

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Hisense USA Corporation
Petitioner

v.

Brightplus Ventures LLC
Patent Owner

Patent No. 7,872,705
Filing Date: July 29, 2007
Issue Date: January 18, 2011
Title: LED Backlight System for LCD Displays

Inter Partes Review No. IPR2023-01411

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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LIST OF EXHIBITS

EXHIBIT	DESCRIPTION
1001	U.S. Patent No. 7,872,705 (“the ’705 Patent”)
1002	Prosecution History of U.S. Patent No. 7,872,705
1003	Declaration of Morgan Pattison, Ph.D.
1004	Curriculum Vitae of Morgan Pattison, Ph.D.
1005	US 6,608,614 to Johnson (“Johnson”)
1006	US 2006/0220040 to Suzuki (“Suzuki”)
1007	US 8,128,272 to Fine (“Fine”)
1008	Counterclaim filed by Patent Owner in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774, Dkt. 9 (N.D. Ga. Sep. 16, 2022)
1009	Scheduling Order in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774, Dkt. 35 (N.D. Ga.)
1010	Judicial Caseload Profile for the Northern District of Georgia
1011	Cover Pleading to Patent Owner’s Infringement Contentions in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774 (N.D. Ga.)
1012	Cover Pleading to Patent Owner’s Supplemental Infringement Contentions in <i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , No. 1:22-cv-02774 (N.D. Ga.) served June 21, 2023
1013	Deposition Transcript of William Bohannon (Oct. 1, 2024)
1014	Declaration of P. Morgan Pattison, Ph.D. in Response to Patent Owner’s Contingent Motion to Amend
1015	US 6,650,822 to Zhou (“Zhou”)

I. Introduction

Each of the Challenged Claims of the '705 Patent is obvious over the prior art. The single independent claim recites little more than an LCD comprising a waveguide having multiple light entry regions for receiving light from multiple LED light sources, respectively—a concept well-known in the art years before the '705 Patent. Faced with this fact, Patent Owner's Response largely attempts to limit the Challenged Claims to only specific embodiments described in the '705 Patent. But that is, of course, improper. The proper focus is on the language of the claims, which plainly does not include the requirements Patent Owner newly suggests.

Moreover, Patent Owner's arguments in Response simply repeat the exact same arguments from its Preliminary Response—each of which the Board already found unavailing. Further, Patent Owner submits no new credible expert testimony in support of its Response. Rather, Patent Owner relies on the exact same expert declaration submitted with its Preliminary Response,¹ which largely just parrots the Preliminary Response (and thus Response)—and thus is entitled little to no weight.

For all these reasons, each of the Challenged Claims of the '705 Patent should be cancelled as obvious.

¹ The Declaration of William Bohannon (Ex. 2006) submitted in support of Patent Owner's Response is a copy of the Declaration of William Bohannon submitted as Exhibit 2001 with Patent Owner's Preliminary Response. Ex. 1013, at 6:9–8:14.

II. Claim Construction

The phrase “each LED of the first plurality of LEDs and second plurality of LEDs is adapted to output substantially the same wavelength” in claim 9 should not be construed according to Patent Owner’s proposed rewrite (Response at 4–5), which has no foundation in either the intrinsic or extrinsic record.

Patent Owner states that there is only a single disclosure in the ’705 Patent “that relates to claim 9,” and it states only that “[w]here multiple strips are utilized, each *strip* may be adapted to emit light of *substantially the same* wavelength as other *strips*.” Response at 5 (emphasis added) (citing ’705 Patent, 11:59–66). That disclosure fails to state or suggest that “*all the LEDs*” in each strip must be “adapted to output the *same wavelength*,” as Patent Owner proposes. Response at 4 (emphasis added). Quite the opposite, that disclosure—like claim 9—suggests, at most, that some LEDs output “*substantially* the same wavelength.” ’705 Patent, 11:59–66, claim 9. Patent Owner fails to present any basis, let alone a compelling one, to rewrite claim 9 to, *inter alia*, eliminate the word “substantially.” Indeed, Patent Owner fails to present any extrinsic evidence from Patent Owner’s expert in support of its impermissible rewrite. *See* Ex. 2006.

III. Ground 1: Claims 1, 2, 5, 6, 9, 11, 13, 14, 16, 17, 22, 28, 29, and 31–34 Are Obvious Over Johnson

A. Johnson Discloses “A First Light-Emitting Source Comprising a First Plurality of LEDs Arranged in a First Strip ...” [Claim 1C]

Patent Owner does not dispute that Johnson discloses a “plurality of LEDs 18” in “LED array 16” positioned to emit light into the “waveguide 20” of Johnson’s LCD system at a first light entry region (“first major surface 22”). Ex. 1005, 2:29–3:33, Figs. 1–2; *see* Response at 10–11. Rather, and just as in its Preliminary Response, Patent Owner argues only that the “LED array 16” of Johnson is not a “single strip” of LEDs “as disclosed by the ’705 Patent.” Response at 10–11.

As noted by the Board (Paper 7 at 14–15), Patent Owner’s argument ignores the teachings of the ’705 Patent and also views Johnson too narrowly. The ’705 Patent states that “multiple strips may be connected to one another in any suitable orientation, such as ... in a side-to-side orientation, in order to yield a single composite light source to emit light into the waveguide element.” ’705 Patent, 11:59–63; *see* Paper 7 at 14. And Figure 4 of the ’705 Patent (reproduced below) illustrates such a composite light source comprising multiple “strips” of LEDs (35A–35I). ’705 Patent, 4:11–17, 13:10–16.

