

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NINTENDO CO., LTD., and NINTENDO OF AMERICA INC.,
Petitioner,

v.

POLARIS POWERLED TECHNOLOGIES, LLC,
Patent Owner.

IPR2023-00778
Patent 8,223,117 B2

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

SZPONDOWSKI, *Administrative Patent Judge*.

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

I. INTRODUCTION

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

Institution of an *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) (2016). Based on the current record, and for the reasons explained below, we determine that Petitioner has established a reasonable likelihood that it would prevail with respect to at least one challenged claim, and we institute an *inter partes* review.

II. BACKGROUND

A. *Real Parties in Interest*

The parties identify themselves as the real parties in interest. Pet. 1; Paper 5, 1 (Mandatory Notices of Patent Owner).

B. *Related Matters*

Petitioner and Patent Owner identify *Polaris PowerLED Techs., LLC v. Nintendo Co.*, No. 2:22-cv-00386-JLR (W.D. Wash.) and *Polaris PowerLED Techs., LLC v. Dell Technologies Inc.*, No. 1:22-cv-00973 (W.D. Tex.) as currently pending related matters. Pet. 1; Paper 5, 1.

The parties also identify that the ’117 patent was formerly the subject of the following actions: *Polaris PowerLED Techs., LLC v. LG Elecs. Inc.*,

No. 8:20-cv-00125 (C.D. Cal.) (terminated February 22, 2023), *Polaris PowerLED Techs., LLC v. Hisense Elecs. Mfg. Co. of Am. Corp.*, No. 8:20-cv-00123 (C.D. Cal.) (terminated April 27, 2021), *Polaris PowerLED Techs., LLC v. Wistron Corp.*, No. 8:19-cv-01935 (C.D. Cal.) (terminated February 28, 2020), *Polaris PowerLED Techs., LLC v. AmTRAN Tech. Co.*, No. 8:19-cv-01630 (C.D. Cal.) (terminated February 24, 2020), *Polaris PowerLED Techs. LLC v. Hon Hai Precision Indus. Co.*, No. 8:19-cv-01926 (C.D. Cal.) (terminated February 12, 2020), *Polaris PowerLED Techs., LLC v. Top Victory Elecs. Taiwan Co.*, No. 8:19-cv-01580 (C.D. Cal.) (terminated February 10, 2020), *Polaris PowerLED Techs., LLC v. VIZIO, Inc.*, No. 8:18-cv-01571 (C.D. Cal.) (final judgment August 24, 2020), *aff'd*, 2020-2328 (Fed. Cir. Aug. 31, 2021), *Polaris PowerLED Techs., LLC v. Samsung Elecs. Am., Inc.*, No. 2:17-cv-00715 (E.D. Tex.) (terminated July 26, 2019). Pet. 1–2; Paper 5, 1–2.

The parties also identify that the '117 patent was formerly the subject of the following IPRs: *Samsung Elecs. Co. v. Polaris PowerLED Techs., LLC*, IPR2018-01262, institution denied (Jan. 17, 2019), *VIZIO, Inc. v. Polaris PowerLED Techs., LLC*, IPR2020-00043, institution denied (May 4, 2020), *Hisense Co. v. Polaris PowerLED Techs., LLC*, IPR2020-01337, institution denied (March 9, 2021), and *LG Elecs., Inc. v. Polaris PowerLED Techs., LLC*, IPR2020-01283, institution denied (March 9, 2021). Pet. 2; Paper 5, 2–3.

The parties also state that the '117 patent is the subject of a pending *ex parte* reexamination (Control No. 90/019,119) filed by Microsoft Corporation, where reexamination was ordered on January 5, 2023. Pet. 2; Paper 5, 3.

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. Independent claim 1, reproduced below with brackets noting Petitioner's identifiers, is illustrative of the claimed subject matter:

1. 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 and Asserted Challenges to Patentability

Petitioner asserts that claims 1, 2, 7, 9, 15, and 16 are unpatentable on the following challenges (Pet. 5):

Claims Challenged	35 U.S.C. § ¹	Basis/References
1, 2, 9, 15, 16	103(a)	Stoughton, ² Mierzwinski, ³ Nagai ⁴
7	103(a)	Stoughton, Mierzwinski, Nagai, Shimomura ⁵
1, 2, 7, 9, 15, 16	103(a)	Gettemy, ⁶ Kerman, ⁷ Rosenzweig, ⁸ Whitted, ⁹ Bell ¹⁰

In support of its proposed challenges, Petitioner relies on the Declaration of R. Jacob Baker, Ph.D. *See* Ex. 1002.

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;

¹ Because the ’117 patent issued from a patent application that was filed before March 16, 2013, patentability is governed by the version of 35 U.S.C. § 103 preceding the Leahy-Smith America Invents Act (“AIA”), Pub L. No. 112–29, 125 Stat. 284 (2011).

² Stoughton, US 4,769,708, issued Sept. 6, 1988 (Ex. 1003).

³ Mierzwinski, US 3,813,686, issued May 28, 1974 (Ex. 1004).

⁴ Nagai et al., US 3,983,575, issued Sept. 28, 1976 (Ex. 1005).

⁵ Shimomura, Japanese Patent Appl. Pub. No. H6[1994]-308891, published Nov. 4, 1994 (Exs. 1006, 1007 (translation)).

⁶ Gettemy, US 6,947,017 B1, issued Sept. 20, 2005 (Ex. 1013).

⁷ Phillip Kerman, *ActionScripting in FLASH* (2001) (Ex. 1014).

⁸ Gary Rosenzweig, *Special Edition Using Macromedia Director 8* (Que 2000) (Ex. 1015).

⁹ Whitted et al., US 7,110,062 B1, issued Sept. 19, 2006 (Ex. 1016).

¹⁰ Bell, US 7,928,955 B1, issued Apr. 19, 2011 (Ex. 1017).

(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 based on a combination of references 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) (citation omitted); *see KSR*, 550 U.S. at 418. 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’” (citation omitted)).

“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 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3)); *see also Intelligent Bio-Sys.*, 821 F.3d at 1369. 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. Level of Ordinary Skill in the Art

Petitioner contends a person of ordinary skill in the art “would have possessed at least a bachelor’s degree in electrical engineering, physics, optics or a related field, and approximately three years of experience in the fields of visual displays, circuit design, and related technologies.” Pet. 7 (citing Ex. 1002 ¶¶ 23–25). Petitioner states that the Board adopted this formulation in IPR2020-01289, Paper 9, 8–9 (PTAB Mar. 9, 2021). *Id.* Petitioner also asserts that “[o]ther formulations are also possible but, even if adopted, they would not materially change the analysis or the outcome.” *Id.*

At this stage of the proceeding, Patent Owner “applies Petitioner’s level of ordinary skill without agreeing to it.” Prelim. Resp. 1.

We find Petitioner’s proposal is consistent with the level of ordinary skill in the art reflected by the prior art of record, and, therefore, adopt Petitioner’s proposed level of ordinary skill in the art for purposes of this Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

Petitioner “does not believe any term requires express construction at this time because, as shown below, the claims are obvious even if the Board adopted the prior district court constructions and constructions proposed by the parties in the pending litigation.” Pet. 8.

Patent Owner requests that the multiplier limitations in claims 1 and 15 (e.g., limitation 1(c)) be construed consistent with how they were construed in prior district court litigations. Prelim. Resp. 1–2 (citing

Ex. 2001, 29–30; Ex. 2002, 34). Further, consistent with the prior district court’s claim construction, Patent Owner argues that the Board should construe “multiplier” and “multiplying” to require multiplication. *Id.* at 3–4.

At this stage of the proceeding, only terms that are in controversy need to be construed, and then only to the extent necessary to determine whether to institute *inter partes* review. *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))). After reviewing the parties’ arguments and evidence, we determine that we do not need to expressly construe any term for purposes of this Decision.

D. Alleged Obviousness Over Gettemy, Kerman, Rosenzweig, Whitted, and Bell

Petitioner contends claims 1, 2, 7, 9, 15, and 16 would have been obvious over the combination of Gettemy, Kerman, Rosenzweig, Whitted, and Bell. Pet. 43–77. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 37–72. Having considered the arguments and evidence before us, we find that the record establishes a reasonable likelihood that Petitioner would prevail on at least one claim in this asserted ground of unpatentability.

1. Gettemy (Ex. 1013)

Gettemy is titled “Dynamic Brightness Range for Portable Computer Displays Based on Ambient Conditions” and is generally directed to “a portable computer system equipped with a dynamic brightness range control to maximize readability in various ambient lighting conditions and to

prolong the lifetime of the display, the light and the battery.” Ex. 1013, code (54), 1:10–14.

Figure 3, reproduced below, illustrates a block diagram of an exemplary portable computer system.

