplication of the "[user/input] signal" and a "[sensing/sense] signal," as required under Petitioner's construction. *Id.* at 59.

We focus our analysis on those claim limitations that are dispositive for purposes of this Decision.[6] On the record before us, we determine that

[6] In particular, we limit our analysis to limitation 1[C]. However, we note that Petitioner's contentions as to Fujimaki also appear to have similar

Petitioner has not shown a reasonable likelihood of prevailing in demonstrating that Fujimaki discloses limitation 1[C], "a multiplier configured to selectively generate a combined signal based on both the user signal and the sensing signal," and, accordingly, has not shown a reasonable likelihood it will prevail in demonstrating that claims 1 and 15 are unpatentable over Fujimaki.

Fujimaki clearly identifies what each element in the calculation depicted in Figure 2 represents:

> Ln = Lmin + (Lmax – Lmin)/N)n, where:
>
> Ln: Duty of nth step (n = 1, 2, 3 . . .)
>
> Lmin: Minimum duty (setting)
>
> Lmax: Maximum duty
>
> N: Variable number of steps (= 1, 2, 3 …)

Ex. 1009 ¶ 23. Fujimaki further explains:

> To simplify the explanation, the standard control line P(a0) in [Figure 2] *divides the ambient illuminance into six ranges* (a minimum illuminance range Amin, illuminance ranges A1 to A4, and a maximum illuminance range Amax) *in five equal ascending steps S1 to S5* (lx). Each of these illuminance ranges is assigned a minimum duty a(min), intermediate duties a(1) to a(4), and a maximum duty a(max) which increase equally in steps.

Id. (emphasis added). Fujimaki provides further explanation of the process. *Id.* ¶¶ 29–37. In particular, Fujimaki states that "the signal detected by the ambient light sensor 21 is retrieved." *Id.* ¶ 32. "Then, it is determined . . . whether or not the ambience illuminance is a value within the currently set

---

problems with the "user signal" and "dark level bias" as discussed above with respect to Yanagiuchi.

ambient illuminance range. In other words, as shown in FIG. 2, it is determined whether or not the detected ambient illuminance is a value within an illuminance range higher than or a value within an illuminance range lower than the currently set ambient illuminance range." *Id.* "When the ambient illuminance is in an illuminance range lower than the setting . . . the illuminance range is lowered by one increment and the corresponding duty is selected based on control line P(a0) or P(b0)." *Id.* ¶ 33. "When the ambient illuminance is in an illuminance range higher than the setting . . . the illuminance range is raised by one increment and the corresponding duty is selected based on control line P(a0) or P(b0)." *Id.* ¶ 34. "Afterwards . . . the drive pulse signal (duty output) 7S for the selected duty is outputted to drive the lamp." *Id.* ¶¶ 33, 34.

Petitioner provides insufficient explanation as to how "n" teaches the "sensing signal." Petitioner identifies "n" as the "sensing signal" in its annotated depiction of Fujimaki's calculation, but Petitioner also asserts that the sensing signal is "*represented by 'n'* – the nth step of ambient illuminance," which indicates that "n" is *not* the sensing signal, but instead, some representation of it. Pet. 51 (emphasis added); *see also* Ex. 1002 ¶ 157. We agree with Patent Owner that "n" in Fujimaki does not teach the "sensing signal." *See* Prelim. Resp. 59–62. Fujimaki discloses that "n" corresponds to the pertinent step for which you are calculating the duty cycle for, and that step represents a range of ambient illuminance. Ex. 1009 ¶ 23.

Petitioner's proposed construction of limitation 1[C] requires that the "combined signal includes, but is not necessarily limited to, *the product of the user signal and the sensing signal*." Pet. 17 (emphasis added). Petitioner has not shown that Fujimaki's calculation teaches "*the product of*

the user signal and the sensing signal." At most, Petitioner has shown that Fujimaki's calculation teaches the product of the user signal and *n*, which, as discussed above, is not the sensing signal. Nor does Mr. Wilhelm's testimony provide any insight. Aside from the same annotated depiction asserting, without explanation, that *n* is the "sensing signal," Mr. Wilhelm does not address or explain how Fujimaki's calculation teaches "the product of the user signal and the *sensing signal*." *E.g.*, Ex. 1002 ¶¶ 154–164. Mr. Wilhelm testifies that "I understand that the phrase 'includes, but is not necessarily limited to' [in the proposed construction for this term] includes [Fujimaki's calculation.]" *Id.* ¶ 157. But Mr. Wilhelm does not provide testimony that Fujimaki's calculation teaches the "combined signal is "the *product* of the user signal and the *sensing signal*." Mr. Wilhelm's testimony simply states that "Fujimaki discloses the combined signal is generated *based on* the user signal and sensing signal." *Id.* ¶ 156; *see also* ¶¶ 155, 164.

