

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TCL Electronics Holdings Ltd. (f/k/a TCL Multimedia Technology Holdings, Ltd.
TCL Industries Holdings Co., Ltd.
TCL Industries Holdings (H.K.) Limited
TTE Technology, Inc. (d/b/a TCL North America)
TTE Corporation
TCL Moka International Limited
TCL Moka Manufacturing S.A. de C.V.
TCL King Electrical Appliances (Huizhou) Co. Ltd.
Manufacturas Avanzadas S.A. de C.V.
TCL Smart Device (Vietnam) Co., Ltd
Shenzhen TCL New Technology Co., Ltd.
TCL Optoelectronics Technology (Huizhou) Co., Ltd.
TCL Overseas Marketing Ltd.
TCL Technology Group Corporation (f/k/a TCL Corp.),

Petitioners

v.

LG Electronics Inc.
Patent Owner

Case No. IPR2023-00239

**PETITION FOR INTER PARTES REVIEW OF
U.S. PATENT NO. 9,080,740
CHALLENGING CLAIMS 1-31**

TABLE OF CONTENTS

Table of Authorities	vii
Petitioners' Exhibit List	viii
I. Introduction.....	1
II. Mandatory Notices.....	1
A. Real Party-in-Interest	1
B. Related Matters.....	2
C. Lead and Back-Up Counsel.....	2
D. Service Information	2
III. Payment of Fees.....	3
IV. Requirements for <i>Inter Partes</i> Review under 37 C.F.R. § 42.104	3
A. Grounds for Standing	3
B. Claims for Which Review Is Requested	3
C. Statutory Grounds of Challenge.....	4
D. Proposed Claim Constructions	4
E. How the Construed Claims Are Unpatentable	4
F. Supporting Evidence	5
V. The '740 Patent.....	5
A. Summary of the '740 Patent.....	5
B. Level of Ordinary Skill in the Art.....	7
VI. The Prior Art.....	8
A. Yokota	9
B. Matsumoto.....	14
C. Ha et al.....	21
D. Kim et al.	23
VII. Detailed Grounds of Unpatentability.....	26

A.	Ground 1: Claims 1-3, 7-29, and 31 Are Obvious Over Yokota in View of Matsumoto.....	29
1.	Claims 1, 2, 22, and 31	29
a.	Limitation 1Pr: Preambles – “A planar lighting device comprising/A display device comprising: a lighting device including/A direct-type lighting device comprising”	30
b.	Limitation 1b: “lower cover/circuit substrate/circuit substrate disposed on the lower cover/a plurality of circuit substrates disposed on the lower cover and spaced apart by a predetermined distance”	30
c.	Limitation 1c: “plurality of light sources disposed on the circuit substrate/plurality of light sources disposed on the circuit substrate such that the light sources are spaced apart by a predetermined distance”	32
d.	Limitation 1d: “a reflection layer disposed on the circuit substrate”	33
e.	Limitation 1e: “a first surface having a plurality of openings where the respective light sources are located”	34
f.	Limitation 1f: “a second surface connected to the first surface, wherein the second surface has an inclination with respect to the first surface”	34
g.	Limitation 1g: “a hole pattern having a plurality of through holes provided in the second surface of the reflection layer, wherein at least two through holes of the hole pattern are different in size”	36
h.	Limitation 1h: “an optical sheet disposed on the light sources”	48
i.	Limitation 1i: “a spacer disposed between the lower cover and the optical sheet; and a liquid crystal panel on the lighting device/a spacer disposed between the lower cover and the optical sheet”	49

j.	Limitation 1j: “a liquid crystal panel on the lighting device”	51
2.	Claim 3: “The planar lighting device of claim 2, wherein the spacer is formed of at least one material selected from polycarbonate (PC), polymethyl methacrylate (PMMA), glass, a resin, phenyl propanol amine (PPA) or aluminum (Al) and thus exhibits light transmission, refraction or reflection.”	51
3.	Claim 7 – “The planar lighting device of claim 1, wherein the light sources are mounted on the circuit substrate such that the light sources are spaced apart by a predetermined distance.” ..	53
4.	Claim 8 - “The planar lighting device of claim 1, wherein the light sources further comprise an optical layer.”	54
5.	Claim 10 – “The planar lighting device of claim 1, wherein the reflection layer is fixed to the circuit substrate by an adhesive.”	54
6.	Claim 11 – “The planar lighting device of claim 1, wherein a size of the openings of the first surface is greater than a size of the light sources.”	56
7.	Claim 12 – “The planar lighting device of claim 1, wherein the openings are disposed in the first surface and spaced apart by a predetermined distance.”	57
8.	Claims 13 and 23 – “The planar lighting device of claim 1/claim 22, wherein the hole pattern is located at a position where corresponding light sources are located.”	58
9.	Claims 14 and 24 – “The planar lighting device of claim 1/claim 22, wherein a plurality of hole patterns is provided in the second surface, and wherein the hole patterns repeat in the second surface.”	59
10.	Claims 15 and 25 – “The planar lighting device of claim 14/claim 24, wherein the hole patterns are spaced apart by a predetermined distance.”	61
11.	Claim 16 and 26 – “The planar lighting device of claim 1/claim 22, wherein the through holes of the hole pattern increase and decrease in size repeatedly.”	62

12.	Claims 17 and 27 – “The planar lighting device of claim 1/claim 22, wherein neighboring through holes of the hole pattern are different in size.”	63
13.	Claim 18 – “The planar lighting device of claim 1, wherein the optical sheet comprises at least one of a diffusion layer, a lower polarizing plate, a color filter substrate and an upper polarizing plate.”	64
14.	Claim 19 – “The planar lighting device of claim 1, wherein the second surface is connected at four side edges of the first surface.”	64
15.	Claim 20 – “The planar lighting device of claim 19, wherein the hole pattern is provided in the second surface connected at two side edges of the first surface.”	65
16.	Claims 21 and 28 – “The planar lighting device of claim 1/22, wherein a largest through hole is disposed in a location close to a corresponding light source.”	66
17.	Claim 9 and 29 – “The planar lighting device of claim 1, wherein the second surface is bent at a periphery of the first surface./The display device of claim 22, wherein the inclination is formed by bending a portion of the reflection layer.”	69
B.	Ground 2: Claim 30 Would Have Been Obvious Over Yokota in View of Matsumoto and Ha et al.	71
C.	Ground 3: Claims 4-6 would have been obvious over Yokota in view of Kim et al.	75
1.	Claim 4 – “The planar lighting device of claim 1, further comprising a lower cover having grooves, wherein the circuit substrate is located in one of the grooves.”	75
2.	Claim 5 – “The planar lighting device of claim 4, wherein at least two circuit substrates are disposed on the lower cover.”	80
3.	Claim 6 – “The planar lighting device of claim 5, wherein the at least two circuit substrates are disposed on the lower cover and spaced apart by a predetermined distance.”	81
VIII.	The Board Should Not Exercise Its Discretion to Deny Institution	81
A.	35 U.S.C. § 314(a)	81

1.	Factor 1: The parallel proceeding is not stayed, and it is unknown whether a stay would be granted (Fintiv factor 1)....	82
2.	Factor 2: The trial will commence after the due date of a Final Written Decision (Fintiv factor 2)	83
3.	Factor 3: The parties’ investments in the parallel proceeding weigh in favor of institution (Fintiv factor 3).....	84
4.	Factor 4: IPR will address issues not raised in the parallel proceeding (Fintiv factor 4)	85
5.	Factor 5: PO and Petitioners are parties in the parallel proceeding (Fintiv factor 5)	85
6.	Factor 6: Other circumstances weigh in favor of institution (Fintiv factor 6)	86
B.	35 U.S.C. § 325(d).....	87
IX.	Conclusion	88

TABLE OF AUTHORITIES

Cases

<i>Acuity Brands Lighting, Inc. v. Ultravision Technologies, LLC</i> , IPR2020-01638, Paper 8 (PTAB May 6, 2021)	86
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential)	82, 84, 86
<i>Becton, Dickinson & Co. v. B. Braun Melsungen AG</i> , IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017)	89
<i>Cisco Sys., Inc. v. Estech Sys., Inc.</i> , IPR2021-00333, Paper 12 (PTAB July 7, 2021)	82
<i>HP Inc. v. Slingshot Printing LLC</i> , IPR2020-01084, Paper 13 (PTAB Jan. 13, 2021)	88
<i>HP Inc. v. Slingshot Printing LLC</i> , IPR2020-01084, Paper 13 (PTAB Jan. 13, 2021)	87

Statutes

35 U.S.C. § 314(b)	84
35 U.S.C. § 325(d)	87

PETITIONERS' EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 9,080,740 to Kim et al.
1002	INTENTIONALLY LEFT BLANK
1003	Declaration of Thomas Credelle in Support of Petition for <i>Inter Partes</i> Review
1004	U.S. Patent Publication 2012-0069248 to Yokota
1005	U.S. Patent Publication 2012-0277347 to Matsumoto
1006	U.S. Patent Publication 2011-0013119 to Ha et al.
1007	Curriculum Vitae of Thomas Credelle
1008	U.S. Patent 7,275,852 to Kim et al.
1009	FINTIV Stipulation
1010	<u>Docket Control Order</u>
1011	<u>Average Time to Trial</u>
1012	<u>LGE v. TCL - Complaint for Patent Infringement</u>
1013	Infringement Contentions

I. INTRODUCTION

USP 9,080,740 (“the ’740 patent,” Ex. 1001¹) purports to solve the problem of uneven illumination in a direct-type, planar backlight assembly by applying reflection reduction elements in the form of holes of two different sizes in inclined peripheral portions of a reflection sheet to reduce reflectance from the reflection sheet. Ex. 1003 at ¶¶35-40. This solution was already provided in prior art direct-type, planar backlight assemblies. That prior art teaches the use of reflection reduction elements located in the same inclined peripheral portions of a reflection sheet for the same purpose. The prior art teaches that the elements can be holes in the reflection sheet or dots of reflection reducing material on the reflection sheet of two different sizes to reduce the reflectance from the reflection sheet. As a consequence all claims of the ’740 patent are unpatentable.

II. MANDATORY NOTICES

A. Real Party-in-Interest

Petitioners identify TCL Electronics Holdings Ltd. (f/k/a TCL Multimedia Technology Holdings, Ltd.); TCL Industries Holdings Co., Ltd.; TCL Industries Holdings (H.K.) Limited; TTE Technology, Inc. (d/b/a TCL North America); TTE Corporation; TCL Moka International Limited; TCL Moka Manufactruing S.A. de C.V.; TCL King Electrical Appliances (Huizhou) Co. Ltd.; Manufacturas

¹ All exhibit page numbers reference the page numbers in the original exhibit.

Avanzadas S.A. de C.V.; TCL Smart Device (Vietnam) Co., Ltd.; Shenzhen TCL New Technology Co., Ltd.; TCL Optoelectronics Technology (Huizhou) Co., Ltd.; TCL Overseas Marketing Ltd.; TCL Technology Group Corporation (f/k/a TCL Corp.), as the real parties-in-interest.

B. Related Matters

Petitioners state that, as of the filing date of this Petition, the '740 patent is involved in litigation in the Eastern District of Texas, captioned *LG Electronics Inc. v. TCL Electronics Holdings Ltd. (f/k/a TCL Multimedia Technology Holdings, Ltd.) et al.*, Case No. 2:22-cv-00122-JRG. LG Electronics Inc. is referred to herein as “Patent Owner” or “PO”). Petitioners are not aware of any other judicial or administrative matter involving the '740 patent which would affect, or be affected by, a decision in this IPR.

C. Lead and Back-Up Counsel

Petitioners provide the following designation of counsel:

Lead Counsel: Jeremy D. Peterson (Reg. No. 52,115)

Backup Counsel: Bradford A. Cangro (Reg. No. 58,478)

D. Service Information

Petitioners state that postal mailings and hand-deliveries should be addressed to:

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Petitioners consent to electronic service by email at the following email addresses:

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III. PAYMENT OF FEES

The required fees are submitted herewith. If any additional fees are due at any time during this proceeding, the Office is authorized to charge such fees to Deposit Account No. 60-3815.

IV. REQUIREMENTS FOR *INTER PARTES* REVIEW UNDER 37 C.F.R. § 42.104

A. Grounds for Standing

Petitioners certify that the '740 patent is available for IPR and that Petitioners are not barred or estopped from requesting IPR challenging the claims of the '740 patent under 37 C.F.R. § 42.101.

B. Claims for Which Review Is Requested

Petitioners request IPR of claims 1-31 of the '740 patent.

C. Statutory Grounds of Challenge

Petitioners identify the specific statutory grounds on which the challenges are based as follows:

Ground	Statute	Reference(s)	Claim(s)
1	Post A.I.A. 35 U.S.C. 103	Yokota in view of Matsumoto	1 – 3, 7 – 29, and 31
2	Post A.I.A. 35 U.S.C. 103	Yokota in view of Matsumoto and further in view of Ha et al.	30
3	Post A.I.A. 35 U.S.C. 103	Yokota in view of Matsumoto and further in view Kim et al.	4 - 6

D. Proposed Claim Constructions

Pursuant to 37 C.F.R. § 42.104(b)(3), Petitioners propose the claims of the '740 patent should be interpreted according to the plain and ordinary meaning as they would have been understood by a POSITA at the time of the purported invention of the '740 patent in light of the claim language, the specification, and the prosecution history. Ex. 1003 at ¶42.

E. How the Construed Claims Are Unpatentable

Petitioners provide an explanation of how the claims of the '740 patent are unpatentable under the statutory grounds identified above in section VII *infra*.

F. Supporting Evidence

Petitioners' Exhibits List, *supra*, identifies the exhibit numbers of the supporting evidence relied upon in the challenges in section VII, *infra*.

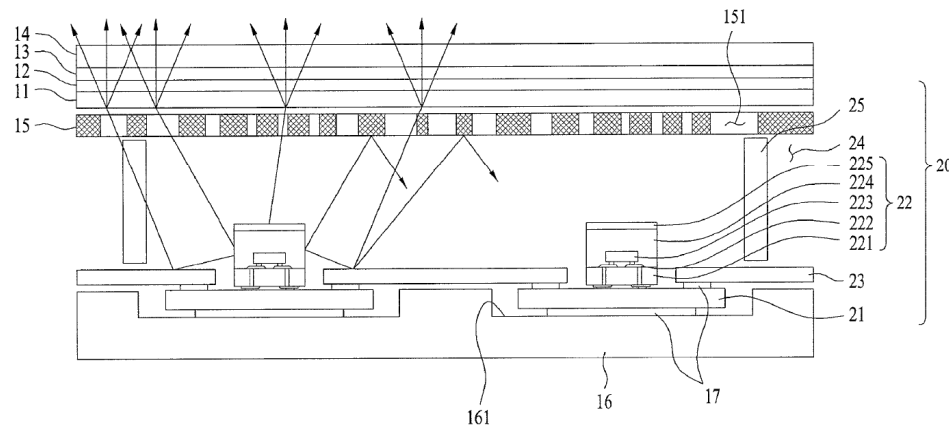
V. THE '740 PATENT

A. Summary of the '740 Patent

The application that matured into '740 patent was filed on August 8, 2014. Its earliest priority date is January 23, 2013, which is the date of filing of Korean patent application 10-2013-0007294. Ex. 1001 at field (30).

FIG. 1 of the '740 patent is an example of a planar lighting device. Ex. 1001 at 3:5-6.

FIG. 1

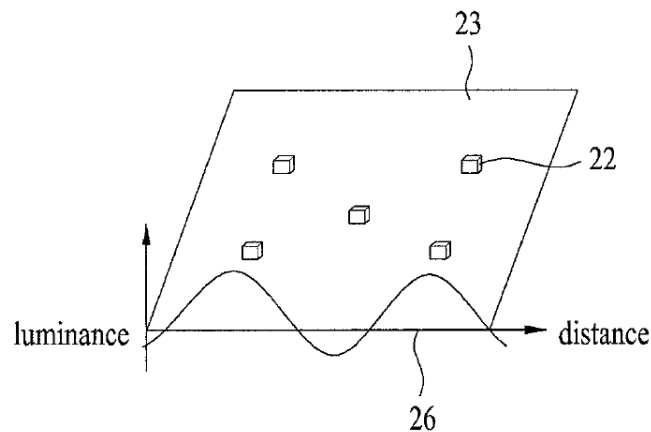


The planar lighting device 20 includes a lower cover 16 and a liquid crystal panel (not shown) may be disposed on the planar lighting device 20. The planar lighting device 20 includes light sources 22 such as light emitting diodes (LEDs)

disposed in one line or a zigzag form. The light sources 22 protrude from an upper surface of a reflection layer 23. Ex. 1001 at 4:19-27.

The intensity of light varies inversely with distance from light sources 22 such as the LEDs. In a direct-type planar lighting device, the aggregate luminance of light emitted from the light sources 22 in the central portion of the planar lighting device 20 is evenly distributed and the luminance happens after passing through optical sheets 11, 12, 13 and 14. However, as shown in FIG. 2, along the edges 26 of the planar lighting device luminance varies significantly based upon the distance of locations on the edge 26 from a light source. Ex. 1001 at 6:1-27.

FIG. 2



Consequently, in a direct-type lighting device, at edge 26 luminance is higher at positions close to the light sources 22 and lower more distant from light sources 22. Ex. 1001 at 6:26-29. These areas of high and low luminance cause uneven brightness because the optical sheets 11, 12, 13 and 14 are not uniformly illuminated across their planar surfaces, degrading the image produced by the LCD. Ex. 1003 at ¶38; Ex. 1001 at 6:18-29.

The '740 patent addresses this issue by providing “a light regulator 300 for regulating luminance difference caused by distance difference between the light source 22 and the edge 26 may be provided.” *Id.*

The filing date of the application that matured into the '740 patent is August 8, 2014. A Notice of Allowance was issued about ten weeks later on October 22, 2014. No Office Action on the merits was issued before the Notice of Allowance.

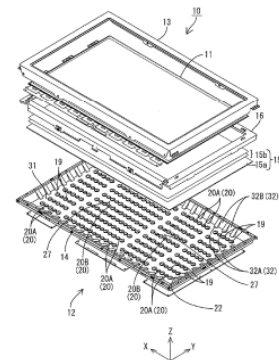
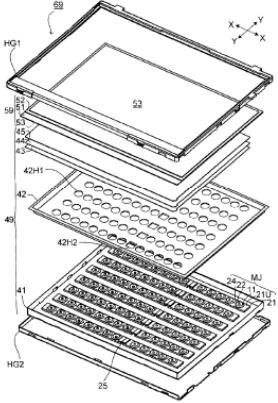
B. Level of Ordinary Skill in the Art

A person having ordinary skill in the art (POSITA) at the time of the alleged invention of the '740 patent would have had a bachelor's level degree in mechanical engineering, physics, optics, or a similar field and at least two years of industry experience designing LCD modules with direct backlights. Work or research experience can substitute for less or different education, and vice-versa. This is the appropriate level of ordinary skill in the art after considering the '740 patent, its prosecution history, and the cited references. Ex. 1003 at ¶¶19,20. Mr.

Credelle bases this conclusion upon his knowledge of the field and after properly considering the factors that inform this inquiry. *Id.* at ¶21.

VI. THE PRIOR ART

Yokota, Matsumoto, Ha et al., and Kim et al. all disclose technology in the same technical field of liquid crystal displays having direct-type, planar lighting backlight assemblies with many similar components. Ex. 1003 at ¶53.

Matsumoto	Yokota	Ha et al.	Kim et al.
			

Matsumoto	Yokota	Ha et al.	Kim et al.
Ex. 1005 at [0027].			