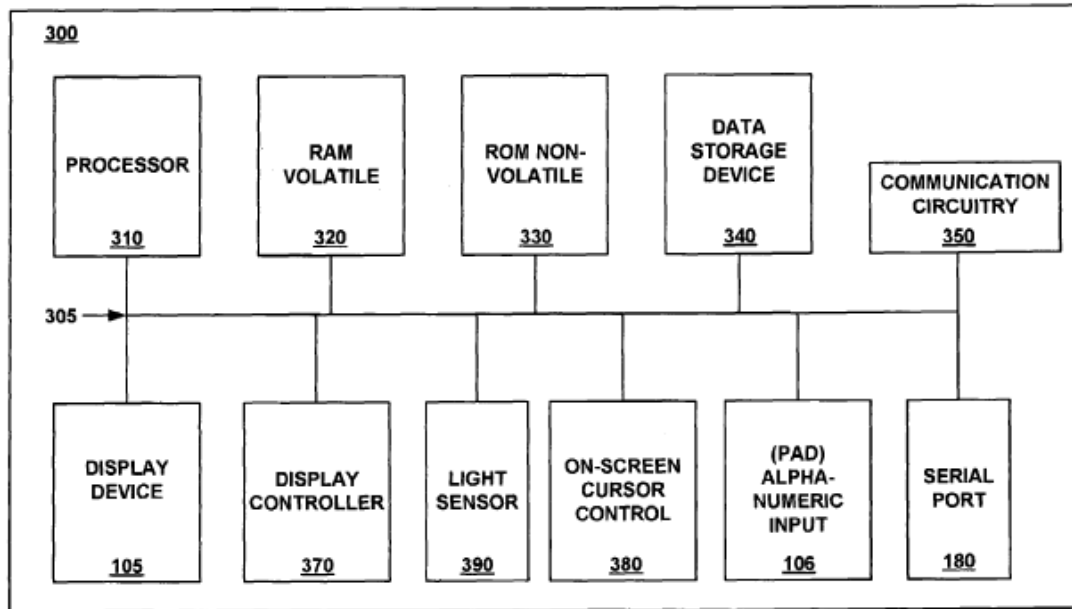


FIGURE 3

Figure 3, above, shows portable computer system 300 including, *inter alia*, an address/data bus 305 for communicating information, a central (main) processor 310 coupled with the bus 305 for processing information and instructions, on-screen cursor control or directing device 380 coupled to bus 305 for communicating user input information and command selections to main processor 310, light sensor 390 coupled to bus 305 for detecting the ambient light and providing a signal to the main processor 310 for determining when to implement a change in brightness range, and display

device 105 coupled with bus 305 for displaying information to the computer user. Ex. 1013, 4:54–5:37.

Figure 4, reproduced below, shows a perspective view of one embodiment of the portable computer system.

400

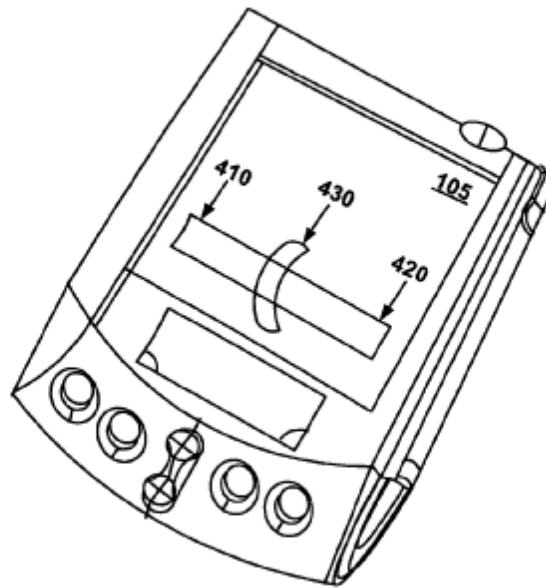


Figure 4, above, shows display screen 105 displaying the user brightness setting, where the user adjusts the on-screen displayed brightness setting between the low level 410 of the range and the high level 420 of the range by moving the slider 430 to the right for an increase in brightness or to the left for a decrease in brightness. Ex. 1013, 5:37–45.

Figure 5, reproduced below, illustrates three possible range settings and midpoint slide settings.

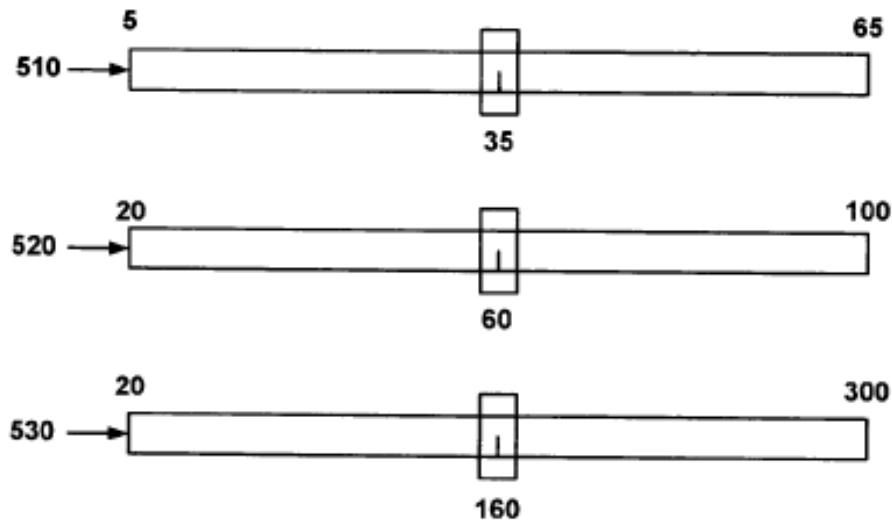


Figure 5, above, shows a computer generated user interface that is displayed on the screen when the user desires to adjust the settings, with values in candelas per square meter (“nits”). Ex. 1013, 5:46–50. The three range settings shown above are (1) range 510, with minimum 5 nits, maximum 65 nits, and slider position at 35 nits that may be used when in a dark or dimly lit environment; (2) range 520, with minimum 20 nits, maximum 100 nits, and slider position at 60 nits that may be used in a normal office environment; and (3) range 530, with minimum 20 nits, maximum 300 nits, and slider position at 160 nits that may be used outdoors in direct sunlight. *Id.* at 5:50–54.

Gettemy describes that “one or more light sensors detect the ambient light and send a signal representing this information to the processor.” Ex. 1013, 5:56–58. “The processor then . . . accesses stored data which configures the ranges and determines if the ambient light signal requires a change to the brightness range.” *Id.* at 5:60–63. “If a change to brightness range is required, the processor then implements the range change.” *Id.* at

5:63–64. “[T]he user can display the currently selected range setting and move the slider up or down to increase or decrease the brightness setting of the display.” *Id.* at 6:17–19. “The computer processor will dynamically adjust the range when the ambient light changes sufficiently, keeping the brightness level commensurate with the slider position last selected relative to the new range setting.” *Id.* at 6:18–22.

Figure 7, reproduced below, shows user adjustments to the brightness settings and computer processor adjustments to the brightness range.

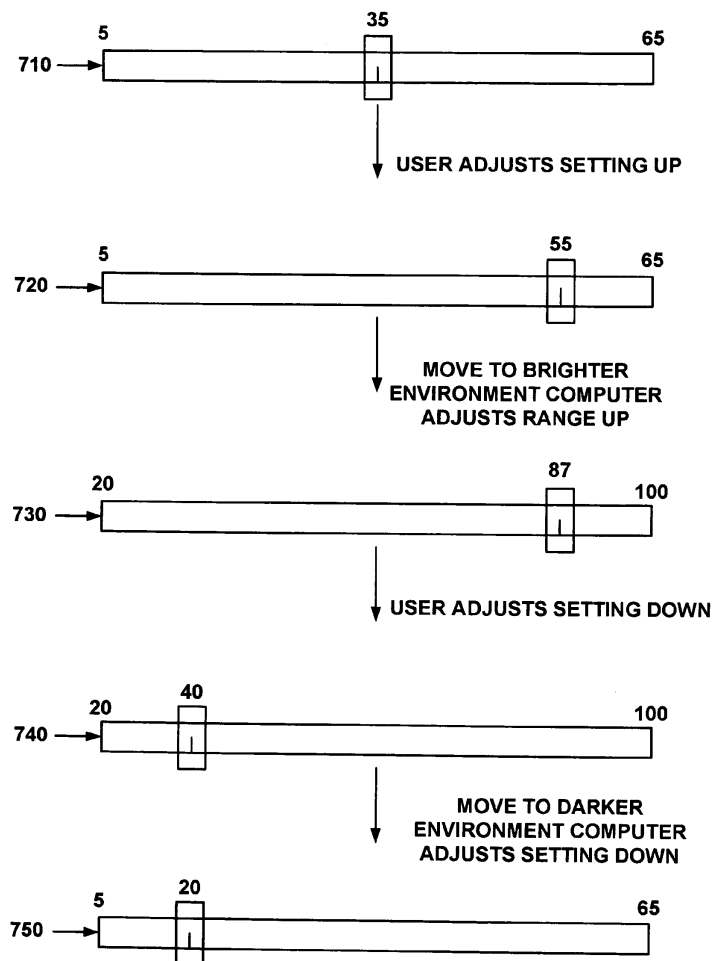


Figure 7, above shows at step 710 the minimum at 5, maximum at 65, and slider position at 35. At step 720, the user adjusts the slider position up to

55. At step 730, the user moves into a brighter environment, so the minimum is adjusted to 20, the maximum is adjusted to 100, and the slider position is adjusted to 87. At step 740, the user adjusts the slider position down to 40. At step 750, the user enters a darker environment, so the minimum is adjusted to 5, the maximum is adjusted to 65, and the slider position is adjusted to 20. *Id.* at 6:25–36.

2. *Kerman (Ex. 1014)*

Kerman is a textbook titled “ActionScripting in FLASH” that generally relates to the ActionScript programming language as used in Flash. Ex. 1014, 2. Among other things, Kerman has a chapter dedicated to “a popular user interface control: the slider.” *Id.* at 39. In this chapter, Kerman describes how to create a slider, including setting minimum and maximum locations for the slider. *Id.* at 39–47. Kerman discloses the following formula for calculating the current position of the slider ($_x$) based upon a given percentage, where the percentage is current position / total distance:

$$\text{Percent} = (_x - \text{min}) / (\text{max} - \text{min}) * 100$$

Id. at 41. When the user sets the percent at 50, Kerman discloses the following formula:

$$\text{percent} = 50;$$

$$_x = \text{min} + ((\text{max} - \text{min}) * (\text{percent} / 100))$$

Id. at 47.

3. *Rosenzweig (Ex. 1015)*

Rosenzweig is a textbook titled “Special Edition Using Macromedia Director 8,” that generally relates to using the Director 8 application, which uses a scripting language called Lingo. Ex. 1015, 22. Rosenzweig contains

a chapter that describes “Creating Sliders,” “a familiar user interface element used in all major software programs.” *Id.* at 44. It describes that the slider “needs to know how far to the left and the right it can move, and what range of values it represents, such as 1 to 3, 0 to 100, or -500 to 500.” *Id.* Rosenzweig describes various scripts that can be used to form the elements of a slider. *Id.* at 44–50.

