

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOE TECHNOLOGY GROUP CO., LTD.,
BEIJING BOE DISPLAY TECHNOLOGY CO., AND
MOTOROLA (WUHAN) MOBILITY TECHNOLOGIES
COMMUNICATION CO., LTD.,
Petitioners

v.

ELEMENT CAPITAL COMMERCIAL COMPANY PTE. LTD.,
Patent Owner

IPR2023-00605
U.S. PATENT NO. 7,259,736

**PATENT OWNER'S PRELIMINARY RESPONSE
PURSUANT TO 37 C.F.R. §42.107(a)**

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Exhibit	Description
2001	Disclaimer in Patent under 37 CFR 1.321(a)
2002	Declaration of Dr. Aris Silzars
2003	Curriculum Vitae of Dr. Aris Silzars
2004	Certificate of Correction of U.S. Patent No. 7,259,736
2005	United States District Courts — National Judicial Caseload Profile, “ https://www.uscourts.gov/statistics-reports/federal-court-management-statistics-march-2023 ”
2006	Explanation of Selected Terms for United States District Courts — National Judicial Caseload Profile, “ https://www.uscourts.gov/statistics-reports/federal-court-management-statistics-march-2023 ”
2007	Plaintiff’s Motion for Leave to Effect Service by Alternate Means, <i>Element Capital Commercial Company PTE. Ltd. v. BOE Technology Group Co., Ltd. et al.</i> , Case No. 2:22-cv-0118-JRG (EDTX)
2008	Order Granting Motion for Leave, <i>Element Capital Commercial Company PTE. Ltd. v. BOE Technology Group Co., Ltd. et al.</i> , Case No. 2:22-cv-0118-JRG (EDTX)
2009	Joint Motion for Entry of Agreed Docket Control Order, <i>Element Capital Commercial Company PTE. Ltd. v. BOE Technology Group Co., Ltd. et al.</i> , Case No. 2:22-cv-0118-JRG (EDTX)
2010	USPTO Memo regarding Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (“Fintiv Memo”)

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2013	Amal Ghosh, et al., "Short Course S-1: Fundamentals of OLEDs," 63-81 (2004)
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Element Capital Commercial Company PTE. LTD (“Element” or “Patent Owner”) submits this Preliminary Response to the Petition (“Pet.”) seeking *inter partes* review of claims 3-5, 7, 9, and 13-17 of U.S. Patent No. 7,259,736 (“the ’736 Patent,” EX-1001), filed by BOE Technology Group Co., Ltd., Beijing BOE Display Technology Co., and Motorola (Wuhan) Mobility Technologies Communication Co., Ltd. (collectively, “Petitioners”).

I. SUMMARY OF ARGUMENT

The Board should deny the Petition because all claims (*i.e.*, claims 3-5, 13, and 16-17) challenged under Ground 1A of the Petition are disclaimed which renders Ground 1A of the Petition moot, and because the Petition fails to establish a reasonable likelihood of success with respect to the remaining (*i.e.*, non-disclaimed) challenged claims (*i.e.*, claims 7, 9, 14-15) under the Petition’s only other ground, Ground 1B.

II. TECHNICAL BACKGROUND OF THE ART

At the time of the filing date of the ’736 Patent, there existed three distinct types of two-dimensional (flat panel) displays based on how a light emitting material is controlled to change the brightness of each segment or cell of the display: (1) segment addressed, (2) passive matrix displays, and (3) active matrix displays. EX-

2002, ¶¶ 10-14. The three types differed in both structure and function, and the technologies and design methods used for one were not readily transferable to the others. EX-2002, ¶¶ 11.

Segment addressed displays are known as the simplest and are a type characterized by a direct electrical connection to each pixel. EX-2002, ¶ 12. Segment addressed displays are used for clocks and other limited information applications, and are limited in complexity by the number and density of wiring interconnections that can be accommodated on a substrate. EX-2002, ¶ 12.

Passive matrix displays are more complex than segment addressed displays, and are displays that have rows and columns and are addressed by briefly stimulating each cell to change its light emission characteristics. EX-2002, ¶ 13. In such display types, after a particular cell is stimulated, it may have an extended relaxation time to hold an image while other cells are being addressed. EX-2002, ¶ 13. An example of a passive matrix display is shown below in FIG. A. EX-2002, ¶ 15; EX-2011, FIG. 10.2.

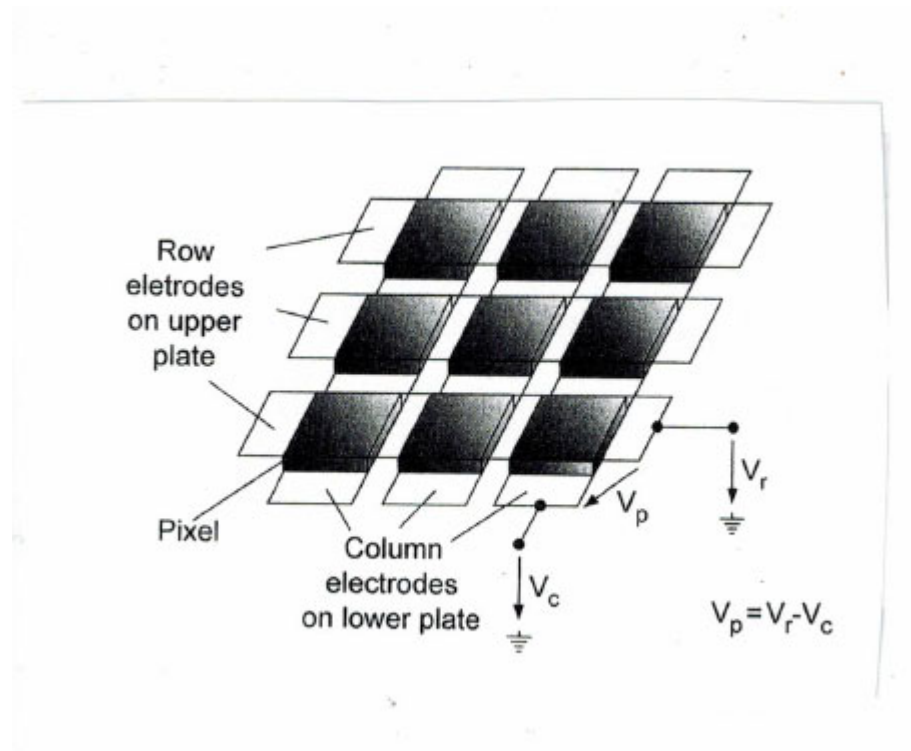


FIG. A (Passive Matrix)

Active matrix displays are the most complex of the three types of displays, and are the type described in the '736 Patent. EX-2002, ¶ 14. Active matrix displays constitute essentially all higher resolution and larger screen size flat panel displays in the market today. EX-2002, ¶ 14. An example of an active matrix display is shown below in FIG. B. EX-2002, ¶ 15; EX-2011, FIG. 10.3.

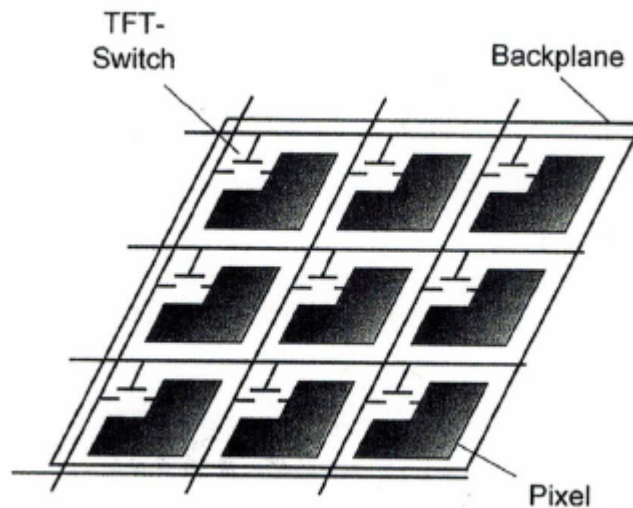


FIG. B (Active Matrix)

Differences between passive matrix displays and active matrix displays are substantial.

For example, passive matrix displays require a structure that places the rows on one substrate and the columns on an opposite substrate, whereby both rows and columns have varying voltages applied in a particular time sequence to address the cells. EX-2002, ¶ 16. There is no common electrode. EX-2002, ¶ 16. On the other hand, in an active matrix display there is a common electrode on one substrate while all of the active addressing circuitry is placed on an opposing substrate. EX-2002, ¶ 16. All the row and column connections in an active matrix display are thus on one

substrate with only a common voltage reference is on the opposing substrate. EX-2002, ¶ 16. As a result, the structure and method of operation are entirely different for these two types of LC displays and the methods used to design and manufacture one type are not readily applicable to the other. EX-2002, ¶ 16.

The need to have rows on one substrate and columns on another for the passive matrix displays has yet other consequences in how the conductive patterns are placed as compared to active matrix displays. EX-2002, ¶ 17. In a passive matrix display, the row and column conductors are integral with the pixel electrodes. EX-2002, ¶ 17. That is, there are no intervening elements. Since the pixel electrodes must typically be transparent, it is quite common to form the rows and columns from this same transparent conductor material. EX-2002, ¶ 17. In contrast, in an active matrix display, the pixel electrodes are isolated from the row and column addressing lines by the thin film transistors (TFTs) placed in the area of each pixel that does not interfere with the light emission. EX-2002, ¶ 17. The row and column electrodes for addressing the pixels are placed in the narrow spaces between the pixels or underneath the emitting areas. EX-2002, ¶ 17. Thus, the location, width, and constituent materials of the rows and columns are substantially different in an active matrix display. EX-2002, ¶ 17. Furthermore, an active matrix display has a

supplemental capacitor for each pixel. EX-2002, ¶ 17. These capacitors are used to store additional charge and provide stability and uniformity for the display. EX-2002, ¶ 17. Such capacitors are not used in passive matrix displays. EX-2002, ¶ 17.