The references also: (1) focus on improving uniformity of the illumination of the liquid crystal display, (2) disclose a host of common elements, e.g., LCD modules, optical sheets, diffuser sheets, LED light sources, LED circuit boards, reflective sheets with inclined portions having reflection reduction treatments such as holes, and dots and sheets of reflection reducing material, where the elements are applied in selected locations to overcome uneven illumination caused by the backlight assembly, and (3) teach interchangeability of reflection reduction treatments such as holes and dots of light absorbent material which can be applied to reduce areas of unevenly high illumination in the backlight assembly. In sum, the teachings in Yokota, Matsumoto, Ha et al., and Kim et al. would have provided POSITA everything necessary to attain without undue experimentation the stated object of the '740 patent invention. Ex. 1001 at 1:62-64; Ex. 1003 at ¶¶54, 55.

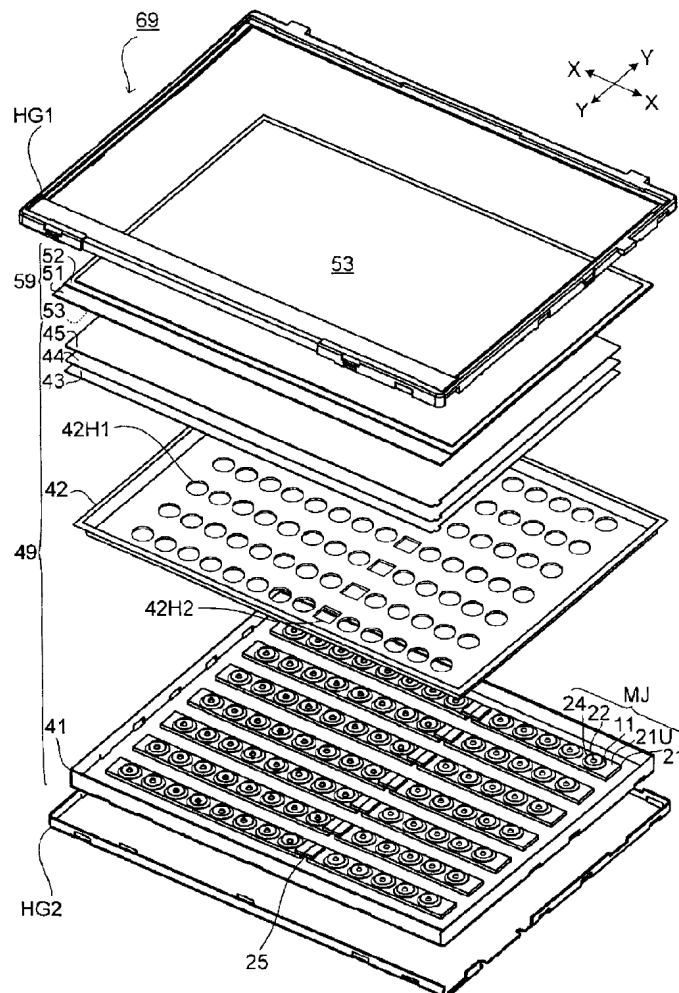
A. Yokota

U.S. Patent Publication 2012-0069248 [Ex. 1004, “Yokota”] entitled “Illumination Device, Display Device, and Television Receiver” was published on March 21, 2012, and is prior art against the '740 patent under AIA U.S.C. §102(a)(1).

A purpose of the invention of Yokota is to provide uniform luminance of a backlight assembly. *Id.* at [0012]. This is the same object as disclosed in the '740 patent, Ex. 1001 at 2:62-64, and, as discussed below, in Matsumoto Ex 1005 at [0009].

Fig. 1 is an exploded view of a display device 69.

FIG.1



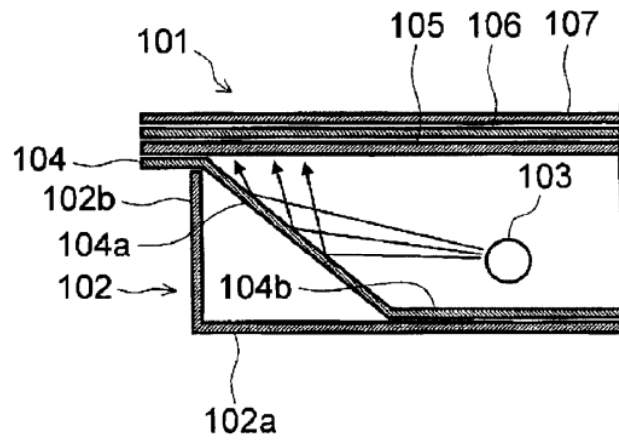
Ex. 1004 at FIG. 1.

The display device 69 includes an LCD panel 59, backlight unit 49, front housing HG1 and rear housing HG2. *Id.* at [0056]. In the backlight assembly, mounting boards (substrates) 21 have mounted thereon modules MJ including either five or eight LEDs 22. *Id.* at [0073]. The mounting boards 21 with the LEDs are coupled together in their lengthwise direction by connectors 25 attached to adjacent edges. *Id.* The mounting boards 21 have a mounting surface 21U with electrodes formed at predetermined intervals in the lengthwise direction. *Id.* at [0068]. The LEDs 22 are individually mounted on the electrodes. *Id.* As shown in FIG. 1, a plurality of sets of an LED 22, a diffusive lens 24, and a built-in reflective sheet 11 combined together are arranged on each mounting board 21, at predetermined intervals in its lengthwise direction. *Id.* The mounting boards are arranged on chassis 41. *Id.* at [0074]. As a result, individual LEDs 22 are arranged in a matrix.

Light emanating from the LEDs 22 shines on the diffusive plate 43 from behind. *Id.* at [0078]. A reflective sheet 42 is provided on the chassis 41 to reflect light from the LEDs 22 toward the rear surface of the diffusive plate 43. *Id.* The reflective sheet 42 has inclined surfaces 42a as its peripheral portions. The lower end of the inclined surface 42a is contiguous with a main plane 42b of the reflective sheet 42. *Id.* at [0077].

Yokota discusses (FIG. 12) a problem of uneven illumination of the diffusion sheet when a reflective sheet having inclined peripheral portions is used in a backlight assembly. *Id.* at [0011].

FIG.12

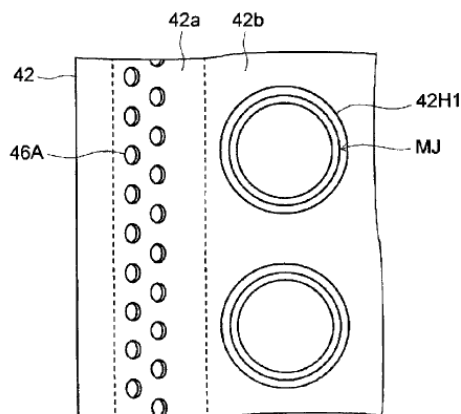


Id., Fig. 12.

Yokota's solves this problem of uneven illumination by forming a number of small apertures in the inclined surface. *Id.* at [0013] - [0015].

FIG. 3, shows holes 46A on inclined surface 42A. *Id.* at [0080].

FIG.3



Id. at FIG. 3.

Yokota discloses a further embodiment where instead of forming the reflection reduction elements as small apertures in the inclined portions of the reflection sheet, patterns of small dots of light absorbing ink (elements 46D in FIGs. 8 and 9) may be printed on the inclined surface 42a to provide a reflection reduction treatment.

FIG.8

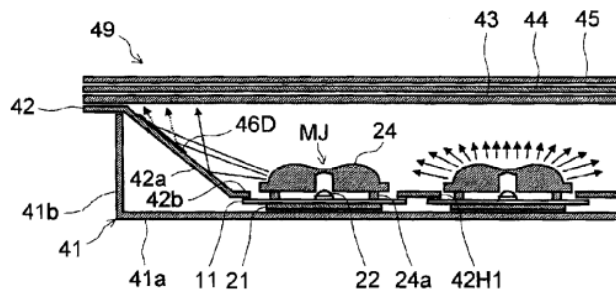
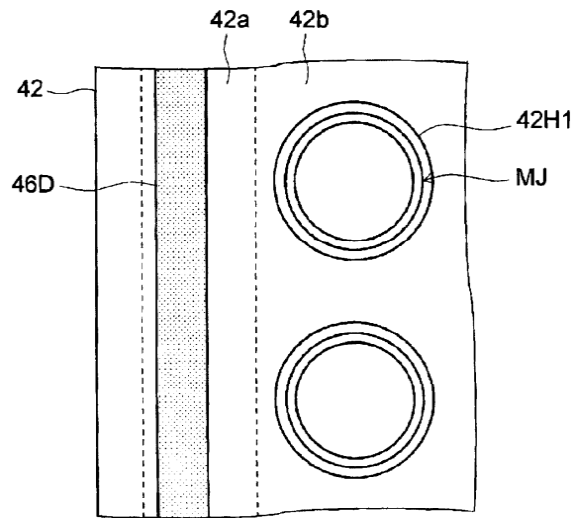


FIG.9



Id. at FIG. 8, 9.

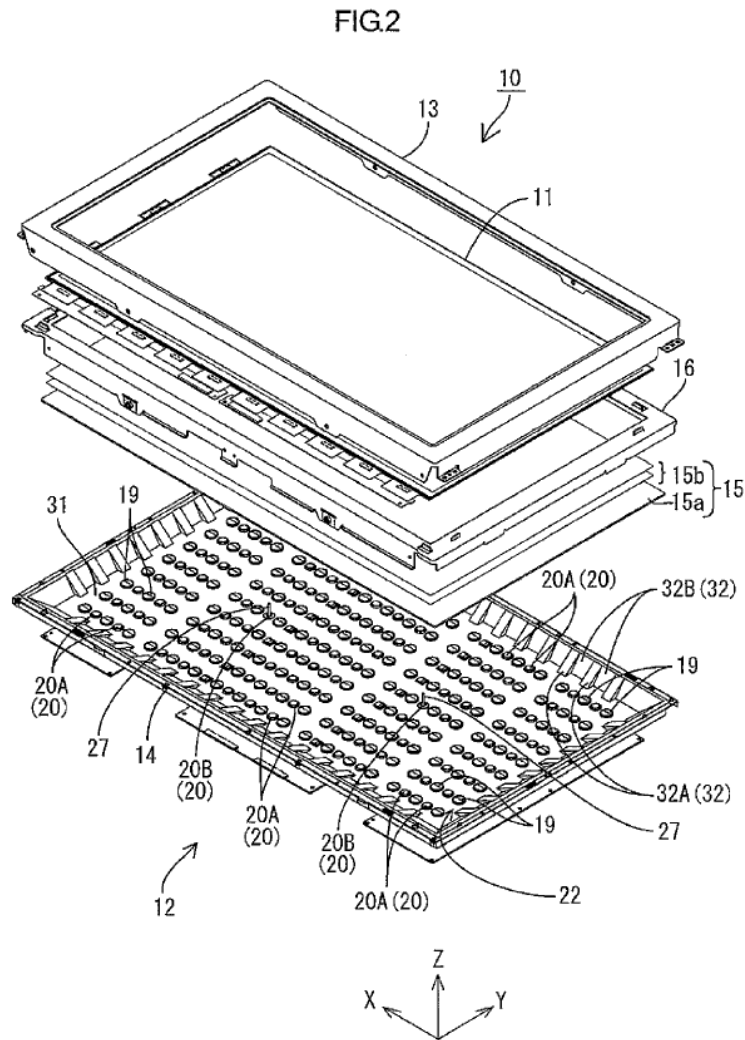
“The printed portion 46D with increased light absorptance reflects less light than the non-printed portion, and this reduces the overall amount of light reflected on the inclined surface 42a so as to travel toward the diffusive plate 43. *Id.* at [0089] – [0091]. Yokota teaches the interchangeability of holes and light absorbent dots as reflection reduction treatments. *Id.* at [0083], [0088]; Ex. 1003 at ¶¶65-66.

B. Matsumoto

United States Published Patent Application 2012/0287347 [Ex. 1005, “Matsumoto”] entitled “Lighting Device, Display Device and Television Receiver” was published on November 15, 2012, and is prior art against the ’740 patent under AIA 35 U.S.C. §102(a)(1).

The invention of Matsumoto is directed to remedying uneven illumination in a backlighting device for a display such as an LCD. *Id.* at [0009],

FIG. 2 is an exploded perspective view illustrating a general configuration of an LCD device, and FIG. 4 is a cross-sectional view of the device. *Id.* at [0027]. [0029].



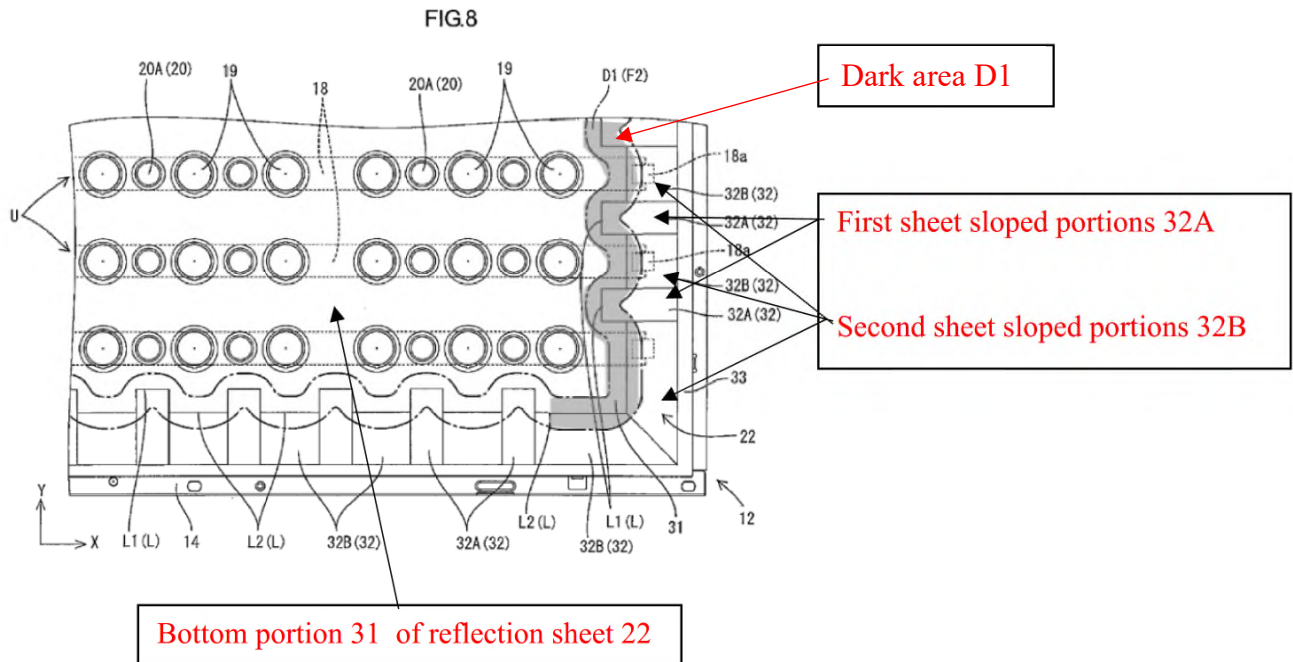
In FIG. 2, the backlight device 12 includes chassis 14, optical sheet set 15 (a diffuser 15a, and a plurality of optical sheets 15b between diffuser 15a and liquid crystal panel 11), frame 16, and chassis reflection sheet 22. *Id.* at [0040].

In “such a backlight unit, if the light sources are arranged on the bottom plate such that a light axis of light from the light source is directed toward the liquid crystal panel ...a portion of the reflection sheet that is adjacent to [borderline L] a border between the sheet bottom portion and the sheet sloped portion (a

peripheral end portion of the sheet bottom portion and a basal end portion of the sheet sloped portion) is likely to be a dark portion compared to other portions.” *Id.* at [0004].

The backlight has a chassis reflection sheet 22 that comprises a sheet bottom portion 31 and sheet sloped portions 32 shown as including first sheet sloped portions 32A and second sheet sloped portions 32B. *Id.* at [0065], [0071]. The sheet sloped portions are inclined areas of the reflection sheet 21 and rise as they extend toward the edges of the reflection sheet 22. *Id.* First sheet sloped portions 32A begin closer to borderline L and have a longer inclined surface than second sheet sloped portion 32B. *Id.*

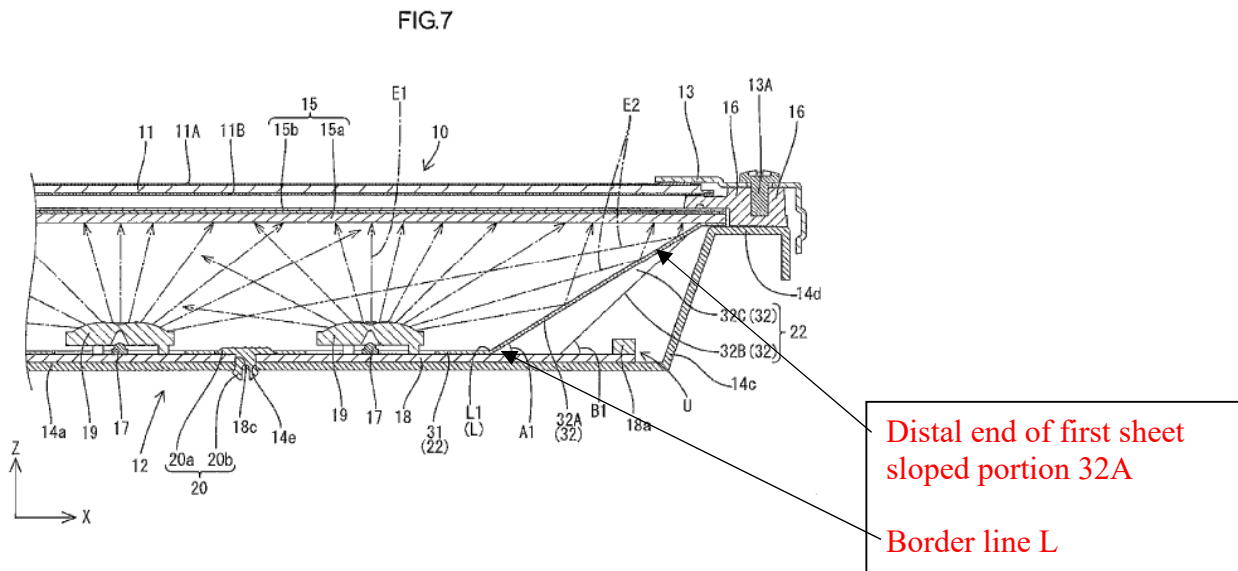
FIG. 8 has been highlighted to identify the dark area D1 and to highlight the first and second sheet sloped portions.



Id. at FIG. 8, annotated.

According to Matsumoto, the dark area D1 results from two factors based on distance and inclination angle of the light rays. *Id.* at [0006], [0007].

Matsumoto refers to FIG. 7 to further describe the problem of uneven illumination of a diffuser 15A causing a display to have uneven brightness.

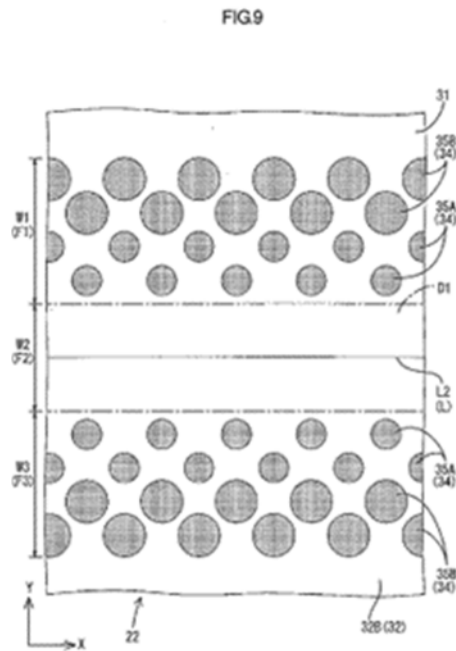


Id. FIG. 7, annotated.