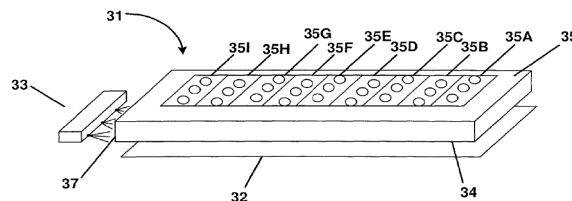


FIG. 4

“LED array 16” of Johnson is likewise such a composite light source, consisting of a plurality of strips (*e.g.*, rows) of LEDs 18. Petition at 17–18 (highlighting in yellow a first “strip”). Indeed, Petitioner’s expert, Dr. Pattison, testified that “a person of ordinary skill in the art would understand that the LEDs 18 ... are arranged in a strip.” Ex. 1003, ¶51; *see* Paper 7 at 14. And as illustrated in Figure 1 of Johnson (reproduced below), each strip of LEDs 18 is delineated from one another by a “light-scattering strip 26.” Ex. 1005, 3:16–14; Fig. 1.

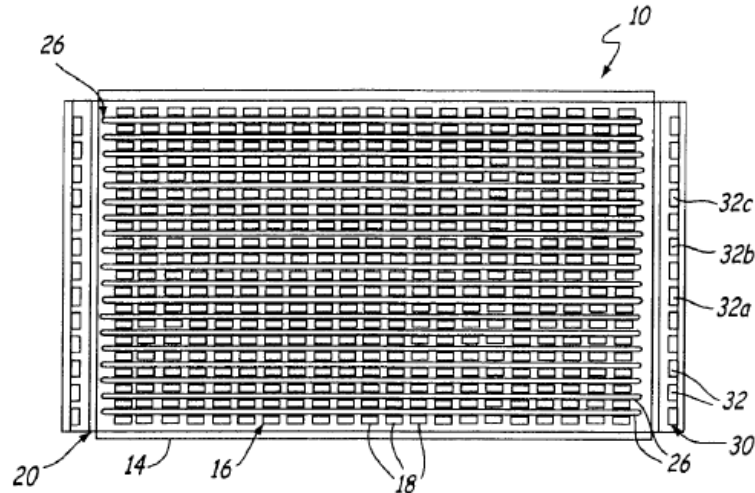


Fig. 1

The cursory opinion of Patent Owner’s expert, William Bohannon, does not demonstrate otherwise. Mr. Bohannon suggests, only in conclusory fashion, that a POSITA would not “interpret” the plurality of LEDs 18 in Johnson’s LED array 16 as being arranged in strips. Ex. 2006, ¶56. Notably, however, Mr. Bohannon fails to acknowledge, let alone account for, the ’705 Patent’s express disclosure that the “strips” of the purported invention “may be connected to one another in any suitable

orientation, such as ... in a side-to-side orientation, in order to yield a single composite light source to emit light into the waveguide element”—despite the Board’s prior findings on this point. ’705 Patent, 11:59–63; *see* Paper 7 at 14. Mr. Bohannon’s curt conclusion thus should not be entitled any weight. *See LG Elecs. Inc. v. Jawbone Innovations, LLC*, IPR2023-01111, Paper 10, at 15 (P.T.A.B. Jan. 9, 2024) (finding Petitioner’s expert’s conclusory assertion “unpersuasive”).

B. Johnson Discloses “A Common Control Circuit in Electrical Communication With At Least One of the First Plurality of LEDs and the Second Plurality of LEDs” [Claim 1E]

Patent Owner does not dispute that Johnson discloses a “control system 40” in electrical communication with “LEDs 18” in first “LED array 16” and other “LEDs 32” in second “LED array 30.” Ex. 1005, 3:43–47, 3:66–4:6, Fig. 3; *see* Ex. 1003, ¶¶56–58. Rather, and just as in its Preliminary Response, Patent Owner argues only that the “control system 40” of Johnson is “not equivalent to” the “common control circuit” “as taught in the ’705 Patent” because Johnson’s control system “only adjusts the power supplied to the LEDs,” whereas the claimed “common control circuit” allegedly must vary “the power supplied to the LEDs *as well as* the intensity and wavelength of the emitted light.” Response at 13 (emphasis added).

Patent Owner’s argument fails as it is fundamentally premised on adding new requirements to the claim language. As noted by the Board, the language of the claim does not require that the “common control circuit” vary “the intensity and

wavelength of the emitted light.” Paper 7 at 16 (citing *In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (stating limitations not appearing in the claims cannot be relied on for patentability); *see also Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346–47 (Fed. Cir. 2015) (cautioning “against limiting the claimed invention to preferred embodiments or specific examples in the specification”)).

Moreover, the portion of the specification of the ’705 Patent cited by Patent Owner undercuts its flawed contention. The patent states that a “common control circuit” regulates, “*for example*, power to the LEDs, intensity of the emitted light, wavelength of the emitted light, and/*or* other parameters.” ’705 Patent, 12:6–15 (emphasis added); *see* Response at 13. The exemplary and alternative nature of this disclosure demonstrates that the “common control circuit” recited in claim 1 need not necessarily vary “the intensity and wavelength of the emitted light.”