Because the active matrix displays use thin-film transistors and supplemental capacitors, the cell response is proportional to the total charge that is placed at each pixel location during the addressing period. EX-2002, ¶ 18. Since passive matrix displays do not have such a charge storage mechanism, they are more susceptible to variations in electrode resistance and the voltage drops that can be introduced by such resistance variations. EX-2002, ¶ 18. This again differentiates the design and fabrication methodologies for these two distinctly different addressing methods. EX-2002, ¶ 18.

III. BACKGROUND OF THE '736 PATENT

The '736 Patent is directed towards an electro-optical device that is an active matrix, organic light-emitting diode ("OLED") display. EX-2002, ¶ 31. In particular, the '736 Patent aims to reduce image distortions and color irregularities caused by directional viewing variations that occur in active matrix OLED displays due to pixel circuits having different shapes and/or different pitches in the column

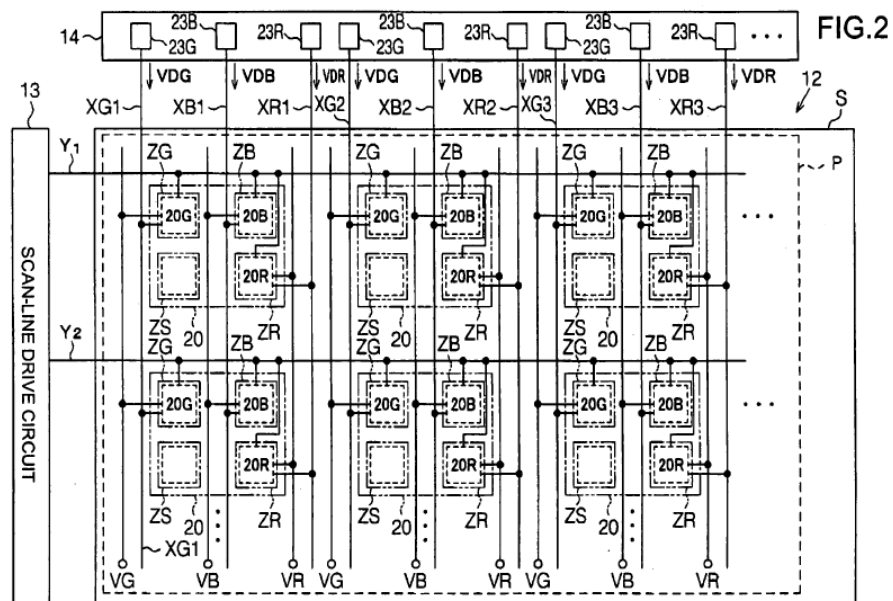
direction (data-line direction) and the row direction (scan-line direction) of a display panel portion. EX-1001, 1:23-24; EX-2002, ¶ 31.

As described in the '736 Patent, active matrix displays include a display panel that has a plurality of pixels arranged in a matrix, where each of the pixels has a respective pixel circuit including electro-optical elements and driving transistors. EX-1001, 1:11-22; EX-2002, ¶ 32. When the pixel circuits have different shapes and/or pitches in the column and row directions of the display, directional viewing variations may occur which results in image distortions and color irregularities. EX-1001, 1:11-22, 1:23-34; EX-2002, ¶ 32.

In order to achieve reduced image distortions and color irregularities caused by directional viewing variations, the '736 Patent discloses an arrangement where, for each pixel, a dummy forming region is provided together with the red, green, and blue pixel forming regions in a square lattice. EX-1001, 7:58-8:8; EX-2002, ¶ 33. Specifically, the dummy forming region is a region that is a non-light emitting region, while the red, green, and blue pixel forming regions are regions that comprise organic EL elements for emitting light in red, green, and blue colors, respectively. *Id.*

In order to reduce the directional viewing variations, the dummy forming regions are arranged so as to be sandwiched by the green pixel forming regions in the vertical direction (column direction), and to be sandwiched by the red pixel forming regions in the horizontal direction (row direction). EX-1001, 8:19-47; 12:41-67; EX-2002, ¶ 34.

An example embodiment of the '736 Patent is shown below:



EX-2004, 2 (Fig. 2 of the '736 Patent)

IV. SUMMARY OF ASSERTED REFERENCES

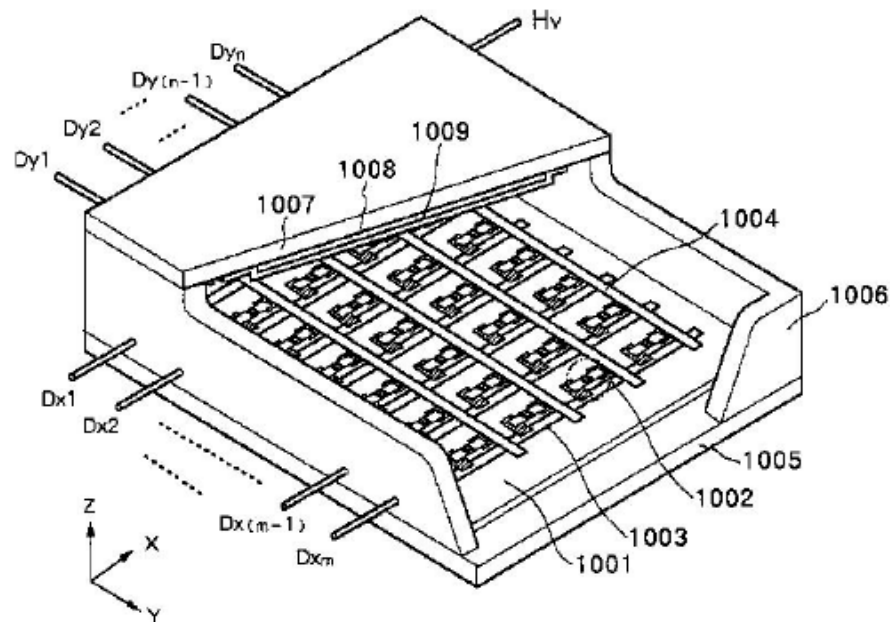
A. Masuda

Masuda is directed towards passive matrix display panels that include field emission display technology. Specifically, the field emission display technology includes cold cathode elements, as parts of primary color display elements, that emit electrons to a fluorescent (*e.g.*, phosphor) material to produce a color display. EX-1009, ¶¶ [0001]-[0002], [0034], and [0042]; EX-2002, ¶ 38.

Masuda describes that the cold cathode elements are to be particularly used as a multi-electron beam source, and that the cold cathode elements include surface conduction-type emitting elements, electric field emission-type elements (“FE-type”), and metal/insulating layer/metal-type emitting elements (“MIM-type”). EX-1009, ¶¶ [0002], [0034], and [0042]; EX-2002, ¶ 39. In other words, the field emission display technology of Masuda includes electron emitters of the surface conduction-type, the FE-type, or the MIM-type. EX-2002, ¶ 39.

Referring to Fig. 4 of Masuda, reproduced below, the multi-electron beam source, implemented by the cold cathode elements (conduction-type emitting elements 1002) that are arranged in a matrix, are controlled to emit electrons towards a fluorescent film 1008 that is above the cold cathode elements and coated with

fluorescent (*e.g.*, phosphor) materials of the three primary colors of red, green, and blue. EX-1009, ¶¶ [0033]-[0036]; EX-2002, ¶ 40. The emitted electrons cause the fluorescent film to emit red, green, and/or blue light, thus implementing primary color display elements of pixels. EX-1009, ¶¶ [0033]-[0036]; EX-2002, ¶ 40.



EX-1009 (“Masuda”) at FIG. 4

Masuda particularly aims to improve image quality and performance of passive matrix displays utilizing field emission display technology that include the cold cathode elements, as parts of color display elements, by arranging the color display elements in a particular checkerboard arrangement. EX-1009, ¶ [0018]; EX-2002, ¶ 41.

Masuda contends that the checkerboard arrangements of Fig. 3, reproduced below, improve resolution but cause viewers to perceive visual interference of red and blue horizontal (or vertical) stripes on the display due to the red and blue display elements being lined up in a respective row (or column), thereby reducing image quality. EX-1009, ¶¶ [0018]-[0019]; EX-2002, ¶ 42. Further, Masuda contends that such an arrangement requires the green color output of green display elements to be limited to half in order to achieve color balance, which limits the maximum performance of the display elements. EX-1009, ¶ [0020]; EX-2002, ¶ 42.

R	G	B	R
R	G	B	R
R	G	B	R
R	G	B	R

(a)

G	R	G	R
B	G	B	G
G	R	G	R
B	G	B	G

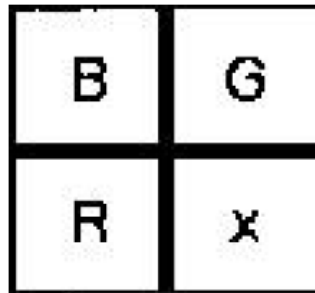
(b)

EX-1009 ("Masuda") at FIG. 3

Masuda contends that the visual interference of horizontal (or vertical) stripes is particularly caused by a difference in luminosity between rows (or columns) of the color display elements. EX-1009, ¶ [0021]; EX-2002, ¶ 43.