The emission intensity of the LED 17 is greater along the light axis E1 represented by arrow E1 in FIG. 7 and sharply decreases as the angle of a light ray to the light axis E1 increases. *Id.* at [0083]. The number of light rays reaching the portion adjacent to the borderline L is smaller than the number of light rays reaching the distal end of the sheet sloped portion 32. *Id.* at [0083], [0084]. Accordingly, fewer light rays reach a border portion F2 of the chassis reflection sheet 22 which is a portion encompassing the border line L appear as dark portions, i.e., lower illumination than adjacent portions F1, F3 (shown below in FIG. 9 and in schematic combination of FIGs. 7, 8 and 9, below.). *Id.* at [0084]. This causes uneven brightness. *Id.*

Matsumoto eliminates “dark portions” in the border portion by applying a reflectance reduction treatment to the reflective surfaces of first sheet sloped

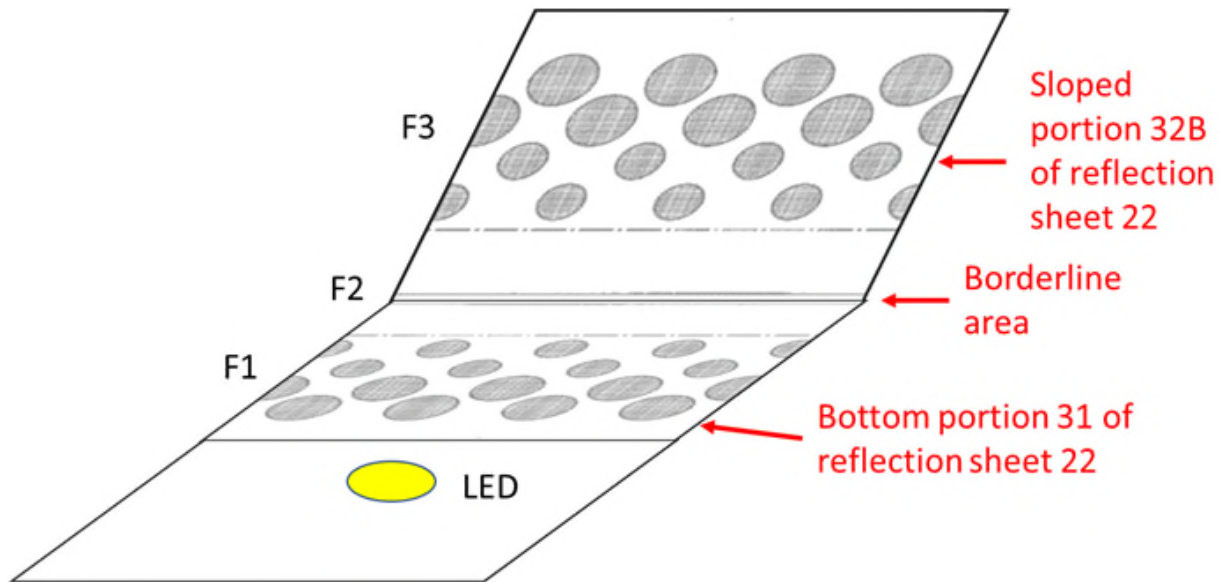
portions 32A and the second sheet sloped portions 32B. FIG 9 and the schematic combination thereof illustrate how this is accomplished using a second sheet sloped portion 32B as an example. Ex. 1003 at ¶76.



Ex. 1005, FIG. 9.

The following is an annotated, schematic combination of FIGs. 7, 8 and 9 showing the relationships of areas F1-F3 of the bottom portion 31 and the second

sheet sloped portion 32B of the reflection sheet 22. Ex. 1003 at ¶77.



The dots 35A (small) and 35B (large) of the portion 34 reflect light less effectively than untreated areas of the chassis reflection sheet 22. As seen in FIG. 9 and in the schematic diagram smaller dots 35A are located adjacent the dark area at the borderline L and larger dots 35B are located more distant from the borderline L. In the area of the small dots 35A the reflectance of the reflection sheet 22 will be reduced less than in the area of the larger dots 35A. *Id* at ¶81. A POSITA would understand from FIG. 9 by providing reflection reduction dots of different sizes on a reflection sheet, the degree of reflection from bright areas can be selectively reduced. *Id*.

Matsumoto teaches that applying reflection reduction elements (dots 35A and 35B) in area F3 the resultant reduction in reflection in that area ensures that the brightness does not abruptly change between the borderline L in area F2 and the

area F3. Consequently, “dark portions” and uneven brightness will not occur. Ex. 1005 at [0086], [0088-0089], Ex. 1003 at ¶81.

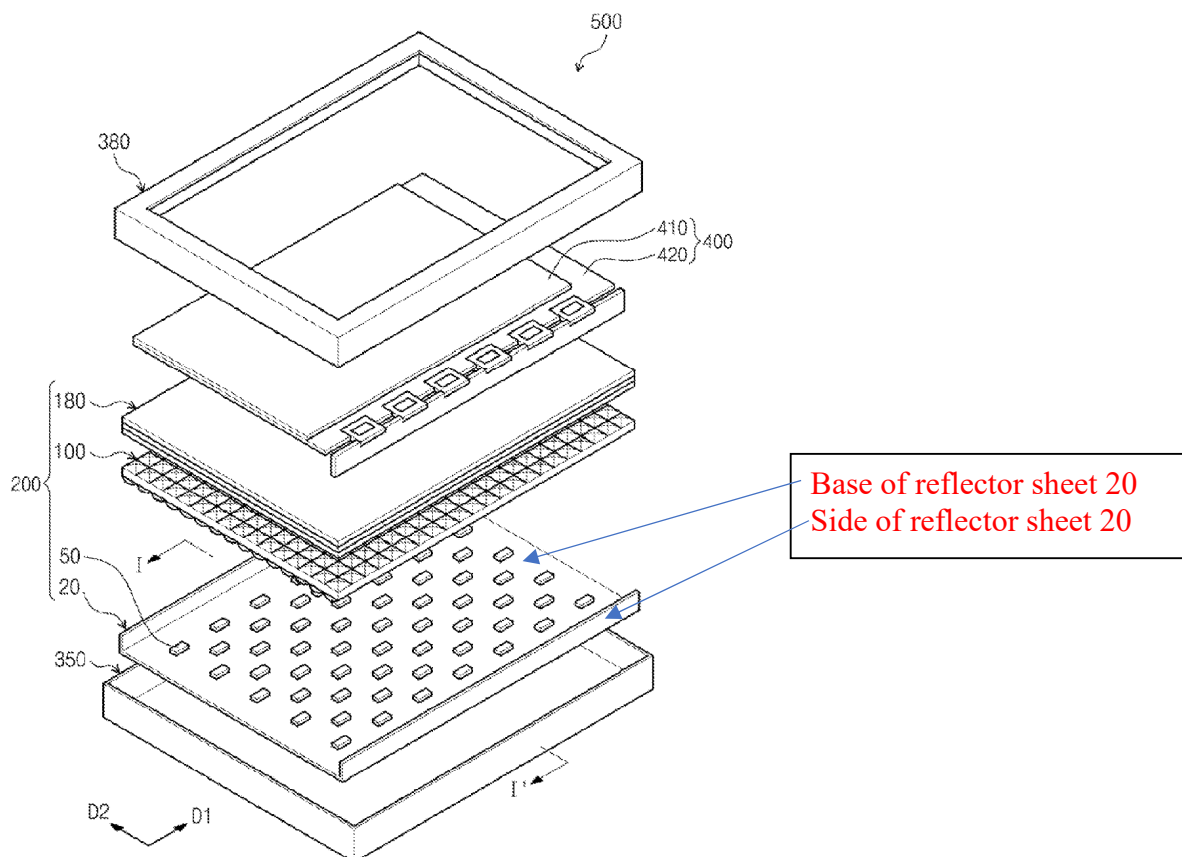
The area of each dot 35A, 35B and the arrangement intervals of the dots can be varied to control the degree of light reflectance in the locations of the dots. *Id.* at [0077], [0081], [0089]. From the teachings of Matsumoto, a POSITA would have readily understood that greater uniformity of illumination in a direct-type backlight assembly can be attained by selectively applying different sized dots of reduced reflection material to undesirably bright areas of a reflection sheet to reduce the reflectance therefrom. Ex. 1003 at ¶82.

C. Ha et al.

U.S. Patent Publication 2011/0013119 [Ex. 1006, “Ha et al.”] entitled “Backlight Assembly and Display Apparatus Having the Same” was published on January 20, 2011, and is prior art regarding the ’740 patent under AIA 35 U.S.C. §102(a)(1). In the manner of the ’740 patent, Matsumoto, and Yokota, the Ha et al. disclosure is directed to a backlight assembly capable of providing substantially uniform light. *Id.* at [0003].

FIG. 1 is an exploded view of a display apparatus having a backlight. *Id.* at [0016].

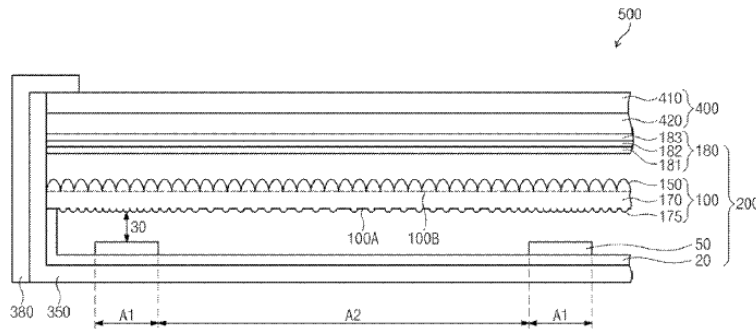
Fig. 1



Id. at Fig. 1, annotated.

FIG. 2 is a sectional view taken along line I-I' of FIG. 1. *Id.* at [0017].

Fig. 2



Id. at Fig. 2.

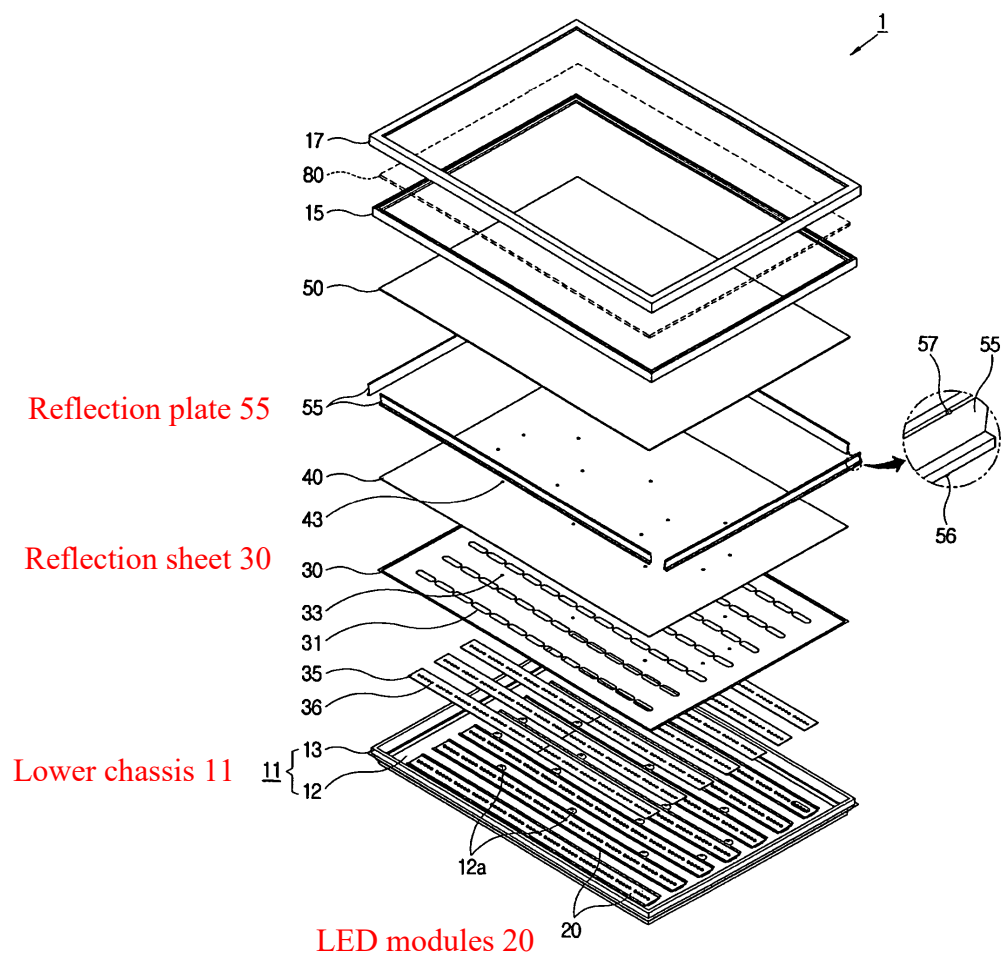
Referring to FIGs. 1 and 2, a display apparatus 500 includes backlight assembly 200, display panel 400, top chassis 380, and bottom chassis 350. *Id.* at [0033]. Backlight assembly 200 includes a reflection plate 20, a plurality of LED light sources 50, a first optical member 100, and a second optical member 180. First optical member 100 is a diffusion sheet that diffuses the light from light sources 50. *Id.* at [0034], [0038]. As shown in FIG. 1, the sides of the reflection plate 20 are inclined at a right angle with respect to the bottom surface of the reflection plate 20. Ex. 1003 at ¶¶83-86.

D. Kim et al.

U.S. Patent No. 7,275,852 [Ex. 1008, “Kim et al.”], entitled, “Backlight Unit and LCD Display Apparatus Having the Same,” was originally filed on Nov. 17, 2004, as KR 10-2004-0093880 and was filed Dec. 29, 2004, in the U.S. The patent issued Oct. 2, 2007, and is prior art regarding the ’740 patent under AIA 35 U.S.C. §102(a)(1).

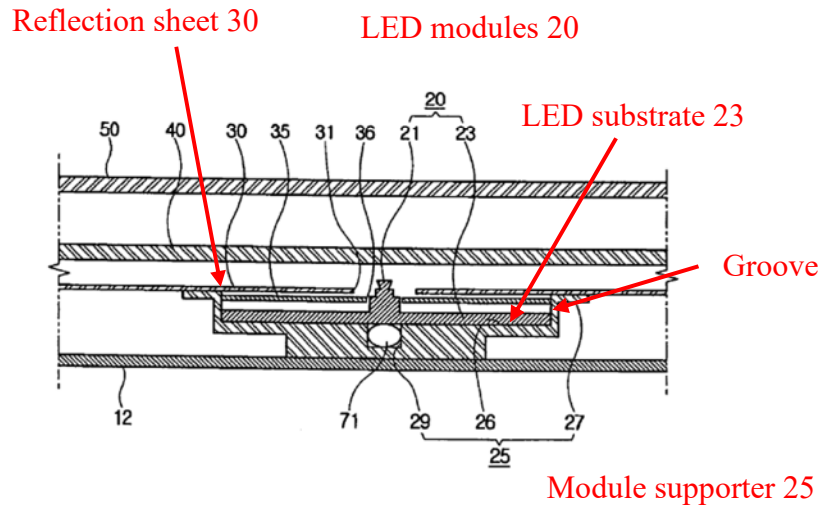
Kim et al., like Yokota, Matsumoto, and Ha et al., is directed to an LED backlight module. Kim et al. discloses “a plurality of LEDs emitting light, and an LED substrate supporting and driving the plurality of LEDs, a diffusion sheet placed over the LED module and diffusing light emitted from the LED module, an optical sheet placed over the diffusion sheet, a module supporter placed on a back of the LED module and supporting the LED module.” *Id.* at Abstract. The LED modules are mounted to a lower chassis assembly 11 comprising a base portion 12 to which module supporters 25 are mounted. Ex. 1008 at 5:48-61. The module supporters include grooves to mount the LED modules 20. *Id.* at 4:43-58, Fig. 2. The module supporters 25 include module accommodator 26, which includes a groove to accommodate the LED substrate 23. *Id.*; Ex. 1003 at ¶¶87-88.

FIG. 1



Ex. 1008 at Fig. 1 (annotated).

FIG. 2



Id. at Fig. 2 (annotated).

VII. DETAILED GROUNDS OF UNPATENTABILITY

Each proposed ground of unpatentability below identifies the specific portions of the evidence that support each ground.

The '740 patent includes independent claims 1, 22, and 31. The table below shows that there are eleven individual claim elements and of these eleven claim

elements seven (shaded in the table) are identically recited in each of the independent claims.²

USP 9,080,740 INDEPENDENT CLAIMS		
1. A planar lighting device comprising:	22. A display device comprising: a lighting device including: a lower cover;	31. A direct-type lighting device comprising: a lower cover;
a circuit substrate;	a circuit substrate disposed on the lower cover;	a plurality of circuit substrates disposed on the lower cover and spaced apart by a predetermined distance;
a plurality of light sources disposed on the circuit substrate	a plurality of light sources disposed on the circuit substrate;	a plurality of light sources mounted on each of the circuit substrates such that the light sources

² Dependent claim 2 is included in this table because it adds to the combination of independent claim 1 the same claim limitation present in independent claims 22 and 31.

		are spaced apart by a predetermined distance;
a reflection layer disposed on the circuit substrate, the reflection layer comprising	identical to claim 1	identical to claim 1
a first surface having a plurality of openings where the respective light sources are located,	identical to claim 1	identical to claim 1
a second surface connected to the first surface, wherein the second surface has an inclination with respect to the first surface, and	identical to claim 1	identical to claim 1
a hole pattern having a plurality of through holes provided in the second surface of the reflection layer,	identical to claim 1	identical to claim 1
wherein at least two through holes of the hole pattern are different in size; and	identical to claim 1	identical to claim 1

an optical sheet disposed on the light sources.	identical to claim 1	identical to claim 1
2. The planar lighting device of claim 1, further comprising a spacer disposed between the reflection layer and the optical sheet.	a spacer disposed between the lower cover and the optical sheet; and	a spacer disposed between the lower cover and the optical sheet.
	a liquid crystal panel on the lighting device.	

Due to the near identity of the independent claims, for clarity and consistency of the presentation, the discussion below addresses each of the three independent claims, i.e., claims 1, 22, and 31, (and dependent claims 2) in the same section.

A. Ground 1: Claims 1-3, 7-29, and 31 Are Obvious Over Yokota in View of Matsumoto

The combination of Yokota modified in view of Matsumoto renders claims 1-3, 7-29, and 31 of the '740 patent obvious.

1. Claims 1, 2, 22, and 31

Claims 1, 22, and 31 are independent claims and claim 2 is dependent on claim 1. These claims recite the following limitations

- a. Limitation 1Pr: Preambles – “A planar lighting device comprising/A display device comprising: a lighting device including/A direct-type lighting device comprising”

The preamble of claim 1 recites “[a] planar lighting device comprising.”

The preamble of claim 22 recites a “display device comprising: a lighting device.”

The preamble of claim 31 recites a “direct-type lighting device.” To the extent the preambles are limiting, they are disclosed in Yokota. Ex. 1003 at ¶105.

