

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOE Technology Group Co., Ltd.
Petitioner

v.

Optronic Sciences LLC
Patent Owner

Inter Partes Review No.: IPR2025-00238
U.S. Patent No. 8,604,471

**PETITIONER'S OPPOSITION TO PATENT OWNER'S REQUEST FOR
DISCRETIONARY DENIAL OF INSTITUTION**

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1001	U.S. Pat. No. 8,604,471 (“ the ’471 Patent ”)
1002	Declaration of Dr. R. Jacob Baker
1003	File History of 8,604,471 (13/208,360)
1004	U.S. 2008/0158108 (“ Hwang ”)
1005	U.S. 2010/0148175 (“ Godó ”)
1006	U.S. 2009/0184898 (“ Yamashita ”)
1007	Solid State Electronic Devices 4 th Edition by Ben Streetman
1008	Handbook of Optics 2 nd Edition Volume II by Michael Bass et al.
1009	KR 10-0853543B1
1010	Certified translation of KR 10-0853543B1
1011	KR 10-0659756B1
1012	Certified translation of KR 10-0659756B1
1013	Introduction to VLSI Systems by Carver Mead and Lynn Conway
1014	Schaum’s Outline of Theory and Problems of Basic Circuit Analysis 2 nd Edition by John O’Malley
1015	U.S. Pat. No. 5,838,399
1016	Curriculum Vitae of Dr. R. Jacob Baker
1017	Initial Infringement Contentions for U.S. Patent No. 8,604,471
1018	February 14, 2025 District Court Docket Control Order
1019	Judge Gilstrap Jury Trial Setting Docket Report
1020	May 9, 2025 <i>Sotera</i> Stipulation
1021	Paper 12, <i>Tesla Inc. v United States of America</i> , IPR2025-00341
1022	Complaint in <i>Optronic Sciences LLC v. BOE Technology Group Co., Ltd.</i> , 2:23-cv-00577
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I. INTRODUCTION

Pursuant to the Director’s March 26, 2025 memorandum regarding Interim processes for PTAB Workload Management (“March 26, 2025 Memo”), Petitioner BOE Technology Group Co., Ltd. (“BOE” or “Petitioner”) opposes Patent Owner Optronix Sciences LLC’s (“Optronix’s”) request that the Director exercise discretion to deny institution of the Petition. *See* Paper 7 (“DD Req.”); Paper 8 (“DD Req. Supp.”).¹

A holistic weighing of the relevant arguments and evidence weighs against discretionary denial and in favor of institution. The complexity of the litigations between the parties—involving thirteen varied patents—and the number of related IPRs—six instituted, two pending—strongly weighs in favor of instituting proceedings on the two remaining petitions, including the instant Petition. Petitioner carefully considered the thirteen asserted patents and filed extremely strong petitions on only eight of the patents. Petitioner’s thoughtful and selective approach has resulted in the Board instituting IPRs on all six of the petitions considered to date. The strength of those six IPRs has subsequently been confirmed

¹ This opposition is filed concurrently with the similar opposition, Paper 9, in IPR2025-00239. While the oppositions are very similar, the opposition in IPR2025-00239, Paper 9 is slightly more comprehensive.

by Patent Owner, who has disclaimed all challenged claims in two of the instituted IPRs, disclaimed the broadest claims in a third IPR, and is not defending over half of the challenged claims in a fourth IPR. In short, the IPRs are serving their intended purpose of being a true alternative and less expensive proceeding. The final two IPRs, including this one, should be instituted for the same reason.

The instant Petition, like the six instituted IPRs, is exceptionally strong, weighing heavily in favor of institution. There is no overlap with the related litigation because the Petition challenges eight claims, the litigation only involves two claims, and the Petitioner has offered a broad *Sotera* stipulation that, under the facts here, eliminates any remaining overlap. The settled expectations of the parties also weigh in favor of institution, as shown by Patent Owner's recent acquisition of the patents and the results so far in the six instituted IPRs. And the Board is a superior forum in which to resolve the invalidity challenge because the technology is complex and because fundamental differences between BOE's and the claimed technology means the litigation is unlikely to address invalidity.

