

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TIANMA MICROELECTRONICS CO., LTD.

Petitioner,

v.

LG Display Co., Ltd.,
Patent Owner

IPR2025-01579

U.S. Patent No. 11,251,394

**PATENT OWNER PRELIMINARY RESPONSE TO PETITION FOR
INTER PARTES REVIEW OF U.S. PATENT NO. 11,251,394**

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Patent Trial and Appeal Board
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PATENT OWNER'S EXHIBIT LIST

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LISTING OF CHALLENGED CLAIMS¹

Claim	Claim Text
1[pre]	An organic light emitting display comprising:
1[a]	light emitting elements disposed on a substrate;
1[b]	an encapsulation unit disposed on the light emitting elements;
1[c]	touch sensors disposed on the encapsulation unit, the touch sensors including: a plurality of first touch electrodes and a plurality of second touch electrodes, first bridges configured to connect the first touch electrodes, and second bridges configured to connect the second touch electrodes;
1[d]	first conductive lines connected to the touch sensors:
1[e]	second conductive lines connected to the first conductive lines;
1[f]	at least one insulating film formed of at least one of an inorganic film or an organic film and disposed between the first and second conductive lines; and
1[g]	a bank configured to expose anodes of the light emitting elements,
1[h]	wherein at least one of the first bridges or the second bridges

¹ For convenience purposes only, Patent Owner adopts for this Preliminary Response the numbering of claim elements advanced by Petitioners in the Petition (Paper 1). Patent Owner does not concede the appropriateness of such grouping and numbering of claim elements.

	overlaps the bank.
2	The organic light emitting display according to claim 1, wherein at least parts of the first and second conductive lines overlap each other in an edge area of the substrate.
3	The organic light emitting display according to claim 1, wherein the first and second conductive lines overlap each other on the encapsulation unit.
4	The organic light emitting display according to claim 1, wherein the first and second conductive lines are connected through contact holes formed through the at least one insulating film.
5	The organic light emitting display according to claim 1, further comprising touch pads connected to the second conductive lines and disposed on the substrate having the light emitting elements disposed thereon.
6	The organic light emitting display according to claim 1, wherein one of the first and the second bridges is disposed on a same plane as one of the first and second conductive lines.
7	The organic light emitting display according to claim 1, wherein at least one of the first bridges, the second bridges, the first touch electrodes, the second touch electrodes, the first conductive lines or the second conductive lines is formed in a multilayer structure comprising Al, Ti, Cu, Mo, ITO or MO.
8	The organic light emitting display according to claim 1,

	wherein at least one of the first bridges, the second bridges, the first touch electrodes, the second touch electrodes, the first conductive lines or the second conductive lines is formed of Ti/Al/Ti or Mo/Al/Mo.
9[pre]	The organic light emitting display according to claim 1, wherein:
9[a]	the encapsulation unit comprises at least one inorganic encapsulation layer and at least one organic encapsulation layer; and
9[b]	the at least one insulating film is one of the at least one inorganic encapsulation layer and the at least one organic encapsulation layer.
10	The organic light emitting display according to claim 9, wherein the second conductive lines are disposed on an uppermost one of the at least one inorganic encapsulation layer.
11	The organic light emitting display according to claim 10, wherein the first conductive lines are disposed on the at least one organic encapsulation layer.
12	The organic light emitting display according to claim 11, wherein the first conductive lines are connected to the second conductive lines through contact holes formed through the uppermost one of the at least one inorganic encapsulation layer.

13	The organic light emitting display according to claim 10, wherein the first conductive lines are disposed on one of the at least one inorganic encapsulation layer, disposed under the at least one organic encapsulation layer.
14	The organic light emitting display according to claim 13, wherein the first conductive lines are connected to the second conductive lines through contact holes formed through the uppermost one of the at least one inorganic encapsulation layer and through the at least one organic encapsulation layer.
15	The organic light emitting display according to claim 10, further comprising an interlayer inorganic layer disposed on cathodes of the light emitting elements, wherein the first conductive lines are disposed on the interlayer inorganic layer.
16	The organic light emitting display according to claim 15, wherein the first conductive lines are connected to the second conductive lines through contact holes formed through the at least one inorganic encapsulation layer and the at least one organic encapsulation layer.
17	The organic light emitting display according to claim 1, wherein the second conductive lines are disposed along a side surface of the encapsulation unit.
18	The organic light emitting display according to claim 9, wherein the second conductive lines contact an uppermost one of the at least one inorganic encapsulation layer.

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19[pre]	An organic light emitting display comprising:
19[a]	light emitting elements disposed on a substrate;
19[b]	an encapsulation unit disposed on the light emitting elements;
19[c]	touch sensors disposed on the encapsulation unit;
19[d]	first conductive lines connected to the touch sensors;
19[e]	second conductive lines connected to the first conductive lines; and
19[f]	at least one insulating film formed of at least one of an inorganic film or an organic film and disposed between the first and second conductive lines,
19[g]	wherein the second conductive lines are disposed along a side surface of the encapsulation unit.

I. INTRODUCTION

Patent Owner LG Display Co., Ltd. (“Patent Owner”) respectfully requests that the Director deny institution of the Petition filed by Tianma Microelectronics Co., Ltd. (hereinafter “Petitioner” or “Tianma”) challenging the patentability of claims 1-19 (“challenged claims”) of U.S. Patent No. 11,251,394 (“the ’394 Patent”) (Ex. 1001).

Incorporated in February 1985, LG Display’s business has been focused on the research, development, manufacture, and sale of products using display technologies such as Organic Light Emitting Diode (“OLED”) and Thin Film Transistor Liquid Crystal Display (“TFT-LCD” or “LCD”). EX2001, ¶2. In 2024, Patent Owner had approximately \$19.4 billion in worldwide sales of display panels. *Id.* at ¶3. Patent Owner invests approximately 8% of its sales into R&D expenses, continually creating customer value through systematic R&D activities for new products and technologies. *Id.* at ¶4. Leveraging these competitive R&D activities, Patent Owner is leading the display market. *Id.*

Patent Owner began to manufacture OLED panels with touch on encapsulation (“TOE”) technology for smartphones starting in 2019 and has since sold OLED panels practicing TOE technology (covered by ’394 Patent) to its

customers including Apple, Microsoft, and Google, who incorporate them into their products. Patent Owner has filed numerous patent applications for TOE technology since 2016, which led to the commercialization of TOE in LG Display products. EX2012.

Tianma has known about its infringement of LG Display's patent portfolio since at least 2011 and due to a prolonged string of failures to act reasonably and in good faith, LG Display was forced to file a district court case (which led to Tianma's filing of its Petition). The '394 Patent is one of seven patents asserted in the co-pending district court litigation but is the **only** patent that Tianma has challenged at the USPTO. Meaning, this proceeding is ripe for Tianma to create and exploit inconsistent arguments and positions in the event this IPR is instituted, as mentioned in Patent Owner's Brief in support of its Request For Discretionary Denial (Paper 7). Indeed, Tianma has already signaled its intent to do just that in its Petition by stating that "Petitioner reserves the right to argue indefiniteness in an appropriate forum." Pet. at 9, n.2. For at least this reason, the Director should deny Petitioners' request to institute *inter partes* review.

In addition, Petitioner has failed to demonstrate a reasonable likelihood of success on the grounds submitted in its Petition.

First, the Petition asserts inconsistent and conflicting interpretations of the cited references in its different Grounds. For example, in Ground 1, the Petition interprets Kwon224's thin film encapsulation layer TFE as corresponding to the claimed encapsulation unit (recited in independent claim 1), but then in Ground 2 contradicts itself by asserting this same TFE layer of Kwon224 corresponds to the claimed interlayer inorganic layer (recited in claim 15). *See* Pet. at 27-28 and 98. The Petition is silent in addressing this contradiction – leaving the Board and Patent Owner to guess as to how to reconcile it. This deficiency alone warrants denial of Petitioner's request to institute for violating the “precision” and “specificity” requirements of 37 C.F.R. § 42.104(b) (the Petition must contain a “statement of the *precise* relief requested” and must “*specify* where each element of the claim is found in the prior art patents or printed publications relied upon.”).

Second, none of the cited references, whether taken alone or in reasonable combination, disclose or render obvious the arrangement of each limitation in the challenged claims. In fact, **all five grounds fail because the relied-upon references fail to disclose or suggest “second conductive lines connected to the first conductive lines” as recited in both independent claims (claim 1 and 19).** On top

of this deficiency in the Petition, the cited references, either individually or in any asserted combination, ***also fail*** to disclose or render obvious at least:

- “wherein at least one of the first bridges or the second bridges overlaps the bank,” (claim 1)
- “wherein the second conductive lines are disposed along a side surface of the encapsulation unit,” (claim 19),

which the Examiner found as the basis for Allowance. In addition, Petitioner fails to demonstrate a motivation to combine for any of the five grounds, relying primarily on hindsight.

The Petition is filled with conclusory statements that fail to demonstrate a reasonable likelihood of success on any ground and are neither bolstered nor supported by Mr. Richard Flasck's declaration (Ex. 1003), which essentially parrots Petitioner's conclusions without additional analysis or evidence. See 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

For at least these reasons, Petitioner has failed to meet their burden of showing a reasonable likelihood of prevailing. Accordingly, the Director should deny Petitioners' request to institute *inter partes* review.

II. BACKGROUND

A. Overview of the '394 Patent

The '394 Patent, titled "*Organic Light Emitting Display And Method Of Fabricating The Same*," issued from U.S. Application No. 16/907,966, which was filed on June 22, 2020. *See* Exs. 1001, 1002.