The cursory opinion of Patent Owner’s expert, Mr. Bohannon, which merely repeats Patent Owner’s incorrect assertion verbatim, also fails. Ex. 2006, ¶58; *e.g.*, *MarkForged Inc. v. Continuous Composites, Inc.*, IPR2022-01431, Paper 7, at 14 (P.T.A.B. Jan. 18, 2023) (an expert declaration that “merely parrots the [Response]” is entitled to “little to no weight”). Moreover, on cross-examination, Mr. Bohannon conceded the claim language does not require that the “common control circuit” vary the intensity and/or wavelength of the emitted light. Ex. 1013, at 80:2–8.

C. Johnson Discloses “Wherein Each LED of the First Plurality of LEDs and Second Plurality of LEDs is Adapted to Output Substantially the Same Wavelength” [Claim 9]

Johnson teaches that all LEDs in an LED array may “all hav[e] the same chromaticity output.” Ex. 1005, 6:15–17; *see also* Ex. 1003, ¶65. And in one embodiment, Johnson discloses that “LEDs 18” in a first “LED array 16” provide light with a “first chromaticity” and that “LEDs 32” in a second “LED array 30” may “emit light with a chromaticity that is different from the chromaticity of light emitted by first LED array 16.” Ex. 1005, 2:59–62, 3:18–28.

Patent Owner argues that the disclosure in Johnson regarding “different” chromaticity between two exemplary LED arrays demonstrates that Johnson fails to disclose the additional limitation of claim 9 (“wherein each LED of the first plurality of LEDs and second plurality of LEDs is adapted to output substantially the same wavelength”). Response at 14–16. Patent Owner, however, overlooks other disclosures in Johnson, which disclose (or, at a minimum, render obvious) this limitation—as already noted by the Board. *See* Paper 7 at 18.

Johnson expressly discloses that its invention “may be varied in many ways.” Ex. 1005, 6:9–10. For example, Johnson discloses that the second “LED array 30” “may be disposed adjacent more than one edge surface of waveguide 20.” *Id.* at 6:9–12. As illustrated in Figures 1 and 2 of Johnson (reproduced below), Johnson discloses that “a part of second array 30 [*i.e.*, a first strip of LEDs 32] is adjacent

edge surface 28a, and another part of the second array [*i.e.*, a second strip of LEDs 32] is adjacent edge surface 28b.” *Id.* at 6:13–15. In this example, Johnson also expressly teaches that it may “be possible that second LED array 30 is comprised of LEDs all having the same chromaticity output.” *Id.* at 6:15–17.

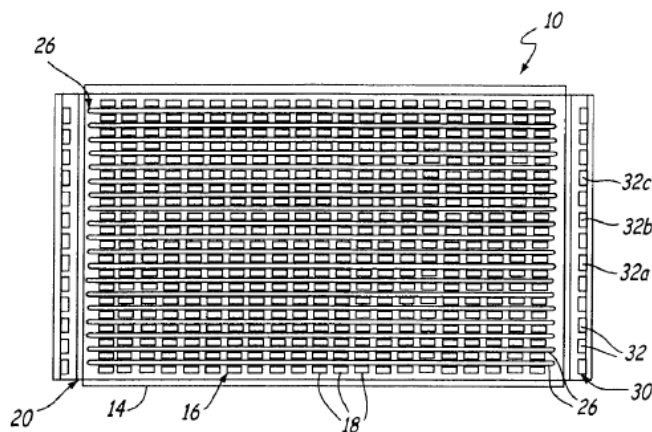


Fig. 1

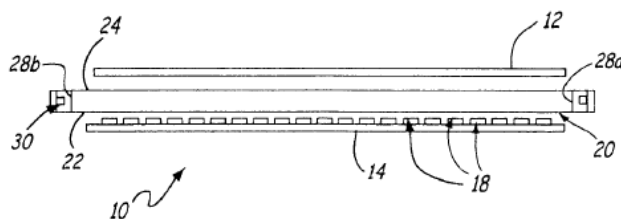


Fig. 2

Thus, and as found by the Board (*see* Paper 7 at 18), in this exemplary embodiment of Johnson, a first strip of LEDs 32 of LED array 30 are positioned to emit light into “edge surface 28a” of waveguide 20, while a second strip of LEDs 32 of LED array 30—which “hav[e] the same chromaticity output” as the LEDs 32 in the first strip—are positioned to emit light into “edge surface 28b” of waveguide 20.

See Ex. 1005, 6:9–17, Figs. 1–2; *see* Ex. 1003, ¶67. As such, Johnson discloses (or, at a minimum, renders obvious) claim 9 of the ’705 Patent.

Patent Owner’s argument that these LEDs 32 cannot satisfy the “first plurality of LEDs” and “second plurality of LEDs” language of the claim because they are described as a part of “LED array 30” (Response at 16) also ignores Johnson’s overall disclosures. Johnson describes and illustrates the LEDs as separate arrangements (*i.e.*, strips) of LEDs positioned to interact with different surfaces of waveguide 20 (“edge surface 28a” and “edge surface 28b,” respectively)—as already noted by the Board. *See* Ex. 1005, 6:19–17; *see also* Paper 7 at 18.