4. *Whitted (Ex. 1016)*

Whitted is titled “LCD With Power Saving Features” and is generally directed to “methods and apparatus for reducing the amount of electrical power required by display devices, e.g., transmissive and/or transreflective liquid crystal (LCD) devices.” Ex. 1016, code (54), 1:7–10.

In particular, Whitted describes an embodiment with a portable computer that includes a backlight intensity control circuit 503 and a brightness control circuit 504 which are used to control the amount of power supplied to the backlight 510 and thus the intensity of light supplied to the rear of the display panel 206. Ex. 1016, 7:62–66. A user may adjust a potentiometer to adjust the brightness control signal supplied to intensity control circuit 503. *Id.* at 8:5–8. Whitted explains that intensity control circuit 503 determines the amount of power supplied to backlight 510 as a function of the output of photo-sensor 502 and the received brightness control signal. *Id.* at 8:9–12. The intensity is adjusted so that the perceived brightness of the display will remain generally constant despite changes in ambient light conditions. *Id.* at 8:14–16. “A minimum power level is set, e.g., pre-programmed, for the backlight 510 to [e]nsure that the display will be readable in low light conditions.” *Id.* at 8:22–25. Whitted states:

In one embodiment, even if the output of the photo-sensor 502 indicates little or no incident light, the intensity control circuit 503 does not lower the power output to the backlight 510 below a preselected threshold to insure that in dark or dimly lit conditions, images on the display panel 206 will remain visible. In such an embodiment, intensity control circuit 503 maintains backlight light output between a minimum threshold level and full intensity as a function of the output of the photo-sensor 502 and the brightness control circuit 504.

Id. at 8:26–35.

5. *Bell (Ex. 1017)*

Bell is titled “Automatic Brightness Control for Displays” and is generally directed to “[a]n automatic brightness adjustment for devices with displays [that] includes the capability to assess ambient light.” Ex. 1017, codes (54), (57). Bell describes that “the brightness setting for a display may be modified by first assessing the ambient luminance level and then using this assessment to select an appropriate display brightness setting.” *Id.* at 2:1–4.

Figure 4, reproduced below, is a graph of a display brightness versus ambient luminance in a first embodiment.

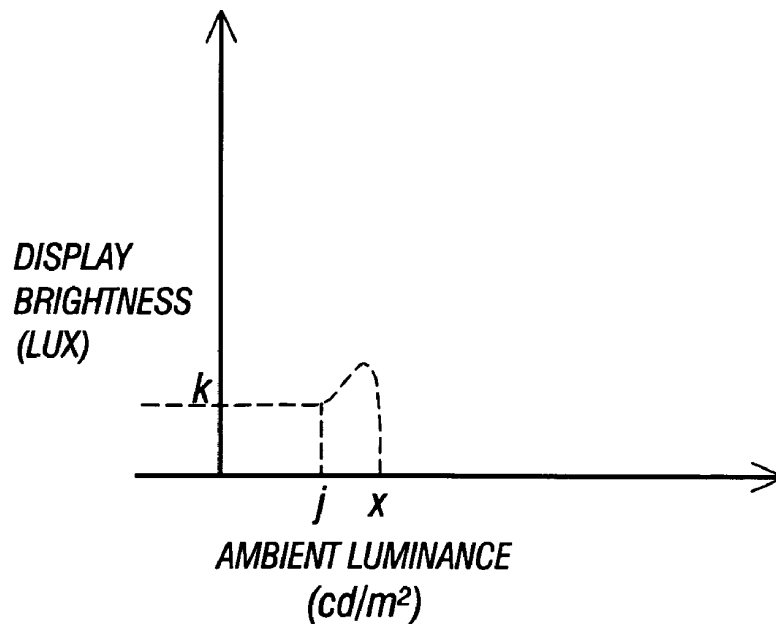


FIGURE 4

Figure 4, above, shows a graph with display brightness (lux) on the vertical axis and ambient luminance (cd/m^2) on the horizontal axis. Bell states that “in very low light ambients, a display brightness of k LUX may be sufficient to readily view the display.” Ex. 1017, 5:30–31.

Figure 5, reproduced below, is a graph of display brightness vs ambient luminance in a second embodiment.

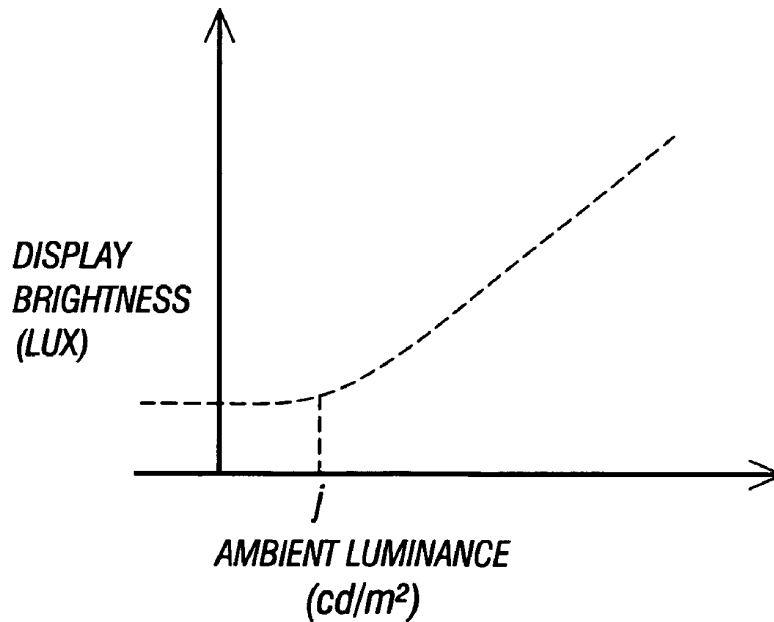


FIGURE 5

Figure 5, above, also shows a graph with display brightness (lux) on the vertical axis and ambient luminance (cd/m^2) on the horizontal axis. Here, “[f]or low ambient luminance levels, a minimum but non-zero display brightness permits viewing of the microdisplay. Once the ambient luminance reaches $j \text{ cd/m}^2$, however, the display brightness also increases, in a somewhat linear fashion.” Ex. 1017, 6:3–7.

6. Analysis of Independent Claim 1

Petitioner contends that the combination of Gettemy, Kerman, Rosenzweig, Whitted, and Bell teaches the limitations of independent claim 1. Pet. 43–72. In support, Petitioner identifies certain passages and figures in the references and explains their significance with respect to the corresponding claim limitation. *Id.* Petitioner also provides reasons, supported by the testimony of Dr. Baker (Ex. 1002), why it would have been

obvious to one of ordinary skill in the art to combine Gettemy, Kerman, Rosenzweig, Whitted, and Bell. *Id.*

a) *Preamble: “A brightness control circuit with selective ambient light correction comprising:”*

Petitioner argues that Gettemy teaches the preamble. Pet. 43–45. Specifically, Petitioner contends that it would have been obvious that the components in Gettemy’s portable computer “have formed at least one ‘**brightness control circuit**,’ because they provide Gettemy’s brightness control functionality and would have been connected using electrical circuitry.” Pet. 44–45 (citing Ex. 1002 ¶ 269); *see* Ex. 1013, Fig. 3. Petitioner further contends that Gettemy “can provide adjustment (‘correction’) to the display brightness based on ambient lighting conditions.” *Id.* at 45 (citing Ex. 1013, 5:31–37, 6:18–22).

At this stage, Patent Owner does not dispute Petitioner’s contentions. *See* Prelim. Resp. Based on our review and consideration of the current record, we determine that Petitioner has sufficiently shown that Gettemy teaches the recited elements for purposes of institution.¹¹

b) *1(a): “a first input configured to receive a user signal indicative of a user selectable brightness setting”*

Petitioner contends that Gettemy teaches this limitation. Pet. 45–50. Relying on Figure 4 of Gettemy, Petitioner asserts that Gettemy’s “user selection, represented as the relative position of slider 430 within the currently-displayed range,” teaches the “user signal indicative of a user selectable brightness setting.” *Id.* at 46 (citing Ex. 1013, 6:4–6, 6:18–22;

¹¹ Petitioner does not argue that the preamble limits claim 1. We make no determination at this stage of the proceeding whether the preamble of claim 1 is limiting.

Ex. 1002 ¶ 275) (emphasis omitted). Specifically, asserts Petitioner, “[t]he relative position of the slider . . . qualifies as a ‘user signal.’” *Id.* at 50 (citing Ex. 1002 ¶¶ 276–283) (emphasis omitted). Petitioner further asserts that Gettemy’s main processor 310 and software functionality, such as a software variable or routine, receives the “user signal,” and therefore teaches the “first input.” *Id.* at 50 (Ex. 1002 ¶¶ 279, 281; Ex. 1013, 5:14–20, 5:21–28).

Patent Owner argues that Petitioner does not separately identify the “user signal” and “user selectable brightness setting,” and instead identifies the “‘user selection’ of a ‘position of the slider 430’ as *both* the ‘user [input] signal’ and the ‘user selectable brightness setting.’” Prelim. Resp. 42–43; *see also id.* at 44–45. Similarly, Patent Owner argues that Petitioner has failed to identify the “user [input] signal” because a human selecting a position on a slider bar cannot be a “user [input] signal.” *Id.* at 45–49.

We disagree that Petitioner has not separately identified the “user signal” and the “user selectable brightness setting.” Petitioner identifies that “relative position of the slider” as the “user signal,” and the “user selection” on Gettemy’s graphical interface as the “user selectable brightness setting.” *See* Pet. 46, 50.¹² Patent Owner’s arguments as to the “user signal” are therefore premised on a misunderstanding of Petitioner’s contentions, and therefore do not undermine Petitioner’s arguments.