The claimed inventions relate to an organic light emitting display "which can achieve weight reduction and slimming." Ex. 1001, 1:21-25. The organic light emitting display includes "light emitting elements disposed on a substrate; an encapsulation unit disposed on the light emitting elements; [and] touch sensors disposed on the encapsulation unit." Ex. 1001, Abstract. The touch sensors include "a plurality of first touch electrodes and a plurality of second touch electrodes, first bridges ... and second bridges," with "first conductive lines connected to the touch sensors," "second conductive lines connected to the first conductive lines," and "at least one insulating film ... disposed between the first and second conductive lines." Ex. 1001, Claim 1. Conductors are disposed "along a side surface of the encapsulation unit," with "pad connection electrodes ... on the upper and side surfaces of the uppermost layer," and a "bank [] configured to expose anodes of the light emitting elements," where "at least one of the first bridges or the second bridges

overlaps the bank.” Ex. 1001, Claim 1.

The '394 Patent explains that prior touch OLED arrangements were “complicated,” where “the touchscreen is separately manufactured and then attached to the front surface of the display panel,” increasing thickness and manufacturing costs. Ex. 1001, 1:41-48. The claimed inventions solve these problems in the conventional art by providing an improved, integrated configuration. For example, the '394 Patent describes “a plurality of inorganic encapsulation layers and at least one organic encapsulation layer,” with intersecting touch lines “disposed so as to intersect each other such that at least one of the inorganic encapsulation layers and the at least one organic encapsulation layer is interposed therebetween,” thereby integrating the touch stack within the encapsulation. Ex. 1001, 2:1-12.

This integrated configuration of the '394 Patent “does not require a touch insulating layer ... thereby achieving structure simplification, weight reduction and slimming,” can “assure flexibility and improve transmittance,” and that “a separate attachment process is omitted and, thus, process simplification and cost reduction can be achieved.” Ex. 1001, 6:28-40. Further, the '394 Patent's display includes conductors “along a side surface of the encapsulation unit,” “pad connection electrodes ... on the upper and side surfaces of the uppermost layer,” and an

encapsulation that “block[s] oxygen or moisture,” that support reliability and manufacturability, while enabling a thinner, lighter, and more robust display. Ex. 1001, 5:47-65.

B. Prosecution History of the '394 Patent

U.S. Patent Application No. 16/907,966, which ultimately issued as the '394 Patent, was filed on June 22, 2020. The '394 Patent is a continuation of U.S. Patent Application No. 16/666,105 filed on October 28, 2019 (now U.S. Patent No. 10,727,436), which is a division of U.S. Patent Application No. 15/637,728 filed on June 29, 2017 (now U.S. Patent No. 10,505,142), which in turn claims foreign priority to Korean Patent Application No. 10-2016-0083006, filed on June 30, 2016.

The '394 Patent is the result of a thorough examination where the Examiner considered prior art analogous to that in the Petition and found the invention patentable. *See* Ex. 1002 at 146-153, 173-174, and 251-269. During prosecution, the Examiner rejected claims 1-9, 11-18, and 20 as anticipated under 35 U.S.C. § 102(a)(1) over U.S. Patent Application Publication No. 2017/0090651 (“Kang”). *See id.* at 146-153. The Examiner also acknowledged that claims 10 and 19 recited allowable subject matter but objected to them for being dependent on rejected claims. *Id.* at 147. In response, independent claim 1 was amended to incorporate the

subject matter of claims 6 and 10, and claim 19 was canceled and rewritten into independent form in claim 21 (now claim 19 as patented). Ex. 1002 at 251-258. The Applicant argued that all claims should be patentable based on reciting the respective subject matter of original claims 10 and 19. *Id.*

The Examiner found these amendments and arguments persuasive. *See id.* at 262-269. For example, the Notice of Allowance pointed to the prior art failing to disclose or suggest the claimed elements as follows:

Regarding claim(s) 1, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim(s) 1, and specifically comprising the limitation of the touch sensors including: a plurality of first touch electrodes and a plurality of second touch electrodes, first bridges configured to connect the first touch electrodes, and second bridges configured to connect the second touch electrodes; first conductive lines connected to the touch sensors; second conductive lines connected to the first conductive lines; at least one insulating film formed of at least one of an inorganic film or an organic film and disposed between the first and second conductive lines; and a bank configured to expose anodes of the light emitting elements, wherein at least one of the first bridges or the second bridges overlaps the bank.

Ex. 1002 at 267.

Regarding claim(s) 21, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim(s) 21, and specifically comprising the limitation of an encapsulation unit disposed on the light emitting elements; touch sensors disposed on the encapsulation unit; first conductive lines connected to the touch sensors; second conductive lines connected to the first conductive lines; and at least one insulating film formed of at least one of an inorganic film or an organic film and disposed between the first and second conductive lines, wherein the second conductive lines are disposed along a side surface of the encapsulation unit.

Ex. 1002 at 268.

C. Summary of Petitioner's Proposed Grounds for Unpatentability

Petitioner alleges that claims 1–19 of the '394 Patent would have been obvious under 35 U.S.C. § 103 and raises five grounds of alleged unpatentability. See Pet. at 11. The alleged invalidity grounds are summarized as follows:

Ground	'394 Claims	Type of Challenge	References	Exemplary Deficiency
1	1-4 and 6-8	§ 103	Kwon224 in view of Kim524	1[e], 1[h]
2	9-16 and 18	§ 103	Kwon224 in view of Kim524 and Zhu837	9
3	5	§ 103	Kwon224 in view of Kim524 and Jang513	5

4	17	§ 103	Kwon224 in view of Kim524 and Kim 481	17
5	19	§ 103	Kim481 in view of Kim 524	19[e], 19[g]

D. Petitioner's Relied-Upon References

The five references relied upon by Petitioner are summarized as follows:

1. Overview of Kwon224 (Ex. 1005)

U.S. Patent Application Publication No. 2016/0378224 (“Kwon224”), published on December 29, 2016 (filed on May 12, 2016), is generally directed to a “flexible display device” including “a plurality of light emitting areas and a non-light emitting area disposed adjacent to the light emitting areas.” Ex. 1005, Abstract. Kwon224 describes that “[a] thin film encapsulation layer TFE [of the flexible display device] may include a plurality of organic layers and/or a plurality of inorganic layers” and may “provide[] the base surface BS on which the touch screen TS is disposed” to “protect the organic light emitting device OLED from moisture and foreign substance.” *Id.* at ¶¶ 112, 123, 139.

The “touch screen TS may include a first conductive layer TS-CL1, a first insulating layer TS-ILL a second conductive layer TS-CL2, a second insulating layer TS-IL2, a third conductive layer TS-CL3, and a third insulating layer TS-IL3.” *Id.*

at ¶257. These conductive layers “may include a plurality of patterns,” such as “first conductive patterns,” “second conductive patterns,” and “third conductive patterns.” *Id.* at ¶ 258. “The first conductive patterns may be a conductive layer (hereinafter, referred to as a noise shielding conductive layer) to shield a noise generated by the display panel DP.” *Id.* “The second conductive patterns and the third conductive patterns may include touch electrodes and touch signal lines to sense an external input.” *Id.* Notably, Kwon224 does **not** disclose, among other things, an insulating encapsulation layer, touch pads connected to second conductive lines, which in turn are connected to first conductive lines connected to the touch sensors, claimed by the '394 Patent.

Kwon224 describes that “the noise shielding layer is disposed to overlap with the first and second conductive patterns, the first and second conductive patterns may be prevented from being interfered with by the noise generated from the display panel.” *Id.* at ¶ 329. Kwon224 also describes that “[s]ince the touch electrodes may have the mesh shape, the tensile stress and the compressive stress, which are applied to the touch electrodes, may be reduced....” *Id.*

2. Overview of Kim524 (Ex. 1006)

U.S. Patent Application Publication No. 2016/0170524 (“Kim524”),

published on June 16, 2016 (filed on June 5, 2015), is generally directed to a “display device includ[ing] a substrate and a touch electrode layer disposed on the substrate.” Ex. 1006, Abstract. “The touch electrode layer includes a touch electrode having a mesh pattern” in which “[t]he density of the mesh pattern in a central portion of the touch electrode is different from the density of the mesh pattern at an outer portion of the touch.” *Id.* Kim524 describes a “[d]isplay panel 10 may include substrate 100, display active layer 200 formed on substrate 100, encapsulation layer 300 formed on display active layer 200, and touch [electrode] layer 400 formed on encapsulation layer 300.” Ex. 1006, ¶ 39. Kim524 describes that the “[e]ncapsulation layer 300 may be a thin film encapsulation layer (TFE) including a plurality of encapsulating thin films... includ[ing] at least one inorganic layer and at least one organic layer, and the inorganic layers and the organic layers may be alternately laminated.” *Id.* at ¶ 73.

Kim524 describes that a touch sensor of the display device may include the “touch electrode layer 400 [] formed on encapsulation layer 300 of display panel 10.” *Id.* at ¶ 78. The “[t]ouch electrode layer 400 includes first touch electrode layer 410 and second touch electrode layer 420, with insulating layer 430 formed therebetween.” Kim524 describes that the “[f]irst touch electrode layer 410 includes

a plurality of first touch electrodes 411, a plurality of first connecting portions 412, a plurality of first lower touch signal lines 415, a plurality of second lower touch signal lines 416..." and the "[s]econd touch electrode layer 420 includes a plurality of second touch electrodes 421, a plurality of second connecting portions 422, a plurality of first upper touch signal lines 425, and a plurality of second upper touch signal lines 426." *Id.* at ¶¶ 79 and 80. The "[f]irst lower touch signal lines 415 are connected with first upper touch signal lines 425... through contact holes 435 in [the] insulating layer 430." *Id.* at ¶ 84.

Kim524 describes that the "[f]irst touch electrode 411 and second touch electrode 421 are formed by mesh patterns formed by crossing the metal lines." *Id.* at ¶ 87. "In the case of the metal mesh, since the flexibility may be better than a transparent electrode, it is advantageous for use in a flexible display device." *Id.* at ¶ 88. However, Kim524 **not** disclose, among other things, an insulating encapsulation layer, touch pads connected to second conductive lines, which in turn are connected to first conductive lines connected to the touch sensors, claimed by the '394 Patent. Further, Kim524 does not disclose or suggest first bridges or second bridges that overlap a bank exposing anodes of the light emitting elements, as claimed by the '394 Patent.