Petitioner thus fails to meet the burden required to support institution of *inter partes* review of independent claims 1 and 15, and, for the same reasons, dependent claims 2, 4, 5, 7, and 16 based on obviousness by Fujimaki. Accordingly, Petitioner fails to demonstrate a reasonable likelihood that it would prevail on this ground of unpatentability.

G. Ground 4: Obviousness over Ottenstein and Fujimaki

Petitioner, alternatively, contends claims 1, 2, 7, 9, 15, and 16 would have been unpatentable over Ottenstein and Fujimaki. Pet. 59–68. For the reasons that follow, we are not persuaded that the evidence sufficiently supports Petitioner's arguments and, therefore, Petitioner has not established a reasonable likelihood of prevailing with respect to this ground.

1. Ottenstein (Ex. 1012)

Ottenstein is titled "Arrangement for Automatically Controlling Brightness of Cockpit Displays," and is generally directed to "[a]n automatic brightness control [that] provides automatic compensation for the effects of ambient light on a display." Ex. 1012, codes (54), (57). Figure 1, reproduced below, depicts a control diagram of the preferred embodiment embedded in a target display.

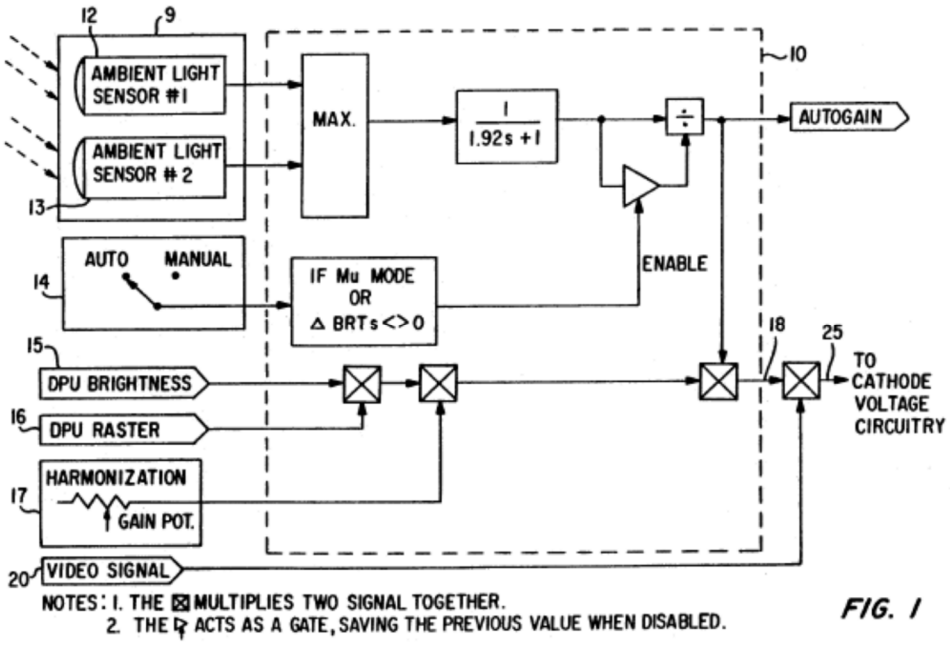


FIG. 1

Figure 1 depicts "microprocessor 10 that interfaces with two ambient light sensors 12, 13 . . . [and] also interfaces with selectable auto mode/-manual mode switch 14 and two pilot selected brightness settings, DPU Brightness (BRT) 15 and DPU Raster 16." *Id.* at 2:21–27. "There are three rocker switches on the display 9 which control symbol brightness, raster brightness and overall brightness." *Id.* at 2:30–33.

2. Independent Claims 1 and 15

Petitioner identifies the disclosures in Ottenstein and Fujimaki that it contends teaches the limitations in independent claims 1 and 15. *See* Pet. 39–68.