Patent Owner also argues that Petitioner fails to separately identify the “first input,” “light sensor,” and “multiplier,” as recited in limitations 1(a),

¹² We note that Patent Owner acknowledges that “[w]hile one could argue that the ‘user selection’ on a slider bar on the user interface is a setting, it cannot be a ‘signal.’” Prelim. Resp. 45.

1(b), and 1(c). Prelim. Resp. 37. We also find this argument unavailing. Contrary to Patent Owner’s arguments, although there is some overlap in the components identified as teaching these limitations, Petitioner does not identify the *same* structure for each of them, as discussed below. Prelim. Resp. 38–39; *see* Pet. 50, 63, 64.

Based on our review and consideration of the current record, we determine that Petitioner has sufficiently shown that Gettemy teaches limitation 1(a) for purposes of institution.

c) 1(b): “a light sensor configured to sense ambient light and to output a sensing signal indicative of the ambient light level”

Petitioner argues that Gettemy teaches this limitation. Pet. 50–54. Specifically, Petitioner contends that “Gettemy discloses a ‘**sensing signal**’ in the form of a brightness range determined by main processor **310** based on the current ambient light level.” *Id.* at 50; *see id.* at 50–51 (citing, e.g., Ex. 1013, Fig. 5). Petitioner explains that the “sensing signal” is not mapped “to a raw sensor signal provided by ambient light sensors **390**, as this information is not directly used to determine display brightness.” *Id.* at 52 (citing Ex. 1002 ¶ 286). Rather, explains Petitioner, Gettemy’s brightness range (which is defined by its minimum and maximum values) is selected by the processor “*based on* the ambient light sensor signal.” *Id.* (citing Ex. 1013, 5:60–64).

Petitioner asserts that the brightness range is “‘**indicative of the ambient light level**’ because it reflects the current level of ambient light as based on the ambient light sensor.” *Id.* (citing Ex. 1013, 5:50–53, Fig. 5). Petitioner also contends that “Gettemy’s sensing signal is ‘in proportion to the level of ambient light’ . . . because Gettemy’s brightness range increases

as the ambient light level increases.” *Id.* Petitioner contends that the brightness range qualifies as a “sensing signal” under Patent Owner’s own interpretation of a “signal.” *Id.* at 53.¹³

Petitioner therefore contends that the recited light sensor “corresponds to light sensor **390**, along with software executed by main processor **310** that uses the output from light sensor **390** to determine the brightness range.”

Pet. 53. Petitioner further asserts that the “selected brightness range (**‘sensing signal’**) will then be **‘output’** or provided to other software in Gettemy to determine the brightness for the display consistent with the position of the slider chosen by the user.” *Id.* (citing Ex. 1002 ¶ 288).

Although Petitioner does not provide an explicit construction for “light sensor,” Petitioner asserts that “nothing in the ’117 patent requires that the claimed **‘light sensor’** be limited solely to light detecting elements.” *Id.*

Patent Owner argues that Petitioner’s theory is “contrary to the claim language that recites the **‘sensing signal’** is output by the light sensor.”

Prelim. Resp. 49. Patent Owner states that Petitioner does not identify Gettemy’s light sensor 390 as the recited “light sensor,” and that Petitioner admits “the output signal of Gettemy’s light sensor 390 is **not** used in determining the brightness.” *Id.* at 50. In a footnote, Patent Owner states that “[w]hile the ’117 patent discloses **‘sensing signals’** that involve scaling

¹³ Petitioner asserts that in the related litigation, Patent Owner proposes that a “signal” should be given its plain and ordinary meaning, which means it “includes both hardware and software signals.” Pet. 17–18. Although Petitioner proposes an alternative construction for “signal” in the related litigation, “for purposes of this IPR,” Petitioner “adopts Patent Owner’s proposed construction of a “signal.” *Id.* at 18, 49. At this stage, neither party has asserted that construction of “signal” is required in this proceeding.

the signal output by the light sensor and using that scaled light sensor signal, the ‘sensing signal’ is always derived from the output of the light sensor.”

Id. n.6 (citing Ex. 1001, Figs. 1, 2; 4:45–61, 5:15–29, 7:3–35, 11:3–15).

Patent Owner further argues that Petitioner “makes no attempt to explain how the ‘brightness range,’ a pair of values Petitioner admits is output by the processor and not light sensor 390 in Gettemy, meets the limitation.” *Id.*

Patent Owner also argues that Gettemy “distinguishes the microprocessor from the light sensor as separate components demonstrating that the processor is **not** part of the ‘light sensor’ in Gettemy.” *Id.* at 51.

Patent Owner appears to raise an issue of claim construction of the term “light sensor.” There is no dispute that Petitioner does not identify Gettemy’s light sensor 390 alone as the recited “light sensor.” Petitioner admits as much, and identifies Gettemy’s light sensor 390, along with software executed by main processor 310, as disclosing the recited “light sensor.”¹⁴ Pet. 52–53. Therefore, the issue is whether this is sufficient to teach the recited “light sensor.” On this record, we agree with Petitioner that nothing in the ’117 patent appears to limit the “light sensor” to light detecting elements. *See* Pet. 53–54. Petitioner identifies two examples in the ’117 patent that describe the light sensor as “including” other components. *See id.*; Ex. 1001, 8:11–13 (describing an embodiment where “ambient light sensor includes a light detector 500, a first transistor 502, a second transistor 504 and an additional current amplifier circuit 506”); 8:42–

¹⁴ Similarly, in the obviousness ground over Stoughton, Mierzewski, and Nagai, Petitioner identifies circuitry beyond the light detecting element as teaching the “light sensor.” Pet. 18–20.

45 (describing an embodiment where the ambient light sensor “further includes a program capacitor 508 and source degeneration resistors 510, 512”). Patent Owner does not address these examples in the Preliminary Response, however, Patent Owner acknowledges that the “sensing signal” may be *derived from* the output of the light sensor, which appears to be consistent with Petitioner’s assertions that the brightness range (i.e., the recited “sensing signal”) is *based on* the ambient light (i.e., the output of the light sensor). Prelim. Resp. 50 n.6; Pet. 52. Therefore, on this record, we determine that Petitioner has sufficiently shown that Gettemy teaches the recited “light sensor.” However, the parties may wish to further develop the record as to this issue during trial.

Patent Owner further argues that Petitioner’s contention that the “sensing signal” is a “brightness range” is contrary to the disclosure of the ’117 patent, which supports that the “sensing signal” is a single value that is output from the light sensor, as opposed to “a ‘brightness range’ of two arbitrary values selected by a processor.” Prelim. Resp. 54–59 (citing, e.g., Ex. 1001, Figs. 1, 2, 4, 8, 9).

Patent Owner’s arguments do not undermine Petitioner’s showing. Petitioner does not identify “two arbitrary values” as the “sensing signal.” Rather, Petitioner identifies a “brightness range” that is a single value, i.e., the difference between the maximum and minimum values in the range. *See* Pet. 52 (“For example, Figure 5 shows range **510** of 60 between 5–65 . . . range **510** of 80 between 20–100 . . . up to range **530** of 280 between 20–300”); 59 (“When expressed as a numerical value, a ‘range’ of a set of numbers is simply the difference between the highest and lowest values in the set, e.g., ‘**60**’ for the 5–65 brightness range **510** for ‘dark or dimly lit’

environments”); 60 (with respect to Figure 5, identifying in blue “sensing signal” as 60, 80, and 280). Accordingly, Patent Owner’s arguments are not commensurate with Petitioner’s contentions.

Therefore, on this record, we find that Petitioner has sufficiently shown that Gettemy teaches limitation 1(b) for purposes of institution.

d) 1(c): “a multiplier configured to selectively generate a combined signal based on both the user signal and the sensing signal”

Petitioner argues that Gettemy, Kerman, and Rosenzweig teach this limitation. Pet. 54–65. Petitioner asserts that Gettemy “computes a brightness value for the display based on: (1) the selected brightness range based on ambient lighting conditions (‘**sensing signal**’) and (2) the relative position of the slider (‘**user signal**’).” *Id.* at 54. Petitioner relies in part on Figure 7 of Gettemy, which Petitioner asserts “shows several examples of how the processor adjusts the brightness level commensurate with the slider position based on the range.” *Id.* at 54–55 (citing Ex. 1013, Fig. 7 and associated description at 6:16–36).

However, Petitioner asserts that Gettemy does not disclose “precise details about how main processor 310 increases or decreases the brightness value associated with the relative slider position in response to a change in the brightness range.” Pet. 56. Petitioner therefore asserts that “[i]t would have been obvious that main processor 310 uses multiplication of the ‘**user signal**’ and the ‘**sensing signal**’ . . . to compute the new brightness value.” *Id.* at 57. Petitioner relies on Kerman and Rosenzweig, “which describe conventional slider controls such as those used in Gettemy.” *Id.*

Petitioner contends that Kerman discloses the following formula for calculating, based on min and max values, the current value of the slider ($_x$)

based on a given percent (the location of the slider relative to the total length of the slider control based on max and min):

$$\begin{aligned} \text{percent} &= 50; \\ _x &= \text{min} + ((\text{max} - \text{min}) * (\text{percent}/100)) \end{aligned}$$

Pet. 57–60 (citing Ex. 1014, 41, 47). Petitioner contends that the (*) in the equation refers to a multiplication operation, and the (/) refers to a division operation. *Id.* (citing Ex. 1002 ¶ 302). According to Petitioner, it would have been obvious to use this this same calculation to determine the display brightness value in Gettemy, because Gettemy uses the same types of slider controls as described in Kerman. *Id.* at 59. Petitioner presents calculations applying the equation from Kerman to the examples shown in Figure 5 of Gettemy, to show that “the Kerman formula, as shown, yields the exact[] same display brightness values shown in Figure 5.” *Id.* at 59–60.