3. Overview of Kim481 (Ex. 1007)

U.S. Patent Application Publication No. 2012/0062481 (“Kim481”), published on March 15, 2012 (filed on February 4, 2011), is generally directed to a “flat panel display having an integrated touch screen panel” in which “sensing lines of the touch screen panel are formed to extend to a substrate of the display panel, on which organic light emitting elements are formed, so that the touch screen panel and the display panel are connected to a flexible printed circuit board....” Ex. 1007, Abstract.

Kim481 describes that “the sealing thin film 200 including a pixel area of the substrate 100 is formed rather than the conventional sealing substrate for the purpose of protecting the organic light emitting elements, thereby minimizing thickness.” Kim481 describes “sensing cells 220 [of the sealing thin film 200] include a plurality of first sensing cells 220 a” and “a plurality of second sensing cells 220 b alternately arranged to not be overlapped with the first sensing cells 220 a.” Ex. 1007, ¶ 26. “The sealing thin film 200 is formed to protect the organic light emitting element provided to each of the pixels 112, and may be implemented as a stacked structure of a plurality of organic and inorganic layers.” *Id.* at ¶ 48.

Kim481 describes that the sealing thin film 200 may be arranged in “a

structure in which a first organic layer 202, a first inorganic layer 204, a second organic layer 206 and a second inorganic layer 208 are alternately stacked so as to effectively block oxygen and moisture from the exterior.” *Id.* at ¶ 49. Missing from Kim481 is, for example, an insulating encapsulation layer, touch pads connected to second conductive lines, which in turn are connected to first conductive lines connected to the touch sensors, claimed by the '394 Patent. Further, Kim481 does not disclose or suggest first bridges or second bridges that overlap a bank exposing anodes of the light emitting elements, as claimed by the '394 Patent.

4. Overview of Zhu837 (Ex. 1008)

U.S. Patent Application Publication No. 2016/0313837 (“Zhu837”), published on October 27, 2016 (filed on June 23, 2016), is generally directed to a “touch control display device” including “second electrodes in the organic light-emitting diodes [that] are connected in series in the same layer in a first direction so as to form a plurality of first conductive units (105); the touch control layer comprises a plurality of second conductive units (107) arranged in parallel in a second direction, the first conductive units (105) and the second conductive units (107) are configured to be insulated from each other and to form a cross network.” Ex. 1008, Abstract. Zhu837 describes that “an objective of the present invention is

to provide an organic light-emitting display device with embedded touch control structure.” *Id.* at ¶ 8.

Zhu837 provides that “[p]referably, the first encapsulation layer and the second encapsulation layer each comprises a single layer of or alternately arranged multiple layers of organic films and/or inorganic films.” *Id.* at ¶ 20. “Only the first encapsulation layer is used for insulation between the first conductive units and the second conductive units, which has a compact structure.” *Id.* at ¶ 33. Zhu837 does not disclose or suggest, for example, an insulating encapsulation layer, touch pads connected to second conductive lines, which in turn are connected to first conductive lines connected to the touch sensors, claimed by the ’394 Patent. Further, Zhu837 does not disclose or suggest first bridges or second bridges that overlap a bank exposing anodes of the light emitting elements, as claimed by the ’394 Patent.

5. Overview of Jang513 (Ex. 1009)

U.S. Patent Application Publication No. 2013/0278513 (“Jang513”), published on October 24, 2013 (filed on August 14, 2012), is generally directed to a “touch screen panel” that “includes a plurality of pixels on a substrate, a sealing thin film on the substrate, and a plurality of sensing electrodes on the sealing thin film, each of the sensing electrodes having a mesh structure.” Ex. 1009, Abstract. Jang513

describes that the plurality of sensing electrodes include “the first sensing electrode and the second electrode [that] may be formed directly on the sealing thin film.” *Id.* at ¶ 16. An insulating film may be “positioned between the first sensing electrodes and the second sensing electrodes at least in an intersection region between the first and second sensing electrodes.” *Id.*

“The sealing thin film 30 may be positioned on the substrate 10 and the pixels 20 in order to protect the pixels 20 positioned on the substrate 10” and “formed at an upper side of the pixels 20, thereby making it possible to prevent penetration of moisture, oxygen, or the like, into the pixel 20.” Ex. 1009, ¶ 69. Jang513 describes that “[a]s the first and second sensing electrodes 50 and 60... are formed of an opaque metal, the first and second sensing electrodes 50 and 60 may be formed in a mesh structure so as to prevent blocking pixels 20 ... thereby improving image quality and visibility.” *Id.* at ¶ 56. Notably, Jang513 does not disclose, for example, an insulating encapsulation layer, touch pads connected to second conductive lines, which in turn are connected to first conductive lines connected to the touch sensors, claimed by the '394 Patent. Further, Jang513 does not disclose first bridges or second bridges that overlap a bank exposing anodes of the light emitting elements.

III. LEVEL OF ORDINARY SKILL

Petitioner proposes that a person of ordinary skill in the art (POSITA) would have had “a four-year undergraduate degree in electrical engineering or physics or a closely-related field and four years of experience in the design and implementation of flat panel display devices or components thereof as of the priority date.” Pet. at 9-10; *see also* Ex. 1003 at ¶55-57.

For the purposes of this Preliminary Response, Patent Owner does not contest that the relevant fields of art may include “electrical engineering or physics or a closely-related field” with experience in “the design and implementation of flat panel display devices or components thereof.” While Patent Owner may not agree with the precise level of education and/or experience proposed by Petitioner, these differences need not be resolved at this stage. Patent Owner reserves the right to provide further evidence and argument on this issue at a later time.

IV. CLAIM CONSTRUCTION

A. The Board Should Deny Institution In View Of Tianma's Indication That It Intends To Argue Different Constructions “In An Appropriate Forum”

The Petition's asserted claim constructions, or lack thereof, are contradictory and vague, in violation of 37 C.F.R. § 42.104's explicit requirement that Petitioner

provide “a statement of the precise relief requested” including “[h]ow the challenged claim is to be construed.” 37 C.F.R. § 42.104(b).

Petitioner states: “Petitioner reserves the right to argue indefiniteness in an appropriate forum.” Pet. at 9, fn 2. Instead of agreeing to be bound by the claim construction positions or lack thereof set forth in this Petition, Petitioner hedges and forces the Board and the Patent Owner to guess which construction Petitioner asserts, while at the same time reserving their right to rely on new, potentially inconsistent, constructions in this proceeding and another litigation (or whatever is intended by the vague statement of “in an appropriate forum”). The Board and Patent Owner should not be burdened with such an unbounded position on claim construction when defending its patent rights. Indeed, this is the precise reason why 37 C.F.R. § 42.104(b)(3) requires Petitioner to explain how the challenged claims are to be construed. Petitioner cannot have it both ways.

By conceding that it is reserving rights to take a different claim construction position, *i.e.*, indefiniteness, Petitioner is indicating that it wants to have the flexibility to take different claim construction positions even for additional invalidity arguments to the PTAB. Such reservation of rights does not comply with the requirements of 37 C.F.R. § 42.104(b)(3) and this Board's prior decisions.

Specifically, under 37 C.F.R. § 42.104(b)(3), petitioners must clearly articulate **in the petition** “[h]ow the challenged claim is to be construed.” If, according to Petitioner, its claim construction positions in this Petition do **not** limit its ability to assert a different claim construction position, *i.e.*, indefiniteness, then how does Petitioner propose that the Board construe such limitations to assess Petitioner’s invalidity challenges, which would result in a consistent record among the forums alluded to by Petitioner in its footnote 2 of the Petition.

Petitioner is silent and provides no explanation for being non-committal in its position of claim construction to obtain an institution decision in this forum, only to turn around and seek indefiniteness of these same terms “in an appropriate forum.” But a petitioner must explain why it takes different claim construction positions in the Petition and in another forum (*e.g.*, district court, ITC, etc.); asserting different claim construction positions in the multiple forums alone favors denial of institution. This is precisely the type of gamesmanship that this Board has found violates the law and warrants denial of institution. *See American Airlines, Inc. et al v. Intellectual Ventures I LLC*, IPR2025-01055, Paper 11 (November 21, 2025) (denying institution when Petitioner was construing terms as plain and ordinary in the Petition, yet arguing for indefiniteness in a different forum); *Revvo Technologies, Inc. v.*

Cerebrum Sensor Technologies, Inc., IPR2025-00632, Paper 20 (Squires November 3, 2025) (precedential) (a petitioner must explain why it takes different claim construction positions in the petition and in district court).

In *American Airlines*, the panel denied institution due to the petitioner purporting to assert certain terms should be construed according to the *Phillips* standard in an IPR but are indefinite in a related district court litigation. The panel reasoned that “[i]f, according to Petitioner, many limitations in claim 1 (and other claims) are indefinite, then how does Petitioner propose that the Board construe such limitations to assess Petitioner’s invalidity challenges—*Petitioner is silent*. Indeed, Petitioner provides no explanation for its different claim construction positions in the two forums. This alone favors denial of institution.” *American Airlines*, IPR2025-01055, Paper 11 at 13. This is exactly the situation Petitioner has created here. Petitioner has indicated that it will assert contradictory constructions of the same terms in this IPR and another litigation, *i.e.*, “appropriate forum.” For the same reasons as *American Airlines*, the Board should deny institution of this Petition.

Notwithstanding these errors, to minimize the disputes that the Board needs to address at this preliminary stage, and for purposes of this Preliminary Response only, Patent Owner applies Petitioner’s proposal that no terms require construction

to show Petitioner has not met its burden under 37 CFR § 42.104(b)(4). Patent Owner reserves the right to contest Petitioner's claim construction should the Board institute this IPR of the '394 Patent.

V. LEGAL STANDARD

A claim is also not patentable if the differences between the claim and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the invention. 35 U.S.C. § 103. Obviousness requires assessing (1) the "level of ordinary skill in the pertinent art," (2) the "scope and content of the prior art," (3) the "differences between the prior art and the claims at issue," and (4) "secondary considerations" of non-obviousness such as "commercial success, long felt but unsolved needs, failure of others, etc." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966)).