Finally, the Board should institute this IPR to protect the integrity of the U.S. intellectual property system because the former, foreign patent owner and current Patent Owner separated the patent from relevant evidence, leaving the relevant evidence in a foreign jurisdiction beyond the reach of the District Court.

II. THE LITIGATION AND IPR HISTORY BETWEEN THE PARTIES WEIGH AGAINST DISCRETIONARY DENIAL

The complexity and diversity of the litigations between the parties, and the proven track record so far in the six instituted IPRs on the portfolio acquired by Patent Owner tip the balance against discretionary denial. See EX1021 (Paper 12, *Tesla, Inc. v. The United States of America*, IPR2025-00341), 2 (citing the complexity and diversity of the dispute as tipping the balance against denial).

The related litigation *Optronic Sciences LLC v. BOE Technology Group Co., Ltd.*, 2:23-cv-00577 (EDTX) (“the 577 Litigation”) involves four patents related to four very diverse and complex technologies. The ’471 patent at issue here relates to a light shielding layer within the semiconductor layers of a pixel, a second patent relates to test shorting bars around the periphery of a display, a third patent relates to diminishing a clock coupling effect in a shift register, and a fourth patent relates to voltage compensation circuitry within a pixel. EX1022 (Complaint), 3-10. This combination of patents on unrelated and highly technical subject matter will present an extremely difficult task for a lay jury. Petitioner selectively filed petitions for IPR on only two of the four patents. The instant Petition (IPR2025-00238) and a petition in IPR2025-00239.

The overall dispute between the parties, which is relevant to the instant decision, includes the related litigation *Optronic Sciences LLC v BOE Technology*

Group Co., Ltd., 2:23-cv-00549 (EDTX) (“the 549 Litigation”) which involves an additional nine patents that were part of the same portfolio of patents Patent Owner acquired from the former owner, AUO Corporation (“AUO”). Petitioner selectively filed petitions for IPR on only six of the nine patents. The Board instituted all six IPRs. *See*, IPR2024-01130; IPR2024-01131; IPR2024-01132; IPR2024-01133; IPR2024-01134; IPR2024-01315.

The six instituted IPRs have succeeded in efficiently narrowing the disputes between the parties as they relate to the AUO portfolio acquired by Patent Owner. In two of the IPRs, Patent Owner disclaimed all challenged claims. *See* EX1023 (Patent Owner’s Response in IPR2024-01315, 1); EX1024 (Patent Owner’s Response in IPR2024-01134, 1). In a third IPR, Patent Owner disclaimed the two broadest claims and is only defending four challenged claims. EX1025 (Patent Owner Response in IPR2024-01130, 1 (“Patent Owner disclaimed claims 3 and 4.”)). In a fourth IPR, Patent Owner is defending less than half of the challenged claims. EX1026 (Patent Owner Response in IPR2024-01132, 21 (only defending claims 3, 4 and 7 of challenged claims 1-7)).

Thus, the dispute between BOE and Patent Owner regarding the portfolio it acquired from AUO includes 13 patents, which is even larger than the 11-patent dispute at issue in *Tesla*. And the proven success in the six IPRs instituted so far in

efficiently narrowing the disputes related to that portfolio tips the balance against discretionary denial.

III. THE *FINTIV* FACTORS WEIGH AGAINST DENIAL

Factors 1, 2 and 5 would normally weigh slightly in favor of denial, but the lack of any overlap in the proceedings means that in this case the IPR would be a true alternative to the related litigation (as explained below for Factor 4), such that any stay (factor 1), the relatively close trial date (factor 2) and the identity of the parties (factor 5) hold less weight. Factors 3, 4 and 6 weigh heavily in favor of institution as described below. Accordingly, a holistic view of the *Fintiv* factors favors institution.