Petitioner states that “[i]n each of these examples, the ‘**user signal**’ (50) was divided by 100 to get **0.5**, which is then multiplied by the ‘**sensing signal**,’ a numerical value reflecting the range (*i.e.*, difference between max and min values (*e.g.*, $65 - 5 = 60$). That value is then added to the low range (min) value.” *Id.* at 60 (color emphasis omitted). Petitioner further alleges that the Kerman formula will produce the same values for the examples in Figure 7 of Gettemy. *Id.* at 60–61. Petitioner similarly asserts that Rosenzweig confirms how to create slider controls, and discloses a mathematically equivalent equation to that in Kerman for determining the value associated with a slider control based on the slider’s current position and range. *Id.* at 61–63.

Petitioner contends that “Gettemy is an analogous reference in the field of adjusting the brightness level for a display” and “Kerman and

Rosenzweig are also analogous references that describe techniques for obtaining input from a user through a user interface, such as a slider control.” Pet. 64. Petitioner contends that “[t]hese references would have been reasonably pertinent to problems facing the inventor, including how to acquire user input indicative of a brightness setting.” *Id.* According to Petitioner, “[s]lider controls were commonly used to obtain user input relating to device parameters such as audio volume and display brightness.” *Id.* (citing Ex. 1002 ¶¶ 317–318).

Petitioner contends that it would have been obvious to combine Gettemy with Kerman and Rosenzweig because “they provide ‘under the hood’ implementation details about the computation of values associated with the slider controls in Gettemy.” Pet. 65 (citing Ex. 1002 ¶ 319). Petitioner also argues that since the techniques described in Kerman and Rosenzweig produce the same values in Gettemy’s examples, this further supports that there is a motivation to combine the references. *Id.* at 65. In addition, Petitioner contends that “multiplication as disclosed in Kerman and Rosenzweig was among a finite number of predictable solutions for how to combine the ‘**user signal**’ and ‘**sensing signal**’ in Gettemy to produce the display brightness value,” and a person of ordinary skill in the art “would have appreciated that the techniques in Kerman and Rosenzweig would have been applicable to any situation in which the current value of a slider needs to be determined.” *Id.* (citing Ex. 1002 ¶¶ 320, 296).

Patent Owner argues that “[n]either Kerman and Rosenzweig disclose the multiplication of any signals or the use of multiplication to determine screen brightness,” so “Petitioner and its expert simply make up an equation for brightness control of a display that is not disclosed in any reference.”

Prelim. Resp. 59–60. Patent Owner argues that “Petitioner is not actually combining the teachings of the references together,” but instead “is using improper hindsight and speculation,” so there is no rationale for the combination. *Id.* at 60–62.

On the current record, we find that, for purposes of institution, Petitioner has sufficiently shown that Gettemy, Kerman, and Rosenzweig teach this limitation and has provided sufficient rationale to combine the references. Petitioner’s arguments that sliders were “commonly used” is supported by the disclosure in both Kerman and Rosenzweig. Ex. 1014, 39 (Kerman describing that a slider is “a popular user interface”); Ex. 1015, 44 (Rosenzweig describing a slider as “a familiar user interface element used in all major software programs”). Petitioner relies on Kerman and Rosenzweig to explicitly explain how Gettemy’s conventional slider is implemented.

Pet. 57. Patent Owner’s arguments largely address the references individually, rather than on the combination as proposed by Petitioner, where Kerman and Rosenzweig are relied upon for the underlying technical functionality of Gettemy’s slider. *See Soft Gel Techs., Inc. v. Jarrow Formulas, Inc.*, 864 F.3d 1334, 1341 (Fed. Cir. 2017); *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). We find persuasive Dr. Baker’s testimony that “[a]n ordinarily skilled artisan, seeking to implement the brightness control system of Gettemy, would thus have been motivated to rely on the teachings of Kerman and Rosenzweig to better understand how to implement the slider controls in Gettemy, including the precise formula that produces the exact display brightness values exhibited in Gettemy.”

Ex. 1002 ¶ 319. Further, we disagree with Patent Owner that Petitioner and Dr. Baker have made up an equation. The equations relied upon by

Petitioner are directly from the Kerman and Rosenzweig references. *See* Pet. 57, 58, 62–64.

Based on our review and consideration of the current record, we determine that, for purposes of institution, Petitioner has sufficiently shown that the combination of Gettemy, Kerman, and Rosenzweig teaches limitation 1(c) and has provided reasons sufficiently supported by factual underpinnings to combine the reference teachings with a reasonable expectation of success.

- e) 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*

Petitioner argues that Gettemy, Kerman, Rosenzweig, Whitted, and Bell teach this limitation. Pet. 66–72. Petitioner contends that, although Gettemy discloses a minimum below which the user cannot move the slider, “nothing in Gettemy suggests that the purpose of this minimum is to maintain brightness at a predetermined level.” *Id.* at 66 (citing Ex. 1002 ¶ 324). Therefore, Petitioner relies on Whitted, which discloses that “[a] minimum power level is set, e.g., pre-programmed, for the backlight **510** to [e]nsure that the display will be readable in low light conditions.” Pet. 67 (citing Ex. 1016, 8:22–25). Petitioner states that “Whitted thus ensures that regardless of the current ambient lighting condition, or user input, the display brightness never falls below ‘a minimum threshold level’ . . . even in dark lighting conditions.” *Id.* at 68. Petitioner also relies on Bell, which states that “for low ambient luminance levels, a minimum but non-

zero display brightness permits viewing of the microdisplay.” *Id.* at 68 (citing Ex. 1017, 6:3–5); *see also id.* (citing Ex. 1017, Figs. 4, 5).

Petitioner contends that the combination of Gettemy with Whitted and Bell would have been “trivially easy to implement” and would involve adapting the software executed by main processor 310 of Gettemy to check whether the display brightness value exceeds a minimum threshold before generating the brightness control signal sent to display controller 370.

Pet. 70. If not, Petitioner asserts, the combined signal would have been adjusted upward to ensure that the corresponding brightness control signal is maintained above a predetermined level. *Id.* at 70–71.

Petitioner contends that a person of ordinary skill in the art would have been motivated to combine Whitted and Bell with Gettemy “to ensure that the display is sufficiently bright to allow the user to view it, even in low or dark ambient light environments.” Pet. 71 (Ex. 1002 ¶ 335). Petitioner asserts that this motivation is expressly stated in Whitted and Bell. *Id.* (citing Ex. 1016, 8:22–25; Ex. 1017, 5:56–58, 5:29–31, 6:3–5). Petitioner contends that this would provide a “beneficial backstop to ensure that the combination of user input (through the slider) and ambient lighting conditions in Gettemy did not result in a brightness level for the display that was undesirably low.” *Id.* (citing Ex. 1002 ¶ 336).

Petitioner contends that “although the exemplary slider controls in Gettemy include non-zero minimum user settings . . . these minimum values could nevertheless have produced brightness levels that were unacceptably low based on additional factors.” *Id.* For example, Petitioner argues, “it was well-known that conventional displays would become dimmer as they age, requiring a concomitant increase in brightness level to compensate for this

degradation to maintain the desired level of brightness.” *Id.* at 71–72 (citing Ex. 1002 ¶ 336).

Patent Owner argues that “the combination would be redundant and provide no technical benefits” because “Gettemy already has a minimum power level that is pre-programmed and stored in memory in the form of the minimum value of the brightness range.” Prelim. Resp. 63. Patent Owner argues that “[t]here is also no dispute that the minimum values of the brightness ranges set an absolutely minimum brightness level.” *Id.* at 64 (citing Pet. 66) (emphasis omitted). Patent Owner argues that Gettemy considers the brightness ranges, “which all have a minimum value, to be perfectly adequate for a ‘dark’ environment when the ambient light is approximately zero.” *Id.* at 64–65 (citing Ex. 1013, 5:50–51). Patent Owner also argues that there is no evidence to support Petitioner’s speculation that the minimum brightness levels in Gettemy “could be” insufficient given degradation of conventional displays and that it is contrary to Gettemy’s teachings, which refer to “prolong[ing] the lifetime of the display.” *Id.* at 66 (citing Ex. 1013, 1:10–15) (emphasis omitted). Patent Owner argues that, under Petitioner’s theory, the “multiplier will indisputably always produce a brightness value equal to or greater than the minimum brightness of the brightness range.” *Id.* at 67. Thus, Patent Owner argues, “there is no need to add the minimum brightness thresholds from Bell or Whitted since the brightness will always be maintained above the minimum brightness of Gettemy’s brightness range.” *Id.*

Patent Owner further argues that “the threshold minimum brightness levels in Whitted and Bell are not a ‘dark level bias.’” Prelim. Resp. 68. According to Patent Owner, the “dark level bias” is “a bias that

mathematically adjusts the combined signal.” *Id.* at 68. Patent Owner argues that “[n]either Whitted or Bell have any disclosure of a bias that adjusts a signal (e.g., ‘combined signal’) as recited by the challenged claims.”¹⁵ *Id.* at 69.