It is the petitioner's burden to prove unpatentability, *E.I DuPont de Nemours & Co. v. Synvina C.V.*, 904 F.3d 996, 1007 (Fed. Cir. 2018), and "to demonstrate both 'that a skilled artisan would have been motivated to combine the teachings of the prior art... and that the skilled artisan would have had a reasonable expectation of success....'" *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d

1359, 1367-68 (Fed. Cir. 2016). However, petitioners must first show that all of the claimed elements are disclosed in the prior art. *See Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1164 (Fed. Cir. 2006) (considering motivation to combine and reasonable expectation of success only “if all the elements of an invention are found in a combination of prior art references”).

VI. PETITIONER’S EXPERT DECLARATION IS ATTORNEY ARGUMENT VEILED AS EXPERT OPINION

Petitioner relies on a declaration from its expert Mr. Flasck (Ex. 1003). However, Mr. Flasck copies Petitioner’s arguments and lacks sufficient facts and data to support his positions. For example:

Petition	Mr. Flasck’s Declaration (Ex. 1003)
Second, the ’394 patent describes a touch sensor based on mutual capacitance. Specifically, it explains that mutual capacitance (Cm) is established between a touch driving line 152 and a touch sensing line 154. Ex-1001, 4:64-5:5; Ex-1003, ¶99. A touch driving pulse charges the driving line 152, and the resulting change in capacitance is transferred to the sensing line 154, allowing the system to detect the presence and location of a touch. <i>Id.</i> (Pet. at 32-33).	Second, the ’394 patent describes a touch sensor based on mutual capacitance. Specifically, it explains that mutual capacitance (Cm) is established between a touch driving line 152 and a touch sensing line 154. Ex-1001, 4:64-5:5 [omitting parenthetical] . It further explain that a touch driving pulse charges the driving line 152, and the resulting change in capacitance is transferred to the sensing line 154, allowing the system to detect the presence and location of a touch. <i>Id.</i> [omitting parenthetical] (Ex. 1003 at ¶ 99).

Petition	Mr. Flasck's Declaration (Ex. 1003)
Kwon224 similarly discloses a capacitive touch sensor architecture. Ex-1003, ¶100. Figures 9A–9B illustrate a “two-layer electrostatic capacitive touch screen” capable of detecting touch events using either self-capacitance or mutual capacitance modes. Kwon224, ¶[0142]. In particular, Kwon224 explains that the first touch electrodes are “capacitively coupled to the second touch electrodes,” and that “when sensing signals are applied to the first touch electrodes ... capacitors may be formed between the first sensing parts SP1 and the second sensing parts SP2.” <i>Id.</i>, ¶¶[0151], [0220], [0278]. (Pet. at 32-33).	Kwon224, in my opinion, similarly discloses a capacitive touch sensor architecture. Specifically, Figures 9A 9B illustrate a “two-layer electrostatic capacitive touch screen” capable of detecting touch events using either self capacitance or mutual capacitance modes. Kwon224, ¶[0142]. In particular, Kwon224 explains that the first touch electrodes are “capacitively coupled to the second touch electrodes,” and that “when sensing signals are applied to the first touch electrodes, capacitors may be formed between the first sensing parts and the second sensing parts.” <i>Id.</i>, ¶[0151], [0278]. (Ex. 1003 at ¶ 100).
In fact, Kim524 itself discloses that the first conductive lines (sky blue and/or pink) and second conductive lines (navy blue and/or magenta) overlap on the encapsulation unit 300 (green). Ex 1003, ¶¶177-78; Kim524, ¶¶[0073], [0078], [0084]. Therefore, the Kwon224-Kim524 combination discloses claim 3 because it discloses the first and second conductive lines (touch signal lines in pink, sky blue, magenta, navy blue) overlap each other on the encapsulation unit (i.e., the TFE layer). (Pet. at 72).	In fact, Kim524 itself discloses that the first conductive lines (sky blue and/or pink) and second conductive lines (navy blue and/or magenta) overlap on the encapsulation unit 300 (green). <i>Id.</i>; Kim524, ¶¶[0073], [0078], [0084]. Therefore, in my opinion, the Kwon224-Kim524 combination discloses claim 3 because it discloses the first and second conductive lines (touch signal lines in pink, sky blue, magenta, navy blue) overlap each other on the encapsulation unit (i.e., the TFE layer). (Ex. 1003 at ¶¶ 178-79).

Mr. Flasck does not provide any other analysis or explanation as to why a POSITA would find something obvious or be motivated to modify the asserted references other than Petitioner's own conclusory and boilerplate statements. The above citations are merely some examples for Ground 1, but Petitioner employs similar tactics throughout the Petition. *See generally* Sections VI(A)-(E).

Such conclusory and superficial attorney argument in the guise of expert testimony cannot serve as sufficient support for Petitioner's arguments. *See, e.g., Cardiacom, LLC v. Bosch Healthcare Sys., Inc.*, IPR2013-00439, Paper 26, 15-16 (PTAB Jan. 16, 2014); *see also Kinetic Techs., Inc. v. Skyworks Solutions, Inc.*, IPR2014-00529, Paper 8, 15-16 (PTAB Sept. 23, 2014) ("Merely repeating an argument from the Petition in the declaration of a proposed expert does not give that argument enhanced probative value," and a petitioner cannot move forward to trial based upon such "mere conclusory statements.") (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *TRW Auto. US LLC v. Magna Elecs., Inc.*, IPR2014-00258, Paper 18, 10-11 (PTAB Aug. 27, 2014) (giving little to no weight to expert testimony that "did not elaborate on [Petitioner's] position because it simply repeated [Petitioner's] conclusory statements verbatim"); *InfoBionic, Inc. v. Braemar Mfg.*,

LLC, IPR2015-01704, Paper 11, 6 (PTAB Feb. 16, 2016) (denying institution because expert merely repeated the argument in the Petition about what a reference meant without explaining why the expert believed that meaning to be correct).

Moreover, such conclusory opinions by an expert that merely parrot Petitioner's arguments should be accorded little weight when used to supply a missing limitation. *See Xerox Corp. et al. v. Bytemark, Inc.*, IPR2022-00624, Paper 12, p. 5 (PTAB Feb. 10, 2023) (Former Director noting in a Sua Sponte affirmation of the decision: "I determine that the Board was correct in giving little weight to Petitioner's expert because the expert declaration merely offered conclusory assertions without underlying factual support and repeated, verbatim, Petitioner's conclusory arguments."). Former Director stated that:

The declaration does not provide any technical detail, explanation, or statements supporting why the expert determines that the feature in question was required or would have been obvious based on the prior art disclosure. See Ex. 1003 ¶ 54. Instead, the declaration copies, word-for-word, Petitioner's conclusory assertions. Compare *id.*, with Pet. 28–29. The declaration sets forth Petitioner's conclusory assertions as though they are facts, rather than setting forth facts and evidence in support of Petitioner's assertions. Accordingly, I agree with the Board's explanation that "the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight" under 37 C.F.R. § 42.65(a).

Id. As discussed *supra*, Mr. Flasck's "opinions" are copied verbatim from the Petition, including attempts to fill in missing limitations.

Therefore, little to no weight should be given to Mr. Flasck's testimony. And, absent his conclusory testimony, the Petition has no evidentiary support. Institution should be denied for this reason.

VII. THE PETITION DOES NOT SHOW A LIKELIHOOD OF PREVAILING WITH RESPECT TO ANY CHALLENGED CLAIM

In addition to the grounds already presented in Patent Owner's Request for Discretionary Denial (Paper 7), institution should be denied because Petitioner does not establish a reasonable likelihood of prevailing against any challenged claim under any proposed Ground.

A. The Petition Asserts Inconsistent and Conflicting Interpretations Across Different Grounds

At the outset, the Petition asserts inconsistent and conflicting interpretations of the cited references against the Challenged Claims. In Ground 1, the Petition interprets Kwon224's thin film encapsulation layer TFE as corresponding to the claimed encapsulation unit recited in independent claim 1. *See* Pet. at 27-28. But then in Ground 2, the Petition changes its position and instead asserts that this same TFE layer described in Kwon224 is equivalent to the claimed interlayer inorganic

layer recited in claim 15. *See* Pet. at 98. Petitioner apparently shifts to this new interpretation of Kwon224 because Petitioner recognizes that Kwon224 does not disclose or suggest the claimed interlayer inorganic layer. Petitioner is therefore forced to abandon its prior interpretation of Kwon224 and try something new in order to read on claim 15.

Patent Owner and the Board are now left in a gray area of uncertainty; forced to guess whether the Petitioner is relying on Kwon224's thin film encapsulation layer TFE to render obvious the claimed encapsulation unit or the claimed interlayer inorganic layer, or both (despite failing to provide any explanation of how such an interpretation would be possible or supported by Kwon224). This is not "a statement of the ***precise*** relief requested" nor does it "specify where each element of the claim is found in the prior art patents or printed publications relied upon," in violation of 37 C.F.R. § 42.104(b).

Therefore, Petitioners inconsistent and conflicting interpretations of Kwon224's thin film encapsulation layer TFE as corresponding to both the claimed encapsulation unit (claim 1) and the interlayer inorganic layer (claim 15) runs afoul of 37 C.F.R. § 42.104(b)'s requirements to provide "a statement of the ***precise*** relief requested" and "***specify*** where each element of the claim is found in the prior art []

relied upon,” as well as the '394 Patent itself. Accordingly, the Board should deny institution of this Petition.

B. Ground 1: Petitioner Fails to Establish That Claims 1-4 and 6-8 Would Have Been Obvious Based on Kwon224 in view of Kim524

Petitioner has not shown a reasonable likelihood of prevailing on Ground 1 because the alleged combination of Kwon224 and Kim524 would not have been obvious to a POSITA and fails to disclose or suggest key features of the '394 Patent's invention, as discussed in detailed below.

1. Petitioner Fails to Establish that a POSITA Would Combine Kwon224 in view of Kim524

Petitioner's assertion that a POSITA would have combined Kwon224 and Kim524 rests on hindsight, ignoring that these references address distinct problems with fundamentally different solutions. Pet. 11-12.