A. *Fintiv* Factor 3 Weighs Against Denial

By the deadline for the decision on institution—October 11, 2025—no substantive orders will have issued in the related litigation and the parties will have just submitted opening claim construction briefs. EX2002 (February 14, 2025 DCO).

B. *Fintiv* Factor 4 Weighs Heavily Against Denial

Factor 4 weighs heavily against denial in light of the *Sotera* stipulation and the fact that the Petition challenges eight claims while only two claims are asserted in the litigation.

First, the litigation will only address (at most) apparatus claims 1 and 17 while the proposed IPR will resolve the invalidity of claims 1, 4, 6, 9, 12, 14, 17, and 18. Pet. 66; EX1017. The Petition addresses independent claim 9, which is substantially different from claim 1 because claim 9 includes three additional claimed layers of the semiconductor device, along with their functionalities and connections. Pet., 36-39.

Second, Petitioner has filed a broad *Sotera* stipulation that, on the facts here, eliminates any possible overlap between the proceedings. EX1020. The validity of claims 1 and 17 in the related litigation will be considered only in light of grounds that include a single prior art product, the Samsung Galaxy S. EX2004 (Chart D-8 applying the Galaxy S). There is no Galaxy S User Manual or other type of reference in the Petition that “corresponds” to the Galaxy S product in the litigation—and Patent Owner does not attempt to show otherwise. Accordingly, on the facts in this particular proceeding, the *Sotera* stipulation is sufficient to eliminate any possible overlap between the proceedings.

C. *Fintiv* Factor 6 Weighs Heavily Against Denial

As shown below, the Petition sets forth an exceptionally strong case of invalidity, the Board is a much better forum to resolve the invalidity challenge, and the compelling interest in mitigating threats by foreign patent owners, all weigh heavily against denial.

IV. THE RELEVANT CONSIDERATIONS WEIGH AGAINST DENIAL

A. No other Forum has Adjudicated the Validity or Patentability of the Challenged Claims

This is the first challenge to the patentability of the challenged claims of the '471 patent or any related patent, which weighs against denial.

B. The Exceptional Strength of the Challenge Weighs Heavily Against Denial

The Petition sets forth a very strong case for invalidity. Patent Owner's two assertions of weaknesses in the Petition are without merit and, in fact, serve to highlight the strength of the Petition.

First, Patent Owner asserts that the asserted light shielding layer 162 is in the wrong position to shield light emitted by the OLED 171 during operation. DD Req., 16-17. But the claim does not claim the purpose of shielding light from the OLED during operation and the specification of the '471 patent itself only discusses the purpose of shielding light during a manufacturing process. EX1001, 1:29-39 ("ultraviolet (UV)-light irradiation is required during a packaging process or a UV-bleach process"). The fact that the Patent Owner must resort to an unclaimed purpose (shielding light from the OLED during operation) that is not even disclosed in the specification of the '471 patent highlights the strength of the Petition.

Second, Patent Owner relies on a misstatement of law to assert that figures can never be relied on for any purpose. DD Req., 18-19. The Federal Circuit has made clear that figures may be useful in shedding light on the general shapes and relative sizes of elements as well as their spatial relations to one another. *See, e.g., Synopsys, Inc. v. ATopTech, Inc.*, 685 F. App'x 951, 954 (Fed. Cir. 2017); *Monterey Resch., LLC v. STMicroelectronics, Inc.*, Nos. 2022-1411 & -1770, 2023 WL 7037383, at *3. Those teachings, in combination with the related description and relevant art, are what the expert relies on for Grounds 1 and 3 to show that the references teach the claimed large range of relative sizes (30-85%). And Patent Owner ignores the fact that Grounds 2 and 4 combine the base reference with Godo to address any perceived deficiency regarding the claimed dimensions. Pet., 43-56, 63-64.

C. The Petition does Not Rely on Expert Testimony To Fill any “Gaps”

Patent Owner notes the length of the expert declaration (DD Req., 15-16), but that declaration consists primarily of the expert walking through the lengthy claims and figures in the patent and prior art. EX1002. The only “gaps” alleged by Patent Owner relate to an unclaimed purpose and misstatement of the law as shown above.