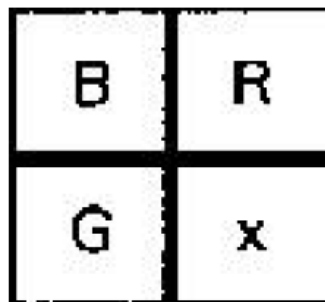
In an attempt to avoid such visual interference, Masuda describes that the passive matrix displays, which include the cold cathode elements as parts of the display elements, include a particular checkerboard arrangement in which a red color display element, a green color display element, a blue color display element, and a non-display element are arranged in a repeated, two-row and two-column arrangement shown Figs. 1-2 of Masuda, reproduced below. EX-1009, ¶¶ [0022] and [0028]-[0030]; EX-2002, ¶ 44.

[FIG. 1]



EX-1009 (“Masuda”) at Fig. 1

[FIG. 2]



EX-1009 (“Masuda”) at Fig. 2

As shown above, in such two-row and two-column checkerboard arrangements, the red display element (R) and the green display element (G) are in opposite corners from each other, which Masuda contends achieves a minimum value among maximum luminosity differences between columns and rows. EX-1009, ¶¶ [0028]-[0030]; EX-2002, ¶ 45. By reducing the luminosity differences between the columns and rows, Masuda contends that the visual interference caused by horizontal stripes or vertical stripes is reduced. EX-1009, ¶ [0021]; EX-2002, ¶ 45.

Notably, the field emission display technology in Masuda of using cold cathode elements to emit electrons to a fluorescent (*e.g.*, phosphor) material to implement color display elements was never implemented in commercial display products, and such field emission display technology can only include a small numbers of pixels since such field emission display technology does not implement storing an image in one row while other rows are being addressed. EX-2002, ¶ 46. Thus, a display implementing such field emission display technology would have limited resolution. EX-2002, ¶ 46.

B. Inoue

Inoue is directed towards an improvement to active matrix (“AM”) organic electroluminescent (“EL”) displays, namely, improving the uniformity of brightness of light emission of the entire active matrix EL display by adding active light-detecting elements. *See* EX-1011, ¶¶ [0009]-[0011]; EX-2002, ¶ 48.

As noted in Inoue, passive matrix (“PM”) organic EL displays include a drive circuit on the outside of an organic EL panel, wherein the drive circuit drives current to the pixels of the organic EL panel to emit light. EX-1011, ¶¶ [0002]-[0003], [0026], [0029]-[0037]; EX-2002, ¶ 49. However, Inoue describes that such passive matrix displays have problems of a non-constant current source, variations in brightness, and limited screen size and pixel amounts. EX-1011, ¶ [0003]; EX-2002, ¶ 49.

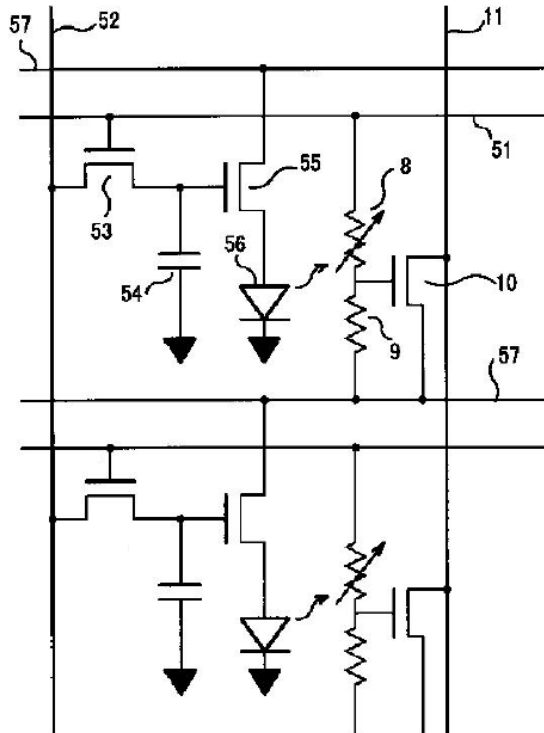
Inoue describes that AM organic EL displays may alleviate these problems. *See* EX-1011, ¶ [0004]; EX-2002, ¶ 50. However, Inoue further describes that conventional AM organic EL displays have a significant drawback of it being difficult to create a driving element with a uniform characteristic over an entire organic EL panel region, thus resulting in a current value flowing to each pixel being different and brightness varying throughout the organic EL panel region. EX-1011,

¶¶ [0005], [0009]-[0010]; EX-2002, ¶ 50. More particularly, in contrast to the PM organic EL displays, Inoue describes that the AM organic EL displays include a TFT drive circuit provided for each pixel in an organic EL panel which controls the brightness of that pixel. EX-1011, ¶¶ [0004]-[0006], Fig. 5; EX-2002, ¶ 50. And Inoue describes that, in prior AM organic EL displays, the threshold voltage of a transistor serving as a drive element varies. As a result, a voltage applied to light-emitting elements varies and the brightness of each pixel varies at the same gradation, or variations in the characteristics of the light-emitting elements themselves cannot be suppressed and therefore the brightness of each pixel varies when displayed at the same gradation. EX-1011, ¶¶ [0009]-[0010]; EX-2002, ¶ 50.

To avoid such issues, Inoue describes a first embodiment in which a light detecting element (light-detecting element 8) is used to detect the voltage at which each pixel starts to emit light in advance, where a threshold voltage at which a light-emitting element (light-emitting element 56) starts to emit light can be added to a voltage corresponding to a certain brightness in order to accurately display the desired brightness for each pixel. EX-1011, ¶ [0026]; EX-2002, ¶ 51. Thus, Inoue describes that a desired brightness is unaffected by threshold variations in the transistor (second transistor 55) operating as the drive element. EX-1011, ¶ [0026];

EX-2002, ¶ 51. Fig. 1 of Inoue, corresponding to its first embodiment, is reproduced below.

[Fig. 1]

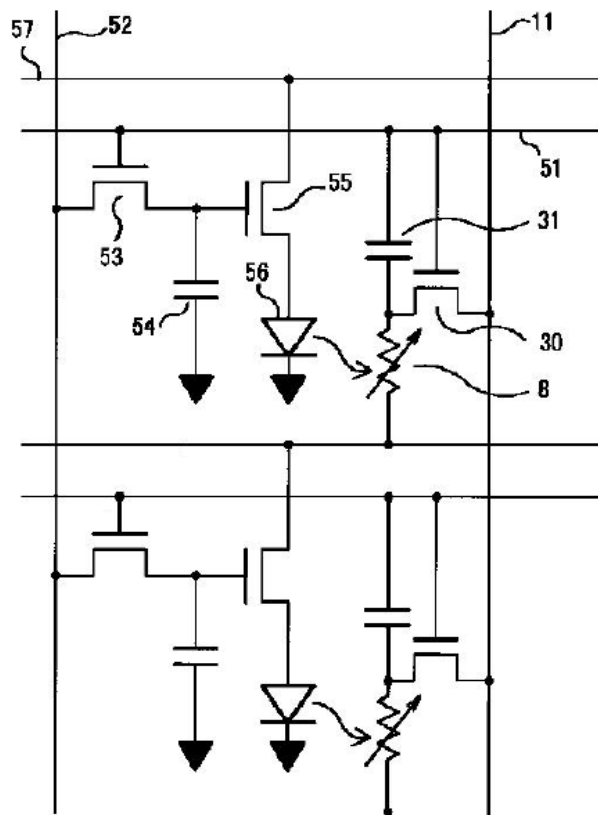


EX-1011 (“Inoue”) at Fig. 1

Inoue also describes a second embodiment in which a voltage of data provided to a first horizontal scanning line is used to detect a threshold voltage of the transistor (second transistor 55) operating as the drive element, where a threshold voltage at which a light-emitting element (light-emitting element 56) starts to emit light can be added to a voltage corresponding to a certain brightness in order to accurately display

the brightness desired for each pixel. EX-1011, ¶ [0029]; EX-2002, ¶ 52. Inoue describes that, as a result, the desired brightness of each pixel of the display is unaffected by threshold variations in the transistor (second transistor 55) operating as the drive element. EX-1011, ¶ [0029]; EX-2002, ¶ 52. Fig. 4 of Inoue, corresponding to its second embodiment, is reproduced below.

[Fig. 4]



EX-1011 ("Inoue") at Fig. 4

Notably, Inoue describes an EL pixel structure that can only be implemented in an active matrix display. For example, it requires at least two thin-film transistors and a storage capacitor for operation. *See, e.g.*, EX-1011, Figs. 1 and 4; EX-2002, ¶ 53. Further, as described above, the desired brightness of each pixel is individually controlled by that pixel's drive circuit.

V. A PERSON OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art ("POSITA") would have had at least a Master's degree in electrical engineering, physics, or a related field, and at least two years of relevant work experience in the field of display device technology. EX-2002, ¶ 14. Additional education can remedy lack of work experience and vice versa.

VI. ARGUMENT

The Petition should be denied at least because the applied references do not anticipate or render obvious any of the non-disclaimed, challenged claims (*i.e.*, claims 7, 9, and 14-15).

A. Ground 1A – Petitioners' Ground 1A is Moot in view of Claims 3-5, 13, and 16-17 Being Disclaimed

Patent Owner has disclaimed claims 3-5, 13, and 16-17, of the '736 Patent, challenged under Ground 1A. EX-2001. Therefore, Ground 1A is moot.