On the current record, we find that, for purposes of institution, Petitioner has sufficiently shown that the combination of Gettemy, Kerman, Rosenzweig, Whitted, and Bell teach this limitation and has provided sufficient rationale to combine the references. First, we credit Dr. Baker’s testimony that “notwithstanding that the system in Gettemy will not permit the user to set the slider below the lower end of the displayed range . . . nothing in Gettemy states that the purpose of summation of the minimum value of the brightness range is to ensure that the final display brightness value used to control the brightness of the display meets a predetermined desired level of brightness.” Ex. 1002 ¶ 324. Thus, Petitioner relies on Whitted and Bell to teach this limitation. As for Patent Owner’s arguments that Whitted and Bell provide “redundant” functionality, we disagree on the current record. Petitioner explains the benefits of adding the functionality from Whitted and Bell as a backstop and to compensate for degradation of conventional displays. Pet. 71–72. Moreover, Dr. Baker provides supporting testimony and citations to additional references in support of Petitioner’s motivation to combine the references, and, accordingly, we disagree with Patent Owner that there is no evidence to support Petitioner’s

¹⁵ Patent Owner argues that the Board’s decision in IPR2018-01262 is instructive. Prelim. Resp. 69. We disagree. That decision described several deficiencies in the Petition relating to the “dark level bias” limitation (*see* IPR2018-01262, Paper 14, 12–16), and Patent Owner oversimplifies the Board’s findings by quoting from one paragraph in the decision.

contentions. *See* Ex. 1002 ¶ 336 (citing Ex. 1019, 1020, 1021). In addition, Patent Owner’s arguments that Whitted and Bell do not disclose the “dark level bias” address Whitted and Bell individually, rather than on the combination as proposed by Petitioner, with Gettemy, Kerman, and Rosenzweig, and are therefore not persuasive on this record. The parties may wish to further develop the record as to the foregoing issues during trial.

Based on our review and consideration of the current record, we determine that, for purposes of institution, Petitioner has sufficiently shown that the combination of Gettemy, Kerman, Rosenzweig, Whitted, and Bell teaches limitation 1(d) and has provided reasons sufficiently supported by factual underpinnings to combine the reference teachings with a reasonable expectation of success.

f) Conclusion Independent Claim 1

For the reasons set forth above, we determine, that the information presented in the Petition demonstrates a reasonable likelihood that claim 1 is unpatentable under 35 U.S.C. § 103(a) over Gettemy, Kerman, Rosenzweig, Whitted, and Bell.

7. Claims 2, 7, 9, 15, and 16

Petitioner contends that dependent claims 2, 7, and 9, which depend from claim 1; independent claim 15; and dependent claim 16, which depends from claim 15, would have been obvious over Gettemy, Kerman, Rosenzweig, Whitted, and Bell. Pet. 72–77. In support, Petitioner identifies certain passages and figures in the references and explains their significance with respect to the corresponding claim limitation. *Id.* We note that Petitioner’s contentions for independent claim 15 are nearly identical to the

contentions for claim 1. *See id.* at 76–77. At this stage, Patent Owner does not dispute Petitioner’s contentions except as previously discussed. *See* Prelim. Resp.

Based on our review and consideration of the current record, Petitioner has sufficiently shown that the combination of Gettemy, Kerman, Rosenzweig, Whitted, and Bell teaches the limitations in claims 2, 7, 9, 15, and 16 and provides reasons sufficiently supported by factual underpinnings to combine the references teachings with a reasonable expectation of success.

8. *Summary*

We find that Petitioner has demonstrated a reasonable likelihood that claims 1, 2, 7, 9, 15, and 16 are unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Gettemy, Kerman, Rosenzweig, Whitted, and Bell.

E. *Alleged Obviousness Over Stoughton, Mierzwinski, Nagai*

Petitioner contends claims 1, 2, 9, 15, and 16 would have been obvious in view of Stoughton, Mierzwinski, and Nagai. Pet. 9–40. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 4–37. Because we determined above that Petitioner demonstrated a reasonable likelihood of prevailing in its challenge to at least one claim of the ’117 patent, we institute *inter partes* review on all claims and grounds. *See* 37 C.F.R. § 42.108(a) (“When instituting . . . review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”). In this section, therefore, we will provide observations on the parties’ positions where relevant.

1. *Stoughton (Ex. 1003)*

Stoughton is titled “Manual and Automatic Ambient Light Sensitive Picture Control for a Television Receiver” and is generally directed to Kim is titled “Light Emitting Display, Display Panel, and Driving Method Thereof” and is generally directed to an “image contrast control apparatus for controlling the magnitude of a video signal both manually and automatically in response to ambient light.” Ex. 1003, code (54), 1:6–9.

Figure 1, reproduced below, shows a portion of a television receiver video signal processing system including contrast control apparatus:

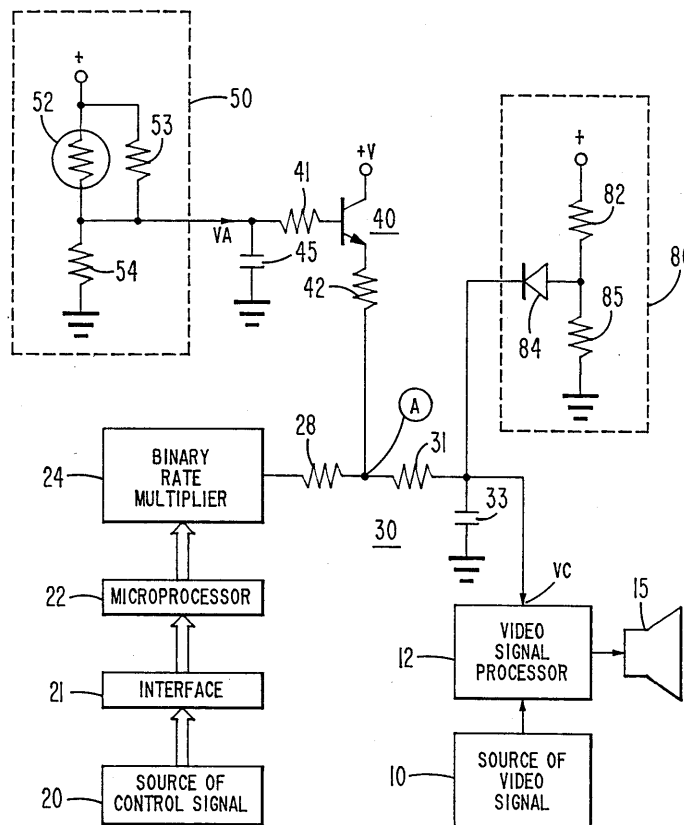


Fig. 1

Figure 1 above, shows a video signal provided from a source 10 to a video signal processor 12 which amplifies the video signal to a magnitude suitable

for driving an image displaying kinescope 15. Ex. 1003, 2:34–37. The peak-to-peak amplitude of the video signal (the contrast of the displayed image) is controlled in response to a control signal from source 20. *Id.* at 2:37–40. A viewer may select the contrast level, and in response, source 20 transmits a coded signal in binary form, where it is ultimately translated into a signal suitable for processing by microprocessor 22. *Id.* at 2:45–48.

Microprocessor 22 provides a binary signal output to a binary rate multiplier (BRM) 24, where it is conveyed via a resistor 28 and an integrating or low pass filter network 30 (including resistor 31 and filter capacitor 33). *Id.* at 2:54–60. “The output signal from the BRM 24 comprises substantially constant amplitude pulses with a pulse width (duty factor) determined by the contrast control information supplied from microprocessor 22.” *Id.* at 2:60–64. “The duty factor of the pulse signal produced by BRM 24 determines the DC voltage produced across capacitor 33,” and “[t]his DC voltage is applied to a contrast control (gain control) input of video processor 12 to control the magnitude of the video signal, and thereby to control the contrast of the reproduced image.” *Id.* at 2:64–3:2.

Figure 1 additionally includes voltage source 50, which includes an ambient light responsive light dependent resistor (LDR 52) and resistors 53 and 54 to provide auxiliary contrast (gain) control in response to ambient lighting conditions. Ex. 1003, 3:18–24. Limiter 80 is also provided, which includes voltage divider resistors 82 and 84 and a normally nonconductive limiter diode 85. *Id.* at 4:60–65.

2. *Mierzwinski (Ex. 1004)*

Mierzwinski is titled “Ambient Light Responsive Control of Brightness, Contrast, and Color Saturation” and is generally directed to a

“circuit deployed in a color television receiver for varying the brightness, contrast and color saturation of a displayed picture in accordance with variations in ambient light in the vicinity of a receiver screen.” Ex. 1004, codes (54), (57).

Mierzwinski describes that “[t]he control of brightness (intensity) and contrast is achieved . . . by a second light dependent resistor 53 which is optically coupled to a light emitting diode 55.” Ex. 1004, 4:66–5:1. “As the room ambient level changes, the change in the resistance of light dependent resistor 41 causes a change in the current through light emitting diode 55.” *Id.* at 5:3–6. “[I]f the light intensity in the room increases, the resistance of resistor 41 will decrease causing a decrease in the current through light emitting diode 55 and, therefore, a decrease in its light output level and this decreased light will cause an increase in the resistance of light dependent resistor 53 thus increasing the effective output load resistor for the transistor 61 thus increasing the gain of the video amplifier as desired.” *Id.* at 5:16–24. “Variable resistor 63 being effectively in series with the light dependent resistor 41 may be varied to compensate for differences in specific light dependent resistors so as to establish a desired level of picture brightness, contrast and color saturation for a given level of ambient light. *Id.* at 5:25–30.