D. Settled Expectations Weigh Against Denial

1. BOE's Settled Expectations Weigh Against Denial

BOE had settled expectations that the AUO would not assert any patent claiming “bottom gate” technology, like the '471 patent, against BOE because BOE uses improved OLEDs with “top gate” transistors.

The '471 patent claims a bottom gate transistor by claiming a substrate [1pre], a gate electrode on the substrate [1a], a gate insulating layer covering the gate electrode [1b], and a channel layer on the gate insulating layer above the gate electrode [1c]. EX1001, claim 1. Because the metal gate electrode is on the substrate at the bottom of the transistor (“bottom gate”), the channel layer is on top and is exposed to light from above. The claimed solution is to add a metal light shielding layer above the exposed channel layer. *Id.*, limitation [1f]. These claim limitations are shown in Figure 1 below.

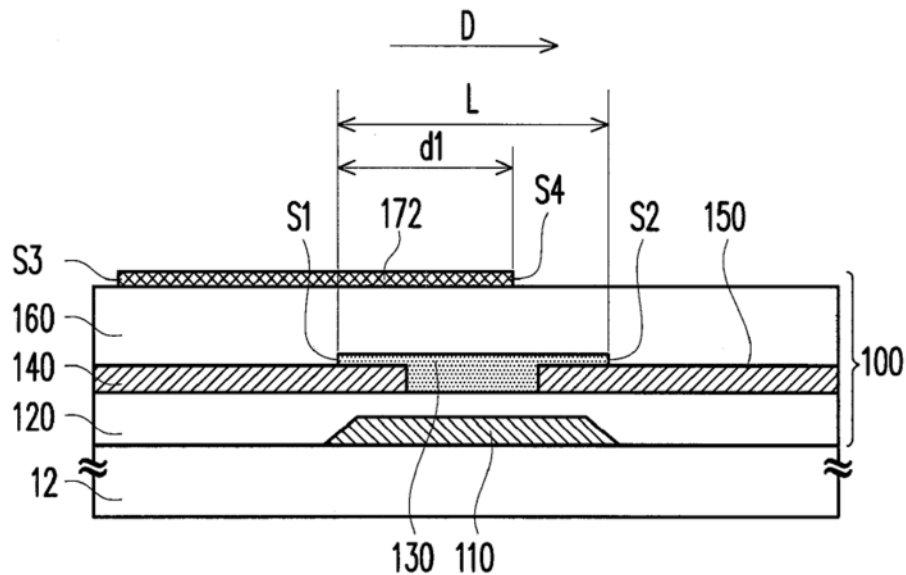
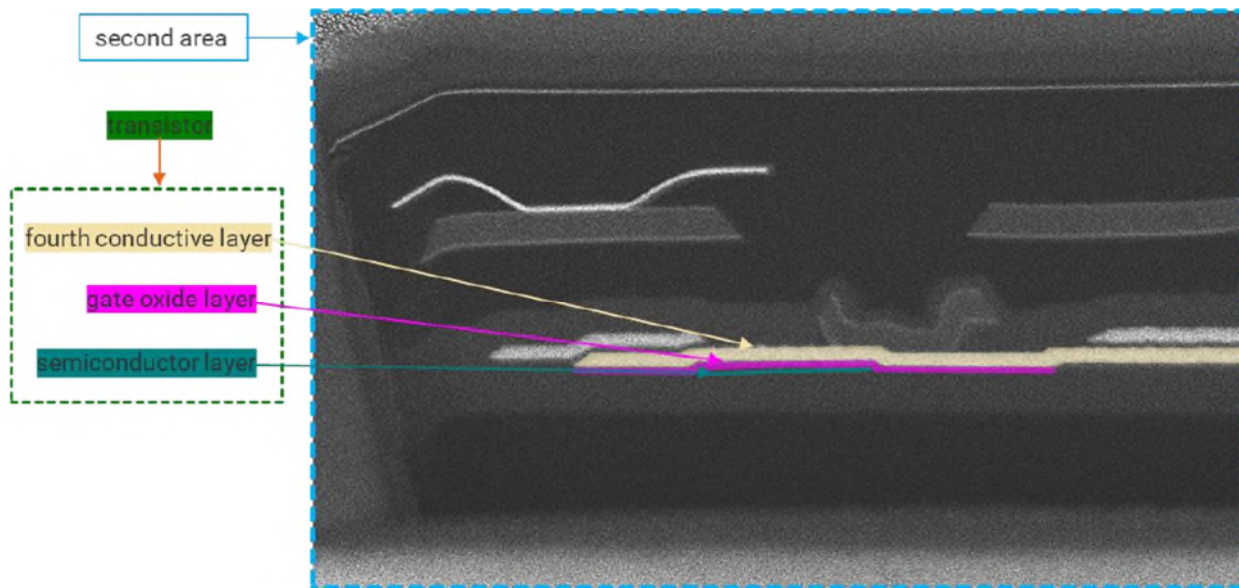