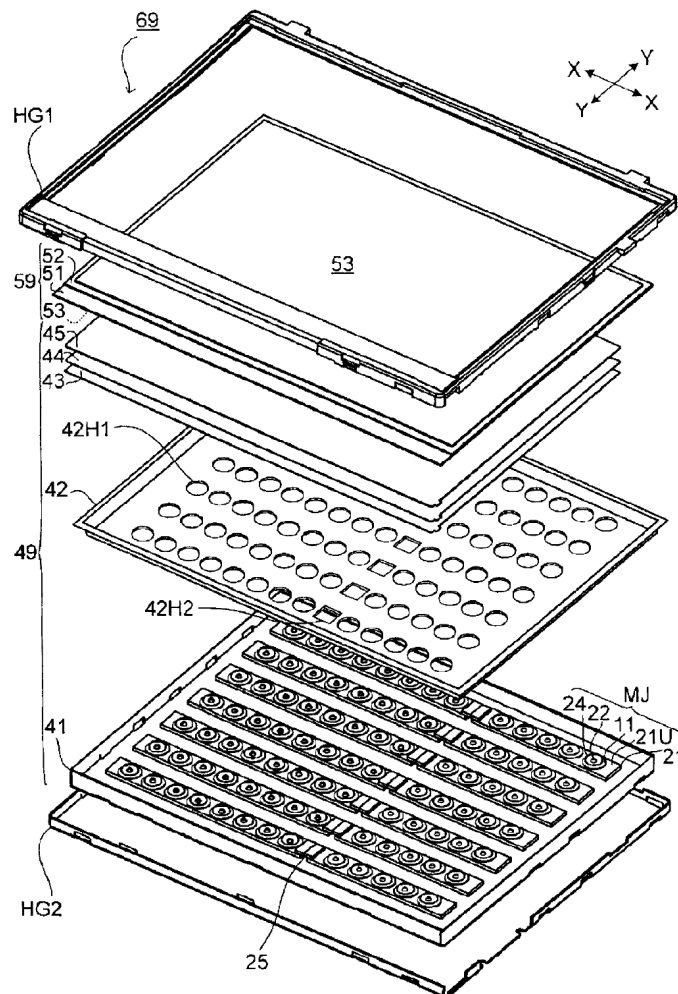
Yokota discloses a “display device 69” with a “backlight unit (49).” Ex. 1004 at Abstract and FIG. 1. The backlight unit (49) is a planar, direct-type backlight device because the light sources are provided in a planar array beneath a diffuser sheet that covers an open side of the backlight device. Ex. 1004 at [0059]; Ex. 1003 at ¶106. The light sources are oriented to directly illuminate the diffuser sheet. *Id.*

- b. Limitation 1b: “lower cover/circuit substrate/circuit substrate disposed on the lower cover/a plurality of circuit substrates disposed on the lower cover and spaced apart by a predetermined distance”

A “lower cover” is recited in claims 22 and 31, but not claim 1. Yokota discloses a chassis 41 serving as a lower cover to meet the requirement that the combination includes a lower cover. Ex. 1005 at [0074], FIGs. 1 and 2; Ex. 1003 at ¶107.

Clam 1 recites “a circuit substrate.” Claims 22 and 31 associated “circuit substrates” with respect to the lower cover. That is, claim 22 recites a “circuit substrate disposed on the lower cover.” Claim 31 recites a “plurality of circuit substrates disposed on the lower cover and spaced apart by a predetermined distance.” Yokota discloses each of these similar limitations as sown in FIG. 1..
Ex. 1003 at ¶108.

FIG.1



Ex. 1004 at Fig. 1.

In FIG. 1, substrates formed by mounting boards 21 have either five or eight light emitting modules MJ arranged thereon. Ex. 1003 at ¶110. The mounting boards 21 are coupled together lengthwise by connectors 25. Ex. 1004 at [0073]. The mounting boards 21 have a mounting surface 21U, on which electrodes (not shown) are formed at predetermined intervals in the lengthwise direction. *Id.* at [0068]. LEDs 22 are mounted on the electrodes. Each mounting board 21 is common to a plurality of LEDs 22. *Id.* That is, as shown in FIG. 1, a plurality of sets of light emitting modules MJ, including an LED 22, a diffusive lens 24, and a built-in reflective sheet 11 combined together, are arranged on each mounting board 21, at predetermined intervals in its lengthwise direction. *Id.* As shown in FIG. 1 multiple rows of mounting boards 21 are spaced apart by a predetermined distance and are disposed on rear housing HG2. Ex. 1004 at [0056] and FIG. 1. Ex. 1003 at ¶110.

- c. Limitation 1c: “plurality of light sources disposed on the circuit substrate/plurality of light sources disposed on the circuit substrate such that the light sources are spaced apart by a predetermined distance”

Claims 1 and 22 identically recite a “plurality of light sources disposed on the circuit substrate.” Claim 31 similarly recites a “plurality of light sources disposed on the circuit substrate such that the light sources are spaced apart by a predetermined distance.” Yokota meets each of these limitations. Ex. 1003 at ¶111.

Yokota discloses that “[o]ne mounting board 21 is common to a plurality of LEDs 22. That is, as shown in FIG. 1, a plurality of sets of an LED 22, a diffusive lens 24, and a built-in reflective sheet 11 combined together are arranged on each mounting board 21, at predetermined intervals in its lengthwise direction.” Ex. 1004 at [0068]. In addition to stating that the LEDs 22 are “arranged ... at predetermined intervals,” FIG. 1 of Yokota shows that the LEDs 22 are spaced apart by “a predetermined distance” as further recited in claim 31. Ex. 1004 at FIG. 1, [0068]. Therefore, Yokota discloses a plurality of light sources (e.g., LEDs 22) disposed on circuit substrate (mounting boards) and that the light sources are spaced apart by a predetermined distance. Ex. 1003 at ¶112.

d. Limitation 1d: “a reflection layer disposed on the circuit substrate”

This element is identically recited in claims 1, 22, and 31; it is clearly shown in Yokota. Ex. 1003 at ¶113.

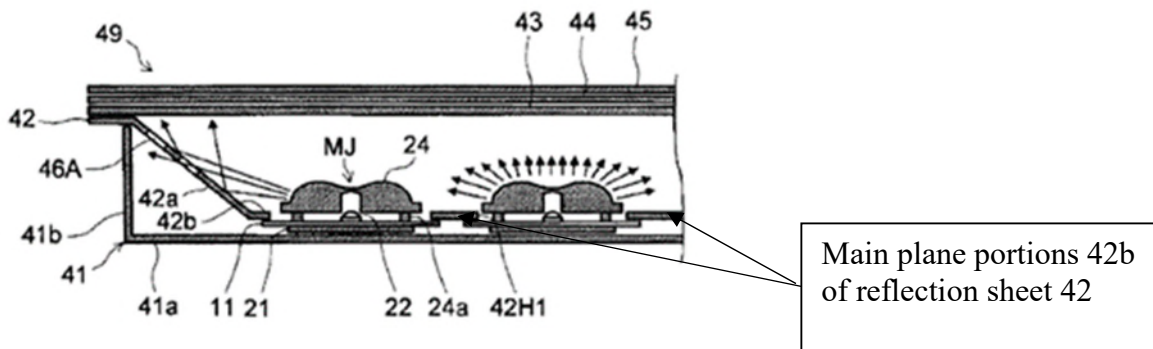
Yokota discloses a reflective sheet 42 disposed on the substrate mounting boards 21 on which the LEDs 22, are mounted. Ex. 1004 at [0076], FIGs. 1 and 2. Therefore, Yokota discloses a reflection layer (e.g., reflective sheet 42) disposed on the circuit substrate (e.g., mounting boards 21). Ex. 1003 at ¶114.

- e. Limitation 1e: “a first surface having a plurality of openings where the respective light sources are located”

This element is identically recited in claims 1, 21, and 31; it is disclosed in Yokota. Ex. 1003 at ¶115.

Yokota discloses a main plane 42b of the reflective sheet 42. The main plane 42b includes circular clearance openings 42H1 in which the light sources MJ, including LEDs 22, are inserted. Ex. 1004 at [0077], FIGs. 1 and 2.

FIG.2



Ex. 1004 at Fig. 2.

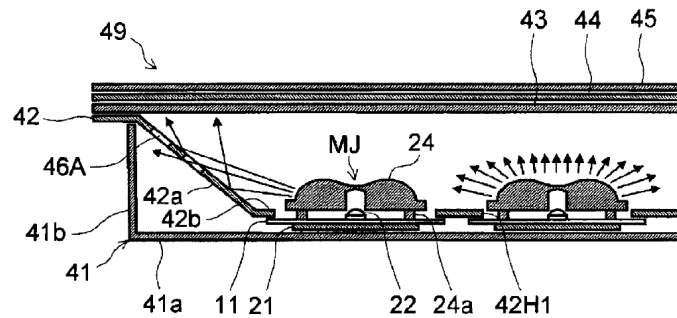
Therefore, Yokota discloses a first surface (e.g., a main plane 42b) having a plurality of openings (e.g., circular clearance openings 42H1) where the respective light sources are located (e.g., LEDs 22). Ex. 1003 at ¶116.

- f. Limitation 1f: “a second surface connected to the first surface, wherein the second surface has an inclination with respect to the first surface”

This element is identically recited in claims 1, 22, and 31; it is disclosed in Yokota. Ex. 1003 at ¶117.

As shown in FIG. 2 and discussed in Yokota, an inclined surface 42a is contiguous at its lowest end with a main plane 42b of the reflective sheet 42. Ex. 1004 at [0075], [0076], [0079].

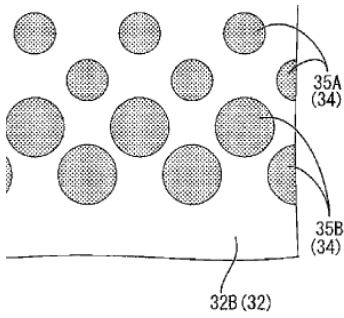
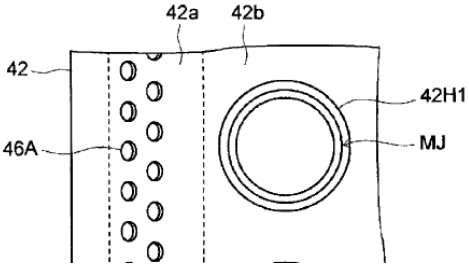
FIG.2



Ex. 1004 at Fig. 2. Light emanating from LEDs 22 illuminates diffusive plate 43 from behind. Light not traveling directly toward diffusive plate 43 is reflected by reflective sheet 42 toward diffusive plate 43. Light emanating sideways from LEDs 22 strikes inclined surface 42a of reflective sheet 42 and is reflected toward diffusive plate 43. Ex. 1004 at [0078]. Therefore, Yokota discloses a second surface (e.g., inclined surface 42a connected to the first surface (e.g., main plane 42b wherein the second surface has an inclination with respect to the first surface (e.g., inclined surface 42a is inclined when compared to first surface main plane 42b). Ex. 1003 at ¶118.

- g. Limitation 1g: “a hole pattern having a plurality of through holes provided in the second surface of the reflection layer, wherein at least two through holes of the hole pattern are different in size”

This element is identically recited in claims 1, 22, and 31, and is obvious in view of the teachings of Yokota in view of Matsumoto which are illustrated with reference to the table and discussion below. Ex. 1003 at ¶119.

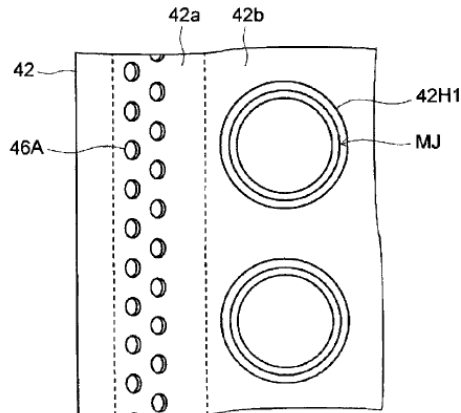
Matsumoto Fig. 9	Yokota Fig. 3
	
Light reflecting portions 34 may be formed as a pattern of dots of different size (35A and 35B) of light absorbing material on the second (inclined) surface 32 of the of the chassis reflection sheet 22. Ex. 1005 at [0077] and FIG. 9.	An inclined surface 42a forming a number of small apertures 46A in the inclined surface 42a. Ex. 1004 at [0076] and [0079], FIGs. 2 and 3. “[T]he size, intervals, positions in the inclined surface 42a, etc. of the small apertures 46A are preferably optimized through experiments,” Ex. 1004 at [0081, FIG. 2.]

	Yokota further teaches that instead of small apertures 46a a pattern of dots of dark colored ink serving as light absorbent material can be provided on the inclined surfaces 42a. Ex. 1004 at [0089], [0090].
--	--

Yokota discloses a reflective sheet 42 with an inclined portion 42a around its periphery. Ex. 1004 at [0076], [0014]. A specific goal of Yokota is to prevent the inclined surface 42a from causing unnecessarily high luminance of edge portions of the diffusive sheet. *Id.* at [0012]. This goal is achieved by applying a reflection reduction treatment to the inclined surface 42a. *Id.* at [0013]. The reflection reduction treatment applied to the inclined surface 42a of the reflective sheet reduces the amount of light reflected from it to prevent disproportionately higher luminance in the peripheral part of the diffusive plate compared to illumination elsewhere on the diffusive plate. *Id.* at [0014].

Yokota teaches multiple structures for the reflection reduction treatment. One treatment is to form an arrangement of holes (apertures) 46A in the inclined surfaces 42a of reflective sheet 42. *Id.* at [0015], FIGs. 2 and 3.

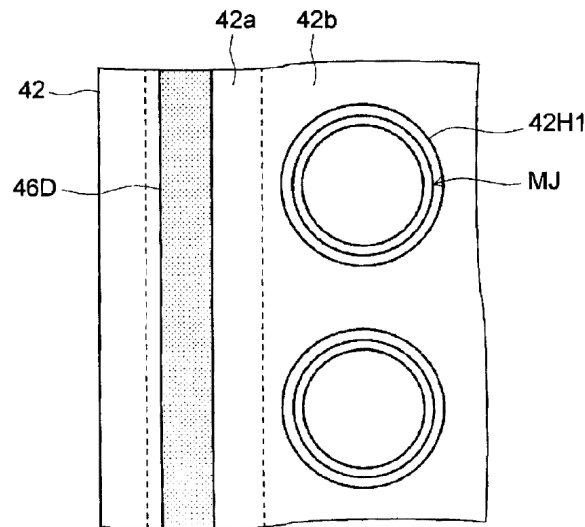
FIG.3



The holes 46A can be punched during the molding process of the reflective sheet 42. *Id.* at [0016]. The area with the holes has reduced light reflectance such that the total light reflected from the inclined portion 42a will be reduced compared to an inclined portion 42a without holes. *Id.* at [0024]. Yokota explains that the size, intervals, and positions in inclined surface 42a of the apertures 46A are optimized through experiments. *Id.* [0081]. The apertures 46A (holes) in the inclined areas 42a of the reflective sheet 42 results in the edge portions of the diffusive plate 43 not be noticeably brighter than other areas of the diffusive plate and illumination will be more uniform. Ex. 1003 at ¶¶120-122.

In another embodiment, Yokota teaches that reflection reducing dots of, for example, light absorbing material are effective as another type of reflection reduction treatment.

FIG. 9



Ex. 1004 at Fig. 9.

As shown in FIG. 9, “[i]n the printed portion 46D, dark-color ink is applied in a pattern composed of a large number of dots . . . to obtain higher light absorptance.” Id. at [0090]. The printed portion 46D with increased light absorptance reflects less light than the non-printed portion, and this reduces the overall amount of light reflected from the inclined surface 42a to the edge portions of the diffusive plate 43 and prevents disproportionately higher luminosity in the edge portions of the diffusive plate 43 than elsewhere in the diffusive plate. Id. at [0091]; Ex. 1003 at ¶¶123-124.

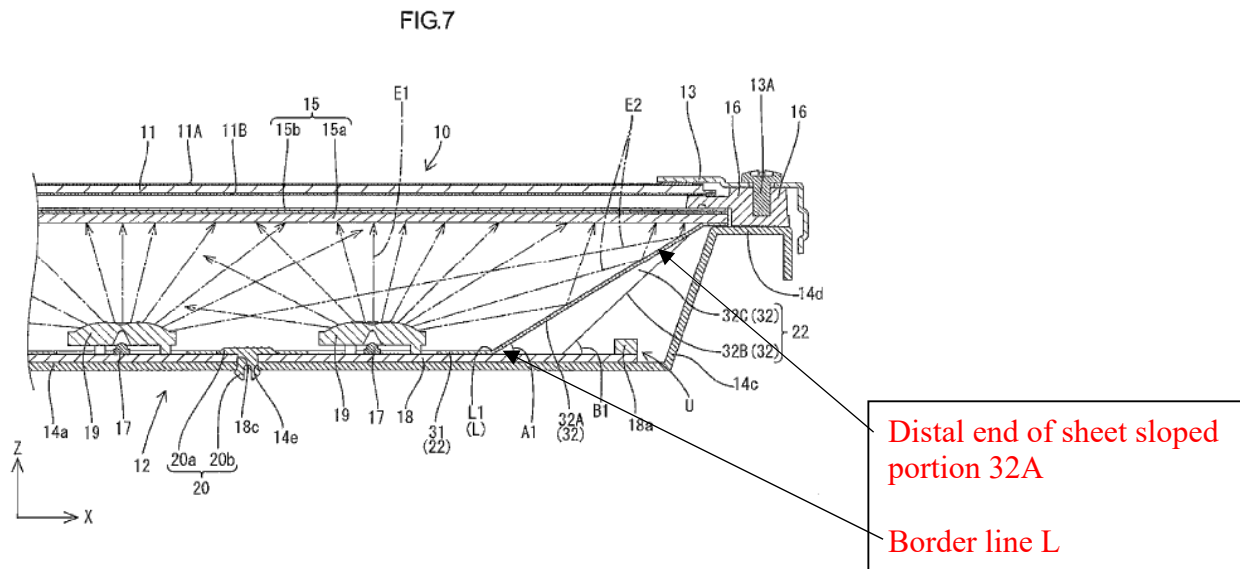
Yokota teaches that dots of reflection reducing material applied to peripheral, inclined surfaces of a reflective sheet and holes punched in the sheet can be used interchangeably as elements of a reflection reduction treatment to

provide localized reduction of light reflectance in a backlight assembly. Moreover, Yokota instructs that the “size, intervals, positions in the inclined surface 42a, etc. of the small apertures 46A are preferably optimized through experiments.” Ex. 1004 at [0081], emphasis added. That is, the size, location, pattern, and spacing of such elements are selected according to the design of the backlight. Ex. 1004 at [0081], [0084], [0090], [0092]. Thus, from this disclosure in Yokota a POSITA would have been motivated to use different size holes in the inclined portions of the reflection sheet to optimize the uniformity of illumination by the backlight. Ex. 1003 at ¶136.

Moreover, this teaching of Yokota to change the size of the holes is directly addressed by Matsumoto, which adds to the teachings of Yokota the use of multiple sizes of reflectance reduction elements included in a pattern of such elements. POSITA would understand from the prior art teachings of Yokota in view of Matsumoto that multiple sizes of holes when provided in inclined portions of a reflection sheet according to the design of the backlight assembly will assist in providing uniformity of illumination of a diffuser sheet in a backlight assembly. *Id.*

Yokota teaches the entirety of this claim limitation except that “at least two through holes of the hole pattern are different in size” A POSITA would have been motivated to provide holes of two different sizes from Matsumoto, which like Yokota, discloses a direct-type backlight assembly. *Id.* at ¶127.