The Petition asserts that “Kwon224 and Kim524 both address similar integration-related problems” and “[b]ecause Kwon224 and Kim524 disclose similar systems that operate similarly and are directed to similar problems, a POSITA would have been motivated to consider their combined teachings.” Pet. at 20-21 (citing Ex. 1003, ¶ 75). This is overly vague and generic reasoning fails to account for the actual, more detailed-oriented approaches taken by Kwon224 and

Kim524. When the full teachings of Kwon224 and Kim524 are considered, although both references ostensibly address integration challenges for OLED touch displays, **they solve materially different problems with different structures and design constraints, and they teach away from the proposed combination.** In addition, Petitioner's stated motivations and predictability assertions are conclusory and overlook incompatibilities that a POSITA would have recognized.

Kwon224 is directed to a flexible display device that includes a touch screen TS, which includes "a first conductive layer TS-CL1, a first insulating layer TS-ILL a second conductive layer TS-CL2, a second insulating layer TS-IL2, a third conductive layer TS-CL3, and a third insulating layer TS-IL3." Ex. 1005, ¶ 257. These conductive layers have "conductive patterns," such as "a noise shielding conductive layer... to shield a noise generated by the display panel DP." *Id.* at ¶ 258. "The second conductive patterns and the third conductive patterns may include touch electrodes and touch signal lines to sense an external input." *Id.* Kwon224 describes that "the noise shielding layer is disposed to overlap with the first and second conductive patterns, [and] the first and second conductive patterns may be prevented from being interfered with by the noise generated from the display panel." *Id.* at ¶ 329.

The goal of Kwon224 is to reduce “the tensile stress and the compressive stress, which are applied to the touch electrodes,” which results in improved flexibility such that “the touch electrodes may be prevented from being cracked.” Ex. 1005, ¶ 329; *see also id.* at ¶ 162. Kwon224 achieves this improved flexibility, preventing electrode “cracking” during bending, by virtue of its mesh-shaped electrodes and stress-relief openings through overlying layers, integrated with thin-film encapsulation and optional buffer/planarization stacks. *Id.* at ¶¶ 181, 252. Further, “since the first touch electrodes TE1-1, TE1-2, and TE1-3 and the second touch electrodes TE2-1, TE2-2, and TE2-3 have a mesh shape and the first and second insulating openings IL1-OP and IL2-OP are respectively defined through the first and second insulating layers TS-IL1 and TS-IL2, the flexibility of the flexible display device DD may be improved.” Ex. 1005, ¶ 162; *see also id.* at ¶ 313. Kwon224 explains that the thin-film encapsulation (TFE) may include alternating organic/inorganic layers with optional grooves or openings aligned to insulating-layer openings to increase flexibility. *Id.* at ¶¶ 165-167.

On the other hand, unlike Kwon224's improved flexibility of the touch electrodes, Kim524 is focused on parasitic capacitance that exists in OLED display devices where a touch electrode is placed at a small distance above the

cathode electrode within the TFE layer. Ex. 1006, ¶¶ 88-91. Kim524 describes that “due to the parasitic capacitance generated between the touch electrode and the electrode of the display panel, sensitivity of the sensor may deteriorate... [and] [p]arasitic capacitance also becomes a problem as the distance between the touch electrode and the electrode in the display panel is decreased.” *Id.* at ¶ 7. Kim524 also describes that when the encapsulation layer is a thin film, “the distance between the touch electrode and the cathode is decreased, increasing parasitic capacitance and “reducing” sensitivity. Ex. 1006, ¶ 90.

To counteract this, Kim524 explains that “the area occupied by the metal line (that is, the density of the mesh pattern) is reduced even while the size of first and second touch electrodes 411 and 421 is maintained, thereby reducing parasitic capacitance.” *Id.* at ¶ 91. “Accordingly, when the area of an adjacent region (that is, an edge of the touch electrode) of each touch electrode is increased or maintained, even though the area of another region of each touch electrode is reduced, the mutual capacitance may be maintained.” *Id.* Therefore, the solution provided by Kim524 is that “in order to reduce the parasitic capacitance while the mutual capacitance is maintained, first and second touch electrodes 411 and 421 are formed so that the density of the mesh pattern varies according to a region.” *Id.* at ¶ 92. **Therefore,**

contrary to the Petitioner's assertions, a POSITA would not have found it obvious to modify Kwon224 with Kim524 in the manner asserted because they solve materially different problems with different structures and design constraints.

The asserted combination of Kwon224 with Kim524 would not have been obvious because, in fact, incorporating Kim524's structure into Kwon224 would be contrary to the stated goals and improvements described in Kwon224. As explained above, the benefits and improvements provided by Kwon224 are increased flexibility while reducing / preventing cracking. *See e.g.*, Ex. 1005, ¶¶ 162, 165-167, 181, 252, and 329. Adding Kim524's additional stacked signal lines and contact holes would undermine Kwon224's carefully balanced flexural strategy by increasing stress concentration, contrary to Kwon224's repeatedly emphasis on using mesh electrodes and insulating openings that "improve" flexibility and "prevent" cracking.

As a specific example of teaching away, Kwon224 focuses on the mechanical stability of a flexible display device by improving flexibility, reducing mechanical stress, and preventing electrode cracking during bending. By connecting the first and the second conductive lines via contact holes as taught by Kim524 and proposed by

Petitioner, the resulting combination increases the risk of cracking due to stress concentrations that would occur around the contact holes caused by structural / geometrical discontinuity. Further, if the touch electrode of Kwon224 is formed so that the density of the center is relatively low and the density is increased toward the outside per the teachings of Kim524, the touch electrode of Kwon224 is more likely to crack at the center having the now lowered mesh density due to stress concentration. Therefore, a POSITA would not have found it obvious to modify Kwon224 with Kim524, as asserted by the Petitioner, because such a combination would be contrary to Kwon224's intended purpose (*see e.g.*, MPEP § 2143.01(V)) and would teach a POSITA away from attempting this modification to Kwon224.

Petitioner asserts that a POSITA would have found it obvious to combine Kwon224 and Kim524 because "Kwon224 and Kim524 both address similar integration-related problems" and "[b]ecause Kwon224 and Kim524 disclose similar systems that operate similarly and are directed to similar problems, a POSITA would have been motivated to consider their combined teachings." Pet. at 20-21. However, the Petition fails to provide sufficient explanation for how such a modification would overcome the clear differences in the teachings of Kwon224 and Kim524, and that the asserted modification would be contrary to the intended

improvement / purpose provided by Kwon224, teaching away from such a combination. Given this, the Petition must rely on impermissible hindsight. Thus, a POSITA would not have found it obvious to combine Kwon224 and Kim524 to achieve the claims of the '394 Patent.

2. Petitioner Fails to Establish That Claim Element 1[e] Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim Element 1[e] recites that the organic light emitting display comprises “second conductive lines connected to the first conductive lines.” The Petition asserts that Claim Element 1[e] is rendered obvious based on the combination of Kwon224 and Kim524. However, the Petition fails to show a reasonable likelihood of success in establishing that Claim Element 1[e] would have been rendered obvious.

The Petition acknowledges that Kwon224 fails to disclose or suggest the claimed second conductive lines. Pet. at 39. The Petition must therefore rely on Kim524's “touch signal structures” to allegedly “improve Kwon224's device.” *Id.* However, as explained in detail in Section VII(B)(1) above, a POSITA would not have found it obvious to combine the teachings of Kwon224 and Kim524.

Further, with regard to Claim Element 1[e], a POSITA would not have found

this combination to have been obvious. The Petition fails to explain **why** a POSITA would have found it obvious to include the alleged second conductive lines taught by Kim524 to the structure of Kwon224 and how the teachings of Kwon224 and/or Kim524 would have taught a POSITA to connect these second conductive lines taught by Kim524 to the touch signal lines SL1 / SL2 (alleged first conductive lines) taught by Kwon224.

Although the Petition on pages 45-53 appears at first glance to provide a lengthy explanation for how and why a POSITA would have found it obvious to combine Kwon224 and Kim524, the explanations in these paragraphs fall short of explaining why a POSITA would make such a combination without the benefit of hindsight. Indeed, by modifying Kwon224's touch signal lines SL1 / SL2 (alleged first conductive lines) to add Kim524's upper / lower touch signal lines 425 / 416 and then connecting them all together via contact holes as also taught by Kim524, **the resulting modified display device would have an increased risk of cracking (caused by structural / geometrical discontinuity), in direct contradiction to Kwon224.** Nothing in the Petition explains why a POSITA would somehow overlook this contrary result and instead connect the second conductive lines taught by Kim524 to the touch signal lines SL1 / SL2 (alleged first conductive lines) taught

by Kwon224. Mr. Flasck's declaration similarly provides no sufficient explanation.

In addition, Petitioner asserts that a POSITA would have understood that Kim524's stacked conductive line configuration allows signal transmission across different layers and wider routing paths in the vertical direction, both of which help reduce resistance in the touch signal line paths. Pet. at 45. However, modifying Kwon224 with Kim524's stacked conductive line configuration would not have been obvious because Kwon224's only discloses auxiliary electrodes connected to touch electrodes for a low-resistance, and that touch signal lines out of display area are more vulnerable to crack damage than touch electrodes in display area. See Ex. 1005, ¶ 177. Therefore, Kwon224 and Kim524, either individually or in combination, fail to disclose or suggest that the second conductive lines are connected to the first conductive lines, as recited in Claim Element 1[e].

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that Claim Element 1[e] would have been rendered obvious based on a combination of Kwon224 and Kim524.

3. Petitioner Fails to Establish That Claim Element 1[h] Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim Element 1[h] recites "wherein at least one of the first bridges or the

second bridges overlaps the bank.” The Petition fails to establish this limitation.