Limitation 1[A] recites "a first input configured to receive a user signal indicative of a user selectable brightness setting." Ex. 1001, 12:30–31. Petitioner contends that Figure 1 of Ottenstein "shows the first input of the microprocessor 10 receives the user signal from the connection points for DPU Brightness 15 and DPU Raster 16." Pet. 60.

Limitation 1[B] recites "a light sensor configured to sense ambient light and to output a sensing signal indicative of the ambient light level." Ex. 1001, 12:32–34. Claim 15 recites a similar limitation. *Id.* at 13:36–37. Petitioner contends that Ottenstein's ambient light sensors 12 and 13 teach this limitation. Pet. 61 (citing Ex. 1012, 1:29–32, 4:2–9).

Limitation 1[C] recites "a multiplier configured to selectively generate a combined signal based on both the user signal and the sensing signal." Ex. 1001, 12:35–37. Claim 15 recites a similar limitation. *Id.* at 14:1–3. Petitioner contends that Ottenstein discloses this limitation, as shown in annotated Fig. 1, reproduced below:

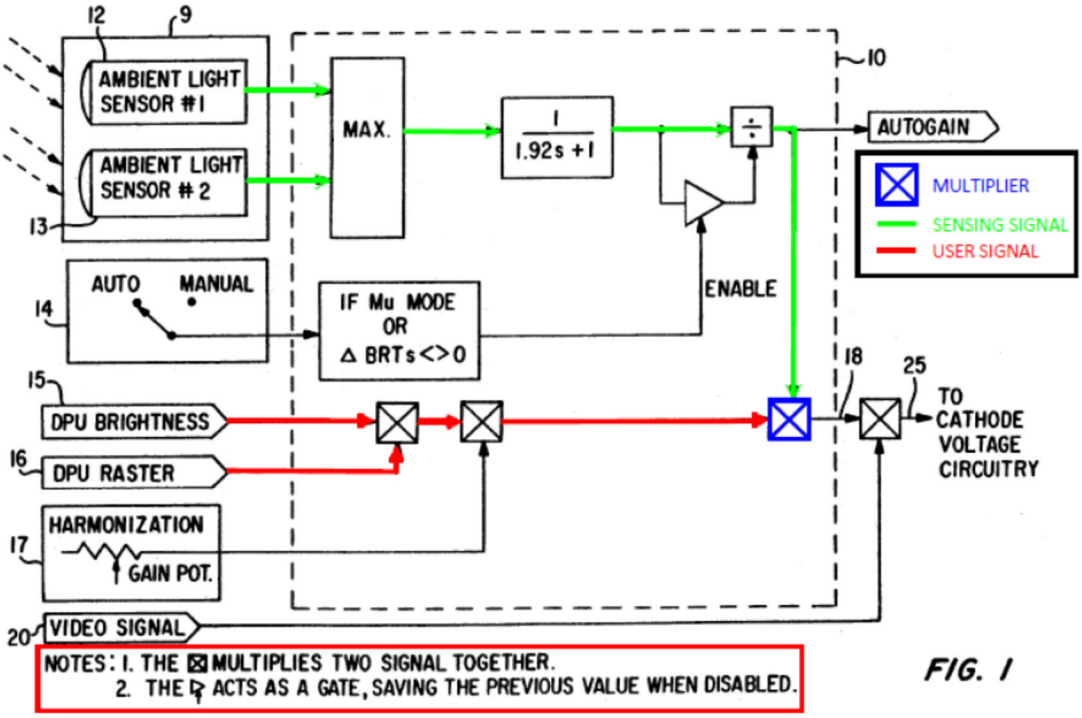


FIG. 1

Pet. 62. Petitioner's annotated Figure 1 depicts sensing signal in green, user signal in red, and multiplier in blue. *Id.*

Limitation 1[D] recites "a dark level bias configured to adjust the combined signal to generate a brightness control signal that is used to control a brightness level of a visible display such that the brightness control signal is maintained above a pre-determined level when the ambient light level decreases to approximately zero." Ex. 1001, 12:38–43. Claim 15 recites a similar limitation. *Id.* at 14:4–9. Petitioner contends that Ottenstein discloses limitation 1[D] in two ways. First, Petitioner contends:

> Ottenstein discloses the brightness control signal is maintained above a predetermined level when the ambient light level decreases to approximately zero by maintaining the sensing signal at least "10% of full scale." Ex. 1012, 3:65-4:5. A POSA would understand that this first way could be implemented using two techniques. Ex. 1002, ¶ 239. In a first technique, a POSA would recognize that when the sensing signal decreases to

> approximately, "say less than 10%" of a sensed amount of ambient light, then the sensed signal should be replaced with a dark level bias that is 10% of full scale brightness. Ex. 1012, 4:2; Ex. 1002, ¶¶ 240-241. In a second technique, the POSA would also know that the dark level bias can be added to the ambient light signal. Ex. 1012, 4:1.