D. Dependent Claims 2, 5, 6, 9, 11, 13, 14, 16, 17, 22, 28, 29, and 31–34 Are Obvious Over Johnson

Patent Owner does not dispute that the additional limitations in dependent claims 2, 5, 6, 9, 11, 13, 14, 16, 17, 22, 28, 29, and 31–34 are obvious over Johnson. *See* Response at 17. Rather, Patent Owner argues, at most, only that these dependent claims are not rendered obvious due to Johnson’s failure to disclose limitations in independent claim 1, such as “a common control circuit.” *Id.* Patent Owner’s arguments with respect to claim 1 fail for the reasons discussed above.

IV. Ground 3: Claims 32 and 33 Are Obvious Over Johnson in view of Fine

Patent Owner does not dispute that the additional limitations in dependent claims 32 and 33 are obvious over Johnson in view of Fine. *See* Response at 25. Rather, Patent Owner argues, at most, only that these dependent claims are not

rendered obvious due to Johnson’s failure to disclose limitations in independent claim 1. *Id.* Patent Owner’s arguments with respect to independent claim 1 fail for the reasons discussed above.

V. Ground 2: Claims 1, 2, 5, 11, 13, 14, 16, 17, 32, and 34 Are Obvious Over Suzuki

A. Suzuki Discloses “A Common Control Circuit in Electrical Communication With At Least One of the First Plurality of LEDs and the Second Plurality of LEDs” [Claim 1E]

Patent Owner does not dispute that Suzuki discloses a “LED driving circuit” in electrical communication with at least LEDs 7R and 8R of Suzuki. *E.g.*, Ex. 1006, [0044]; Ex. 1003, ¶¶59–60; *see* Response at 18–21. And Patent Owner does not dispute that LEDs 7R and 8R are contained within different “discrete light sources,” which Suzuki refers to as “LED sets” 10 (or “RGBG” sets 10), that, respectively, emit light into different regions of light entry surfaces of the light guide 11 (the claimed “waveguide element”) of Suzuki. *E.g.*, Ex. 1006, [0027], [0034], Fig. 4; *see* Response at 18–21. Additionally, Suzuki discloses that the “LED driving circuit” may “supply[] the end light source LEDs 8R with a current smaller than a current supplied to the LEDs 7R.” Ex. 1006, [0044]; *see* Ex. 1003, ¶¶59–60.

Patent Owner nonetheless argues that the “LED driving circuit” of Suzuki is “nothing similar to the common control circuit of the ’705 Patent” because the LEDs in Suzuki are supplied a “predetermined amount” of current and “Suzuki did not intend to vary the intensity of the emission of light from the light sources.” Response

at 19–21. But, as previously noted by the Board (Paper 7 at 20), nothing in the claim language requires that the “common control circuit” “vary the intensity of the emission of light from the light sources” or vary supplied current by a non-predetermined amount. The “proper focus is on the language of the claim” (Paper 7 at 20 (citing *Self*, 671 F.2d at 1348)), and the claim language requires only “a common control circuit in electrical communication with at least one of the first plurality of LEDs and the second plurality of LEDs.” Patent Owner’s expert, Mr. Bohannon, concedes as much. *See* Ex. 1013, at 80:2–8. And this is undisputedly disclosed by Suzuki. Ex. 1006, [0044]; Ex. 1003, ¶¶59–60; *see* Response at 18–21.

Moreover, and in any event, Patent Owner overstates the description of the “common control circuit” in the specification of the ’705 Patent. The patent states only that a “common control circuit” regulates, “*for example*, power to the LEDs, intensity of the emitted light, wavelength of the emitted light, and/or other parameters.” ’705 Patent, 12:6–15 (emphasis added); *see* Response at 13. The exemplary and alternative nature of this disclosure demonstrates that the “common control circuit” recited in claim 1 need not necessarily “vary the intensity of the emission of light from the light sources” nor vary supplied current by a non-predetermined amount. *See, e.g.*, Ex. 1013, at 80:2–8. *Cf.* Response at 20.

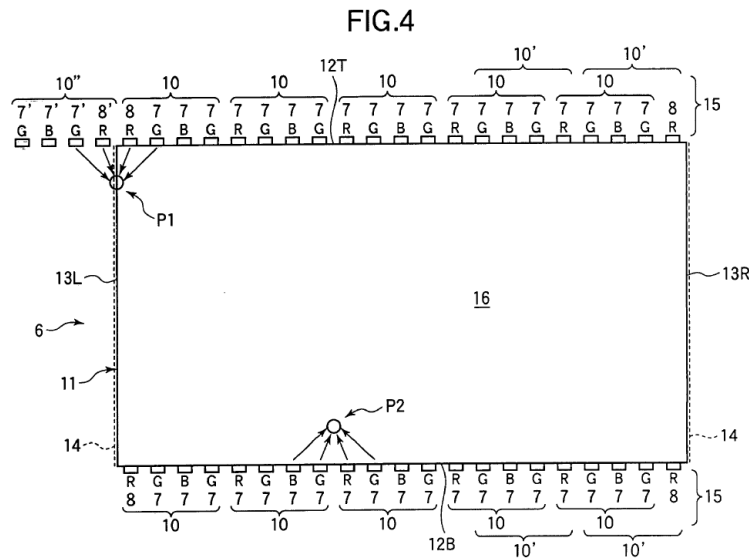
B. Suzuki Discloses “Wherein Any of the First Light Emitting Source and the Second Light Emitting Source Comprises a Plurality of LEDs Adapted to Emit Any of White Light and Single Color Light” [Claim 5]

Each “7R” LED in Suzuki’s “LED sets” 10 (or “RGBG” sets) emits “red” light. *E.g.*, Ex. 1006, [0034]. Each “7B” LED emits “blue” light. *E.g.*, Ex. 1006, [0034]. And each of the two “7G” LEDs in an “RGBG” set emits “green” light. Ex. 1006, [0034]. As such, each of the “first light emitting source” and “second light emitting source” of Suzuki (each made up of a “RGBG” set) comprises a plurality of LEDs (*e.g.*, two “7G” LEDs) adapted to emit “single color light.” Ex. 1006, [0034]; *see* Ex. 1003, ¶63; *see also* Paper 7 at 20–21.