The Petition alleges that Kwon224 discloses Claim Element 1[h]. Pet. at 60. The Petition relies purely on *inferring* what is shown by combining Kwon224's Figures 9A-10B, and 12A-12B, without any direct disclosure / description from Kwon224. See Pet. at 60-67. The Petition asserts Kwon224 discloses bridges (CP1/CP2) overlapping the pixel definition layer (PXL), which allegedly corresponds to the claimed bank, because CP1/CP2 are “entirely within” a non-light emitting area (NPXA) and the PXL “covers” NPXA. See Pet. at 65. However, Kwon224 does **not** expressly state that CP1/CP2 overlap the PXL.

Further, Kwon224 locates “the first connecting part CP1 may include third vertical portions CP1-C1 and CP1-C2 disposed on the thin film encapsulation layer TFE” and the “second connecting part CP2 may include fourth horizontal portions CP2-L1 and CP2-L2 disposed on a color filter layer TS-CF” or “on the first insulating layer TS-IL1.” Ex. 1005, ¶¶ 161, 310. While the pixel definition layer PXL is part of the OLED pixel stack, the layered structure “may be provided with an opening OP” to expose “at least a portion of the anode (AE).” Ex. 1005, ¶¶ 121-122. Given this, neither the Petition nor Kwon224 explicitly show that CP1/CP2 overlaps the PXL. Therefore, Kwon224 fails to disclose or suggest, through

inherency or otherwise, that at least one of the first bridges or the second bridges overlaps the bank, as recited in Claim Element 1[h]. Kim524, either alone or in combination with Kwon224, also fails to disclose or suggest Claim Element 1[h].

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that Claim Element 1[h] would have been rendered obvious based on a combination of Kwon224 and Kim524.

4. Petitioner Fails to Establish That Claim 2 Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim 2 recites: “The organic light emitting display according to claim 1, wherein at least parts of the first and second conductive lines overlap each other in an edge area of the substrate.”

Because claim 2 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224 and Kim524 fail to teach, as detailed *supra* §VII(A) & (B)(1)-(3). Petitioner's argument for claim 2 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 2 would have been rendered obvious based on the alleged combination of Kwon224 and Kim524.

5. Petitioner Fails to Establish That Claim 3 Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim 3 recites: “The organic light emitting display according to claim 1, wherein the first and second conductive lines overlap each other on the encapsulation unit.”

Because claim 3 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224 and Kim524 fail to teach, as detailed *supra* §VII(A) & (B)(1)-(3). Petitioner's argument for claim 3 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 3 would have been rendered obvious based on the alleged combination of Kwon224 and Kim524.

6. Petitioner Fails to Establish That Claim 4 Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim 4 recites: “The organic light emitting display according to claim 1, wherein the first and second conductive lines are connected through contact holes formed through the at least one insulating film.”

Because claim 4 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224 and Kim524 fail to teach, as detailed *supra*

§VII(A) & (B)(1)-(3). Petitioner's argument for claim 4 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 4 would have been rendered obvious based on the alleged combination of Kwon224 and Kim524.

7. Petitioner Fails to Establish That Claim 6 Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim 6 recites: "The organic light emitting display according to claim 1, wherein one of the first and the second bridges is disposed on a same plane as one of the first and second conductive lines."

Because claim 6 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224 and Kim524 fail to teach, as detailed *supra* §VII(A) & (B)(1)-(3). Petitioner's argument for claim 6 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 6 would have been rendered obvious based on the alleged combination of Kwon224 and Kim524.

8. Petitioner Fails to Establish That Claim 7 Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim 7 recites: “The organic light emitting display according to claim 1, wherein at least one of the first bridges, the second bridges, the first touch electrodes, the second touch electrodes, the first conductive lines or the second conductive lines is formed in a multilayer structure comprising Al, Ti, Cu, Mo, ITO or MO.”

Because claim 7 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224 and Kim524 fail to teach, as detailed *supra* §VII(A) & (B)(1)-(3). Petitioner's argument for claim 7 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 7 would have been rendered obvious based on the alleged combination of Kwon224 and Kim524.

9. Petitioner Fails to Establish That Claim 8 Would Have Been Obvious Based on Kwon224 in view of Kim524

Claim 8 recites: “The organic light emitting display according to claim 1, wherein at least one of the first bridges, the second bridges, the first touch electrodes, the second touch electrodes, the first conductive lines or the second conductive lines is formed of Ti/Al/Ti or Mo/Al/Mo.”

Because claim 8 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224 and Kim524 fail to teach, as detailed *supra* §VII(A) & (B)(1)-(3). Petitioner's argument for claim 8 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 8 would have been rendered obvious based on the alleged combination of Kwon224 and Kim524.

C. Ground 2: Petitioner Fails to Establish That Claims 9-16 and 18 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Petitioner has not shown a reasonable likelihood of prevailing on Ground 2 because the alleged combination of Kwon224, Kim524, and Zhu837 would not have been obvious to a POSITA and fails to disclose or suggest key elements of the '394 Patent, as discussed in detailed below.

1. Petitioner Fails to Establish that a POSITA Would Combine Kwon224, Kim524, and Zhu837

Petitioner's assertion that a POSITA would have combined Kwon224, Kim524, and Zhu837 rests on hindsight, ignoring that these references address distinct problems with fundamentally different solutions. Pet. at 83. As explained

above in Section VII(B)(1), the alleged combination of Kwon224 and Kim524 would not have been obvious to a POSITA, except through the use of improper hindsight. Kwon224 is directed to a flexible display device that achieves improved flexibility, preventing electrode “cracking” during bending, by virtue of its mesh-shaped electrodes and stress-relief openings through overlying layers, integrated with thin-film encapsulation and optional buffer/planarization stacks. *Id.* at ¶¶ 181, 252. Kwon224 explains that the thin-film encapsulation (TFE) may include alternating organic/inorganic layers with optional grooves or openings aligned to insulating-layer openings to increase flexibility. *Id.* at ¶¶ 165-167.

Kim524 is directed to a display device including a touch electrode layer that includes a touch electrode having a mesh pattern. Ex. 1006, ¶¶ 88-91. Kim524 describes that “due to the parasitic capacitance generated between the touch electrode and the electrode of the display panel, sensitivity of the sensor may deteriorate... [and] [p]arasitic capacitance also becomes a problem as the distance between the touch electrode and the electrode in the display panel is decreased.” *Id.* at ¶ 7. Kim524 also describes that when the encapsulation layer is a thin film, “the distance between the touch electrode and the cathode is decreased, increasing parasitic capacitance and “reducing” sensitivity. Ex. 1006, ¶¶ 88-91. As explained

above, a POSITA would not have found it obvious to modify Kwon224 with Kim524 in the manner asserted because they solve materially different problems with different structures and design constraints.

Zhu837 is directed to a touch control display device “to provide an organic light-emitting display device with embedded touch control structure that has simple preparation process, small thickness and achievable flexibility.” Ex. 1007, ¶ 8. Zhu837 describes “[p]referably, the first encapsulation layer and the second encapsulation layer each comprises a single layer of or alternately arranged multiple layers of organic films and/or inorganic films.” *Id.* at ¶ 20. “Only the first encapsulation layer is used for insulation between the first conductive units and the second conductive units, which has a compact structure.” *Id.* at ¶ 33.

Although Kwon224, Kim524, and Zhu837 each relate to touch-sensitive display devices, they do so using distinct configurations and without any need for the teachings of the others. **Petitioner’s three-way combination depends on swapping Kwon224’s touch-screen insulating/stack coordination with Zhu837’s “encapsulation layer 106” while grafting in Kim524’s vertically stacked “first” and “second” touch signal lines connected through contact holes.** Pet. at 83. The Petition fails to provide any evidence, including in Mr. Flasck’s

declaration (Ex. 1003), that a POSITA would have found it obvious to modify Kwon224 with the combination of Kim524 and Zhu837.

Kwon224 expressly situates connecting parts, such as CP1 “on the thin film encapsulation layer (TFE)” and CP2 “on” insulating/color-filter layers, and then uses black-matrix coverage and planarization layers to mitigate stress effects. Replacing TS-IL1 of Kwon224 with Zhu837’s encapsulation layer 106, and drilling additional contact holes to connect stacked lines, as suggested by Kim524, would add steps/vias that act as stress concentrators, undermining Kwon’s stated objective to prevent cracking.

The Petitioner asserts a POSITA would have found it obvious to replace Kwon224’s TS-IL1 layer with Zhu837’s encapsulation layer 106 because each is organic or inorganic and insulating, and “[c]reating contact holes and openings in encapsulation layers is a routine thin-film OLED practice well known in the industry.” However, Kwon’s TS-IL architecture is part of a system of aligned openings to provide flexibility and optical performance, whereas Zhu837’s encapsulation layer 106 is used for insulation between the first conductive units 105 and the second conductive units 107 and has a compact structure to provide increased light-emitting efficiency—different functions with different requirements. Thus, a

POSITA would not have found it obvious to combine Kwon224, Kim524, and Zhu837 to achieve the claims of the '394 Patent, except through the use of improper hindsight.

2. Petitioner Fails to Establish That Claim 9 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 9 (9[pre]-9[b]) recites: “The organic light emitting display according to claim 1, wherein: the encapsulation unit comprises at least one inorganic encapsulation layer and at least one organic encapsulation layer; and the at least one insulating film is one of the at least one inorganic encapsulation layer and the at least one organic encapsulation layer.”

Because claim 9 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3). Petitioner's argument for claim 9 fails for at least these same reasons.

In addition, the alleged combination of Kwon224, Kim524, and Zhu837 fails to disclose or suggest Claim Element 9[b] (“the at least one insulating film is one of the at least one inorganic encapsulation layer and the at least one organic encapsulation layer.”). As mentioned above, a POSITA would not have found it

obvious to replace Kwon224's TS-IL1 layer with Zhu837's encapsulation layer 106, and therefore, the alleged combination of Kwon224, Kim524, and Zhu837 fail to disclose or suggest Claim Element 9[b].