B. Ground IB – Claims 7, 9, and 14-15 Are Not Rendered Obvious Under 35 U.S.C. § 103 By Inoue In View Of Masuda

Ground IB of the Petition fails to establish a likelihood that any non-disclaimed, challenged claim (*i.e.*, claims 7, 9, and 14-15) of the '736 Patent would have been obvious.

The Petitioner relies on a combination of a configuration of Inoue and a checkerboard pattern of Masuda to allegedly describe all features of each of claims 7, 9, and 14-15 of the '736 Patent. Pet., 46-75. Petitioners' proposed combination of Inoue and Masuda, however, does not establish obviousness of any of claims 7, 9, and 14-15 of the '736 Patent for at least the following reasons.

First, as described in sub-section 1, Petition has not sufficiently shown a motivation to modify Inoue by Masuda, or any other rationale to sustain an obviousness ground under the law. The problem of Masuda does not apply to Inoue, where pixel brightness is individually controlled, and the solution of Masuda would not resolve the problem addressed by Inoue. That is, the Petition does not establish that any problem addressed by Masuda exists in Inoue and therefore fails to provide a sufficient reasoning to modify Inoue by Masuda.

Second, as described in sub-section 2 below, Masuda does not constitute analogous art to claims 7, 9, and 14-15 of the '736 Patent (or to the display technology of Inoue), and therefore it would not have been obvious to combine Inoue with Masuda with respect to said claims.

Masuda is directed towards the field of *passive* matrix displays utilizing field emission display technology, while the invention defined by claims 7, 9, 14, and 15 of the '736 Patent is directed towards a completely different field of endeavor of an active matrix display and/or an OLED display. EX-2002, ¶¶ 38-40, 42, 56-67, 75.

Further, Masuda is directed to the problem of passive matrix displays utilizing field emission display technology having visual interference caused by horizontal stripes or vertical stripes due to differences in luminosity between rows or differences in luminosity between columns in such passive matrix displays. EX-2002, ¶¶ 71-73. In contrast, the '736 Patent is directed towards a completely different problem of how to reduce, with respect to electro-optical devices that utilize active matrix displays, image distortions and color irregularities caused by directional viewing variations. EX-2002, ¶¶ 69-70, 74. Accordingly, Masuda is not reasonably pertinent to the problem faced by the inventor of the '736 Patent. EX-2002, ¶¶ 68, 75.

Third, as described in sub-section 3 below, a POSITA would not have looked towards Masuda to modify Inoue.

Masuda is directed to passive matrix displays utilizing field emission display technology, while Inoue is directed to active matrix (“AM”) organic electroluminescent (“EL”) displays. EX-2002, ¶¶ 38-40, 46, 48-53, 78. The operating principles of displays utilizing field emission display technology (such as described in Masuda) and EL displays (such as described in Inoue) are entirely different, and a POSITA working on an active matrix EL display design would never think to search Masuda for a configuration of a display utilizing the field emission display technology of Masuda. EX-2002, ¶ 79.

Further, Masuda is directed to the problem of passive matrix displays utilizing field emission display technology having visual interference caused by horizontal stripes or vertical stripes due to differences in luminosity between rows or differences in luminosity between columns in such passive matrix displays. EX-2002, ¶¶ 71, 73, 81. Such problems related to the interference effects of horizontal and vertical stripes of Masuda does not exist in active matrix displays, such as described in Inoue. EX-2002, ¶ 81.

Additionally, Inoue describes a configuration that improves the uniformity of brightness of light emission of an entire active matrix EL display by adding active light-detecting elements. EX-2002, ¶ 82. Thus, even assuming, *arguendo*, that the active matrix EL displays of Inoue could have differences in luminosity between rows or columns, such problem would have been addressed by Inoue's configuration related to the inclusion of active light-detecting elements which accomplishes uniform brightness control. EX-2002, ¶ 82.

Fourth, as described in sub-section 4 below, modifying Inoue by Masuda would make Inoue unsatisfactory for its intended purpose. The purpose of Inoue is to improve the uniformity of brightness of light emission of an entire active matrix EL display, which Inoue achieves by adding active light-detecting elements. EX-2002, ¶¶ 50-52, 82, 84. However, the checkerboard arrangement of Masuda does not provide any mechanism for ensuring uniform brightness for all pixels of a display when the voltage applied to light-emitting elements varies due to non-uniform characteristic of a driving element in EL displays. EX-2002, ¶ 85. Thus, if Inoue is modified to implement a checkerboard arrangement of Masuda, the brightness uniformity problem resulting from varying voltages would not be resolved. Indeed, if Masuda's checkerboard arrangement were implemented instead

of the solution provided by Inoue, the brightness uniformity of light emission in Inoue would be substantially decreased and would cause Inoue to be unsatisfactory for its intended purpose. EX-2002, ¶ 85.

Fifth, as described in sub-section 5 below, during prosecution of the Japanese counterpart application (JP2002-348622), the Applicant made no admission concerning combinability of Inoue and Masuda and no admission concerning obviousness of combining such references, contrary to Petitioner's misleading allegations otherwise.

For at least these reasons, Petitioners have not shown a reasonable likelihood of success that any non-disclaimed, challenged claim (*i.e.*, claims 7, 9, and 14-15) of the '736 Patent would have been obvious.

1. Petitioner Fails to Establish *Prima Facie* Case of Obviousness in Modifying Inoue in view of Masuda

Ground 1B is deficient because Petitioner does not adequately provide an “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

For its obviousness analysis, Petitioner provides two rationales: (1) a motivation to combine rationale (Pet., 51-52); and (2) an “application of known

techniques to yield predictable results” rationale (Pet., 53). Petitioner fails to satisfy its burden or show a reasonable likelihood of success under both rationales.

(a) *Petitioner fails to Satisfy Requirements of Motivation to Combine Rationale*

A “motivation to combine” rationale requires:

(1) “a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;” and

(2) “a finding that there was reasonable expectation of success.”

MPEP 2413(I)(G) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360, 80 USPQ2d 1641, 1645 (Fed. Cir. 2006)). “If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.” *Id.*

According to Petitioner, a POSITA implementing Inoue’s display panel “would have been motivated to arrange those pixels in the improved checkerboard

pattern taught by Masuda” because “Inoue seeks to reduce variation in brightness or luminosity across pixels.” Pet., 51-52. Further, according to Petitioner, Masuda’s technique for reducing variation in brightness, *i.e.*, its particular checkerboard arrangement of pixels, is a “complementary technique” for Inoue. Pet., 51-52. Petitioner’s analysis, however, relies on sweeping statements regarding display technologies that ignore the highly relevant differences between the passive matrix display technology of Masuda and the active matrix OLED technology of Inoue, discussed in greater detail below in section VI(3), as well as above in section II.

In this regard, the variation in brightness problem of Masuda is a product of its display technology, where brightness or luminosity is dependent on the natural characteristics of color. Specifically, the brightness variation problem in Masuda is a function of the inherent luminosity differences between the different primary colors, in which green has a luminosity value of 0.59, red has a luminosity value of 0.30, and blue has a luminosity value of 0.11. EX-1009, ¶¶ [0022], [0026]; EX-2002, ¶¶ 88. Based on these differences in the natural characteristics of these colors, Masuda proposes a checkerboard arrangement in which the two brightest colors (*i.e.*, Green (0.59) and Red (0.30)) are “arranged at opposite corner positions.” EX-1009, ¶ [0022]; EX-2002, ¶ 88. In so doing, the brightness variations are not eliminated,

but are minimized. EX-1009, ¶ [0028]. What is important here, though, is that the pixel arrangement of Masuda is specific to display devices in which brightness and variations thereof are *color-dependent*. That is, Masuda's pixel arrangement does not reduce variation in pixel luminance *generally*, but reduces only color-dependent variations in pixel luminance. EX-2002, ¶ 89.

Thus, a necessary premise for any motivation to use Masuda's pixel arrangement is that a color-dependent brightness variation exists in the base device. Petitioner, however, fails to establish or even allege this necessary premise in the display device and active matrix OLED technology of Inoue.¹ That is, Petitioner does not establish that Inoue's display device has a brightness variation due to differences in color.

¹ Petitioner cites to Kwon (EX-1013) that recognizes the same color-dependent brightness variation as Masuda, Pet., 52, but Kwon is an entirely different display technology (plasma display) from Inoue. Petitioner provides no evidence whatsoever to suggest that the same problem exists in the active matrix OLED technology of Inoue.

In fact, Inoue's display device does not have a brightness variation resulting from pixel colors. EX-2002, ¶ 90. Rather, the brightness variation in Inoue is explicitly disclosed as a product of variations of threshold voltages of its pixel unit drive transistors. EX-1011, ¶¶ [0009], [0007] ("Because an organic EL emits lights with a brightness proportional to the level of the current, variations in the characteristics of the second transistor 55 appear as variations in the emission brightness."); EX-2002, ¶¶ 90-91. Thus, Petitioner not only fails to satisfy its initial burden of showing the necessary premise for a motivation to use Masuda in Inoue, but the record establishes that this premise does not exist in Inoue. Inoue does not leave its pixel brightness up to the natural characteristics of color, but explicitly controls the brightness of each pixel via that pixel's driving circuit and a controlled level of current. EX-1011, ¶¶ [0007], [0026], [0029]; EX-2002, ¶ 90.

In sum, variations in pixel brightness in Inoue are not because of the pixel colors, but because of transistor variables (*e.g.*, "the production method for low-temperature polysilicon," EX-1011, ¶ [0007]). EX-2002, ¶ 91. There is no motivation to use the pixel arrangement of Masuda to address this problem in Inoue. EX-2002, ¶ 93.