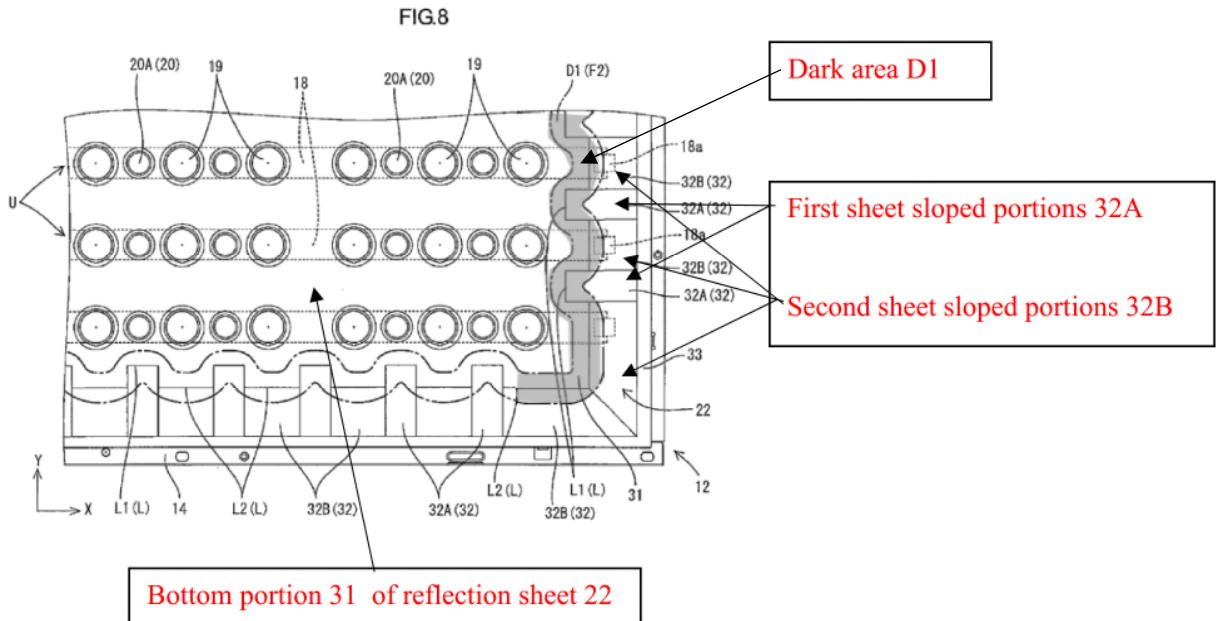
A purpose of Matsumoto is to eliminate noticeable “dark portions” in the border of a diffusion sheet caused by non-uniform illumination by the backlight. Ex. 1005 at [0004], [0008-0009]. Specifically, Matsumoto refers to FIG. 7 to describe a problem of a backlight not uniformly illuminating a diffuser causing a display to have uneven brightness. Ex. 1005 at [0082].



As described previously, the emission intensity of an LED 17 is greatest along the light axis E1 represented by arrow E1 in FIG. 7 and sharply decreases as the angle of a light ray to the light axis E1 increases. Ex. 1005 at [00083]. Light

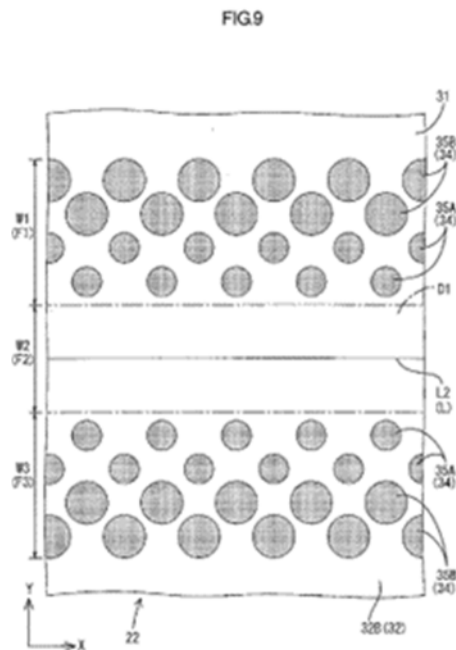
rays E2 from the LED 17 reaching the distal end of the sheet sloped portions 32 have a relatively small angle with respect to light axis E1 compared to light reaching a portion adjacent to the borderline L which is at an angle of approximately 90 degrees with respect to the light axis E1. Thus, the number of light rays reaching the portion adjacent to the borderline L is smaller than the number of light rays reaching the distal end of the sheet sloped portion 32. *Id.* Accordingly, fewer light rays reach a border portion F2 of the chassis reflection sheet 22 resulting in a portion encompassing the border line L appearing as dark portions, i.e., lower illumination than adjacent portions F1, F3 (shown below in FIG. 9 and in schematic combination of FIGs. 7, 8 and 9, below.). *Id.* This causes uneven brightness. Ex. 1005 at [0083], [0084]; Ex. 1003 at ¶¶128-129.

FIG. 8 of Matsumoto has been highlighted to locate the dark portions on the reflective sheet 22.



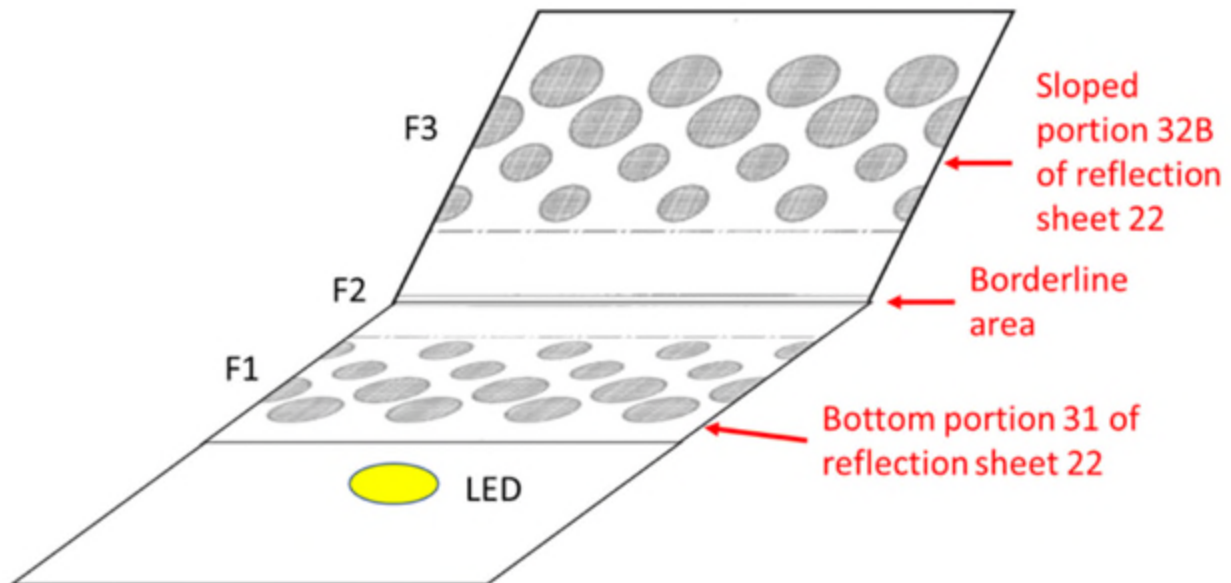
Ex. 1005, Fig. 8 (annotated).

Fig. 9 illustrates a pattern of reflectance reduction elements incorporated into the structure of Fig. 8 to eliminate noticeable dark portions.



Ex. 1005 at Fig. 9.

The illustration below is a schematic diagram produced by combining portions of FIG. 8 and FIG. 9 and the corresponding description of each drawing in the Matsumoto specification. The diagram shows the relationships of areas F1-F3 of the bottom portion 31 and the inclined, sheet sloped portion 32B of the reflection sheet 22. Ex. 1003 at ¶¶130-131.



Ex. 1005 at Figs. 7, 8 and 9 (annotated).

The area F2 is the fold region of reflection sheet 22 at the borderline L. Area F1 is an area of the bottom portion 31 of reflection sheet 22 and area F3 is the surface of the inclined, sheet sloped portion 32B of the reflection sheet 22. The area F2 is the location of the dark portion D1 highlighted in FIG. 8, above. Ex. 1003 at ¶132.

Referring to FIG. 8, a light reflecting portion 34, which is embodied as a pattern of different-sized dots (35A) and (35B) formed in portions F1, F3 on a front surface of reflection sheet 22. The areas covered by dots have a reduced reflection compared with the other areas of the reflection sheet 22. Ex. 1005 at [0102-0103], Fig. 9. F3 corresponds to the inclined sheet sloped portion 32B. Ex. 1005 at FIGs. 7, 8 and 9. The dots 35A and 35B reflect less light than the remainder of the reflection sheet 22. *Id.* at [0102-0103]. Since there are no reduced reflection dots in the border portion F2 of the reflection sheet 22 light reflection in area F2 is not reduced and will be higher than the light reflectance of the reflection sheet 22 in areas F1 and F3 because those areas are treated with reduced reflection dots 35A and 35B. *Id.* at [0078]; Ex. 1003 at ¶133.

As discussed with reference to FIG. 7, fewer light rays reach the border portion F2 than reach areas F1 and F3. This would normally cause light reflectance from area F2 to be lower than reflectance of light from areas F1 and F2 because for the same reflecting surface fewer incident light rays means lower light reflectance. Consequently, the area F2 will produce a noticeable darker portion in the display. Ex. 1005 at [0083], [0084]. However, by applying the dots 35A and 35B to reduce reflectance in portions F1 and F3 the brightness of light reflected from areas F1 and F3 will be reduced such that the brightness does not abruptly change in the area of the borderline L in area F2 when compared to areas F1 and F3.

Consequently, noticeable “dark portions” and uneven brightness do not appear. *Id.* at [0086], [0088], Ex. 1003 at ¶134.

Matsumoto clearly shows that the areas of dots 35A (small), 35B (large) are different and Matsumoto shows in FIG. 9 a pattern of dots provided at predetermined intervals. Matsumoto further instructs that in addition to the dots differing in size, the dots can be applied in different patterns to control the degree of light reflectance from the area of a reflective sheet in which the dots are located. Ex. 1005 at [0077], [0081], [0089]. Thus, from the teachings of Matsumoto a POSITA would have readily understood to apply patterns of different sized dots of reduced reflection material to areas of a reflection sheet to reduce the reflectance therefrom, and hence to lower the illumination from areas of a reflection sheet in order to attain uniformity of illumination in a direct-type backlight assembly. Ex. 1003 at ¶135.

Yokota teaches that dots of reflection reducing material applied to peripheral, inclined surfaces of a reflective sheet and holes punched in the sheet can be used interchangeably as elements of a reflection reduction treatment to provide localized reduction of light reflectance in a backlight assembly. The size, location, pattern, and spacing of such elements are selected according to the design of the backlight. Ex. 1004 at [0081], [0089], [0090], [0092] Matsumoto adds to the teachings of Yokota the understanding that multiple sizes of reflectance reduction

elements may be used together in a pattern of such elements. A POSITA would understand from the prior art teachings of Yokota in view of Matsumoto that multiple sizes of holes when provided in inclined portions of a reflection sheet according to the design of the backlight assembly will assist in providing uniformity of illumination of a diffuser sheet in a backlight assembly. Ex. 1003 at ¶136.

The combination of Yokota in view of Matsumoto would have instructed a POSITA to adopt a reflection reduction treatment comprising a pattern of holes of at least two different sizes in peripheral, inclined portions of a reflective sheet, which fully meets this claim element. Ex. 1003 at ¶137.

Moreover, a POSITA would have been motivated to combine the teachings of Yokota and Matsumoto. The prior art solutions of Yokota and Matsumoto are used in the same environment (direct-type backlights), on the same element (reflection sheets), in the same area (inclined portions of the reflection sheets) for the same purpose (the localized reduction of reflectance to achieve uniform luminance in the backlight). Yokota teaches the interchangeability of holes and dots of reflection reducing material to embody the reflection reduction treatment. Compare Ex. 1004 at ¶¶[0079-0080] and [0090-0091]. Both references teach that the size, pattern, and location of the elements is selected based upon experimentation according to the design of the backlight assembly. Consequently,

a POSITA would have been motivated to apply the combined teachings of Yokota and Matsumoto to provide a pattern of holes of two different sizes in inclined portions of a reflective sheet to optimize uniformity of illumination. Therefore, the combination of Yokota and Matsumoto teach this claim element. Ex. 1003 at ¶138; see also, *id.* at ¶¶94-104, *supra*.

h. Limitation 1h: “an optical sheet disposed on the light sources”

The optical sheet is present in Yokota. Ex. 1003 at ¶139.

Yokota discloses a diffusive sheet 43, a prism sheet 44, and a microlens sheet 45 disposed on the light emitting modules MJ, which includes the light sources, i.e., LEDs 22. Ex.1004 at [0059], FIGs. 1 and 2. Claim 18 of the ’740 patent which depends upon independent claim 1 recites: “The planar lighting device of claim 1, wherein the optical sheet comprises at least one of a diffusion layer, a lower polarizing plate, a color filter substrate and an upper polarizing plate. Ex. 1001, 11:26-29. Yokota teaches the same types of optical sheets as claimed in the ’740 patent. Yokota also discloses that these optical sheets are disposed on the light emitting modules which contain the LEDs. Ex. 1004 at [0073-0074], Fig. 1. Ex. 1003 at ¶140.

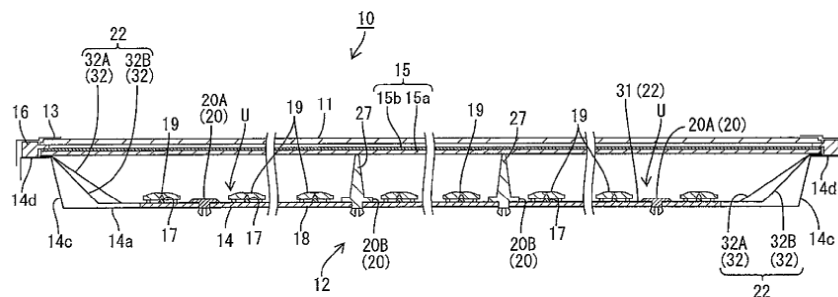
- i. Limitation 1i: “a spacer disposed between the lower cover and the optical sheet; and a liquid crystal panel on the lighting device/a spacer disposed between the lower cover and the optical sheet”

Claim 22 further recites “a spacer disposed between the lower cover and the optical sheet; and a liquid crystal panel on the lighting device.” Claim 31 recites “a spacer disposed between the lower cover and the optical sheet.” Claim 1 does not recite a spacer limitation, but claim 2, which depends from claim 1, recites as its only limitation that the planar lighting device of claim 1 further comprises “a spacer disposed between the reflection layer and the optical sheet.” This recitation in claim 2 is the same as the spacer limitation of claim 22.

First, Yokota discloses a liquid crystal panel 59. Ex. 1004 at [0057].

Matsumoto discloses a supporting pin 27 that projects from supporting member 20B and is located between the reflective layer 22 on the chassis 14 and the diffuser 15 such that the diffuser 15a is supported from the lower side by the support pins 27. Ex. 1005 at [0064]; Fig. 4.

FIG.4



Ex. 1005 at Fig. 4.

As shown in FIG. 4, a stopper portion 20b secures the support pins 27 to the bottom plate 14a of the chassis 14, which forms the bottom cover of the backlight assembly. *Id* at [0042], [0063]. The support pins 27 ensures that the proper spacing is maintained between the diffuser 15a and the reflective sheet 22 so that uneven brightness is less likely to result from warping of the diffuser 15a. *Id.* at [0064].

As stated above, a POSITA would have looked to a combination of Yokota and Matsumoto in designing a backlight assembly with uniform luminance. Ex. 103 at ¶¶95-103,135-137. Moreover, Matsumoto teaches the value of the support pins 27, which are connected to the chassis 14 (the back cover) to maintain a uniform distance between the reflective sheet and diffuser to prevent uneven brightness due to warping of the diffuser. *Id.* Consequently, a POSITA would have been motivated to include the support pins 27 in the backlight assembly of Yokota to support the diffuser from the chassis 14 and to maintain the space between the reflective sheet 42 and the diffuser 15a to avoid uneven brightness due to warping of the diffusive plate. Therefore, the combination of Yokota and Matsumoto discloses a spacer (e.g., support pins 27) disposed between a lower cover (chassis 14) and an optical sheet (diffuser 15a) in a manner that meets the “spacer” limitations in each of claims 2, 22, and 31. Ex. 1003 at ¶¶141-144.

- j. Limitation 1j: “a liquid crystal panel on the lighting device”

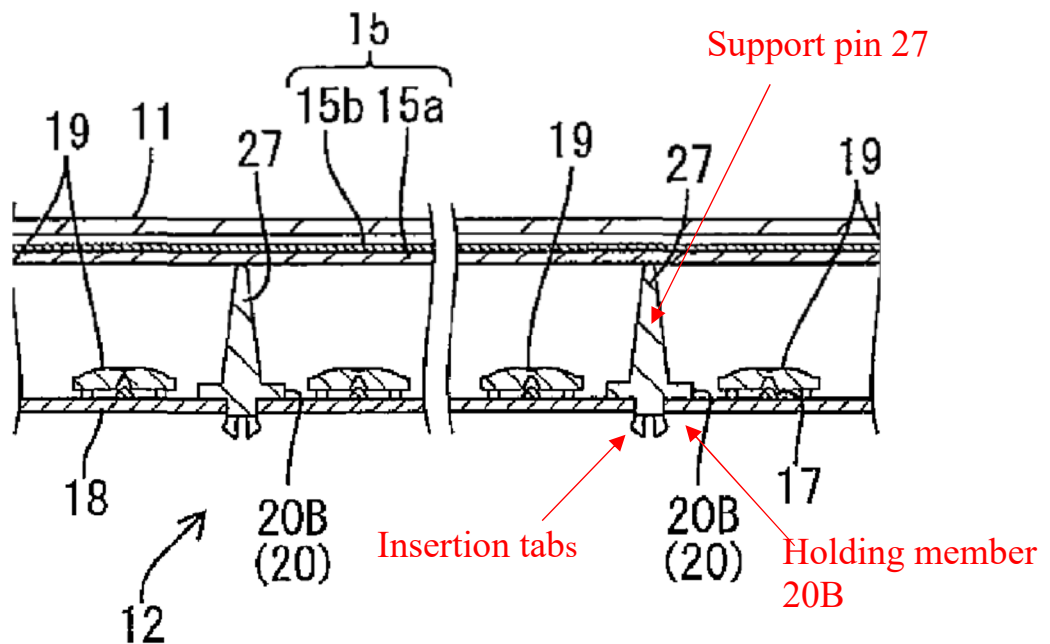
This limitation is in independent claim 22 and is not present in independent claims 1 and 31. Not surprisingly all of the applied references, which disclose backlight assemblies for use with liquid crystal panels, also disclose a liquid crystal panel. For example, Yokota discloses a liquid crystal panel 59 which meets this limitation. Ex. 1004 at [0057]; Ex. 1003 at ¶145.

The foregoing discussion of the elements a-j found in claims 1, 2, 22, and 31 establishes the combinations of those elements as recited in those claims would have been obvious to a POSITA at the time the alleged invention of the ‘740 patent was made. Id. at ¶146.

2. Claim 3: “The planar lighting device of claim 2, wherein the spacer is formed of at least one material selected from polycarbonate (PC), polymethyl methacrylate (PMMA), glass, a resin, phenyl propanol amine (PPA) or aluminum (Al) and thus exhibits light transmission, refraction or reflection.”

A POSITA would have understood that the spacer pin disclosed in Matsumoto is formed of at least one material selected from polycarbonate (PC), polymethyl methacrylate (PMMA), glass, a resin, phenyl propanol amine (PPA) or aluminum (Al) and thus exhibits light transmission, refraction or reflection. Ex. 10003 at ¶147.

Matsumoto teaches that the LED board 18 is fixed to the bottom plate by a holding member 20. “The holding member 20B includes a disk-like shaped pressing portion **20a** and a stopper portion **20b** extending downwardly from the pressing portion **20a**.” ... “A distal end portion of the stopper portion 20b of the holding member 20 is formed to be an **elastically deformable** wide portion.” Ex. 1004 at [0063], emphasis added. An enlarged view of the holding member 20B from Fig. 4 is shown below. The holding member is inserted into a hole in the LED board 18 with “tabs” to lock the member in place; these tabs would necessarily be deformable. Further, holding members 20B arranged in the middle portion of the bottom plate 14a have supporting pins 27. Ex. 1004 at [0064], *Id.*



Ex. 1004, Fig. 4 excerpt, annotated

With such teaching of a holding member with supporting pin, i.e. a spacer, which is elastically deformable, a POSITA would understand that the spacer is made of a plastic material such as polycarbonate (PC), polymethyl methacrylate (PMMA), glass, a resin, phenyl propanol amine (PPA) as these were among the common choices for moldable plastic materials. Ex. 1003 at ¶148. A POSITA's selection of the material would have been a conventional consideration based upon factors such as cost, weight, rigidity, and ease of molding or shaping. *Id.* Therefore, the limitations of claim 3 would have been obvious in view of the combination of Matsumoto and Yokota. *Id.*

3. Claim 7 – “The planar lighting device of claim 1, wherein the light sources are mounted on the circuit substrate such that the light sources are spaced apart by a predetermined distance.”