Furthermore, the Petition's proposal would result in the insulating layer TS-IL1 of Kwon224 being removed in the light emitting area PXA and replaced with the encapsulation layer 106 of Zhu837. Kwon224's first insulating layer TS-IL1 is expressly patterned so that it is present only over the non-light emitting area (NPXA) and is removed over the light emitting area PXA, and has a plurality of first insulating openings IL1-OP defined through the first insulating layer TS-IL1 to correspond to the light emitting areas PXA, *i.e.*, the first insulating layer TS-IL1 is removed in the PXA to leave openings where light is emitted. Therefore, removing the first insulating layer TS-IL1 makes it fundamentally unsuitable to be "replaced" by Zhu837's encapsulation layer 106 that, by design, must continuously cover and seal the emissive region. Accordingly, the alleged combination of Kwon224, Kim524, and Zhu837 fails to disclose or suggest that at least one insulating film is one of the at least one inorganic encapsulation layer and the at least one organic encapsulation layer, as recited in claim 9.

For at least the foregoing reasons, Petitioner fails to show a reasonable

likelihood of success in establishing that claim 9 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

3. Petitioner Fails to Establish That Claim 10 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 10 recites: “The organic light emitting display according to claim 9, wherein the second conductive lines are disposed on an uppermost one of the at least one inorganic encapsulation layer.”

Because claim 10 depends from claim 9 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(2). Petitioner's argument for claim 10 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 10 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

4. Petitioner Fails to Establish That Claim 11 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 11 recites: “The organic light emitting display according to claim 10, wherein the first conductive lines are disposed on the at least one organic encapsulation layer.”

Because claim 11 depends from claim 10 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(3). Petitioner's argument for claim 11 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 11 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

5. Petitioner Fails to Establish That Claim 12 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 12 recites: "The organic light emitting display according to claim 11, wherein the first conductive lines are connected to the second conductive lines through contact holes formed through the uppermost one of the at least one inorganic encapsulation layer."

Because claim 12 depends from claim 11 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(4). Petitioner's argument for claim 12 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable

likelihood of success in establishing that claim 12 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

6. Petitioner Fails to Establish That Claim 13 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 13 recites: “The organic light emitting display according to claim 10, wherein the first conductive lines are disposed on one of the at least one inorganic encapsulation layer, disposed under the at least one organic encapsulation layer.”

Because claim 13 depends from claim 10 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(3). Petitioner's argument for claim 13 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 13 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

7. Petitioner Fails to Establish That Claim 14 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 14 recites: “The organic light emitting display according to claim 13, wherein the first conductive lines are connected to the second conductive lines through contact holes formed through the uppermost one of the at least one inorganic

encapsulation layer and through the at least one organic encapsulation layer.”

Because claim 14 depends from claim 13 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(6). Petitioner's argument for claim 14 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 14 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

8. Petitioner Fails to Establish That Claim 15 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 15 recites: “The organic light emitting display according to claim 10, further comprising an interlayer inorganic layer disposed on cathodes of the light emitting elements, wherein the first conductive lines are disposed on the interlayer inorganic layer.”

Because claim 15 depends from claim 10 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(3). Petitioner's argument for claim 15 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 15 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

9. Petitioner Fails to Establish That Claim 16 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 16 recites: “The organic light emitting display according to claim 15, wherein the first conductive lines are connected to the second conductive lines through contact holes formed through the at least one inorganic encapsulation layer and the at least one organic encapsulation layer.”

Because claim 16 depends from claim 15 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(8). Petitioner's argument for claim 16 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 16 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

10. Petitioner Fails to Establish That Claim 18 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Zhu837

Claim 18 recites: “The organic light emitting display according to claim 9,

wherein the second conductive lines contact an uppermost one of the at least one inorganic encapsulation layer.”

Because claim 18 depends from claim 9 (and ultimately from claim 1), it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Zhu837 fail to teach, as detailed *supra* §VII(B)(1)-(3) & (C)(1)-(3). Petitioner's argument for claim 18 fails for at least these same reasons.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 18 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Zhu837.

D. Ground 3: Petitioner Fails to Establish That Claim 5 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Jang513

Petitioner has not shown a reasonable likelihood of prevailing on Ground 3 because the alleged combination of Kwon224, Kim524, and Jang513 would not have been obvious to a POSITA and fails to disclose or suggest key elements of the '394 Patent, as discussed in detailed below.

1. Petitioner Fails to Establish that a POSITA Would Combine Kwon224, Kim524, and Jang513

Petitioner's assertion that a POSITA would have combined Kwon224, Kim524, and Jang513 rests on hindsight, ignoring that these references address

distinct problems with fundamentally different solutions. Pet. at 107-108. As explained above in Section VII(B)(1), the alleged combination of Kwon224 and Kim524 would not have been obvious to a POSITA, except through the use of improper hindsight.

Jang513 is directed to a touch screen panel that includes a plurality of sensing electrodes, which include “the first sensing electrode and the second electrode [that] may be formed directly on the sealing thin film.” Ex. 1009, ¶ 16. Jang513 describes that an insulating film may be “positioned between the first sensing electrodes and the second sensing electrodes at least in an intersection region between the first and second sensing electrodes.” *Id.* Jang513 describes that “[a]s the first and second sensing electrodes 50 and 60... are formed of an opaque metal, the first and second sensing electrodes 50 and 60 may be formed in a mesh structure so as to prevent blocking pixels 20 ... thereby improving image quality and visibility.” *Id.* at ¶ 56. Jang513 also describes that a sealing thin film 30 may be positioned on the substrate 10 and the pixels 20 “in order to protect the pixels 20 positioned on the substrate 10” and “formed at an upper side of the pixels 20, thereby making it possible to prevent penetration of moisture, oxygen, or the like, into the pixel 20.” Ex. 1009, ¶ 69.

Even though Kwon224, Kim524, and Jang513 each relate to touch-sensitive

display devices, they have discrete arrangements and do not have any need for the teachings of the other references. Jang513 discloses opaque-metal mesh sensing electrodes on the sealing thin film, explicitly formed so the mesh structures and the “pixels overlap different portions,” with openings that “expose” pixels and with metal lines aligned to non-emissive regions to avoid luminance/image degradation. Ex. 1009, ¶¶ 56-58. Jang513 further routes “first position detecting line 150” and “second position detecting line 160” to a “pad unit 200,” which adds conductive area and pad structures that Kwon224 manages via the black matrix, color filters, and planarization to minimize optical noise and bending stress. Ex. 1009, ¶ 63.

The Petition vaguely asserts that Jang’s conductive lines connected to a touch pad unit 200 with touch pads on a substrate would have been obvious to incorporate into Kwon224 and Kim524. However, the Petition fails to provide any explanation of how a POSITA would have accounted for the potential impacts on the crack prevention approaches described in Kwon224. For example, adding Jang’s opaque-metal meshes and pad routing into Kwon224’s stress-relieved layers could increase density and stress concentrations, contrary to Kwon’s goal of crack prevention. Layering Kim524’s first upper / first lower touch lines with contact holes 435 through an insulating layer 430 on top of this alleged arrangement only compounds

the problem, which the Petition is silent on. Therefore, the Petition fails to provide any evidence, including in Mr. Flasck's declaration (Ex. 1003), that a POSITA would not have found it obvious to combine Kwon224, Kim524, and Jang513 in the manner asserted in the Petition, except through hindsight.

2. Petitioner Fails to Establish That Claim 5 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Jang513

Claim 5 recites: "The organic light emitting display according to claim 1, further comprising touch pads connected to the second conductive lines and disposed on the substrate having the light emitting elements disposed thereon."

Because claim 5 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Jang513 fail to teach, as detailed *supra* §VII(B)(1)-(3). Petitioner's argument for claim 5 fails for at least these same reasons.

In addition, the alleged combination of Kwon224, Kim524, and Jang513 fails to disclose or suggest claim 5 because Jang513, either alone or in combination with Kwon224 and Kim524, fails to disclose or suggest touch pads connected to the second conductive lines. Jang513 merely discloses position detecting lines 150/160 that is connected sensing electrodes 50/60, which are also connected to a pad unit

200. Ex. 1009, ¶¶ 63, 80. Jang513 does not disclose connecting the second sensing electrode 60 to the pad unit 200. At most, Jang513, when combined with Kwon224 and Kim524, may teach to connect the touch pad with the first conductive line rather than the second conductive line. Accordingly, the alleged combination of Kwon224, Kim524, and Jang513 fails to disclose or suggest touch pads connected to the second conductive lines and disposed on the substrate having the light emitting elements disposed thereon, as recited in claim 5.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 5 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Jang513.

E. Ground 4: Petitioner Fails to Establish That Claim 17 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Kim481

Petitioner has not shown a reasonable likelihood of prevailing on Ground 4 because the alleged combination of Kwon224, Kim524, and Kim481 would not have been obvious to a POSITA and fails to disclose or suggest key elements of the '394 Patent, as discussed in detailed below.

1. Petitioner Fails to Establish that a POSITA Would Combine Kwon224, Kim524, and Kim481

Petitioner's assertion that a POSITA would have combined Kwon224,

Kim524, and Kim481 rests on hindsight, ignoring that these references address distinct problems with fundamentally different solutions. Pet. at 120-121. As explained above in Section VII(B)(1), the alleged combination of Kwon224 and Kim524 would not have been obvious to a POSITA, except through the use of improper hindsight. *See* VII(B)(1) *supra*.

Kim481 is directed to a flat panel display including sensing cells 220, which include a plurality of first sensing cells 220 a and a plurality of second sensing cells 220 b “alternately arranged to not be overlapped with the first sensing cells 220 a.” Ex. 1007, ¶ 26. Kim481 describes that a sealing thin film 200 includes “a pixel area of the substrate 100” to “protect the organic light emitting element provided to each of the pixels 112, and may be implemented as a stacked structure of a plurality of organic and inorganic layers.” Ex. 1007, ¶ 48. Kim481 describes that the sealing thin film 200 may be arranged in “a structure in which a first organic layer 202, a first inorganic layer 204, a second organic layer 206 and a second inorganic layer 208 are alternately stacked so as to effectively block oxygen and moisture from the exterior.” *Id.* at ¶ 49.