3. *Nagai (Ex. 1005)*

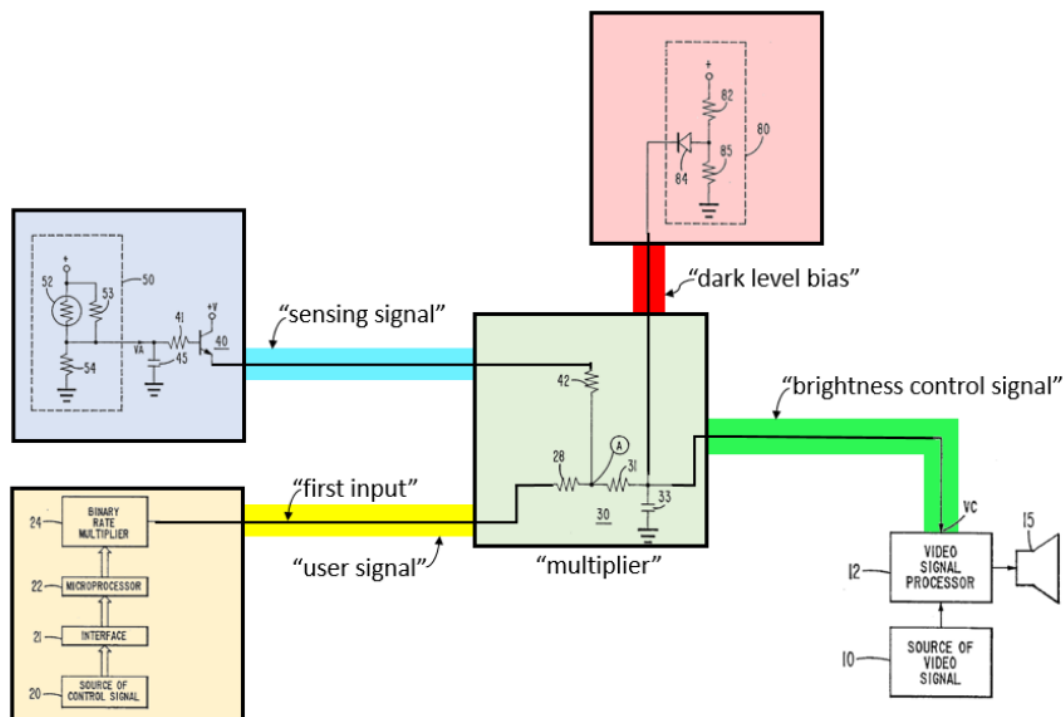
Nagai is titled “Color Saturation and Contrast Control Circuitry Responsive to Ambient Light” and is generally directed to “[a] control circuit used in a color television receiver for controlling a reproduced picture in response to an ambient light level.” Ex. 1005, codes (54), (57). Nagai describes an automatic mode where changes in ambient light are

automatically detected and display contrast is adjusted, as well as a manual mode, where the ambient light circuitry is disabled. *Id.* at 2:32–63.

4. Analysis of Independent Claim 1

Petitioner contends that the combination of Stoughton, Mierzwinski, and Nagai teaches each limitation of independent claim 1. Pet. 9–40. In support, Petitioner identifies certain passages and figures in the references and explains their significance with respect to the corresponding claim limitation. *Id.* Petitioner also provides reasons, supported by the testimony of Dr. Baker, why it would have been obvious to one of ordinary skill in the art to combine Stoughton, Mierzwinski, and Nagai. *Id.*

Petitioner primarily relies on Stoughton to teach the limitations in claim 1. Pet. 9–40. Petitioner identifies the components of Stoughton that are relied upon in annotated Figure 1, reproduced below:



Pet. 23. Petitioner’s annotated Figure 1 of Stoughton shows in yellow the “first input,” (limitation 1(a)) which corresponds to the wire at the output of BRM 24; in blue the “light sensor,” (limitation 1(b)) which corresponds to voltage source 50 and circuitry elements 40, 41, and 45, the output of which is identified also in blue as the “sensing signal”; in green the “multiplier” (limitation 1(c)) which includes circuitry elements 28, 30, 31, 33, and 42; in red the “dark level bias” (limitation 1(d)) which corresponds to the output from limiter 80; in bright green, the wire output from the “multiplier” to video signal processor 12 as the “brightness control signal.” Pet. 16, 18–19, 21–23, 25–27.

Petitioner states that Stoughton is “directed to a television receiver with a ‘contrast control apparatus’ for ‘both manually and automatically’ controlling picture contrast ‘in response to ambient light.’” Pet. 9–10 (citing Ex. 1003, 1:6–9, 2:27–29, Fig. 1). Petitioner acknowledges that “Stoughton discloses techniques for contrast adjustment but does not expressly use the term ‘**brightness**.’” *Id.* at 11. However, Petitioner argues, “this distinction is immaterial because brightness and contrast are inextricably intertwined concepts such that changes to contrast result in changes to the brightness of the display.” *Id.* In support, Petitioner cites to the *Television Engineering Handbook*,¹⁶ which states “[t]he contrast control affects both the brightness and the contrast of the picture.” *Id.* at 12 (citing Ex. 1008, 58). Therefore, Petitioner asserts, “[t]he circuit in Stoughton provides a ‘**brightness control circuit**’ because . . . it controls contrast of a display which in turn directly controls the brightness of the display.” *Id.* (citing Ex. 1002 ¶¶ 140–144).

¹⁶ *Television Engineering Handbook* (McGraw-Hill Book Co. 1st ed. 1957).

Alternatively, Petitioner contends that “it would have been obvious to adapt the circuit of Stoughton to use ambient lighting levels to also separately adjust brightness.” Pet. 12. Petitioner states that “Mierzwinski discloses a circuit, similar to the one in Stoughton, that detects ambient lighting levels[,] [b]ut the circuit in Mierzwinski uses the ambient lighting levels to adjust both display brightness and contrast of the display.” *Id.* (citing Ex. 1004, 4:65–5:24, 3:35–61, Fig. 2; Ex. 1002 ¶¶ 145–147).

Petitioner contends that “[i]t would have been obvious to combine Stoughton with Mierzwinski, predictably resulting in the control circuit of Stoughton adapted to separately control both brightness and contrast of the display.” Pet. 13 (citing Ex. 1002 ¶ 148). According to Petitioner, the combination would be “straightforward,” and “the only change to the Stoughton Figure 1 circuit” that would be required is to “adapt video signal processor 12 to also adjust both display brightness and contrast based on the VC signal, consistent with the embodiment in Mierzwinski.” *Id.* (citing Ex. 1002 ¶¶ 143, 147; Ex. 1004, 5:25–34). Petitioner further contends that Stoughton and Mierzwinski are analogous art, and provides several reasons that a person of ordinary skill in the art would have been motivated to adapt the circuit of Stoughton to adjust contrast and brightness levels, such as providing optimal viewing conditions and improving user experience. *Id.* at 13–14. Petitioner further contends that a person of ordinary skill in the art “would have had at least a reasonable expectation of success and could have implemented the proposed combination using conventional techniques.” *Id.* at 14 (citing Ex. 1002 ¶¶ 143, 147, 156).

Patent Owner argues that brightness and contrast are “two entirely different concepts that are implemented by entirely different technical

mechanisms.” Prelim. Resp. 5; *see also id.* at 5–11. Therefore, with respect to limitation 1(a), Patent Owner argues that Petitioner has not shown that Stoughton teaches a “user selectable brightness setting.” *Id.* at 12. Patent Owner also argues that Petitioner’s obviousness argument as to the combination of Stoughton and Mierzwinski is insufficient because Petitioner does not cite to disclosures in Mierzwinski or provide analysis as to how or why the “user selectable brightness setting” would have been obvious in view of Mierzwinski. *Id.* at 13–14.

With respect to limitation 1(d), Patent Owner argues that Stoughton does not teach the “brightness control signal that is used to control a brightness level of a visible display” because Stoughton’s voltage VC across capacitor 33 (which Petitioner asserts teaches the “brightness control signal,” Pet. 26) is only used to change the amplitude of the video signal to control contrast, which does not change the brightness. Prelim. Resp. 28. Rather, Patent Owner argues, “[b]rightness is controlled by changing the DC bias applied to the grid cathode-circuit of the picture tube.” *Id.* Patent Owner also argues that Petitioner’s obviousness argument as to the combination of Stoughton and Mierzwinski is insufficient because Petitioner does not cite to disclosures in Mierzwinski or provide analysis as to how or why the “brightness control signal” would have been obvious in view of Mierzwinski. *Id.* at 29. Patent Owner further argues that Petitioner does not “identify any disclosure in Mierzwinski that teaches how to use a signal like voltage VC, which is configured to change the amplitude of a video signal, to adjust brightness, which requires a DC bias applied to grid-cathode circuitry of the picture tube.” *Id.* at 30 (citing Ex. 1003, code (57), 1:10–16, 1:50–53, 2:37–40). Patent Owner also argues that, for similar reasons,

“there would have been no reasonable expectation of success if VC is used to control brightness.” *Id.*

Patent Owner further argues that Petitioner has failed to establish a motivation to combine Stoughton with Mierzwinski. Prelim. Resp. 31. Patent Owner argues that “Petitioner fails to explain how these references would be combined.” *Id.* at 33. Patent Owner asserts that “Petitioner does not propose incorporating any circuitry from Mierzwinski or rely on any teachings other than the generic assertion that it is desirable to control both brightness and contrast.” *Id.* at 34. Patent Owner also argues that “Petitioner fails to provide any ‘evidence-supported account’ of how the combination would work” because Petitioner does not provide any explanation of how Stoughton’s video processor 12 would be adapted to adjust brightness. *Id.* Patent Owner argues that “[t]here is no teaching in Stoughton, Mierzwinski, or Nagai of how to adapt a video signal processor designed to control contrast to control both contrast and brightness.” *Id.*; *see also id.* at 35–36. Patent Owner also argues that Petitioner’s does not explain how Stoughton would have to be adapted to have a single user input for both brightness and contrast. *Id.* at 35. Patent Owner also argues that a person of ordinary skill in the art would not have had a reasonable expectation of success because Stoughton’s circuitry is designed to carry out a single function (changing the amplitude of a video signal to control contrast) and “[t]he idea that this same circuitry without any significant modifications can control both contrast and brightness lacks credibility.” *Id.*

Patent Owner’s arguments may have merit. With regard to Stoughton alone, there is no dispute that Stoughton is used to control or adjust contrast and does not mention “brightness.” *See* Pet. 11; Prelim. Resp. 28, 30. Thus,

even assuming that adjusting contrast affects brightness in some manner, as Petitioner argues and Patent Owner did not address in the Preliminary Response, we have doubts that Petitioner will be able to sufficiently show that Stoughton alone teaches limitation 1(a) (“user selectable brightness setting”) and limitation 1(d) (“brightness control signal that is used to control a brightness level of a visible display”).