As shown in FIG. 1 of Yokota, a plurality of sets of LEDs 22 on the mounting boards 21 are arranged at predetermined intervals in both the X and Y directions. Ex. 1004 at [0068].

Therefore, Yokota teaches the light sources (e.g., LEDs 22) are mounted on the circuit substrate (e.g., mounting board 21) such that the light sources are spaced apart by a predetermined distance applying the plain meaning of “predetermined” as discussed with regard to claim element 1b. This disclosure meets the limitation of claim 7. Ex. 1003 at ¶¶149-150.

4. Claim 8 - “The planar lighting device of claim 1, wherein the light sources further comprise an optical layer.”

In Yokota, diffusive lenses 24 are provided on LEDs 22. Ex. 1004 at [0063], [0064], [0068], FIG. 1. These diffuser lenses comprise an optical layer and meet the limitation of claim 8. Ex. 1003 at ¶151.

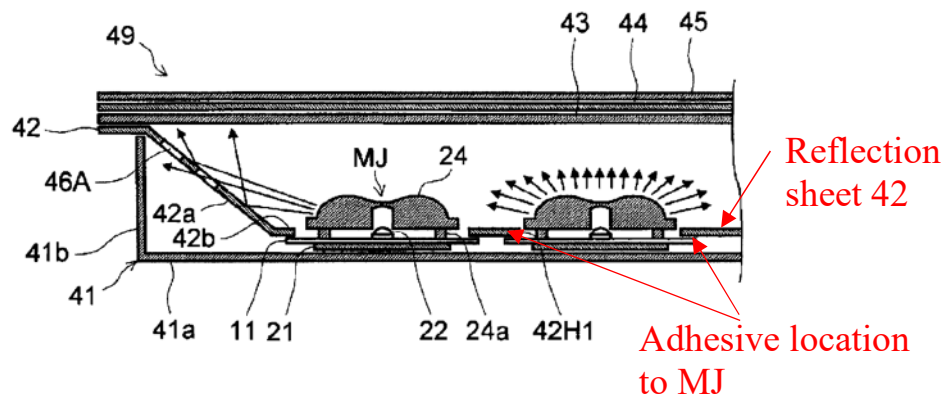
5. Claim 10 – “The planar lighting device of claim 1, wherein the reflection layer is fixed to the circuit substrate by an adhesive.”

Yokota states that the light absorption surfaces may be bonded to the inclined surface 42a. Ex. 1004 at [0093]. This is a teaching of the use of bonding to secure optical elements, such as a reflective sheet. Yokota also discloses that a reflection sheet “combined together . . . with a plurality of sets of an LED 22, a diffusive lens 24, and a built-in reflective sheet 11 . . . are arranged on each mounting board 21.” Ex. 1004 at [0068]. The built-in reflective sheet 11 is “fixed on the mounting surface 21U.” *Id.* at [0075]. Further, Yokota teaches the use of adhesives to bond diffusive lens 24 to the mounting board. *Id.*, at [0069]. Thus, Yokota teaches a reflection sheet fixed to the circuit substrate and a POSITA would understand that “fixing” would be accomplished with an adhesive.

Yokota is directed to providing a backlight assembly with uniform illumination and an unbonded reflection sheet 42 may become uneven due to heat generated by the LEDs, thus reducing the uniformity of light on the diffusion sheet. Thus, a POSITA would have been motivated from Yokota to attach the reflective

sheet to the light emitting module MJ by using well-known adhesive bonding techniques which would have been applied to the opposite surface of the reflection sheet 42 than the side used to reflect light to illuminate a diffusion sheet. *See* annotated figure 2 below.

FIG.2



Ex. 1004, Fig. 2, annotated.

To the extent that Yokota does not explicitly state that adhesive bonding is used to secure a reflection layer to the circuit substrate, A POSITA considering FIG. 2 would have found it obvious to use adhesive bonding. *Id.* at ¶154.

FIG. 2 shows the reflection sheet 42 attached to built-in reflector sheets 11 to cover gaps between the built-in reflector sheets to ensure the integrity of a reflective surface below the LEDs 22 and throughout the interior surface of the base of the backlight assembly. No mechanical coupling is illustrated in FIG. 2 to couple the edges of the reflector sheet 42 to the edges of the built-in reflector sheet or to couple the built-in reflector sheet 11 to circuit substrates 21. *Id.* at ¶155.

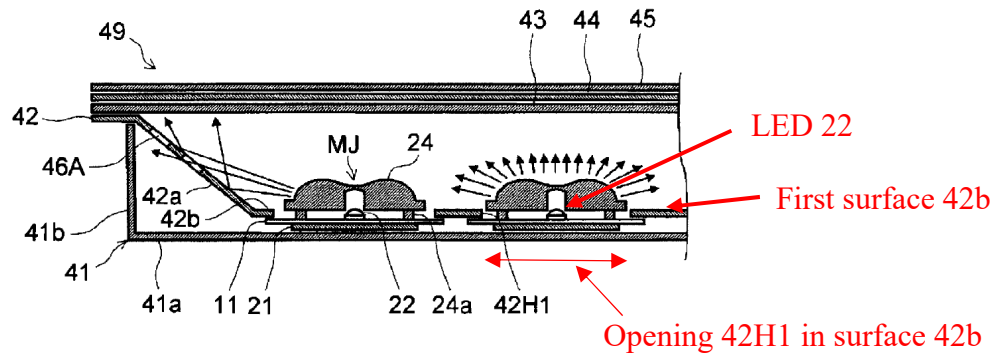
A POSITA would have understood that to maintain uniformity of reflectance of the reflector sheet 41 and the built-in reflector sheets 11, those reflector sheets would be joined at points of overlap as shown in FIG. 2 and the means for joining them at those overlapped areas would be applied to the underside of the reflector sheet 41 and the top side of the built-in reflector sheets 11 at the points of overlap. This would ensure uniform reflectance even at the areas of overlap. Given the references to the use of adhesive elsewhere in Yokota, a POSITA would have readily and naturally turned to adhesive to join the overlapped edges of the reflector sheets to form a continuous reflection sheet in the backlight assembly which would also be fixed by adhesive to the circuit substrates 21 for stability. *Id.* at ¶156.

The subject matter of claim 10 is therefore met or rendered obvious by Yokota. *Id.* at ¶157.

6. Claim 11 – “The planar lighting device of claim 1, wherein a size of the openings of the first surface is greater than a size of the light sources.”

As discussed above in connection with FIGs. 2 and 3 of Yokota, the reflective sheet includes a pattern of holes 42H in which the LEDs 22 are inserted. Inherently, the holes 42H must be greater in size than the LEDs 22 (the light sources).

FIG.2



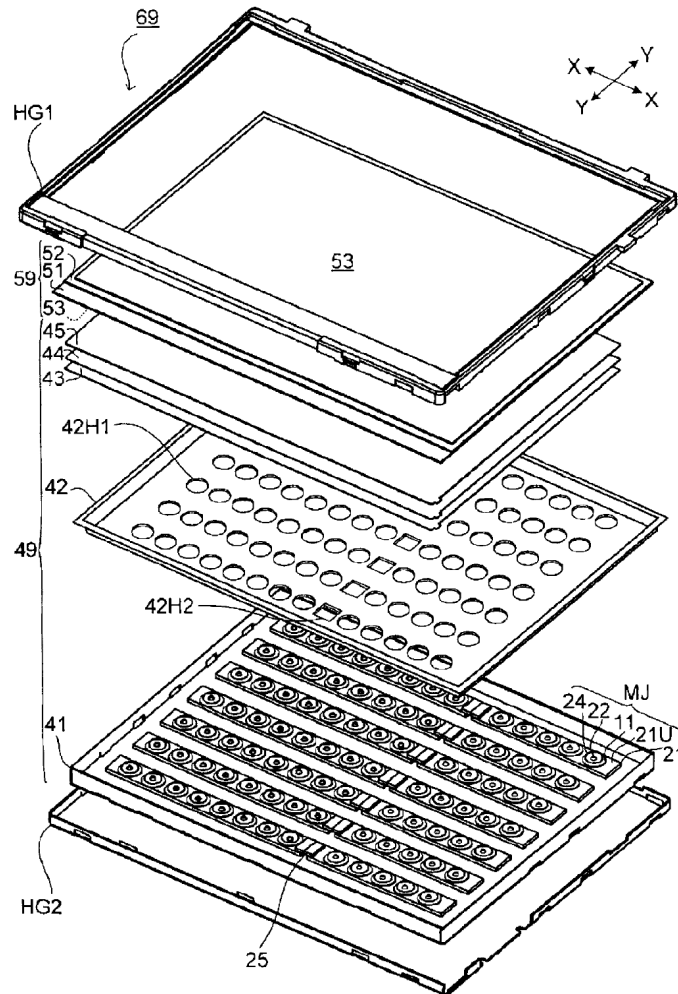
Ex. 1004, FIG. 2 (annotated).

This limitation is found in Yokota. Further, as shown above, the openings in first surface 42b are larger than the size of the LED 22. Ex. 1003 at ¶¶158-159.

7. Claim 12 – “The planar lighting device of claim 1, wherein the openings are disposed in the first surface and spaced apart by a predetermined distance.”

FIG. 1 of Yokota discloses that holes 42H in the reflective 42 are disposed on the first surface of the reflection sheet 42 and arranged in an array in the central portion of reflective sheet 42 and are spaced apart by a predetermined distance in the manner of the LEDs 22. Ex. 1003 at ¶160.

FIG.1



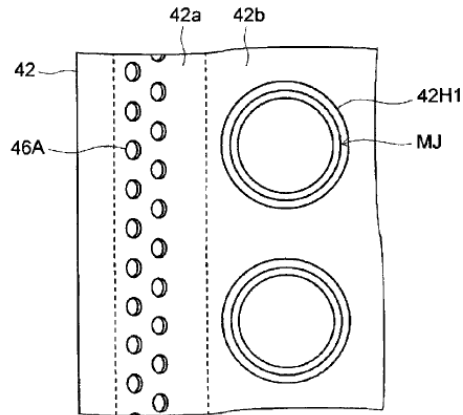
Ex. 1004, FIG. 1.

Yokota teaches the limitation of claim 12. Ex. 1003 at ¶161.

8. Claims 13 and 23 – “The planar lighting device of claim 1/claim 22, wherein the hole pattern is located at a position where corresponding light sources are located.”

As shown in FIG. 3 of Yokota, the pattern of holes 42H is located proximate to, and at a position corresponding to, LEDs in light sources MJ.

FIG.3



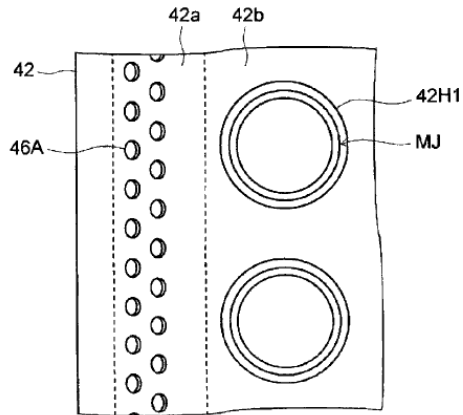
Ex. 1004 at FIG. 3

Yokota teaches the additional limitation of claims 13 and 23. Ex. 1003 at ¶¶162-163.

9. Claims 14 and 24 – “The planar lighting device of claim 1/claim 22, wherein a plurality of hole patterns is provided in the second surface, and wherein the hole patterns repeat in the second surface.”

Yokota shows in FIG. 3 a repeating pattern of holes 46A in the inclined portion 42a (second surface) of reflective sheet 42b and teaches that the use of holes or dots of light absorbent material are interchangeable. Ex. 1004 at [0079], [0081], [0090].

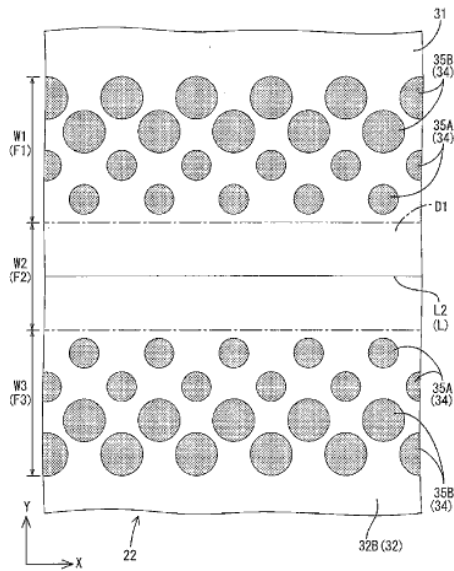
FIG.3



Ex. 1004 at Fig. 3.

Matsumoto shows a repeating dot pattern of light absorbent material where the pattern includes two different sizes of dots. Ex. 1005 at [0077], [0080]; Fig. 9.

FIG.9



Ex. 1005 at Fig. 9.

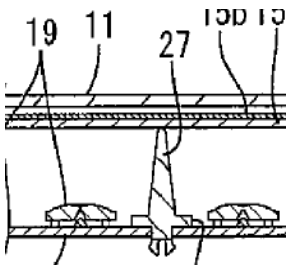
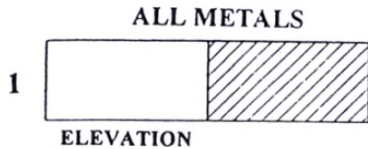
As explained in with regard to Ground 1, claim 1, limitation 1g, Section VII.A.1.g, *supra*, one of skill in the art world have been motivated to modify the

pattern of holes in Yokota in view of Matsumoto to provide patterns of holes of different sizes with the patterns repeating in the inclined surface 42a (second portion) of the reflective sheet 42. Ex. 1003 at ¶165-166.

The additional limitation of claims 14 and 24 would have been obvious from Yokota modified in view of Matsumoto. *Id.* at ¶167.

10. Claims 15 and 25 – “The planar lighting device of claim 14/claim 24, wherein the hole patterns are spaced apart by a predetermined distance.”

The hole pattern resulting from modification of Yokota in view of Matsumoto provides holes of two different sizes in a pattern shown in FIG. 9 of Matsumoto. The holes in the patten of Matsumoto are spaced apart by a predetermined distance. This limitation is met by the modification of Yokota in view of Matsumoto as discussed at Ground 1, claim 1, limitation 1g

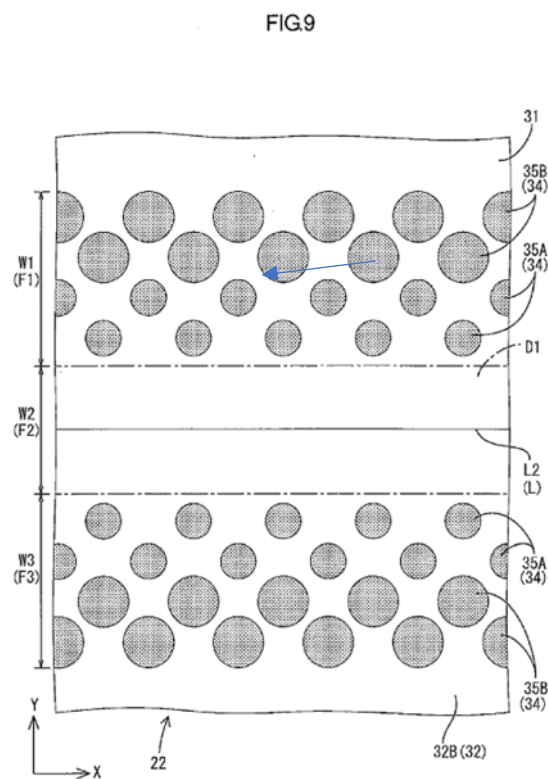
Matsumoto, Ex. 1005 FIG. 4 excepted	USPTO Guide for Preparation of Patent Drawings – June 2002, p. 74 Ex. ____.
	

, Section VII.A.1.g, *supra*. Ex. 1003 at ¶168.

11. Claim 16 and 26 – “The planar lighting device of claim 1/claim 22, wherein the through holes of the hole pattern increase and decrease in size repeatedly.”

Matsumoto shows that the pattern of dots of light absorbent material in at least the two middle rows of dots repeatedly increase and decrease in size (area).

Ex. 1005 at FIG. 9.



Ex. 1005 at Fig. 9.

When Yokota is modified in view of Matsumoto, holes of two different sizes are provided in patterns in the inclined portions 42a of reflection sheet 42. This modification of Yokota in view of Matsumoto meets the limitations of claims 16 and 26 because each small hole 35a would be adjacent to a large hole 35b.

Moreover, it would have been a matter of design choice to select the locations and other patterns where the holes increase and decrease in size repeatedly according to the change of reflectance required to provide uniform illumination of the diffusion sheet. Ex. 1004 at [0081], [0092]; Ex. 1003 at ¶¶169-170.

The subject matter of claims 16 and 26 would have been obvious from Yokota in view of the Matsumoto at the time the invention of the '740 patent was made. Ex. 1003 at ¶171.

12. Claims 17 and 27 – “The planar lighting device of claim 1/claim 22, wherein neighboring through holes of the hole pattern are different in size.”

In the pattern of dots of reflectance reducing material shown in FIG. 9 of Matsumoto (see reproduction of FIG. 9 in the above discussion of claims 16 and 26) vertically neighboring dots and diagonally neighboring dots in the middle two rows differ in size (area). [Ex. 1005 at FIG. 9]. Yokota teaches that dots of light absorbent material and holes are interchangeable as reflection reduction elements to reduce light reflectance in selected areas of a reflection sheet in order to uniformly illuminate a diffusion sheet in a backlight assembly. Ex. 1004 at [0089], [0090]. Thus, Yokota modified in view of Matsumoto provides to provide a pattern of through in the pattern of the dots of Matsumoto yields the limitations of these claims. Ex. 1004 at [0081], [0092]; Ex. 1003 at ¶172.

The additional limitation of claims 16 and 26 would have been obvious from the modification of Yokota in view of Matsumoto. Ex. 1003 at ¶173.

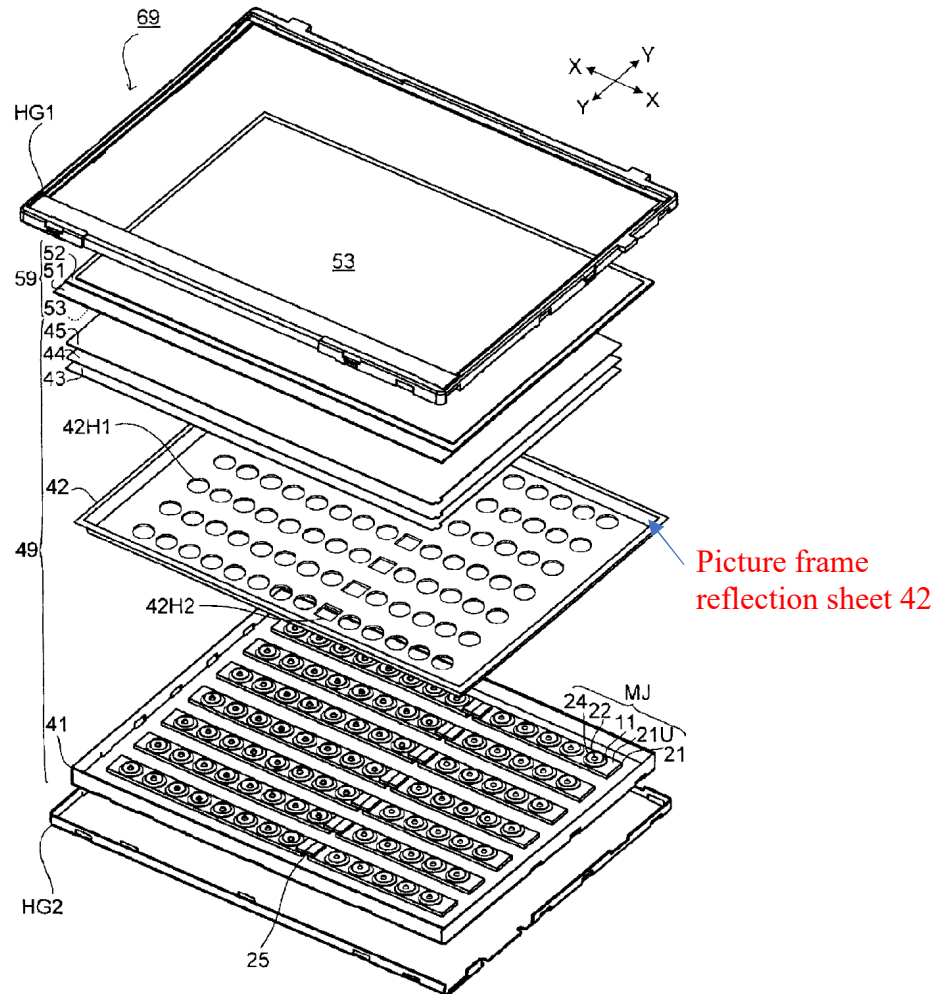
13. Claim 18 – “The planar lighting device of claim 1, wherein the optical sheet comprises at least one of a diffusion layer, a lower polarizing plate, a color filter substrate and an upper polarizing plate.”