Further, the Petition fails to sufficiently establish a reasonable expectation of success as required for a motivation to combine rationale. MPEP 2413(I)(G) (citing *DyStar*, 464 F.3d at 1360). For this factor, the Petition merely alleges that “Masuda’s teachings are generally applicable to different types of display technologies,” because they are applicable to the passive matrix and plasma displays of Masuda and Kwon. Pet., 53-54. As an initial point, and as set forth above, the Petition does not provide any evidence that Masuda’s teachings are applicable to an active matrix display device or Inoue (in which each pixel is individually driven by its own driving circuit, EX-1011, ¶¶ [0004]-[0006], FIGS. 4-5). Passive matrix and plasma displays are not active matrix display devices, and Petitioner does not address the differences or similarities therebetween in its sweeping generalizations. Notably, the Petition’s conclusory statement does not explain how or why Masuda’s teachings are applicable to Inoue’s display device technology. *KSR*, 550 U.S. at 418 (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements”). Petitioner has not met its burden, and therefore Ground 1B must fail.

Nevertheless, the record shows that the color-based pixel luminance variance of Masuda and its pixel arrangement solution is not independent of the display technology used. Inoue, itself, discloses that its pixel brightness is current-controlled

at each pixel unit driving circuit, and its brightness variations are a result of pixel unit driving transistor variances, and not color characteristics. EX-1011, ¶ [0007]; *see also id.*, ¶¶ [0026], [0029]; EX-2002, ¶¶ 88-92.

Finally, the Petition fails to establish that Masuda's pixel arrangement (or any pixel arrangement) would provide a successful result in Inoue, *i.e.*, would resolve Inoue's brightness variation problem. As discussed above, the brightness variations in Inoue are not due to color characteristics, but due to variances in the pixel unit transistors that control the pixel brightness. The Petition does not explain how Masuda's pixel arrangement would address this problem at all. Because Inoue's brightness variations are due to circuit characteristics independent of color, those variations would continue to exist under any pixel arrangement, including Masuda's EX-2002, ¶ 92. The Petition fails to address this plain fact, or that Masuda's pixel arrangement does not relate to and would in no way solve Inoue's unit brightness variances that are a function of circuit (not color) factors. The Petition therefore does not show a reasonable likelihood of success with respect to Ground 1B.

(b) *Petitioner fails to Satisfy Requirements of Applying a Known Technique Rationale*

An “application of known techniques to yield predictable results” rationale requires “a finding that one of ordinary skill in the art would have recognized that applying the known technique would have yielded predictable results and resulted in an improved system.” MPEP 2143(I)(D). On this requirement, it appears that the Petition is relying on the same “reasonable expectation of success” analysis discussed above. Pet., 53-54. For the same reasons discussed above, the Petition fails to sufficiently show a reasonable expectation of success, let alone any reason for a POSITA to look to a color-based luminosity variance solution for Inoue’s non-color-based (but transistor-dependent) brightness control technology.

Petitioner has not satisfied its *prima facie* burden of proof for a legal case of obviousness, and therefore fails to show a reasonable likelihood of success for Ground IB.

2. Masuda is not Analogous Art

In order for a reference to qualify as prior art for an obviousness determination, the reference must be analogous art. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). To be considered analogous art, (1) the reference must be from the same field

of endeavor as the claimed invention, or (2) the reference must be reasonably pertinent to the particular problem with which the inventor is involved. *Id.*

To determine the field of endeavor, “explanations of the invention’s subject matter in the patent application, including the embodiments, function, and structure of the claimed invention,” must be considered. *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1380 (Fed. Cir. 2019) (citing *In re Bigio*, 381 F.3d at 1325). Additionally, each reference's disclosure must be considered in view of the “the reality of the circumstances” and “weigh those circumstances from the vantage point of the common sense likely to be exerted by one of ordinary skill in the art in assessing the scope of the endeavor.” *Airbus S.A.S.*, 941 F.3d at 1380 (citing *In re Bigio*, 381 F.3d at 1326 (quoting *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992))).

A reference is reasonably pertinent to an inventor’s problem only when it “logically would have commended itself to an inventor's attention in considering his problem.” *Circuit Check, Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 1331) (quoting *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992)); *see also Airbus S.A.S.*, 941 F.3d at 1382 (“In other words, references are ‘reasonably pertinent’ only if ‘a person of ordinary skill would reasonably have consulted those references and applied their teachings in seeking a solution to the problem that the inventor was attempting to

solve.’” (quoting *In re GPAC Inc.*, 57 F.3d 1573, 1578 (Fed. Cir. 1995)). Furthermore, “[t]he pertinence of the reference as a source of solution to the inventor's problem must be recognizable with the foresight of a person of ordinary skill, not with the hindsight of the inventor’s successful achievement.” *Airbus S.A.S.*, 941 F.3d at 1383 (quoting *Sci. Plastic Prods., Inc. v. Biotage AB*, 766 F.3d 1355, 1359 (Fed. Cir. 2014)).

(a) Not the same field of endeavor

Regarding part (1) of the analogous art test, the Petition merely asserts that Masuda and the '736 Patent pertain to the same field of endeavor of “an electro-optical display using display elements arranged in a matrix.” Pet., 48-49. Petitioner’s assertion, however, is an over-generalization of the subject matter of Masuda and the Challenged Claims that does not take into account “the reality of the circumstances” and does not adequately consider “explanations of the invention's subject matter in the patent application, including the embodiments, function, and structure of the **claimed** invention.” *Airbus S.A.S.*, 941 F.3d at 1380 (citing *In re Bigio*, 381 F.3d at 1325-26) (emphasis added).

For example, the Petition provides no discussion related to the specific nature of the displays in Masuda and the claimed displays in the '736 Patent, and merely

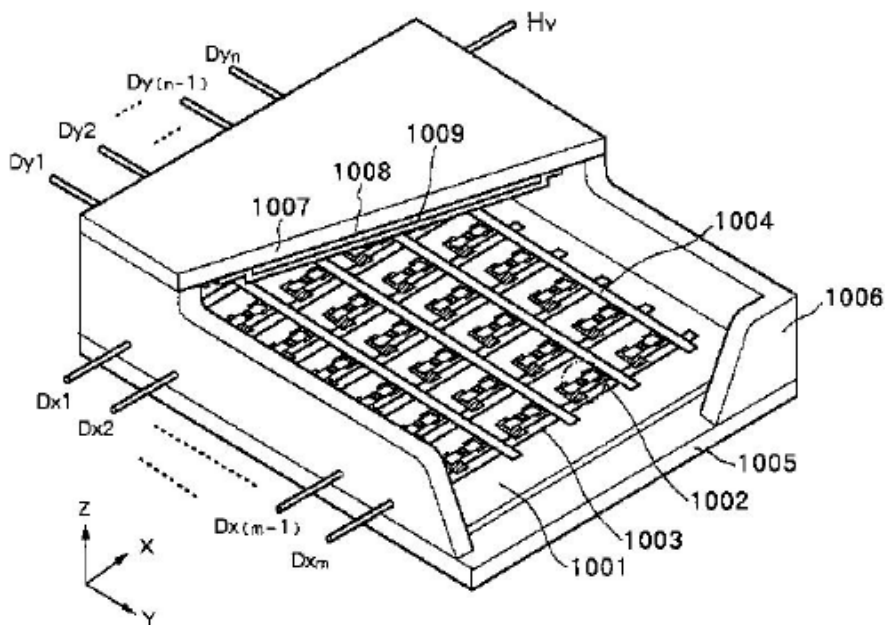
and erroneously concludes that they are from the same field of endeavor due to certain aspects of Masuda and the '736 Patent broadly relating to a display with a matrix. *See, e.g., In re Clay*, 966 F.2d 656, 659 (1992) (“The PTO argues that Sydansk and Clay's inventions are part of a common endeavor — ‘maximizing withdrawal of petroleum stored in petroleum reservoirs.’ However, Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry.”).

As discussed below, when the disclosures of Masuda and the '736 Patent are duly considered, it is evident that Masuda and the claimed invention of the '736 Patent are directed to different fields of endeavor at least because Masuda and the claimed invention of the '736 Patent are directed toward substantially and fundamentally different types of displays. EX-2002, ¶ 56.

i. Masuda

In contrast to Petitioners' contentions, Masuda is directed to the field of endeavor of passive matrix displays utilizing field emission display technology. *Supra* section IV(A); EX-1009, [0001]-[0002], [0034], and [0042]; EX-2002, ¶ 38 and 58. That is, Masuda describes that a multi-electron beam source, implemented by cold cathode elements (conduction-type emitting elements 1002) that are

arranged in a matrix, are controlled to emit electrons towards a fluorescent film 1008 that is above the cold cathode elements and coated with fluorescent (*e.g.*, phosphor) materials of the three primary colors of red, green, and blue. *Supra* section IV(A); EX-1009, [0033]-[0036], Fig. 4; EX-2002, ¶ 40. Figure 4 of Masuda is reproduced below.



EX-1009 (“Masuda”) at FIG. 4

As previously discussed, Masuda particularly aims to improve image quality and performance of such passive matrix displays that include the cold cathode elements, as parts of color display elements, by arranging the color display elements in a particular checkerboard arrangement. *Supra* section IV(A); EX-1009 at [0018];

EX-2002, ¶ 41. More specifically, Masuda aims to reduce visual interference caused by horizontal stripes or vertical stripes. *Supra* section IV(A); EX-1009 at [0021]; EX-2002, ¶ 45.

The particular checkboard arrangement, shown in Figs. 1-2 of Masuda, is reproduced below.