FIG. 1A

EX1001, Fig. 1A. Figure 1A illustrates, from the bottom up, the claimed substrate 12, gate electrode 110 (“bottom gate”), gate insulating layer 120, channel layer 130, and light shielding layer 172. Patent Owner does not dispute that the prior art discloses the claimed “bottom gate” transistor. *See, e.g.*, Pet., 15 ([1pre] substrate), 16 ([1a] gate electrode), 17 ([1b] gate insulating layer), 18 ([1c] channel layer); DD Req., 15-18 (not disputing).

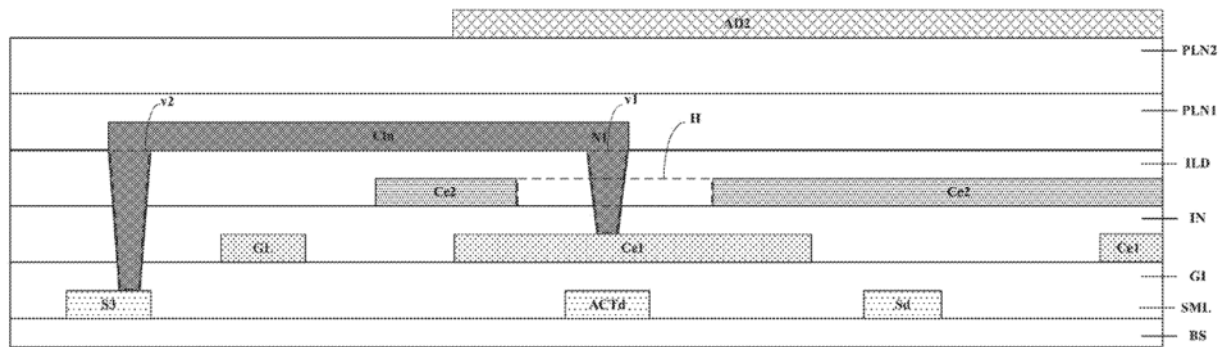
BOE’s technology, in contrast, uses a “top gate” transistor. From the bottom up, BOE uses a substrate, a semiconductor layer on the substrate, a gate insulating layer on the semiconductor layer, and a metal gate electrode above the insulating layer. The metal gate electrode is on top of the transistor (“top gate”) and covers the channel region. Thus, BOE does not practice the bottom gate limitations of

[1pre]-[1c]. Patent Owner's own reverse engineering cross sections clearly show BOE using a "top gate" transistor as shown in the excerpt below.



EX1027, (Patent Owner's Infringement Contentions for 7,915,117), 17. Thus, even Patent Owner knows that in BOE's design the semiconductor channel region is on the bottom and the metal gate electrode is on the top.