Yokota discloses a diffusive sheet 43, a prism sheet 44, a microlens sheet 45, and a polarizing film 53 disposed on the light emitting modules MJ, which includes the light sources, i.e., LEDs 22. Ex.1004 at [0055], [0059], FIGs. 1 and 2. These are optical sheets. Ex. 1003 at ¶174 Therefore, Yokota teaches an optical sheet which comprises a diffusion layer meeting this claim. *Id.*

14. Claim 19 – “The planar lighting device of claim 1, wherein the second surface is connected at four side edges of the first surface.”

As described earlier, Yokota discloses (1) that second surfaces (the inclined surfaces 42a) are provided like a picture frame to surround the main plane 42b of the reflection sheet 42, and (2) are contiguous with the main plane 42b (first surface). Ex. 1004 at [0076], [0079], Fig. 1. As can be seen below, the second surface (inclined surfaces of 42) meet at all four side edges of the flat surface of the first surface (flat surface of 42). Ex. 1003 at ¶175.

FIG. 1



Ex. 1004, FIG. 1 (annotated).

Yokota teaches the additional limitation of claim 19. Ex. 1003 at ¶176.

15. Claim 20 – “The planar lighting device of claim 19, wherein the hole pattern is provided in the second surface connected at two side edges of the first surface.”

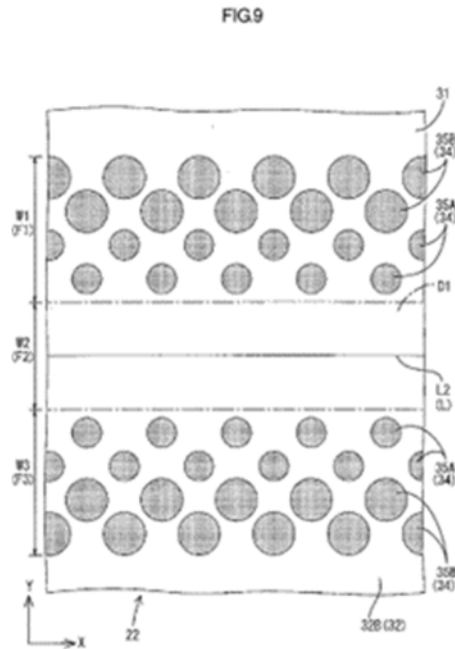
Since Yokota teaches that the surfaces 42a are contiguous with the main plane 42b on four side edges, Yokota meets this claim limitation that the surfaces 42a are contiguous with the main plane 42b on two side edges. Ex. 1003 at ¶177.

The additional limitation of claim 20 is fully met by Yokota. Ex. 1003 at ¶178.

16. Claims 21 and 28 – “The planar lighting device of claim 1/22, wherein a largest through hole is disposed in a location close to a corresponding light source.”

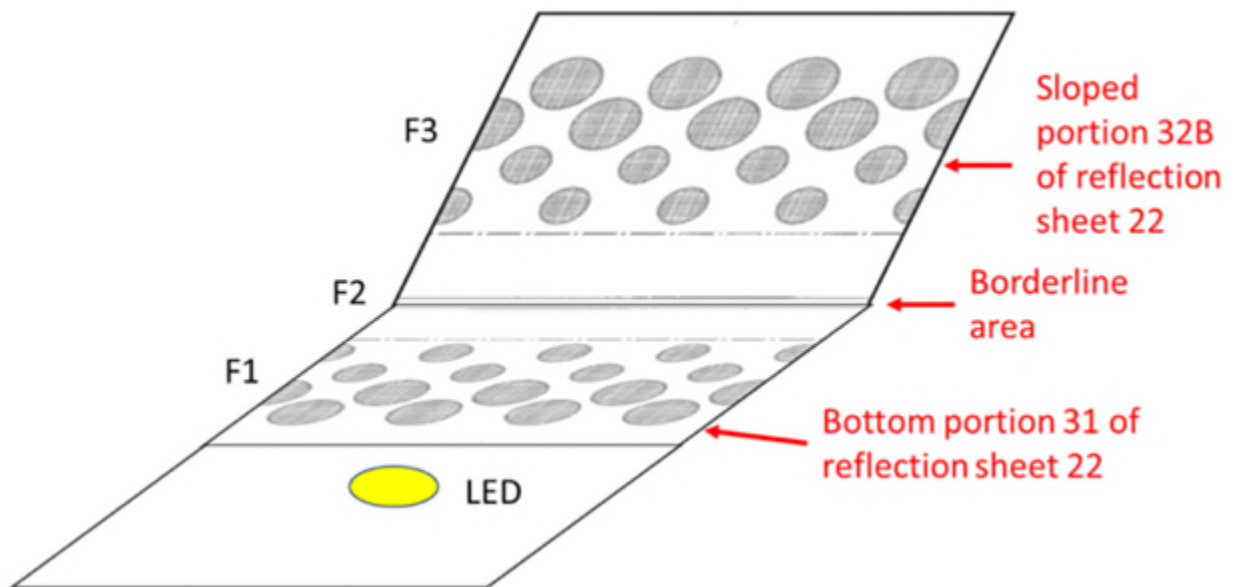
As noted in Section VII.A.1.g, *supra*, Yokota applies a reflection reduction treatment, i.e., holes in the inclined area 42a of a reflective sheet 42, to change the reflectance of the inclined surface 42a is to avoid over illuminating the peripheral areas of a diffusive plate 45. Ex. 1004 at [0013]-[0015].

Matsumoto uses a reflection reduction treatment to eliminate dark areas D1 causing non-uniform illumination near the borderline L of the reflective sheet in the backlight assembly. Ex. 1004 at [0088],[0089]. As shown in FIG. 9 and in the below diagram schematically combining portions of FIGs 8 and 9, Matsumoto solves this problem by applying a pattern of smaller light absorbent dots 35A near basal (bottom) portions of the sheet sloped portions 32A and a pattern of larger light absorbent dots 35B near distal (top) portions of the sheet sloped portions 32A. FIG. 9 illustrates a pattern of reflectance reduction elements incorporated into the structure of FIG. 8 to eliminate noticeable dark portions.



Ex. 1005, FIG. 9.

The illustration below is a schematic combination of portions of FIGs. 7, 8 and 9 showing the relationships of areas F1-F3 of the bottom portion 31 and the inclined, sheet sloped portion 32B of the reflection sheet 22.



Ex. 1005, FIGs. 7, 8 and 9 (annotated).

A result of applying the reflection reducing spots to the reflection sheet in area F3 light absorption will be less at the basal portions of sheet sloped portions 32B that are illuminated less brightly and greater at the peripheral portions of the sheet sloped portions 32B that are illuminated more brightly. Ex. 1003 at ¶182. The result is to make the light reflected from the entirety of the sheet sloped portions more uniform to eliminate the dark portions, which are artifacts of the design of the backlight assembly. *Id.*

Stepping back, in the context of a direct, planar backlight assembly, Yokota modified in view of Matsumoto instructs a POSITA to use larger reflection reduction elements, e.g., large holes, in areas that are brightest or where the greatest reduction in light reflection is desired. Ex. 1003 at ¶183. Smaller reflection reduction elements (smaller holes) are located in areas less bright or where light reflectance is to be suppressed to a lesser degree. *Id.* Equipped with this knowledge, and the teachings of Yokota and Matsumoto of examples of the practical application of these principles in backlight assemblies, a POSITA faced with unwanted high illumination in a planar, direct backlight assembly would have easily understood to use holes of selected sizes in selected patterns and locations to suppress reflectance of a reflection sheet and attain uniform illumination. *Id.* Placing the largest holes in the area of highest brightness, such as locations nearest to light sources, was merely a routine design choice readily apparent to a POSITA

from the combined teachings of Yokota and Matsumoto. *Id.* The recitation of claims 21 and 29 that the “largest through hole is disposed in a location close to a corresponding light source” applies the principals readily apparent from Yokota modified in view of Matsumoto in a routine manner to provide the greatest suppression of reflectance at a location closest to the light source. *Id.* A POSITA would have had a reasonable expectation of success in making this combination because it would amount to no more than the combination of known elements to yield predictable results. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 415-16 (2007); Ex. 1003 at ¶183.

The subject matter of claims 21 and 29 would have been obvious from Yokota in view of Matsumoto. Ex. 1003 at ¶184.

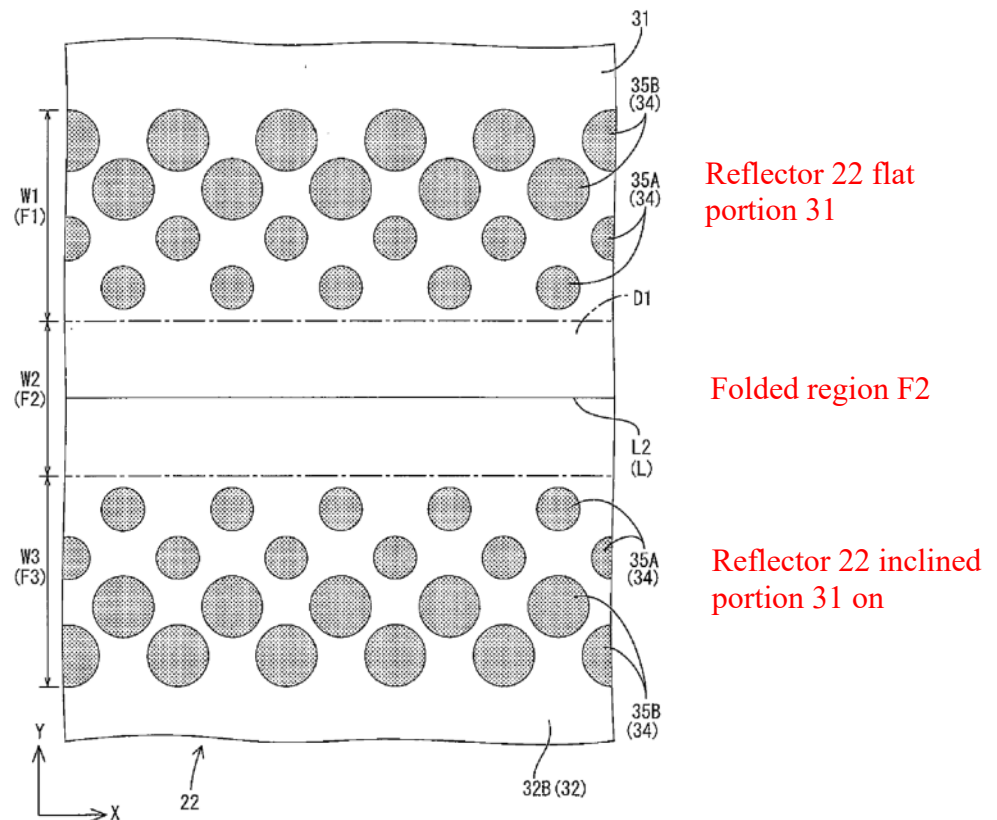
17. Claim 9 and 29 – “The planar lighting device of claim 1, wherein the second surface is bent at a periphery of the first surface./The display device of claim 22, wherein the inclination is formed by bending a portion of the reflection layer.”

Claim 9 depends from claim 1 and recites that “the second surface is bent at a periphery of the first surface.” Claim 29 depends from claim 22 and recites that “the inclination is formed by bending a portion of the reflection layer.” These claims are directed to the inclined second surface of the reflection layer. Ex. 1003 at ¶185.

Yokota teaches that inclined surface 42a is contiguous with a main plane 42b of the reflective sheet 42. Ex. 1004 at [0076] and [0079], FIGs. 2 and 3. Since the peripheral portion 42a is both inclined with respect to, and contiguous with, the main plane 42b it must be bent (formed by bending) at the juncture of the inclined portion 42a and the reflective sheet 42. Ex. 1003 at ¶186.

Furthermore, Matsumoto teaches a folded reflection sheet 22 formed by bending at borderline shown in FIG. 9. Ex. 1005 at [0074]-[0076], FIG. 9. Ex. 1003 at ¶187.

FIG.9



Ex. 1005, FIG. 9 (annotated).

The additional limitations of claims 9 and 29 would have been obvious over Yokota modified in view of Matsumoto. Ex. 1003 at ¶188.

B. Ground 2: Claim 30 Would Have Been Obvious Over Yokota in View of Matsumoto and Ha et al.

1. Claim 30 recites “The display device of claim 22, wherein the inclination is about a right angle with respect to the first surface.” As shown in the discussion of independent claim 22 in Ground 1 the combination of Yokota modified in view of Matsumoto renders claim 22 invalid as obvious. Claim 22 recites “a second surface connected to the first surface, wherein the second surface has an inclination with respect to the first surface.” Yokota meets this limitation by disclosing that surfaces 42a of reflection sheet 42 are contiguous with, and inclined with respect to, the main plane 42b of reflection sheet 42. See discussion in Section VII.A.1.f relating to Ground 1, claim 1, limitation 1f; Ex. 1003 at ¶¶117,189.

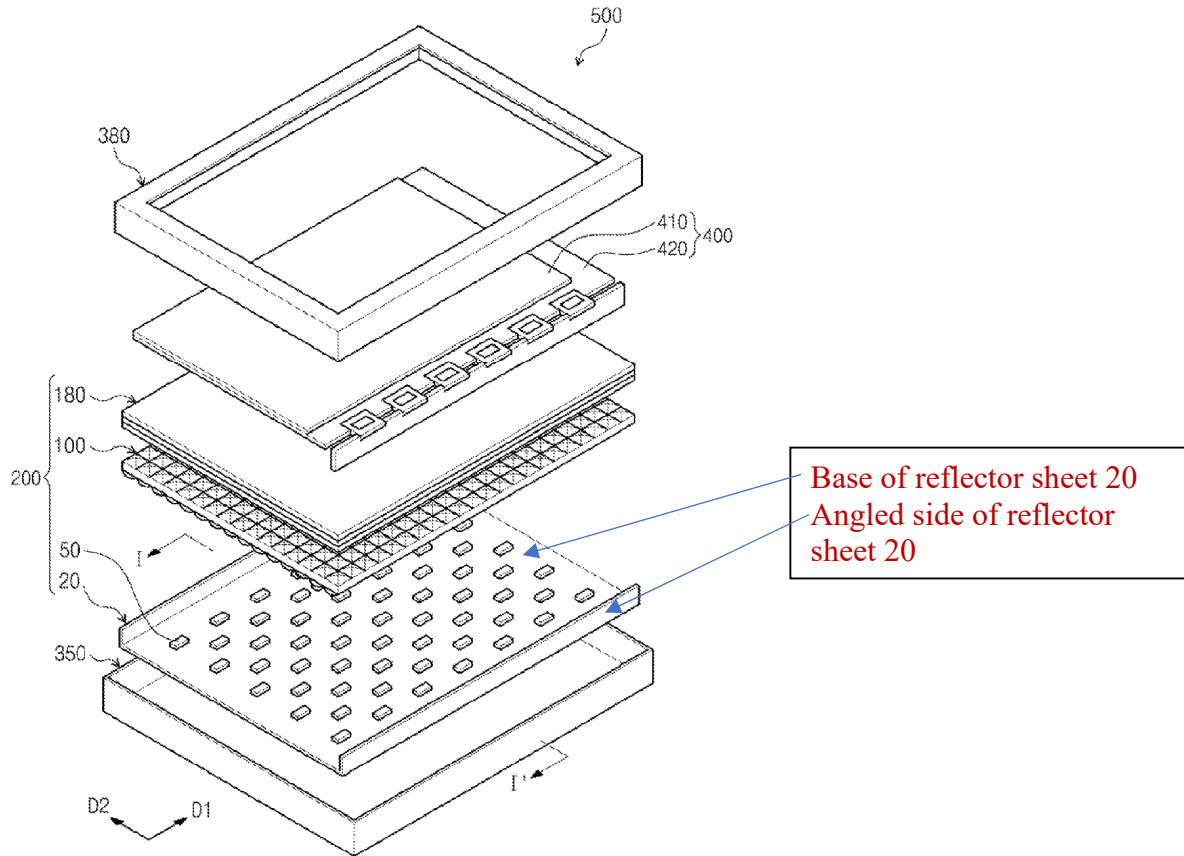
Claim 30 further narrows the scope of independent claim 22 by requiring that the “inclination [of the second surface] is about a right angle with respect to the first surface.” In other words, the peripheral portion of the reflection sheet is inclined at about a right angle with respect to the main body of the reflection sheet. Ha et al. shows this structure and Yokota modified in view of Matsumoto and Ha et

al. renders the subject matter of claim 30 invalid for obviousness. Ex. 1003 at ¶190.

Like Yokota and Matsumoto, Ha et al. is directed to a backlight assembly as evident by its title “Backlight Assembly and Display Apparatus Having the Same.” Ex. 1006 at Title. FIG. 1 shows a direct type of backlight assembly 200. Ex. 1003 at ¶191.

FIG. 1 is an exploded view of a display apparatus having a backlight. Ex. 1006 at [0016]. Ex. 1003 at ¶192.

Fig. 1



Ex. 1006 at Fig. 1 (annotated).

Fig. 1 includes a reflection plate 20 and a plurality of light sources 50 arranged on the reflection plate 20. Ex. 1006 at [0034]. The reflection plate 20 includes peripheral portions inclined at a right angle with respect to the central portion of the plate 20, i.e., “about a right angle” as required by claim 30. Ex. 1006 at Fig. 1; Ex. 1003 at ¶193.