[FIG. 1]

B	G
R	x

EX-1009 (“Masuda”) at Fig. 1

[FIG. 2]

B	R
G	x

EX-1009 (“Masuda”) at Fig. 2

As shown above, in the 2x2 checkerboard arrangements, the red display element (R) and the green display element (G) are in opposite corners from each other, which Masuda contends achieves a minimum value among maximum luminosity differences between columns and rows. EX-1009 at [0028]-[0030]; EX-2002, ¶ 45. By reducing the luminosity differences between the columns and rows, Masuda contends that the visual interference caused by horizontal stripes or vertical stripes is reduced. EX-1009, ¶ [0021]; EX-2002-46.

However, the problem of visual interference caused by horizontal stripes or vertical stripes that is described in Masuda to be allegedly solved by the above checkerboard arrangements is a problem inherent in passive matrix displays due to their low pixel density causing poor display resolution. EX-2002, ¶ 73. That is, the low pixel density is related to the fact that, in passive matrix displays, the addition of more rows/columns of pixels means that there is less time to stimulate the pixels because passive matrix displays have no mechanism for storing an image in a row while other rows are being written. EX-2002, ¶ 73. With such constraints, the maximum resolution of passive matrix displays is significantly limited. EX-2002, ¶ 73. In contrast, active matrix displays include a mechanism for storing an image in a row while others rows are being written, and therefore achieve much greater

resolution than passive matrix displays, which avoids the problem mentioned in Masuda. EX-2002, ¶¶ 73-74.

In view of the above, given consideration of the disclosure of Masuda in view of “the reality of the circumstances,” and “weigh[ing] those circumstances from the vantage point of the common sense likely to be exerted by one of ordinary skill in the art in assessing the scope of the endeavor,” Masuda is directed towards the field of endeavor of passive matrix displays utilizing field emission display technology. *Airbus S.A.S.*, 941 F.3d at 1380 (citing *In re Bigio*, 381 F.3d at 1325-26).

ii. The claimed invention of the '736 Patent

The invention defined by claims 7, 9, 14, and 15 of the '736 Patent (*i.e.*, the claimed invention that is the subject of the only non-moot, alleged bases for rejection in the Petition) is directed towards the field of endeavor of an active matrix display and/or an OLED display. EX-2002, ¶¶ 38-40, 42, 56-67, 75.

That is, the invention as defined by claims 7 and 9 of the '736 Patent is directed towards the field of endeavor of an active matrix display, and the invention as defined by claims 14-15 of the '736 Patent is directed towards the field of endeavor of an OLED display. EX-2002, ¶ 58.

For example, claim 7 of the '736 Patent includes the feature of “the first and second effective optical regions having respective electronic circuits to drive the electro-optical elements provided in the first and second effective optical regions,” which specifies that the invention defined by claim 7 includes electronic circuits that are in element forming regions and that drive electro optical elements. EX-2002, ¶ 60. Active matrix displays are displays having electronic circuits that are in element forming regions and drive electro optical elements. EX-2002, ¶ 59; *see also* EX-1001, 5:29-35, 6:1-4 (describing active matrix displays in the '736 Patent). Accordingly, the invention as defined by claim 7 is directed towards the field of endeavor of an active matrix display. EX-2002, ¶ 60.

For at least these same reasons, claim 9 of the '736 Patent, which depends from claim 7, is also directed towards the field of endeavor of an active matrix display. EX-2002, ¶ 61.

Additionally, claim 14 includes the feature of “each of the first electro-optical elements and the second electro-optical elements being an electroluminescent element” which indicates that claim 14 is directed towards the field of endeavor of an OLED display. EX-2002, ¶ 62.

For at least the same reasons, claim 15 of the '736 Patent, which depends from claim 14, is also directed towards the field of endeavor of an OLED display. EX-2002, ¶ 63. Also, claim 15 includes the feature of “the electroluminescent element having a light-emitting layer that includes organic material” which further establishes that claim 15 is directed towards the field of endeavor of an OLED display. EX-2002, ¶ 63.

The general structure and method of operation for passive matrix displays (*e.g.*, displays of Masuda) and active matrix displays (*e.g.*, displays of the claimed invention of the '736 Patent) are substantially different. EX-2002, ¶ 64. For example, as previously described, passive matrix displays require a structure that places the rows on one substrate and the columns on an opposite substrate, where rows and columns have varying voltages applied in a particular time sequence to address the cells without the use of common electrode. EX-2002, ¶ 64; *supra* section II. In contrast, active matrix displays require a structure that has all the row and column connections on one substrate, where a common electrode is used on one substrate while all of the active addressing circuitry is placed on an opposing substrate. EX-2002, ¶ 64; *supra* section II. These differences result in further substantial differences with respect to specific structures, such as the location, width,

and constituent materials of the rows and columns for passive matrix displays and active matrix displays. EX-2002, ¶ 65. For example, in a passive matrix display, the row and column conductors are integral with the pixel electrodes, *i.e.*, there are no intervening elements, and since the pixel electrodes must typically be transparent, the rows and columns should also be formed from this same transparent conductor material without having any intervening elements. EX-2002, ¶ 17, 65. In contrast, in an active matrix display, the pixel electrodes are isolated from the row and column addressing lines by thin film transistors (TFTs) placed in the area of each pixel that does not interfere with the light emission. EX-2002, ¶ 17. Also, active matrix displays include a supplemental capacitor for each pixel, that is used to store additional charge and provide stability and uniformity for the display, and passive matrix displays do not include such a capacitor. EX-2002, ¶¶ 17, 65. Furthermore, because passive matrix displays do not have such a charge storage mechanism, unlike active matrix displays, they are more susceptible to variations in electrode resistance and the voltage drops that can be introduced by such resistance variations. EX-2002, ¶ 18.

The general structure and method of operation for displays utilizing field emission display technology (*e.g.*, displays of Masuda) and OLEDs (*e.g.*, displays

of the claimed invention of the '736 Patent) are substantially different. EX-2002, ¶ 66. Specifically, the displays utilizing field emission display technology implement cold cathode elements that are electrically driven such that the cold cathode elements emit electrons towards a fluorescent (*e.g.*, phosphor) material that, in response, produces colored light to implement self-illuminating pixels. *See, e.g.*, EX-1009, [0002]-[0015], [0033]-[0036], Figs. 4 and 18-20; EX-2002, ¶ 66. Such field emission display technology is required to be implemented in a vacuum enclosure to function. EX-2002, ¶ 66. In contrast, OLED displays include organic electroluminescent diodes that are electrically driven such that the organic electroluminescent diodes, themselves, produce colored light to implement self-illuminating pixels. EX-2002, ¶ 66. OLEDs do not require a vacuum enclosure to implement the self-illuminating pixels. EX-2002, ¶ 66.

At least in view of the above, Masuda, which is directed towards the field of endeavor of passive matrix displays utilizing such field emission display technology, is not from the same field of endeavor of the invention as defined by claims 7, 9, 14, and 15 of the '736 Patent, which are directed towards the field of endeavor of an active matrix display, and are not from the same field of endeavor of the invention

as defined by claims 14-15 of the '736 Patent, which are directed towards the field of endeavor of an OLED display. EX-2002.

(b) *Not reasonably pertinent to the particular problem with which the inventor is involved*

Regarding part (2) of the analogous art test, the Petition asserts that Masuda and the '736 Patent solve the same problem of improving display quality. Pet., 48-49. However, this is an overgeneralization of the problem alleged to be solved by Masuda and the problem solved by the '736 Patent.

Masuda is directed to the problem of visual interference caused by horizontal stripes or vertical stripes due to differences in luminosity between rows or differences in luminosity between columns. Ex-1009, ¶ [0021]; EX-2002, ¶¶ 71, 73; *supra* section VI(B)(2). This is a problem that occurs specifically in passive matrix displays due to their low pixel density causing poor display resolution. EX-2002, ¶ 73. The low pixel density is related to the fact that, in passive matrix displays, the addition of more rows/columns of pixels means that there is less time to stimulate the pixels and because passive matrix displays have no mechanism for storing an image in a row while other rows are being written. EX-2002, ¶ 73. With such

constraints, the maximum resolution of passive matrix displays is significantly limited. EX-2002, ¶ 73.

In contrast to the problem described in Masuda, the '736 Patent is directed towards the problem of how to reduce image distortions and color irregularities caused by directional viewing variations. EX-1001, 1:11-22; 1:23-34. EX-2002, ¶ 69. Such directional viewing variations occur specifically in electro-optical devices utilizing active matrix displays in which pixels circuits have different shapes and/or pitches in the column and row directions. Ex-1001, 1:11-22; 1:23-34; EX-2002, ¶ 71.

The problem related to the interference effects of horizontal and vertical stripes of Masuda is different from the problem related to directional viewing variation effects of the '736 Patent. EX-2002, ¶ 70.

In particular, the problem related to the interference effects of horizontal and vertical stripes of Masuda may be perceived at all viewing positions. EX. 2002, ¶ 72. Further, the interference effects of horizontal and vertical stripes is strongly affected by the particular image being displayed. EX. 2002, ¶ 72. In contrast, the problem related to directional viewing variation effects of the '736 Patent pertains to a gradual decrease in brightness or contrast of a display as you move away from

being directly in front of the display, and the directional viewing variation effects are not related to any specific image. EX-2002, ¶ 72.

Further, the problem related to the interference effects of horizontal and vertical stripes of Masuda does not exist in embodiments of the '736 Patent, nor does Petitioner allege that it exists. EX-2002, ¶¶ 73-74. For example, at the time of the alleged invention of Masuda and the filing date of the '736 Patent, active matrix displays included a mechanism for storing an image in a row while others rows are being written and achieved much greater resolution than passive matrix displays, which avoids the problem mentioned in Masuda. EX-2002, ¶¶ 73-74.