We also question whether Petitioner has presented sufficient evidence regarding the combination of Stoughton and Mierzwinski, specifically evidence showing “*how* the combination of the two references was supposed to work.” *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017). Although Mierzwinski teaches using ambient levels to adjust both display brightness and contrast (e.g., Ex. 1004, code (54)), Petitioner’s explanation of how a person of ordinary skill in the art would adapt Stoughton with Mierzwinski has weaknesses. For example, Petitioner asserts that “[i]t would have been obvious to adapt [Stoughton’s] video signal processor **12** to also adjust both display brightness and contrast based on the VC signal, consistent with the embodiment in Mierzwinski,” but does not (1) explain what adaption would need to be made to Stoughton’s video signal processor; or (2) provide explanation how this adaptation would be performed in order to be “consistent with the embodiment in Mierzwinski.” Pet. 13. Petitioner asserts that this change to the video signal processor is “the only change to the Stoughton Figure 1 circuit” that is required, but it is not clear what change is proposed. Petitioner’s cited declaration testimony from Dr. Baker likewise is thin on explanation. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). For example,

Dr. Baker provides testimony comparing the circuitry in Stoughton and Mierzwinski, and testifies that “[t]he similarities between these circuits would have made them simple for a user to combine,” but does not explain how they would be combined. Ex. 1002 ¶ 152.

Moreover, Petitioner’s contentions regarding the proposed modification (i.e., only a change to Stoughton’s video signal processor is required) appear to be internally inconsistent. Petitioner contends that, in the combination, the user control would have provided adjustments for both contrast and brightness, but does not appear to propose any change to Stoughton to allow the user control to adjust brightness, as opposed to only adjusting contrast, as Stoughton discloses. Pet. 14; Ex. 1003, 2:40–43 (in discussing Figure 1, “source 20 constitutes part of a viewer operated remote control unit. In response to a *viewer selected contrast level . . .*”) (emphasis added). However, Dr. Baker testifies that “Mierzwinski discloses that brightness and contrast of its display can be adjusted using a single variable resistor – element 63 in Mierzwinski’s Figure 2 circuit,” and “[b]ased on such knowledge, a [person of ordinary skill in the art] would have been motivated to combine Stoughton and Mierzwinski such that adjusting Stoughton’s user setting would change both the contrast and the brightness of kinescope 15.” Ex. 1002 ¶ 154. And in paragraph 156, Dr. Baker testifies that “the combination would have required *few if any* modifications to Stoughton’s Figure 1 circuit.” This testimony by Dr. Baker (i.e., referring to adjusting Stoughton’s user setting and proposing “few” modifications to Stoughton’s Figure 1 circuit) appears to conflict with the contentions in the Petition and in Dr. Baker’s prior testimony that adjustment to the video signal processor is “the only change to the Stoughton Figure 1 circuit” that is

required. Pet. 13; Ex. 1002 ¶ 143. Given this testimony, it is unclear what adjustments Petitioner proposes be made to Stoughton's Figure 1 circuit.

Nor does Petitioner provide further explanation or evidence regarding the combination in its analysis of limitations 1(a) and 1(d). For example, in the discussion of limitation 1(d), Petitioner merely states that "it would have been obvious based on Stoughton . . . in view of Mierzwinski, that voltage VC qualifies as a '**brightness control signal that is used to control a brightness of a visible display.**'" Pet. 32 (citing Ex. 1002 ¶ 221).

Dr. Baker's cited testimony simply states that "it would have been obvious in light of Mierzwinski to modify the Stoughton circuit such that it controls both contrast and brightness of kinescope 15," but likewise provides no further explanation. Ex. 1002 ¶ 221. Likewise, in the discussion of limitation 1(a), Petitioner states that "it would have been obvious in combination with Mierzwinski, that this viewer selected contrast level would also provide a '**user-selectable brightness setting,**'" without further explanation. Pet. 17 (citing Ex. 1002 ¶ 180).

Therefore, for at least the foregoing reasons, at this stage we question whether Petitioner has sufficiently shown "with particularity" why the claims are unpatentable over the combination of Stoughton, Mierzwinski, and Nagai. The parties may wish to further develop the record as to these issues during trial.

F. Discretionary Denial

Patent Owner argues that the Board should exercise discretion under 35 U.S.C. § 314(a) and deny institution. Prelim. Resp. 72–77. Petitioner disagrees that discretionary denial is appropriate. Pet. 5.

Patent Owner argues that the '117 patent has been unsuccessfully challenged in four prior *inter partes* review proceedings.¹⁷ Prelim. Resp. 72, 76. Patent Owner contends that even though Petitioner did not file any of the previous petitions, the factors set forth in *General Plastic Indus. Co. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017) (precedential Section II.B.4.i) support denial of institution. *Id.* at 72–76.

General Plastic involved multiple petitions serially filed by the same petitioner against the same patent. *General Plastic*, Paper 19 at 6–8. The *General Plastic* factors are as follows:

1. Whether the same petitioner previously filed a petition directed to the same claims of the same patent;
2. Whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it;
3. Whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary response to the first petition or received the Board's decision on whether to institute review in the first petition;
4. The length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition;
5. Whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent;

¹⁷ These four prior IPR proceedings are identified above in Section I.B.

6. The finite resources of the Board; and
7. The requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review.

Id. at 9–10. In *Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, -00063, -00084, Paper 11 (PTAB Apr. 2, 2019) (designated precedential May 7, 2019) (“*Valve*”), the Board extended application of *General Plastic* factors to the situation where multiple petitions for review of the same patent are filed by different petitioners. *Valve*, Paper 11 at 2 (“when different petitioners challenge the same patent, we consider any relationship between those petitioners when weighing the *General Plastic* factors.”).

Having reviewed the parties’ arguments and the evidence in the record, we determine that the first *General Plastic* factor does not favor exercising discretion to deny institution of *inter partes* review. This is the Petitioner’s first petition challenging the ’117 patent.¹⁸ Patent Owner does not argue that Petitioner has a significant relationship with the prior petitioners, and there is no evidence in the record of any relationship. *See* Prelim. Reply 71–77; *see Valve*, Paper 11 at 9–10 (stating that two petitioners who were co-defendants in district court litigation and were accused of infringing the patent-in-suit based on the same product had a “significant relationship”).

As for the remaining factors, we determine that these factors also do not favor discretionarily denying institution. Although Patent Owner is correct that the full record of the four prior IPR proceedings against the

¹⁸ We further note that Petitioner did not file the pending reexamination against the ’117 patent. Pet. 2; Paper 5, 3.

'117 patent was available when the Petition was filed (Prelim. Resp. 73 (factor 3)), there is no indication in the record that Petitioner specifically waited to file the Petition in a strategic move to gain any sort of advantage. That is, it does not appear that the Petition was filed with any consideration of the timing of the prior IPR proceedings because Petitioner did not file the Petition until nearly two years after the last proceedings concluded, and only after being sued for infringement of the '117 patent by Patent Owner. *See* Ex. 1032, 4 (complaint filed March 29, 2022); Pet. 2; Paper 5, 2–3. That Petitioner may have reviewed strategies undertaken by prior petitioners does not, in and of itself, constitute unfairness to Patent Owner or create a relationship with any of the prior petitioners. As a result, we are persuaded that there is an adequate explanation for the time elapsed between the filings of the prior petitions and the current Petition. *Cf. General Plastic*, Paper 19 at 18 (explaining that factors 2, 4, and 5 “allow[] us to assess and weigh whether a petitioner should have or could have raised the new challenges earlier”).

With regard to factor 6, Patent Owner argues that the Office is considering the patentability of the challenged claims in a pending reexamination. Prelim. Resp. 75–76. Accordingly, Patent Owner argues it is an inefficient use of Office resources to institute review, and, therefore, factor 6 weights in favor of exercising discretion to deny institution. *Id.* Patent Owner argues that the Central Reexamination Unit “has already expended Office resources reviewing the claims and preparing and issuing a first Office Action, EX 2024, and will consider the arguments made in the Petition during the reexamination because they have been submitted in an IDS. EX 2025.” *Id.* at 77. Patent Owner argues that *inter partes* review

should “be denied, and the more advanced and ongoing reexamination be allowed to proceed.” *Id.*

On the present record, we are not persuaded that a reexamination proceeding in its preliminary stages weighs in favor of exercising discretion to deny institution of *inter partes* review. Petitioner asserts that only six claims are challenged in the Petition (claims 1, 2, 7, 9, 15, 16), the same claims that are asserted against Petitioner in the related district court litigation. Pet. 5. In the reexamination, twelve claims are challenged (claims 1–7, 9, 15–18) by Microsoft. Ex. 2024, 1. With regard to the reexamination, one Non-Final Office Action issued on June 2, 2023, citing four references, including Whitted. Ex. 2024, 3. There are two obviousness rejections involving Whitted: (1) claims 15 and 16 as unpatentable over Narveson and Whitted; and (2) claims 15 and 16 over Whitted and Ottenstein. Ex. 2024, 19, 22. The third obviousness rejection, involving claims 1, 4–7, 15, 16, and 18, does not include Whitted. Ex. 2024, 11. That is, the reexamination proceeding does not include any of the alleged grounds of obviousness presented in the Petition. Therefore, at this stage, we do not discern that there are overlapping issues, and this factor does not favor exercising discretion to deny institution of trial.

For these reasons, we decline to exercise our discretion to deny institution.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and the Preliminary Response, we determine Petitioner has established a reasonable likelihood of prevailing on its assertion that at least one claim of the ’117 patent is unpatentable, and we institute an *inter partes*

review on all the challenged claims and on all grounds presented in the Petition. *See* 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim”).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314, *inter partes* review is instituted as to the challenged claims of the ’117 patent and on all grounds of unpatentability presented in the Petition; and

FURTHER ORDERED that *inter partes* review is commenced on the entry date of this Order, and 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.

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Patent 8,223,117 B2

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