As demonstrated in Section VII.A.1., *supra*, Yokota modified in view of Matsumoto instructs a POSITA to provide the structure of independent claim 22. Ha et al. is in the same technical field of those references and includes a reflection plate 20 to reflect light from the light sources 50 to illuminate a diffusion plate in the manner of Yokota and Matsumoto, Ex. 1006 at Fig. 1, for the same purpose as similar elements provided in Yokota and Matsumoto. Ex. 1003 at ¶194. From Yokota modified in view of Matsumoto, a POSITA would know to apply a reflection reduction treatment, including an array of holes or light absorbent dots of more than one size, to inclined, peripheral portions of a reflection sheet to reduce reflection from locations of high illumination compared to locations of lower illumination in order to uniformly illuminate a diffuser sheet. *Id.* Ha et al. teaches in Fig. 1 that the peripheral inclined portions of the reflection sheet 20 may be inclined at “about a right angle.” To apply the solution evident from Yokota modified in view of Matsumoto to the “about a right angle” portions of the reflection sheet 20 of Ha et al. facilitates the same result of uniform illumination of a diffuser sheet by selectively reducing high areas of reflectance. The principles are identical whether the inclination is “about a right angle” or a smaller angle. *Id.* A POSITA would further have been motivated to make this change because Ha et al. describes the reflection plate 20 as “reflect[ing] the light provided from the light sources 50 to enhance the amount of light used in the display panel.” Ex. 1006 at

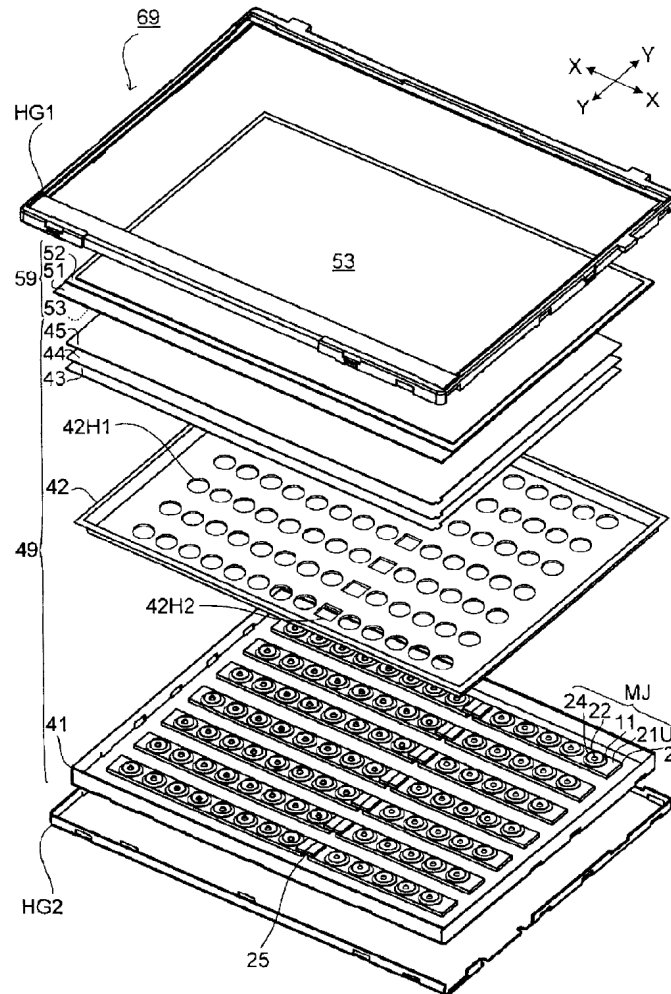
[0037]. Thus, Yokota modified in view of Matsumoto and further modified to have an inclination at about a right angle as shown in Ha et al. renders obvious the additional limitations of claim 30. Ex. 1003 at ¶194.

C. Ground 3: Claims 4-6 would have been obvious over Yokota in view of Kim et al.

1. Claim 4 – “The planar lighting device of claim 1, further comprising a lower cover having grooves, wherein the circuit substrate is located in one of the grooves.”

In FIG. 1, Yokota shows a plurality of sets of mounting boards 21 arranged parallel to one another on a chassis 41 of the backlight assembly. Ex. 1004 at [0061], [0068], FIG. 1. The mounting boards are circuit substrates for the lighting sources (LEDs). Ex. 1003 at ¶195.

FIG. 1

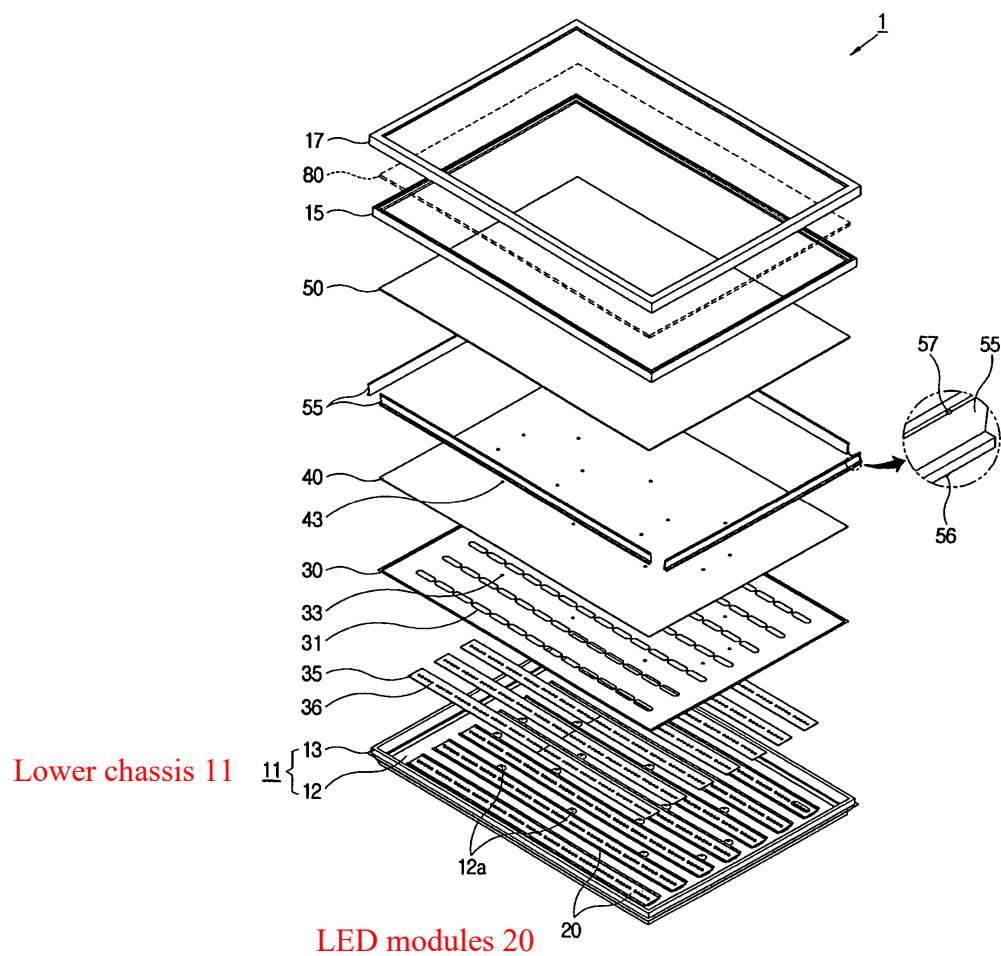


Ex. 1004, FIG. 1

Kim et al. similarly teaches an array of LED modules 20 comprising a plurality of LEDs 21 formed on LCD substrates 23. Ex. 1008, 4:8-26. As shown in FIG. 1 of Kim et al. reproduced below, a plurality of the LED modules 20, each including a plurality of LEDs 21, are arranged on a base portion 12 of lower chassis 11, which serves as a lower cover assembly. Ex. 1008 at 3:34-40, 5:49-53. The base portion 12 is shaped like a rectangular plate and is compactly coupled

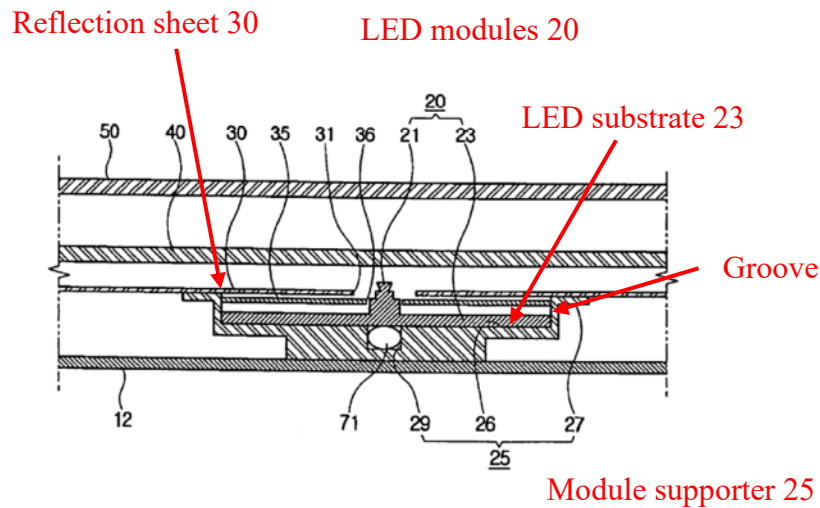
with a module supporter 25. Ex. 1008 at 5:58-61. Referring to FIGs. 1 and 2, the module supporter 25 comprises a module accommodator 26 that receives and supports the elongated LED modules 20 in elongated recesses or grooves. Ex. 1008 at 3:34-64; 4:43-45; Ex. 1003 at ¶196. The lower cover assembly thus has recesses or grooves formed by the module accommodators 26 of the module supporters 25 in which the LED modules 20 are located.

FIG. 1



Ex. 1008, FIG. 1 (Annotated).

FIG. 2



Ex. 1008, FIG. 2 (annotated).

A POSITA would have been motivated to look to Kim et al. to modify Yokota since the disclosures both relate to planar backlight units comprising strips of LEDs mounted on circuit substrates and that incorporate reflectors and diffusers to create a uniform light source. Ex. 1003 at ¶197. The use of recesses or grooves as proposed by Kim et al. would result in a more uniform light source since the thickness of the circuit substrates would be below the principal surface of the reflector sheet 42. *Id.*

Each of Yokota, Matsumoto, and Kim et al. discloses structures for mounting LED substrates in direct, planar backlight assemblies. A POSITA would have knowledge of such mounting structures and would have selected one of them or

other known alternatives to mount LED substrates in the backlight assemblies according to routine design choice. well within the capabilities of a POSITA and would not have required undue experimentation. Ex. 1003 at ¶198. The modification of the combination of Yokota and Matsumoto to include the module accommodator 26 of Kim et al. incorporated into the lower cover assembly would have been one such routine design choice. The subject matter of claim 4 is obvious over such combination. *Id.*

2. Claim 5 – “The planar lighting device of claim 4, wherein at least two circuit substrates are disposed on the lower cover.”

As shown in FIG. 1 of Kim et al. reproduced above, a plurality of LED modules 20, each including a plurality of LEDs 21 arranged on a circuit substrate, are provided on a lower chassis 11 of the chassis assembly 10, which serves as a lower cover assembly. Ex. 1008 at 3:34-40 (“the LED modules 20 may be plurally provided . . . as being transversely arranged with respect to a lower chassis 11 of the chassis assembly 10 (to be described later). Each LED module 20 comprises a plurality of LEDs 21 to emit light, and an LED substrate 23 supporting and driving the plurality of LEDs 21 (see FIG. 2).”). Therefore, a plurality of LED modules each with an LED substrate 23 means Kim et al. discloses at least two circuit substrates disposed on the lower cover. Ex. 1003 at ¶199. This meets the limitation of claim 5. *Id.*

3. Claim 6 – “The planar lighting device of claim 5, wherein the at least two circuit substrates are disposed on the lower cover and spaced apart by a predetermined distance.”

As shown in FIG. 1 of Kim et al. reproduced above, a plurality of LED modules 20, each including a plurality of LEDs 21 arranged on a circuit substrate (LED substrate 23), are disposed on a lower chassis 11 of the chassis assembly 10, which serves as a lower cover assembly. Ex. 1008 at 3:34-40; Ex. 1003 at ¶200. The circuit substrates are shown in FIG. 1 to be spaced apart by a predetermined distance. *Id.* This meets the limitation of claim 6. *Id.*

VIII. THE BOARD SHOULD NOT EXERCISE ITS DISCRETION TO DENY INSTITUTION

A. 35 U.S.C. § 314(a)

The Board should grant institution notwithstanding the parallel litigation between Patent Owner and Petitioners. In determining whether to exercise its discretion to deny institution of IPR in view of a parallel proceeding, the Board considers the following factors:

1. whether a stay of the parallel proceeding has been granted or may be granted if an IPR proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;

5. whether the Petitioners and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020)

(precedential) (“*Fintiv*”).

In evaluating these factors, the Board “takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.*

1. *Factor 1: The parallel proceeding is not stayed, and it is unknown whether a stay would be granted (Fintiv factor 1)*

Fintiv factor 1 is neutral. This factor considers whether the court presiding over the parallel proceeding has granted a stay or likely would grant a stay if the Board institutes IPR. *Fintiv*, Paper 11 at 6. Where a stay has not been granted, and it is unknown whether the presiding court would grant a stay if the Board institutes IPR, this factor is neutral. *See Cisco Sys., Inc. v. Estech Sys., Inc.*, IPR2021-00333, Paper 12 at 10 (PTAB July 7, 2021) (finding *Fintiv* factor 1 neutral after “declin[ing] to speculate on the likelihood of a stay.”).

In this case, neither party requested a stay in the parallel proceeding, and it is unknown whether the Court would grant a stay if the IPR is instituted. Accordingly, this factor is neutral.

2. *Factor 2: The trial will commence after the due date of a Final Written Decision (Fintiv factor 2)*

This factor weighs in favor of institution. The answer to the complaint was due on August 15. The Court in the parallel proceeding has issued a schedule. Currently, the Court has jury selection set for February 5, 2024. Ex. 1010 at p. 1.

Further, the Interim *Fintiv* Guidance³ states: “Parties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration.” USPTO *Fintiv* Guidance., 8-9. The Interim *Fintiv* Guidance states that such statistics are available at U.S. District Courts—Combined Civil and Criminal Federal Court Management Statistics (March 31, 2022) (“U.S. District Court Statistics”).⁴ *Id.* at 9 n.12. The most recent statistic on median time-to-trial for civil actions in the Eastern District of Texas is 24.2 months. Ex. Ex. 1011 at p. 35.

³ Available at

https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621.pdf. (“USPTO *Fintiv* Guidance”).

⁴ Available at <https://www.uscourts.gov/statistics/table/nadefederal-court-management-statistics/2022/03/31-1>.

Here, the complaint was filed on April 21, 2022. Ex. 1012. Applying the above statistic, the expected trial date would be approximately May 2024, well after the Board's FWD deadline in this case which should be about February 2024. In such circumstances, the Board weighs *Fintiv* factor 2 as against exercising discretion to deny institution. *See, e.g., Hanwha Solutions Corp. v. REC Solar Pte. Ltd.*, IPR2021-00989, Paper 12 at 14 (PTAB Dec. 13, 2021).

3. *Factor 3: The parties' investments in the parallel proceeding weigh in favor of institution (Fintiv factor 3)*

Fintiv factor 3 favors institution. This factor considers "the investment in the parallel proceeding by the court and the parties." *Fintiv*, Paper 11 at 6. As stated, the date of the FWD is estimated to be in February. 35 U.S.C. § 314(b); 37 CFR § 42.107(b).

A scheduling conference was set for September 22, 2022. Ex. 1011. The date for a claim construction hearing and jury selection are August 15, 2023 and February 5, 2024 respectively. Ex.1010. The deadline to substantially complete document production in the parallel proceeding and file opening claim construction briefs is set for July 5, 2021, completion of fact and expert discovery is September 5, 2023 and October 17, 2023, respectively. The Decision on Institution (approximately February 2023) will be well before each of those deadlines. *Id.* Moreover, the District Court will not have considered any dispositive issues in the

case, or any invalidity issues based on the prior art. Accordingly, this factor favors institution.

4. *Factor 4: IPR will address issues not raised in the parallel proceeding (Fintiv factor 4)*

Fintiv factor 4 will likely favor institution. On September 8, 2022, Plaintiff served infringement contentions against the Defendants in the parallel litigation. Ex. 1013. To date, Plaintiff has only accused claims 1-3, 7-29, and 31 of infringement. *Id* at p. 3. This Petition asserts invalidity of all 31 claims. Further, Petitioners submit a stipulation (Ex. 1009) that if IPR is instituted they will not pursue in the parallel proceeding invalidity positions that are brought or could have brought in this Petition. The Board recognizes with regard to factor 4 such stipulation weighs against exercising discretion. *Acuity Brands Lighting, Inc. v. Ultravision Technologies, LLC*, IPR2020-01638, Paper 8 at 12-13 (PTAB May 6, 2021). Accordingly, factor 4 also favors institution.

5. *Factor 5: PO and Petitioners are parties in the parallel proceeding (Fintiv factor 5)*

In addition, when the Board's deadline for FWD precedes the district court trial date and the parties are the same in both proceedings, *Fintiv* factor 5 typically weighs against exercising discretion to deny institution. *See, e.g., Hanwha Solutions Corp.*, IPR2021-00989, Paper 12 at 17; *Carrier Fire & Security Americas Corp. v. Sentrilock, LLC*, IPR2021-00665, Paper 12 at 13-14 (PTAB Sept. 16, 2021).

6. *Factor 6: Other circumstances weigh in favor of institution (Fintiv factor 6)*

This factor considers “other circumstances that impact the Board’s exercise of discretion, including the merits.” *Fintiv*, Paper 11 at 6. The merits of the Petition and considerations of efficiency and fairness not addressed in *Fintiv* factors 1-5 favor institution.

The merits of this Petition are strong. The Petition exposes the claims are merely obvious combinations of elements that were well-known in the prior art. The Board has found *Fintiv* factor 6 “strongly weighs against denying institution” in view of similarly strong petitions. *HP Inc. v. Slingshot Printing LLC*, IPR2020-01084, Paper 13 at 11-12 (PTAB Jan. 13, 2021).

Considerations of efficiency and fairness also favor institution. Unlike in *Fintiv* (involving a one-patent district court case), PO asserts six patents in the parallel proceeding. Rather than leave to the District Court the issues of invalidity and non-infringement for all six patents, it is more efficient for the Board to address the invalidity grounds in this Petition. Doing so would help alleviate the burdens on the District Court in addressing six patents and several accused products.

Moreover, the Board’s technically trained judges are well suited to assess the patentability grounds presented in this Petition. This fact weighs heavily against discretionary denial. *Fintiv* factor 6 favors institution.

In this case, *Fintiv* factor 1 is neutral and factors 2-6 favor institution.

The merits of this Petition are strong. The Petition exposes the claims as mere obvious combinations of elements that were well-known in the prior art. The Board has found *Fintiv* factor 6 “strongly weighs against denying institution” in view of similarly strong petitions. *HP Inc. v. Slingshot Printing LLC*, IPR2020-01084, Paper 13 (PTAB Jan. 13, 2021).

B. 35 U.S.C. § 325(d)

Under 35 U.S.C. § 325(d), “[i]n determining whether to institute . . . the Director may take into account whether . . . the same or substantially the same prior art or arguments previously were presented to the Office.” Certain factors have been identified as informing whether the Board should exercise its discretion under this statute, particularly the following:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;

- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioners rely on the prior art or PO distinguishes the prior art;
- (e) whether Petitioners have pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential in relevant part).

None of the references cited in the Above Grounds is cited on the face of the '740 patent or referenced in the file history of the '740 patent with the consequence that factors c, d, e, and f are not applicable. This Petition shows that had the Examiner considered the combinations set forth in this Petition, the obviousness of claims 1-31 would have been manifest. (factors (a) and (b)).

Thus, in this case, these factors counsel against the Board exercising its discretion under 35 U.S.C. § 325(d).

IX. CONCLUSION

Petitioners respectfully requests institution of IPR.

Dated: November 29, 2022

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioners hereby certifies, in reliance on the word count feature provided by the word-processing system used to prepare this Petition, that the number of words in this Petition is 13,993. Pursuant to 37 C.F.R. § 42.24(a), words in the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, certificate of word count, appendix of exhibits, and claim listing were excluded.

Dated: November 29, 2022

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Petition and all exhibits and other documents filed together with the Petition were served on November 29, 2022 via Federal Express on the attorney of record for Patent Owner at the following address:

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A copy of the foregoing Petition and all exhibits and other documents filed together with the Petition were also served on November 29 2022 via electronic mail to counsel for LG Electronics Inc. in the Eastern District of Texas litigation at the email address below:

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IPR2023-00239, Petition for *Inter Partes* Review
U.S. Patent No. 9,080,740

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