Pet. 63. Second, Petitioner contends

> Ottenstein discloses maintaining the brightness control signal above a predetermined level by multiplying the user signals with a harmonization signal. Specifically, Ottenstein shows this multiplication in FIG. 1 by multiplying the user signal (e.g., from DPU Brightness 15 and DPU Raster 16) and the harmonization signal from harmonization gain pot 17. Ex. 1012, col. 3:38-44. Ottenstein discloses the harmonization gain pot 17 is "a potentiometer used to calibrate the cathode voltage at the manufacturing site." Ex. 1012, 2:46-48. Just like the '117 patents' teachings regarding VCC, Ottenstein's harmonization gain pot 17 supplies minimum voltage to the systems to ensure a minimum amount of brightness. Ex. 1001, 9:38-10:20; 2:31-36 (disclosing use in CRT displays); Ex. 1012, 2:46-53 (explaining harmonization gain pot and user signals output by the microprocessor is used to produce cathode voltage 25). Thus, Ottenstein describes a dark level bias in the same way as the alleged invention in the '117 patent. Ex. 1002, ¶¶ 247-250.

Id. at 63–64. Petitioner also contends that "[i]t would have been obvious to a [person of ordinary skill in the art] to modify the vehicular display of Ottenstein (a non-CRT cockpit display) to include a minimum luminance value [like Lmin in Fujimaki] that achieves the at least 10% of full scale described in Ottenstein." *Id.* at 64–65. Petitioner contends that a person of ordinary skill in the art "would know that this provides a display that allows for changes to the brightness of a display 'that are aligned with a user's overall preference.'" *Id.* at 65.

Patent Owner argues that Ottenstein does not teach the limitation 1[D] "because Ottenstein unequivocally states that the automatic brightness control of Fig. 1 on which Petitioners rely does not operate at very low ambient light levels 'when the ambient light decreases to approximately zero.'" Prelim. Resp. 68–69 (Ex. 1012, 3:65–68); *see also id.* at 72–73. According to Patent Owner, Ottenstein uses a "night mode", which is an inversion of the color scheme that allows easier visibility at night. *Id.* at 69–70; *see also id.* at 73. Patent Owner also argues that Ottenstein states that it does not operate below 500 foot-Lamberts, "which is the brightness of an overcast daytime afternoon." *Id.* at 71 (citing Ex. 1012, 4:19–31); *see also id.* at 73. Patent Owner further argues that Ottenstein's "harmonization gain pot 17" does not teach the "dark level bias" because the harmonization gain pot 17 is described as "a pentiometer used to calibrate the cathode voltage at the manufacturing site." *Id.* at 74 (citing Ex. 1012, 2:46–48) (emphasis omitted). Patent Owner also argues that Petitioner has not provided sufficient motivation to combine Ottenstein with Fujimaki. *Id.* at 78–79.

We focus our analysis on those claim limitations that are dispositive for purposes of this Decision. On the record before us, we determine that Petitioner has not shown a reasonable likelihood of prevailing in demonstrating that the combination of Ottenstein and Fujimaki discloses limitation 1[D] and, accordingly, has not shown a reasonable likelihood it will prevail in demonstrating claims 1 and 15 are unpatentable over Ottenstein and Fujimaki.

First, Petitioner asserts that Ottenstein discloses that it will maintain the sensing signal at least "10% of full scale" when the ambient light level decreases to approximately zero. Pet. 63. We disagree. Ottenstein states:

> Further for very low ambient light levels, a night mode should be used in place of auto mode. Thus the automatic brightness control need not and should not operate at low ambient light levels, say less than 10% of maximum. The sensed ambient brightness level should be limited so that it is always at least 10% of full scale.