Patent Owner’s argument that this limitation is not disclosed by Johnson because the LEDs in a “RGBG” set are “mixed” misses the mark (inasmuch as it appears to be based on a misread of the claim language). Response at 22; *see* Paper 7 at 21 (finding same argument by Patent Owner in its Preliminary Response “unavailing”). *Compare* Response at 22 *with* Preliminary Response at 19–20 (both citing Ex. 2006, ¶67). The claim requires that “a plurality of LEDs” in a “light emitting source” (*i.e.*, a “RGBG” set 10 of Suzuki) be “adapted to emit *any of* white light and single color light”—which means adapted to emit either “white light” *or* a “single color light.” The two “7G” LEDs in an “RGBG” set 10 of Suzuki are adapted to emit “green” light and thus satisfy this limitation, regardless of how their light may be ultimately “mixed” in Suzuki’s system. Ex. 1006, [0034].

C. Suzuki Discloses “Wherein the Common Control Circuit Is in Electrical Communication With Each of the First Plurality of LEDs and the Second Plurality of LEDs” [Claim 14]

As discussed with respect to claim limitation 1E above, Suzuki discloses a “LED driving circuit” in electrical communication with at least LEDs 7R and 8R of Suzuki. Ex. 1006, [0044]; *see* Ex. 1003, ¶¶59–60. And, as illustrated below in Figure 4 of Suzuki (reproduced below), Suzuki discloses that LEDs 7R and 8R are contained within different “discrete light sources,” which Suzuki refers to as “LED sets” 10 (or “RGBG” sets 10), that, respectively, emit light into different regions of light entry surfaces of the light guide 11 (the claimed “waveguide element”) of Suzuki. *E.g.*, Ex. 1006, [0027], [0034], Fig. 4.



Petitioner’s expert, Dr. Pattison, testified that a POSITA would consider each “RGBG” set 10 of LEDs as a light emitting source comprising a plurality of LEDs. Ex. 1003, ¶81. The Board already found Dr. Pattison’s testimony “persuasive” on

this point. Paper 7 at 22. And Patent Owner does not offer any argument or expert testimony to the contrary with respect to claim 14. *See* Response at 23. As such, Suzuki discloses a “LED driving circuit” in electrical communication with “each of the first plurality of LEDs and the second plurality of LEDs” (*i.e.*, each of the “RGBG” set 10 containing LED 8R and the “RGBG” set 10 containing LED 7R, respectively), as recited in claim 14.

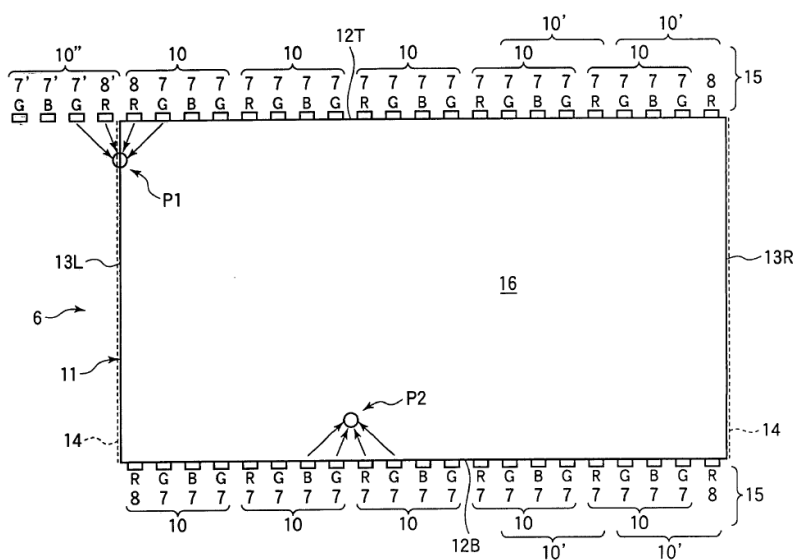
D. Suzuki Discloses “A Common Control Circuit in Electrical Communications With Each LED of At Least One of the First Plurality of LEDs and the Second Plurality of LEDs” [Claim 11]

Suzuki’s “LED driving circuit”—as its name suggests—is in electrical communication with “each LED” in such a “LED set” 10 (or “RGBG” set 10), “at least to turn the LED on/off,” so that each LED in the set can be made to emit light as appropriate to achieve the intended result of Suzuki: a balanced mixing of light. Ex. 1003, ¶60; *see* Ex. 1006, [0044]–[0045]; *see also* Paper 7 at 21–22. Indeed, Suzuki expressly describes its driver circuit as “*general* LED driving circuit.” Ex. 1006, [0044] (emphasis added). A POSITA would have understood, or found it obvious in view of their knowledge, that such a “*general* LED driving circuit” would be in communication with “each LED” in Suzuki’s “RGBG” sets to supply driving current to each LED, as opposed to leaving some LEDs isolated. Ex. 1014, ¶46; *see* Ex. 1003, ¶60.