For at least the reasons set forth above, the '736 Patent and Masuda are not within the same field of endeavor, and Masuda is not reasonably pertinent to the problem faced by the inventor of the '736 Patent. EX-2002, ¶ 75. Thus, Masuda is not analogous art to the '736 Patent. EX-2002, ¶ 75.

3. A POSITA Would not have Looked Towards Masuda to Modify Inoue

“The obviousness inquiry does not merely ask whether a skilled artisan could combine the references, but instead asks whether ‘they would have been motivated to do so.’” *Adidas AG v. Nike, Inc.*, 963 F.3d 1355, 1359 (Fed. Cir. 2020) (quoting

InTouch Techs., Inc. v. VGO Commc'ns, Inc., 751 F.3d 1327, 1352 (Fed. Cir. 2014)) (aff'g PTAB's no motivation to combine findings based on understanding that "[f]undamental differences between the references are central to this motivation to combine inquiry").

A POSITA would not have found it obvious to combine Masuda with Inoue, nor look from one to the other for guidance. EX-2002, ¶ 76.

First, as described above, passive matrix displays, such as described in Masuda, and active matrix displays, such as described in Inoue, are entirely different. *Supra* section II; EX-2002, ¶¶ 16-18, 64-65, 78.

Also, the operating principles of displays utilizing field emission display technology, such as described in Masuda, and EL displays, such as described in Inoue, are entirely different. EX-2002, ¶ 79.

For example, displays utilizing field emission display technology require the application of substantial voltages to create an electron beam that then impinges on a fluorescent (*e.g.*, phosphor) surface. EX-2002, ¶ 79. A display implementing such field emission display technology is basically a voltage-controlled device, and it also requires a vacuum envelope for operation. EX-2002, ¶ 79.

On the other hand, the active matrix EL display operates based on the current supplied to an emitting pixel. EX-2002, ¶ 79. More particularly, the active matrix EL display is a current controlled device and requires a storage mechanism to hold the driving transistor at the desired current level. EX-2002, ¶ 79.

With Masuda's diametrically different mode of operation and configuration that is limited in the number of pixels that can be implemented, a POSITA working on an active matrix EL display design would never think to search Masuda for the configuration of a display utilizing field emission display technology proposed therein. EX-2002, ¶ 79.

In view of the above, Inoue and Masuda describe incompatible display technologies such that a POSITA would not look towards one of such references in attempt to improve the other. EX-2002, ¶ 80.

Second, as previously discussed, Masuda is directed to solving a problem of visual interference caused by horizontal stripes or vertical stripes that is not a problem of active matrix displays due to active matrix displays being capable of greater resolution than passive matrix displays. *Supra* section VI(B)(2)(b) (“[A]ctive matrix displays included a mechanism for storing an image in a row while others rows are being written and achieved much greater resolution than passive

matrix displays, which avoids the problem mentioned in Masuda.”); EX-2002, ¶ 81. Thus, the problem of Masuda is not a problem in Inoue, which describes an improvement for active matrix EL displays, and the solution of Masuda is not applicable to Inoue. EX-2002, ¶ 81; *supra* section IV(B) (summary of Inoue).

Third, Inoue describes a configuration that improves the uniformity of brightness of light emission of an entire active matrix EL display by adding active light-detecting elements (*e.g.*, a light-detecting element 8). *Supra* section IV(B); EX-1011, ¶¶ [0009]-[0010], [0019], [0027], [0030]; EX-2002; ¶ 82. This configuration of Inoue enables a brightness level for each pixel to be varied and/or balanced in a gradual way and in small increments. EX-2002; ¶ 82. Thus, even assuming, *arguendo*, that some active matrix active matrix EL displays could have differences in luminosity between rows or columns, any alleged problem of color-based differences in luminosity between columns or rows of pixels of Masuda would not be present in Inoue due to Inoue's configuration related to drive circuits that individually control brightness of each pixel and the inclusion of active light-detecting elements which accomplishes uniform brightness control. EX-2002; ¶ 82. In other words, Inoue, by itself, operates effectively to achieve uniform brightness control and would not have the problem alleged to be solved by Masuda, and

therefore a POSITA would have no reason to combine the configuration of Masuda with Inoue. EX-2002; ¶ 82.

At least in view of the above, a POSITA would not have considered combining Inoue and Masuda, as the references describe significantly different and incompatible technologies. EX-2002; 83; *see also Adidas AG v. Nike, Inc.*, 963 F.3d at 1359 (aff'g PTAB's no motivation to combine findings based on fundamental differences in garment seaming techniques of two asserted references). Also, as described above Inoue already effectively achieves its purpose of uniform brightness control without having the problem indicated in Masuda of visual interference caused by horizontal stripes or vertical stripes, which are alleged in Masuda to be caused by differences in luminosity between columns or rows of pixels. EX-2002; ¶ 83.

4. Modifying Inoue with Masuda Would Make Inoue Unsatisfactory for its Intended Purpose

There is no suggestion or motivation to make a proposed modification if doing so would render the prior art being modified unsatisfactory for its intended purpose. *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984); *see also DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (“[T]he

‘predictable result’ discussed in [KSR] refers not only to the expectation that prior art elements are capable of being physically combined, but also that the combination would have worked for its intended purpose.”).

As previously discussed, Inoue is intended to provide a configuration that improves the uniformity of brightness of light emission of an entire active matrix EL display by adding active light-detecting elements. *Supra* section IV(B); EX-1011, ¶¶ [0009]-[0011]; EX-2002, ¶ 84.

If Inoue is modified to implement a checkerboard arrangement of Masuda, instead of using the active light-detecting elements of Inoue, the brightness uniformity of light emission in Inoue would be substantially decreased. EX-2002, ¶ 85.

For example, the purported solution of Masuda of having a checkerboard pattern of primary color display elements and a non-display element does not address the problem solved in Inoue of brightness varying (including for pixels of the same color) that is caused by difficulty in creating a driving element for driving the pixels with a uniform characteristic for an entire active matrix EL display. EX-1011, ¶¶ [0005], [0009]; EX-2002, ¶ 85. Particularly, the purported solution of Masuda does not provide any mechanism for ensuring uniform brightness for all pixels of a display

when the voltage applied to light-emitting elements varies due to non-uniform characteristic of a driving element in EL displays. EX-2002, ¶ 85.

Moreover, unlike Inoue which enables varying and/or balancing of the brightness level at each pixel in a gradual way and in small increments through the use of active light-detecting elements, the checkerboard pattern of Masuda does not provide any mechanism for varying/balancing of brightness levels of individual pixels. EX-2002, ¶ 85.

Thus, a modification of Inoue in which the active light-detecting elements of Inoue are replaced with the checkerboard pattern of Masuda would cause Inoue to be unsatisfactory for its intended purpose of accomplishing uniformity of brightness of an entire active matrix EL display. EX-2002, ¶ 86.

At least in view of the above, it would not have been obvious for a POSITA to modify Inoue with the checkerboard pattern of Masuda. EX-2002, ¶ 87.

5. No Admission was made with Respect to Obviousness of Combining Inoue and Masuda

Petitioners contend that, during prosecution of the Japanese counterpart application (JP2002-348622), the Applicant “acknowledged that Inoue and Masuda could be combined together by describing the characteristics of ‘an invention that is

achieved through combining the driving method disclosed in [Inoue] with the layout of display elements described in [Masuda].” Pet., 54 (citing EX-1007, 8).

However, the Applicant stating that “an invention that is achieved through combining the driving method disclosed in [Inoue] with the layout of display elements described in [Masuda] ...” is **not** an admission by the Applicant that it **would have been obvious** to combine aspects of Inoue and Masuda.

More particularly, such statement by the Applicant merely describes a hypothetical configuration, and is neither an admission concerning combinability of Inoue and Masuda nor obviousness of combining such references.

As discussed above, it would not have been obvious to combine Inoue and Masuda to describe all features of any of claims 7, 9, and 14-15 of the '736 Patent. *Supra* section VI(B)(1)-(4).

VII. THE BOARD SHOULD EXERCISE ITS AUTHORITY AND DENY INSTITUTION IN VIEW OF FINTIV AND JUDICIAL ECONOMY

The Board should exercise its discretion to deny institution under 35 U.S.C. §314(a) “because institution of a trial at the PTAB would be an inefficient use of Board resources in light of the ‘advanced state’ of the parallel district court

litigation in which the petitioner had raised the same invalidity challenges.” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, 2 (PTAB 2020) (precedential) (“Fintiv”) (citing *NHK Spring Co. v. Intrix-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB 2018) (precedential) (“NHK”)).

In determining whether to deny institution, the Board is to consider the presence and status of parallel district court litigation. *NHK Spring Co., Ltd. v. Intrix-Plex Technologies*, IPR2018-00752, Paper 8, 11 (PTAB 2018) (precedential), and *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB 2020) (precedential) (“Fintiv”). *Fintiv* sets forth a non-exhaustive list of factors that balance system efficiency and fairness considerations when considering discretionary denial. *Fintiv*, 5–6:

1. Whether the court granted a stay or evidence exists that one may be granted if a 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 petitioner 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.

Id.

Additionally, the *Fintiv* factors should be considered in view of the guidance provided in the June 21, 2022 Memo regarding Post-Grant Proceedings with Parallel District Court Litigation. (“*Fintiv* Memo”). *See* EX-2010.