BOE's fundamentally different technology is also shown in the BOE patent that cites the application that issued as the '471 patent, on which Patent Owner relies in its supplemental brief. DD Req. Supp., 2-3; EX2011. BOE's patent (EX2011) illustrates the semiconductor region in Figure 3C and the top gate in Figure 3D. EX2011, Figs. 3C, 3D. The vertical arrangement is shown in Figure 4A, reproduced below.



EX2011, Fig. 4A. As shown in Figure 4A and discussed in the accompanying text, BOE's technology uses, starting at the bottom, a substrate (BS), a semiconductor layer (SML) with an active region (ACTd), a gate insulating layer (GI) and then the metal gate Ce1 on top. EX2011, Fig. 4A, 14:41-49, 15:31-37. This "top gate" structure is precisely the opposite of the "bottom gate" structure claimed in the '471 patent in limitations [1pre]-[1c].

As noted in *Debico*, the settled expectations consideration aligns with other approaches to settled expectations like the six years for filing a lawsuit. EX2010, 3. For ten years, from the time the '471 patent issued in 2013 until it was sold 2023, AUO pursued its "bottom gate" and BOE pursued its "top gate" technologies in peace. There was no reason for AUO to assert the '471 patent against BOE and no reason for BOE to challenge the claims in the '471 patent. It was Patent Owner, who acquired the '471 patent in 2023 and made the meritless and surprising assertion in 2024, that disturbed settled expectations. The Director should not

encourage such belated and meritless assertions by sheltering the '471 patent from a clearly meritorious IPR.

2. Patent Owner Lacks any Settled Expectations

The relevant expectations are the expectations of “the parties.” March 26, 2025 Memo, 2 (“Settled expectations of the parties”). Patent Owner purportedly acquired approximately 200 patent assets from AUO, including the '471 patent in 2023. EX1028. Accordingly, Patent Owner has no “settled” expectations as to the recently acquired '471 patent. Patent Owner’s reliance on the decisions in *Debico* and *Irythm* is misplaced because those decisions did not involve recent acquisitions of a large portfolio of patents by a non-practicing entity.

To be sure, some patent acquirors may be able to show they acquired the prior owner’s settled expectations or that they developed their own settled expectations after the acquisition. There are many types of patent acquisitions, from high-value acquisitions with terms that indicate the selling and acquiring entities have settled expectations of validity, to low-value acquisitions where large numbers of low-value patents are bundled up like a tranche of sub-prime mortgages and sold to speculators for pennies-on-the-dollar. An acquiring entity could come forward with facts sufficient to show that the terms of its particular acquisition reflect settled expectations. For example, an acquiror may show it paid a substantial sum for a particular patent, that particular emphasis was placed on a

particular patent in a portfolio during negotiations, that a particular patent was battle-tested prior to or after the acquisition, that a particular patent was licensed for a persuasive amount, or that the seller provided some kind of representation or warranty regarding the validity of a patent. Here, Patent Owner chose not to provide any evidence regarding its negotiation and acquisition of the patent. For example, Patent Owner did not provide the purchase agreement, which would have shown the amount paid and any representations as to validity of the '471 patent. Thus, the Director should infer from Patent Owner's decision to withhold those facts that the facts are adverse to Patent Owner. Put another way, Patent Owner's request that the Director discretionarily deny the Petition without providing the relevant evidence to the Director should be held against the Patent Owner.

While Patent Owner has deprived the Director of any direct evidence of its subjective expectations, Patent Owner's litigation strategy provides substantial circumstantial evidence that Patent Owner has no settled expectations as to the validity of any one the patent assets it acquired *en masse* from AUO. Patent Owner filed multiple lawsuits with a large number of patents (thirteen) and then disclaimed and dropped entire patents (or a large percentage of the asserted claims) once IPRs were instituted. This indicates that Patent Owner subjectively has no settled expectations as to any individual asserted patent and has decided to sue on a large number of patents and weed out weak patents during the litigation.