E. Suzuki Discloses “A Third Light Emitting Source Positioned to Emit Light into the At Least One Waveguide Element” [Claim 34]

As illustrated in Figure 4 of Suzuki (reproduced below), Suzuki discloses “discrete light sources,” which Suzuki refers to as “LED sets” 10 (or “RGBG” sets), that, respectively, emit light into different regions of light entry surfaces of the light guide 11 (the claimed “waveguide element”) of Suzuki. *E.g.*, Ex. 1006, [0027], [0034]. And Petitioner’s expert, Dr. Pattison, testified that a POSITA would consider each “RGBG” set 10 of LEDs as a light emitting source. Ex. 1003, ¶81. Accordingly, and as depicted below in Figure 4 of Suzuki, Suzuki discloses at least three light-emitting sources (*i.e.*, at least three “RGBG” sets 10) positioned to emit light into respective regions of the light entry surfaces of light guide 11 (the claimed “waveguide element”) of Suzuki—as previously found by the Board. Paper 7 at 22.

FIG.4



Patent Owner's and its expert's statements that they simply "disagree" with Petitioner's argument (and thereby the Board's findings) do not demonstrate otherwise. Response at 24; Ex. 2006 at 24; *see MarkForged*, IPR2022-01431, Paper 7, at 14 (an expert declaration that "merely parrots the [Response]" is entitled to "little to no weight"). Patent Owner's related modification of Figure 4 of Suzuki, which fundamentally distorts Suzuki's disclosures, fares no better. Response at 24. Indeed, Patent Owner's misleading strawman argument relies on addition of new light sources to "reflective surface" 13R of Figure 4 of Suzuki (as opposed to "light entrance surfaces 12T and 12B"). Response at 24. *Cf.* Ex. 1006, [0044], Fig. 4.

Patent Owner's argument is, at best, impermissibly premised on specific structures from select embodiments of the '705 Patent—*i.e.*, Figures 2 and 3—rather than the requirements of the claim language, as the Board previously noted. *See* Response at 24 (Patent Owner arguing the claimed "third light emitting source" is limited to, *e.g.*, reference numeral 15C in Figure 2 of the '705 Patent); *see* Paper 7 at 22. But those figures "do[] not limit the claim language." *Electro Sci. Indus., Inc. v. Dynamic Details, Inc.*, 307 F.3d 1343, 1349 (Fed. Cir. 2002) ; *see Laitram Corp. v. NEC Corp.*, 163 F.3d 1342, 1347 (Fed. Cir. 1998) ("[A] court may not import limitations from the written description into the claims.").

F. Dependent Claims 2, 5, 11, 13, 14, 16, 17, 32, and 34 Are Obvious Over Suzuki in view of the Knowledge of a POSITA

Patent Owner does not dispute that the additional limitations in dependent claims 2, 5, 11, 13, 14, 16, 17, 32, and 34 are obvious over Suzuki. *See* Response at 25. Rather, Patent Owner argues, at most, only that these dependent claims are not rendered obvious due to Suzuki's failure to disclose limitations in claim 1. *Id.* Patent Owner's arguments with respect to claim 1 fail for the reasons discussed above.

VI. Ground 4: Claims 6, 22, 28, 29, 32, and 34 Are Obvious Over Suzuki in view of Fine

A. Motivation to Combine Suzuki and Fine

As set forth in the Petition—and found by the Board—a POSITA would have been motivated to combine Suzuki and Fine. Petition at 60–62; Paper 7 at 24–26.

As already found by the Board (Paper 7 at 26), both Suzuki and Fine expressly relate to backlighting for LCDs, similar to the '705 Patent. *See, e.g.,* Ex. 1006, [0004], [0024], [0025], [0030]; Ex. 1007, 3:53–4:8; 5:37–40; Ex. 1003, ¶92 *see also* '705 Patent, 1:6–2:58. Patent Owner's accusation (repeated from its Preliminary Response) that Petitioner has “misrepresent[ed]” Suzuki is this regard—because Suzuki is purportedly limited to only “edge lighting which is generally seen as a separate method for illuminating an LCD panel”—is incorrect. Response at 25–26. Suzuki expressly and repeatedly describes a “*backlight* unit [for an LCD] as a surface illuminator according to a first embodiment of the invention.” Ex. 1006,

[0018], [0024] (emphasis added); *see id.*, ; [0004]–[0007], [0024]–[0042], claim 18. And the '705 Patent concedes that both “direct backlighting” and “backlighting by edge illumination” are “recognized as backlighting.” '705 Patent, 1:54–60.

More pointedly, Suzuki is directed to methods for providing “high display quality” in an LCD, including “high uniformity in color and luminance” in an “LED backlight unit.” Ex. 1006, [0017], [0042]. In relation, Fine (filed subsequently to Suzuki’s foreign priority date) is directed to, *inter alia*, improvements to “known LED based backlight devices,” including so as to deliver “superior properties” with respect to “brightness, intensity and/or color profiles.” Ex. 1007, 4:50–59, 5:2–10. And Fine expressly states that its teachings “can be incorporated in a passive display device,” such as a “liquid crystal display (LCD)” that employs a “backlight assembly.” Ex. 1007, 5:22–23, 3:37–52. Indeed, Fine states that a goal of its invention “to provide substantially uniform illumination,” which Fine notes is “particularly useful when ... incorporated in a backlight unit of a passive display device.” Ex. 1007, 16:31–38. A POSITA would thus have been motivated to use the improvements described within Fine to improve the “uniformity in color and luminance” sought and described in Suzuki. Ex. 1006, [0042]; *see also* Ex. 1003, ¶95. And, as Dr. Pattison testified, a POSITA would recognize that the combination is simply the use of a known solution described in Fine to modify a similar system in Suzuki, and for this reason would expect a successful combination. Ex. 1003, ¶95.