Discretionary denial is warranted here because institution would be an inefficient duplication of a parallel district court litigation in which the same grounds of invalidity are being raised by Petitioner. Each *Fintiv* factor favors exercising discretion to deny institution and none of the circumstances presented in the *Fintiv* Memo are applicable because Petitioners did not present compelling evidence of unpatentability (*supra* section V), there is no parallel ITC proceeding, and the Petitioners have not submitted a *Sotera* stipulation.

A. Factor 1: Whether a Stay Exists or is Likely to be Granted

The District Court has not instituted a stay, the Petitioners have not filed a motion to stay the District Court litigation, and there is no evidence that a stay would be granted if this IPR proceeding is instituted. This factor weighs against institution. *See Fintiv*, 12.

B. Factor 2: Proximity of the District Court's Trial Date

Trial with Petitioners in the District Court is scheduled to start on May 20, 2024, nearly five months before the projected deadline² on October 13, 2024, for when any final written decision would be due should this petition be instituted. *See* 35 U.S.C. §§314(b) ("The Director shall determine whether to institute an inter partes review under this chapter pursuant to a petition filed under section 311 within

² The projected final written decision deadline of October 13, 2024, is one year after the projected date for the institution decision of October 13, 2023, which is three months after the deadline of July 13, 2023, for this Preliminary Response. Petitioners alleged an expected date of the Final Written Decision in August 2024, Pet., 75, which would still be more than three months after the scheduled trial date.

3 months after ... receiving a preliminary response to the petition under section 313.”) and 316(a)(11) (“requiring that the final determination in an inter partes review be issued not later than 1 year after the date on which the Director notices the institution of a review under this chapter.”; EX-1016. There is no reason to believe that trial will be delayed.

Petitioners argue that, based on Federal Court management statistics at uscourts.gov, the median time from filing to trial in the Eastern District of Texas is ordinarily 24.5 months, and thus, according to that estimate, the trial for the District Court litigation would likely take place in April 2024 since Patent Owner filed the complaint on April 18, 2022. Pet., 75. Petitioners' argument demonstrates that the actual trial start date of May 20, 2024, is unlikely to be moved to a later date, at least since the actual trial start date gives the parties and court an additional month to prepare for trial in comparison to an estimated trial start date of April 2024 (that is based on Petitioners' alleged median period of filing to trial of 24.5 months).

Petitioners further argue that the median time to trial should be measured from the date of service³ of the complaint, instead of the date of filing of the complaint. Pet. at 76. However, Petitioners have not provided any evidence related to the Federal Court management statistics to support this contention. Instead, a document, from uscourts.gov that explains terms of the Federal Court management statistics, states that statistics on median time to trial is measured from the “date a case was filed.” EX-2006, 2. Even under Petitioner’s unsupported contention of such a later

³ Patent Owner filed the Complaint on April 18, 2022, and then initiated the Hague process for international service, and sent via Federal Express, a copy of the Complaint with exhibits and a waiver form, in both English and Chinese, to each of the Petitioners, requesting the Petitioners to waive formal service. EX-2007, 3-4. Because none of the Petitioners had responded to these requests and one of the Petitioners has refused to accept the Federal Express package, Patent Owner requested leave, on July 22, 2022, from the District Court to serve the Petitioners through alternative means. *Id.* The Court granted the motion for leave on September 22, 2022, and the Petitioners were served the Complaint thereafter. EX-2008.

trial date, such a later trial date would still precede the expected Final Written Decision deadline.

Moreover, the most recent Federal Court management statistics indicate that, in the latest 12-month period ending on March 31, 2023, the median time from filing to trial in the Eastern District of Texas is 19.0 months, not 24.5 months as contended by the Petitioners. EX-2005, 35. Thus, even if the median time to trial is measured from the service date of the complaint of September 27, 2022, as erroneously contended by the Petitioners, instead of correctly from the filing date of April 18, 2022, the estimated trial start date would be April 2024 based on the most recent statistical data of median time (19.0 months). Such date is still a month before the currently scheduled trial start date of May 20, 2024, nearly six months before the Final Written Decision deadline of October 13, 2024, should the Petition be instituted.

Also, in the District Court litigation, subsequent to the last service date of the Complaint of which the Petitioners alleged caused a delay, Petitioners and Patent Owner jointly agreed to entry of a proposed docket control order on February 2, 2023, which stated that jury selection for trial should be on May 20, 2024, and the court established such date for the jury selection. EX-1016 (Docket Control Order);

EX-2009 (Joint Motion for Entry of Agreed Docket Control Order). Since Patent Owner, Petitioners, and the District Court established that May 20, 2024, was a suitable date to start trial, and because no material delay has occurred after filing of the proposed docket control order and entering of the docket control order, there is further no evidence that the trial date of May 20, 2024, will be moved to a later date.

Given that at least the trial in the District Court will proceed well before the expected Final Written Decision deadline, this factor favors denial of institution. *Roku, Inc. v. IOENGINE, LLC*, No. IPR2022-01554, Paper 11 (PTAB 2023); *Samsung Electronics Co. Ltd. v. California Institute of Tech.*, No. IPR2023-00130, Paper 10 (PTAB 2023); *Google, LLC. v. Personalized Media Comm., LLC.*, IPR2020-00723, Paper 22, 7 (PTAB 2020).

C. Factor 3: Investment in the Parallel Proceeding

Under the third factor, the Board is to “consider[] the amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision.” *Fintiv*, 9.

Patent Owner, Petitioners, and the District Court have already spent and will continue to spend significant resources on litigating the '736 Patent at and/or around the time of the institution decision.

Discovery is on-going in the District Court litigation, with both parties having already exchanged document requests and interrogatories. Additionally, infringement and invalidity contentions have been exchanged, and proposed claim terms for claim construction have been exchanged.

On October 13, 2023, the projected date for the institution decision, the exchange of claim construction briefs between the Patent Owner and the Petitioners should be ongoing, and the Patent Owner, Petitioners, and the District Court will conduct the Markman Hearing less than a month thereafter on November 7, 2023.

EX-1016.

The parties' substantial investment in the District Court litigation favors denial of institution.

D. Factor 4: Overlap Between Issues Raised in the Petition

Under the fourth factor, as the Board found in *Fintiv*, “if the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial.” *See Fintiv*, 12.

Issues related to the '736 Patent are being litigated in the parallel District Court litigation. Petitioners already set forth the grounds raised in this Petition in their invalidity contentions.

Additionally, Petitioners refuse to mitigate concerns of potentially conflicting decisions and duplicative efforts by failing to submit a stipulation in the District Court proceedings or elsewhere per *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential). Pet., 77 (Petitioners only agreed to “cease asserting in the district court any invalidity contention based on the prior art presented in this petition that constitutes part of a ground.” Petitioners omit a stipulation with respect to any ground that reasonably could have been raised, as required for *Sotera* to apply.)

These circumstances favor denial of institution. See *Roku, Inc. v. IOENGINE, LLC*, No. IPR2022-01554, Paper 11 (PTAB 2023); *Samsung Electronics Co. Ltd. v. California Institute of Tech.*, No. IPR2023-00130, Paper 10 (PTAB 2023); *Sand Rev'n II LLC v. Cont'l Intermodal Grp. – Trucking LLC*, IPR2019-01393, Paper 24, 7 (PTAB 2020) (informative); *Sotera*, 18 (weighing Factor 4 in favor of denial of institution based on “concerns of inefficiency and the possibility of conflicting decisions”).

E. Factor 5: Whether Petitioners and the Defendant(s) in the Parallel Proceeding(s) are the Same Party

The Petitioners and the Defendants in the District Court litigation are the same parties. This factor favors denial of institution.

F. Factor 6: Other Circumstances that Impact the Board's Exercise of Discretion, Including the Merits

The Board is to consider the merits of a petitioner's challenge when determining whether to institute a post-grant proceeding in view of parallel district court litigation. EX-2010, 4. As explained in more detail above in section VI, Petitioners have failed to meet their burden under 37 C.F.R. §42.108(c) of establishing a reasonable likelihood of success that any of the challenged, pending claims are unpatentable, let alone a compelling case. *CommScope Techs. LLC v. Dali Wireless, Inc.* IPR2022-01242, Paper 23, 3 and 5 (PTAB 2023) (precedential) ("As the Guidance Memo and my precedential decision in *OpenSky* make clear, the compelling merits standard is a higher standard than the standard for institution set by statute.") ("[T]he Board must provide reasoning sufficient to allow the parties to challenge that finding and sufficient to allow for review of the Board's decision.").

In sum, each of the *Fintiv* factors weigh in favor of denying institution, and the Board should exercise its discretion in accordance therewith.

VIII. CONCLUSION

As set forth above, Ground 1A of the Petition of the petition is moot because all claims (*i.e.*, claims 3-5, 13, and 16-17) challenged under Ground 1A of the Petition were disclaimed. Furthermore, the Petition failed to establish a reasonable likelihood of success with respect to the remaining (*i.e.*, non-disclaimed) challenged claims (*i.e.*, claims 7, 9, 14-15) under the Petition's only other ground, Ground IB. Additionally, the Board should exercise its discretion to deny institution under 35 U.S.C. §314(a). Therefore, the Petition should be denied in its entirety.

Respectfully submitted,

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July 13, 2023

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Patent Owner hereby certifies that the present paper contains 11,158 words (as counted by the “Word Count” feature of Microsoft WordTM). This word count excludes the table of contents, table of authorities, table of exhibits, certificate of word count, and certificate of service.

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Patent Owners' Preliminary Response

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the attached Patent Owner Preliminary Response is being served by electronic mail on the following counsel of record:

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