The six related IPRs have played a critical role to date in weeding out weak patents and creating, for the first time, Patent Owner's expectations as to its recently acquired patents. In the case of the disclaimed patents and claims, the six IPRs have been an extremely efficient use of the Board's resources as the Board was not required to conduct a full trial. And for the parties it has been an extremely efficient (and true alternative) to costly litigation. The Director should build on the success of the first six IPRs by instituting the two remaining IPRs, including this one.

E. The Board is Better Suited To Address the Claimed Subject Matter

The Patent Office would be the best place to address the prior art issues raised in the Petition. The technology is complex, and Patent Owner's attempt to distinguish the prior art in its brief based on an unclaimed purported advantage that is not even disclosed in the specification highlights why Patent Owner would prefer the challenge be decided by a lay jury and why the Board would be more likely to reach the correct result on the merits. Moreover, because of the number of patents at issue, the technical complexities of the '471 patent itself, and because of BOE's extremely strong noninfringement position (as discussed above under settled expectations), it is highly unlikely that BOE will, as a practical matter, have sufficient time to present a prior art invalidity case on the '471 patent to a lay jury.

F. The Compelling Interest in Countering Foreign Threats to the U.S. Patent System Weighs Against Denial

The former and current patent owner's actions highlight a threat to the U.S. patent system that militates against denial. The District Court cannot fully litigate the relevant issues in the underlying litigation because AUO and Patent Owner have manufactured a lack of relevant evidence. Patent Owner acquired the patents from AUO, a foreign company, and failed to obtain from AUO relevant evidence related to certain encumbrances on the '471 patent, including encumbrances related to invalidity, license, and standing. AUO is beyond the subpoena power of the District Court and has ignored the Letters Rogatory served on it. And AUO's U.S. affiliate responded to a subpoena by denying it has access to the relevant information. EX1029, 4-8 (denying possession of relevant evidence).

Patent Owner is attempting to capitalize on this manufactured lack of evidence by asserting Petitioner cannot meet its burden of proving certain issues in the related litigation. For example, Patent Owner is suing BOE for indirect infringement based on sales by Samsung, which AUO has publicly acknowledged has been licensed. EX1026 (AUO 2023 Annual Report), 232. But Patent Owner hides behind the lack of evidence to assert that BOE cannot prove the scope of Samsung's license, freeing the patent from that encumbrance. Similarly, PO asserts that because it filed a self-serving assignment with the Office, the District Court

must assume Patent Owner has standing to sue because the relevant documents that would show whether Patent Owner actually has standing to sue are beyond the court's reach. EX1031, 6-9 (arguing standing should be "presumed" because BOE cannot come forward with contrary evidence).

Attempts by foreign entities and non-practicing entities like Patent Owner to manufacture a lack of relevant evidence to free patents of encumbrances is a threat to the integrity of the U.S. patent system. This threat also represents an imbalance between foreign and U.S. patent holders, because U.S. patent owners (who remain subject to U.S. discovery even after divesting their patents) cannot engage in such conduct. Foreign entities could sue in their own names or provide the relevant evidence to their assignees, such that they are on an equal footing with their U.S. counterparts. But AUO and Patent Owner chose not to do so here. Having effectively hobbled the related litigation, Patent Owner's request to deny this IPR in favor of that litigation should be rejected.

V. CONCLUSION

The Director should deny Patent Owner's request and refer the Petition to the Board for a decision on the merits.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

I certify that there are 3,682 words in this paper, exclusive of the portions
exempted under 37 C.F.R. § 42.24(a)(1), according to the word count tool in
Microsoft Word.

Date: July 14, 2025

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CERTIFICATE OF SERVICE

The undersigned certifies pursuant to 37 C.F.R. §§ 42.6(e) and 42.105 that on July 14, 2025, a true and correct copy of the **PETITIONER'S OPPOSITION TO PATENT OWNER'S REQUEST FOR DISCRETIONARY DENIAL OF INSTITUTION** was served by emailing a copy of same (by agreement) to the following attorneys for the Patent Owner:

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