Even though Kwon224, Kim524, and Kim481 each relate to touch-sensitive display devices, they have discrete arrangements and do not have any need for the

teachings of the other references. Kim481 discloses that the sealing thin film 200 is made of alternately stacked organic and inorganic layers to “effectively block oxygen and moisture,” with the organic layers arresting cracks in the inorganic barrier and reducing stress. Ex. 1007, ¶¶ 48-50. Kwon224 describes the importance of continuous coverage and crack prevention across the emissive region, and therefore perforating Kim481’s sealing thin film 200 with added contact holes for stacked routing would degrade sealing and introduce concentrated stress locations contrary to Kim481’s stated purpose of “preventing an infiltration path of moisture and oxygen and to reduce stress.” Ex. 1005, ¶ 50. Further, Kim481 would not have been obvious to combine with Kim524 because Kim481 is focused on reducing cracking in the inorganic barrier and reducing stress. Ex. 1007, ¶¶ 48-50. As mentioned above in Section VII(B)(1), the solution provided by Kim524 is that “in order to reduce the parasitic capacitance while the mutual capacitance is maintained, first and second touch electrodes 411 and 421 are formed so that the density of the mesh pattern varies according to a region.” Ex. 1006 at ¶ 92. Therefore, contrary to the Petitioner’s assertions, a POSITA would not have found it obvious to combine Kim524 with Kim481 in the manner asserted because they solve materially different problems with different structures and design constraints.

Therefore, the Petition fails to provide any evidence, including in Mr. Flasck's declaration (Ex. 1003), that a POSITA would not have found it obvious to combine Kwon224, Kim524, and Kim481 in the manner asserted in the Petition, except through hindsight.

2. Petitioner Fails to Establish That Claim 17 Would Have Been Obvious Based on Kwon224 in view of Kim524 and Kim481

Claim 17 recites: "The organic light emitting display according to claim 1, wherein the second conductive lines are disposed along a side surface of the encapsulation unit."

Because claim 17 depends from claim 1, it includes all of the limitations that the alleged combination of Kwon224, Kim524, and Kim481 fail to teach, as detailed *supra* §VII(B)(1)-(3). Petitioner's argument for claim 17 fails for at least these same reasons.

In addition, the alleged combination of Kwon224, Kim524, and Kim481 fails to disclose or suggest claim 17 because Kim481, either alone or in combination with Kwon224 and Kim524, fails to disclose or suggest that the second conductive lines are disposed along a side surface of the encapsulation unit. Kim481 discloses sensing lines 230 that are used "to connect the sensing cells 220 to a driving circuit," and the

sensing lines 230 are arranged in a non-touch active area formed at the outside of a touch active area. Ex. 1007, ¶ 34. Kim481's touch active area is "an area corresponding to the pixel area of the display panel." *Id.* Kim481 describes touch sensing patterns, which include the sensing cells 220 and the sensing lines 230, and "are formed on the top surface of the sealing thin film 200 formed on the substrate 100 including a pixel area 110." Ex. 1007, ¶ 43.

However, Kim481 only discloses that the sensing lines 230 connected the sensing cells 220 are disposed along a side surface of the encapsulation unit (Kwon224's TFE layer or Kim524's encapsulation layer 300). Even if Kim481 would have been obvious to combine with Kwon224 and Kim524, a POSITA would have tried to arrange the first conductive line rather than the second conductive line, along a side surface of the encapsulation unit based on the arrangement taught by Kim481. Accordingly, the alleged combination of Kwon224, Kim524, and Kim481 fails to disclose or suggest the second conductive lines are disposed along a side surface of the encapsulation unit, as recited in claim 17.

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that claim 17 would have been rendered obvious based on the alleged combination of Kwon224, Kim524, and Kim481.

F. Ground 5: Petitioner Fails to Establish That Claim 19 Would Have Been Obvious Based on Kim481 in view of Kim524

Petitioner has not shown a reasonable likelihood of prevailing on Ground 5 because the alleged combination of Kim481 and Kim524 would not have been obvious to a POSITA and fails to disclose or suggest key features of the '394 Patent's invention, as discussed in detailed below.

1. Petitioner Fails to Establish that a POSITA Would Combine Kim481 in view of Kim524

Petitioner's assertion that a POSITA would have combined Kim481 and Kim524 rests on hindsight, ignoring that these references address distinct problems with fundamentally different solutions. Pet. at 126-127. As explained above in Section VII(B)(1) and VII(E)(1), the alleged combination of Kim481 and Kim524 would not have been obvious to a POSITA, except through the use of improper hindsight. See VII(B)(1) and VII(E)(1) *supra*.

The Petition asserts that Kim481 and Kim524 "disclose complementary systems/methods in the field for organic light emitting display having touch sensors, analogous to the '394 patent and each other." Pet. at 126. (citing Ex. 1003, ¶¶ 318-219). This is overly vague and generic reasoning fails to account for the actual, more detailed-oriented approaches taken by Kim481 and Kim524. **Accounting for the**

complete teachings of Kim481 and Kim524, they solve materially different problems with different structures and design constraints, and they teach away from the proposed combination. In addition, Petitioner's stated motivations and predictability assertions are conclusory and overlook incompatibilities that a POSITA would have recognized.

Kim481 and Kim524 are discussed in-detail above. *See, supra*, Section VII(B) & (E). Further, as similarly explained above in Section VII(E)(1), Kim481 and Kim524 would not have been obvious to combine to achieve the claimed elements.

Given this, the Petition must rely on impermissible hindsight. Thus, a POSITA would not have found it obvious to combine Kim481 and Kim524 to achieve claim 19 of the '394 Patent.

2. Petitioner Fails to Establish That Claim Element 19[e] Would Have Been Obvious Based on Kim481 in view of Kim524

Claim Element 19[e] recites that the organic light emitting display comprises "second conductive lines connected to the first conductive lines." The Petition asserts that Claim Element 19[e] is rendered obvious based on the combination of Kim481 and Kim524. However, the Petition fails to show a reasonable likelihood of success in establishing that Claim Element 19[e] would have been rendered obvious.

See, supra, Section VII(B)(1)-(2).

The Petition acknowledges that Kim481 fails to disclose or suggest the claimed second conductive lines because Kim481 “includes no cross-sectional view showing this structure.” Pet. at 135. The Petition must therefore rely on Kim524’s “vertically-stacked signal line structure” to allegedly render obvious Claim Element 19[e]. *Id.* However, as explained in detail in Section VII(B)(1)-(2), (E)(1) & (F)(1) above, a POSITA would not have found it obvious to combine the teachings of Kim481 and Kim524.

In addition, with regard to Claim Element 19[e], a POSITA would not have found this combination to have been obvious. The Petition fails to explain **why** a POSITA would have found it obvious to include the alleged second conductive lines taught by Kim524 into the structure of Kim481. Nothing in the Petition explains how the teachings of Kim481 and Kim524 would have been obvious to combine given their distinct structures and incompatibilities. For example, Kim481 describes touch sensing patterns, which include sensing lines 230 connected the sensing cells 220, and are formed on the top surface of the sealing thin film 200 formed on the substrate 100 including a pixel area 110.” Ex. 1007, ¶¶ 34, 43. Kim524’s stacked lines are taught within a touch active layer above a TFE, governed by placement and

mesh-area constraints to reduce parasitics. Nothing in Kim524 provides a general teaching to *always* add a second, parallel routing network wherever sensing lines are present or desired. Kim524's teachings are expressly tied to parasitics mitigation by managing electrode area and pixel non-overlap; adding an entire second network of lines and via pads into the same TFE-proximate regime, as the Petition asserts is described in Kim481, would increase parasitic capacitance. Kim524 therefore teaches away from incorporating its conductive line routing into Kim481's structure because this purported combination by the Petition would be contrary to Kim524's goal of preventing or reducing parasitic capacitance to maintain or improve touch sensitivity. Therefore, the Petition fails to show that Kim481 and Kim524, either individually or in combination, disclose or suggest that the second conductive lines are connected to the first conductive lines, as recited in Claim Element 19[e].

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that Claim Element 19[e] would have been rendered obvious based on a combination of Kim481 and Kim524.

3. Petitioner Fails to Establish That Claim Element 19[g] Would Have Been Obvious Based on Kim481 in view of Kim524

Claim Element 19[g] recites "wherein the second conductive lines are

disposed along a side surface of the encapsulation unit.” The Petition fails to establish this limitation for substantially the same reasons as claim 17 discussed above. *See, supra*, Section VII(E)(1)-(2).

Kim481 discloses that sensing lines 230 connected the sensing cells 220 are disposed along a side surface of the encapsulation unit (Kwon224's TFE layer or Kim524's encapsulation layer 300). Even if Kim481 would have been obvious to combine with Kwon224 and Kim524, a POSITA would have tried to arrange the first conductive line rather than the second conductive line, along a side surface of the encapsulation unit based on the arrangement taught by Kim481. Therefore, Kim481 and Kim524, either individually or in combination, fail to disclose or suggest that the second conductive lines are disposed along a side surface of the encapsulation unit, as recited in Claim Element 19[g].

For at least the foregoing reasons, Petitioner fails to show a reasonable likelihood of success in establishing that Claim Element 19[g] would have been rendered obvious based on a combination of Kwon224 and Kim524.

VIII. CONCLUSION

For at least the foregoing reasons, the Director should deny institution of the Petition.

Case IPR2025-01579
Patent No. 11,251,394
Patent Owner's Preliminary Response

Dated: January 30, 2026

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on this January 30, 2026, a copy of the attached **PATENT OWNER'S PRELIMINARY RESPONSE** was served by electronic mail to the attorneys of record, at the following addresses:

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CERTIFICATION PURSUANT TO 37 C.F.R. § 42.24(d)

Pursuant 37 CFR 42.24(d), the undersigned certifies that this Preliminary Response and complies with the type-volume limitation of 37 CFR § 42.24(a). The word count application of the word processing program used to prepare this Patent Owner's Preliminary Response indicates that the Preliminary Response contains 13,992 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

Respectfully submitted,

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