Patent Owner’s argument that certain aspects of Fine’s teachings cannot readily be physically implemented in Suzuki’s lighting system misses the mark. *See* Response at 26–28. In previously rejecting this exact same argument from Patent Owner (Preliminary Response at 24–26), the Board correctly held that Patent Owner’s argument “is an improper focus for determining whether the claim would have been rendered obvious by the prior art as a whole.” Paper 7 at 25 (citing *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (*en banc*) (“Etter’s assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.”)); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”).

Moreover, Patent Owner’s speculative argument regarding the physical implementation of Fine’s teachings in Suzuki is supported only by statements from Patent Owner’s expert, Mr. Bohannon. Response at 28 (citing Ex. 2006, ¶76). Mr. Bohannon, however, just repeats Patent Owner’s argument verbatim—with no other evidence or support—and its thus entitled little to no weight. *MarkForged*, IPR2022-01431, Paper 7, at 14 (an expert declaration that “merely parrots the [Response]” is entitled to “little to no weight”). *Compare* Response at 28 *with* Ex. 2006, ¶76.

B. The Suzuki-Fine Combination Discloses “Wherein Any of the First Light Emitting Source and the Second Light Emitting Source Comprises a Plurality of Direct LEDs” [Claim 6]

As discussed in the Petition—and undisputed by Patent Owner—a POSITA would understand that the “direct LEDs” recited in claim 6 refer to light sources positioned directly behind the center of pixels in the claimed “LCD panel.” See Petition at 23–24. Fine discloses such “direct LCDs.” Fine describes an apparatus 10 that includes “light emitting sources 12” that propagate light through a “waveguide material 14.” Ex. 1007, 11:50-55. Fine teaches that “[l]ight source 12 can be a LED.” Ex. 1007, 13:24. Fine also teaches that such LEDs 12 can either be “embedded in the bulk of waveguide material 14” or positioned “near [bottom] surface 18” of the waveguide material 14. Ex. 1007, 13:66–67; *see id.*, 12:16–17. Figure 2b of Fine (reproduced below) illustrates an embodiment according to the latter option, wherein the LED 12 emits light toward and through “top surface 16” of the waveguide material 14. Ex. 1007, 11:50–55, 12:16–17, 13:66–14:9, Fig. 2b.

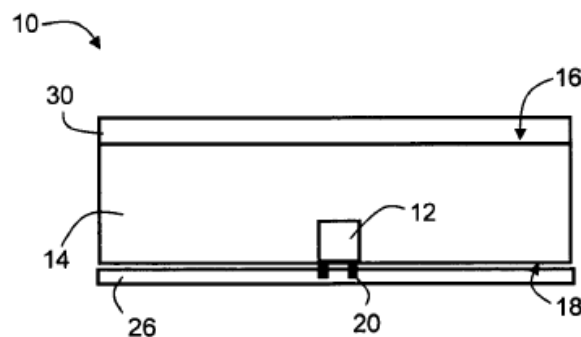


Fig. 2b

Petitioner’s expert, Dr. Pattison, testified that a POSITA would understand that Fine’s LEDs 12 are “direct LEDs,” as claimed by claim 6 of the ’705 Patent in such an embodiment of Fine. Ex. 1003, ¶70. Dr. Pattison further testified that modifying Suzuki’s system to include such direct LEDs 12 of Fine would allow for more light to be emitted into Suzuki’s lightguide 11 and thereby Suzuki’s LCD panel (Ex. 1003, ¶70)—consistent with Fine’s goal of providing “superior properties” with respect to “brightness, intensity and/or color profiles.” Ex. 1007, 4:50–59, 5:2–10. Indeed, the obvious nature of this modification is demonstrated by Johnson, which includes the combination of both edge lighting (*e.g.*, LED array 30 emitting light into “edge surface 28a” and “edge surface 28b” of “waveguide 20”), like that taught in Suzuki, and direct lighting (*e.g.*, LED array 16 emitting light into “first major surface 22” of “waveguide 20”), like that taught in Fine. *See, e.g.*, Ex. 1005, 2:49–3:33, 6:9–15, Figs. 1–2; *see also* Petition at 15–19.

Patent Owner’s argument that a POSITA would not have been motivated to add Fine’s direct LEDs 12 to Suzuki’s lighting system because “Suzuki’s device uses edge lighting” and Fine’s direct LEDs 12 would thus be “redundant and create unnecessary expense” (Response at 28–29) falls flat. As the Board aptly noted when previously rejecting this argument by Patent Owner, “[t]he proper focus is whether the combination provides a suitable option”—not whether it is cost-effective. Paper 7 at 26–27 (citing *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed.

Cir. 2023)). And, as discussed above, the record evidence (*e.g.*, Johnson) demonstrates that, contrary to Patent Owner’s speculation, the combination of both edge lighting and direct lighting in an LCD backlight is, in fact, a suitable option. *See, e.g.*, Ex. 1005, 2:49–3:33, 6:9–15, Figs. 1–2; *see also* Petition at 15–19.