Ex. 1012, 3:66–4:4. We agree with Patent Owner that Ottenstein does not disclose that the sensing signal is *maintained* above a certain level; rather, Ottenstein refers to the bottom of the ambient light range that should be used in auto mode before switching to night mode. *See* Prelim. Resp. 73. Moreover, Petitioner contends that maintaining the sensing signal at this level would be implemented using one of two techniques: (1) "the sensed signal should be replaced with a dark level bias that is 10% of full scale brightness" or (2) "the dark level bias can be added to the ambient light signal." Pet. 63. However the claim recites "a dark level bias configured *to adjust the combined signal* . . ." Ex. 1001, 12:38 (emphasis added). Both of the constructions advanced by Petitioner for this limitation also require a "deviation *from the combined signal*" or "a dark level bias . . . to *adjust the combined signal*." Pet. 18 (emphasis added). Neither of Petitioner's two proposed implementations teach adjusting the *combined signal*; rather, Petitioner proposes either replacing the *sensed signal* or adding the dark level bias to the *ambient light signal*. Therefore, Petitioner has not shown that either of the two proposed techniques teach limitation 1[D].

Petitioner alternatively relies on Ottenstein's harmonization signal from harmonization gain pot 17 to teach the "dark level bias." *Id.* at 63–64. However, as Petitioner acknowledges, Figure 1 of Ottenstein shows that *the user signal* (e.g., from DPU Brightness 15 and DPU Raster 16) is multiplied

by the harmonization signal from harmonization gain pot 17. *See Id.* at 63–64; Ex. 1012, Fig. 1. However, as with Petitioner's first alternative discussed above, multiplying the user signal by the harmonization signal does not teach "a dark level bias configured *to adjust the combined signal* . . ." Ex. 1001, 12:38 (emphasis added). Petitioner also has not sufficiently explained how the harmonization gain pot 17 corresponds to VCC in the '117 patent. Although Petitioner cites to testimony from Mr. Wilhelm, this testimony does not elaborate on what is stated the Petition. As Patent Owner points out, VCC, by itself, is not a "dark level bias" in any of the disclosed embodiments. *See* Prelim. Resp. 74–77. Therefore, Petitioner also has not shown that the harmonization signal teaches limitation 1[D].

Finally, Petitioner relies on the combination of Ottenstein with Fujimaki, "to modify Ottenstein with the predetermined level described in Fujimaki to ensure the user can continue to view their display screen in dark conditions." Pet. 64 (citing Ex. 1009 ¶ 48, Ex. 1002 ¶ 251). In light of Ottenstein's disclosure discussed above that "the automatic brightness control need not and should not operate at low ambient light levels," we agree with Patent Owner that Petitioner has not provided sufficient rationale for the combination to support the conclusion of obviousness. *See KSR*, 550 U.S. at 418.

Petitioner thus fails to meet the burden required to support institution of *inter partes* review of independent claims 1 and 15, and, for the same reasons, dependent claims 2, 7, 9, and 16 based on obviousness by the combination of Ottenstein and Fujimaki. Accordingly, Petitioner fails to demonstrate a reasonable likelihood that it would prevail on this ground of unpatentability.

H. Grounds 5–7: Obviousness over Yanagiuchi and Henry; Yanagiuchi, Toffolo, and Henry; and Fujimaki and Henry

Petitioner contends that claim 6 would have been unpatentable over Yanagiuchi and Henry (Ground 5), Yanagiuchi, Toffolo, and Henry (Ground 6), and Fujimaki and Henry (Ground 7). For the same reasons as set forth above for Grounds 1, 2, and 3, Petitioner has failed to establish a reasonable likelihood that it would prevail on these grounds of unpatentability.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine that Petitioner has not established a reasonable likelihood of prevailing on its assertion that at least one claim of the '117 patent is unpatentable. Accordingly, we do not institute an *inter partes* review of the challenged claims on the grounds set forth in the Petition.

V. ORDER

In consideration of the foregoing, it is hereby

ORDERED that *inter partes* review is not instituted for any claim of the '117 patent.

FOR PETITIONER:

Andrew R. Sommer
Vivian S. Kuo
GREENBERG TRAURIG, LLP
sommera@gtlaw.com
kuov@gtlaw.com

Matias Ferrario
Jonathan Lewis
KILPATRICK TOWNSEND & STOCKTON LLP
mferrario@kilpatricktownsend.com
jvlewis@kilpatricktownsend.com

FOR PATENT OWNER:

Russell Tonkovich
FEINBERG DAY KRAMER ALBERTI LIM
TONKOVICH & BELLOLI LLP
rtonkovich@feinday.com

Bridget A. Smith
LOWENSTEIN & WEATHERWAX LLP
smith@lowensteinweatherwax.com