C. The Suzuki-Fine Combination Discloses “Wherein Any of the First Light Emitting Source and the Second Light Emitting Source is Optically Coupled to a Back Portion of the At Least One Waveguide Element” [Claim 22]

Fine expressly discloses that, when a “light emitting diode” (*i.e.*, LED) is used as light source 12 in Fine’s apparatus 10, it is advantageous to achieve “optical coupling between the light source and the waveguide material.” Ex. 1007, 13:7–9; *see id.*, 13:24 (“Light source 12 can be a LED ...”). And given that Fine also teaches that such an LED can be positioned “near [bottom] surface 18” of the waveguide material 14 (Ex. 1007, 13:66–67, Fig. 2b; *see id.*, 12:16–17), it would have been obvious to a POSITA to optically couple Fine’s LEDs 12 to the back portion of waveguide 14 (*i.e.*, bottom surface 18). Ex. 1003, ¶¶74–76.

Patent Owner’s argument that Fine—despite expressly referring to “*optical coupling* between the light source and the waveguide material” (Ex. 1007, 13:7–9 (emphasis added))—“does not disclose light emitting sources optically coupled to the back portion of a waveguide within the meaning of the ’705 patent” is misguided. Response at 30–31. Patent Owner argues that all the LEDs in Fine are “embedded” in the waveguide material and “the ’705 Patent does not include ‘embedded’ within

the definition of ‘optically coupled.’” Response at 31. But, in fact, the ’705 Patent states that “[o]ptical coupling between a light source and waveguide element may include any of: ... embedding a light source in a waveguide element.” ’705 Patent, 10:14–18. As such, and contrary to Patent Owner’s suggestion, there is no “definition” of “optically coupled” in the ’705 Patent that clearly and unmistakably excludes “embedded” from its scope. Response at 31. Rather, the opposite is true.

Patent Owner’s additional argument that this limitation is not rendered obvious because “a POSITA would not be motivated to move the edge lighting LEDs [of Suzuki] to a back portion of the light guide” also misses the mark. Response at 31; *see* Paper 7 at 28 (finding same argument by Patent Owner in its Preliminary Response “unavailing”). Patent Owner’s argument ignores that a POSITA would have been motivated to add Fine’s direct LEDs 12 to the bottom surface of Suzuki’s lightguide 11 *in addition to* Suzuki’s edge light sources 15 (not in replacement thereto) and that such combination would be suitable and successful, as discussed herein. *See supra* Section VI.B.

D. The Suzuki-Fine Combination Discloses “Wherein Any of the First Light Emitting Source and the Second Light Emitting Source is ... Positioned to Emit Light Into a Back Side of the At Least One Waveguide Element” [Claim 28]

As discussed, Fine teaches that LED 12 can be positioned “near [bottom] surface 18” of the waveguide material 14. Ex. 1007, 13:66–67, 12:16–17. And as

illustrated in Figure 2b of Fine (reproduced below), in such an embodiment, the LED 12 emits light into a back side of the waveguide material 14 relative to the LED 12:

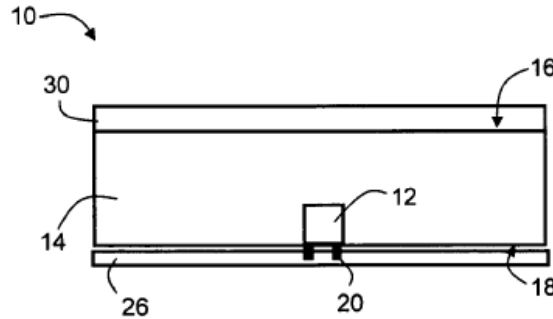


Fig. 2b

Ex. 1007, Fig. 2b; *see* Paper 7 at 28. Patent Owner’s argument otherwise is premised on its contention that, to meet this claim limitation, the LED 12 must be “provided outside of the back surface of the light guide.” Response at 32. But the language of the limitation does not include any such “outside of the back surface” requirement. *See In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998) (stating “the name of the game is the claim”). Patent Owner’s argument thus fails.

E. Additional Dependent Claims 29, 32, and 34 Are Obvious Over the Suzuki-Fine Combination in view of the Knowledge of a POSITA

Patent Owner does not dispute that the additional limitations in dependent claims 29, 32, and 34 are obvious over Suzuki in view of Fine. *See* Response at 33. Rather, Patent Owner argues, at most, only that these dependent claims are not rendered obvious due to Suzuki’s failure to disclose limitations in claim 1. *Id.* Patent Owner’s arguments with respect to claim 1 fail for the reasons discussed above.

VII. Conclusion

The Challenged Claims of the '705 Patent should be cancelled as obvious.

Respectfully submitted,

By: /s/ *Matias Ferrario*

Matias Ferrario

Registration No. 51,082

CERTIFICATE OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24(d) that the foregoing **PETITIONER’S REPLY TO PATENT OWNER’S RESPONSE** excluding any table of contents, mandatory notices, certificates of service or word count, or appendix of exhibits or claim listing, contains 5,547 words according to the word-processing program used to prepare this paper (Microsoft Word). The foregoing word count complies with the 5,600 word type-volume limit specified by 37 C.F.R. § 42.24(c)(1).

Dated: October 17, 2024

By: /s/ Matias Ferrario
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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the date below a copy of this
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