

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KANGXI COMMUNICATION TECHNOLOGIES (SHANGHAI) CO., LTD.
Petitioner,

v.

SKYWORKS SOLUTIONS, INC.
Patent Owner.

Case No. IPR2024-01457
U.S. Patent No. 9,148,194

PATENT OWNER'S SUR-REPLY

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. PETITIONER FAILED TO MEET THE EVIDENTIARY STANDARD REQUIRED FOR PROVING UNPATENTABILITY	2
A. Petitioner Presented a Deficient Obviousness Analysis	5
B. Huang and Seshimo Fail to Disclose or Render Obvious Claims 2 and 8’s Capacitors “Configured to Inhibit a Low-Frequency Blocker Signal from Mixing with a Fundamental-Frequency Signal in the Switch”	9
C. Huang and Seshimo Fail to Disclose or Render Obvious Claim 5’s “a [First/Second] Capacitor Formed on the Same Semiconductor Substrate and Connected in Series with the [First/Second] Switch Circuit Between the [First/Second] Switch Circuit and the Antenna Node”	19
III. CONCLUSION.....	24

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Ariosa Diagnostics v. Verinata Health, Inc.</i> , 805 F.3d 1359 (Fed. Cir. 2015)	13
<i>Bicon, Inc. v. Straumann Co.</i> , 441 F.3d 945 (Fed. Cir. 2006)	16
<i>Comcast Cable Commc’ns, LLC v. Promptu Sys. Corp.</i> , 838 F. App’x 555 (Fed. Cir. 2021)	6
<i>Enzo Biochem, Inc. v. Gen-Probe, Inc.</i> , 424 F.3d 1276 (Fed. Cir. 2005)	14
<i>In re Fulton</i> , 391 F.3d 1195 (Fed. Cir. 2004)	8
<i>Gemtron Corp. v. Saint-Gobain Corp.</i> , 572 F.3d 1371 (Fed. Cir. 2009)	14
<i>Henny Penny Corp. v. Frymaster LLC</i> , 938 F.3d 1324 (Fed. Cir. 2019)	14, 16
<i>Hesai Tech. Co., Ltd. v. Ouster, Inc.</i> , IPR2023-01422, Paper 33, 53-54	4
<i>In re Magnum Oil Tools Int’l, Ltd.</i> , 829 F.3d 1364 (Fed. Cir. 2016)	2
<i>Polaris Indus., Inc. v. Arctic Cat, Inc.</i> , 882 F.3d 1056 (Fed. Cir. 2018)	4
<i>Qualcomm Inc. v. Apple Inc.</i> , 24 F.4th 1367 (Fed. Cir. 2022)	3
<i>SAS Inst., Inc. v. Iancu</i> , 584 U.S. 357 (2018)	5, 14

<i>Sirius XM Radio Inc. v. Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung E.V., IPR2018-00690, Paper 63 (PTAB July 23, 2020)</i>	<i>14, 16</i>
<i>Wasica Fin. GmbH v. Cont’l Automotive Systems, Inc., 853 F.3d 1272 (Fed. Cir. 2017)</i>	<i>15</i>
<i>WBIP, LLC v. Kohler Co., 829 F.3d 1317 (Fed. Cir. 2016)</i>	<i>6</i>
<i>Xerox Corp. v. Bytemark, Inc., IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022).....</i>	<i>5</i>
Federal Statutes	
35 U.S.C. § 311(b)	3
35 U.S.C. § 316(e)	2

I. INTRODUCTION

As detailed in the Patent Owner Response (“POR”), Petitioner failed to carry its burden for both grounds in the Petition. Petitioner asserted that two primary references, Huang (Ex-1005) and Seshimo (Ex-1007), in combination with the general knowledge of a POSITA, render the challenged claims unpatentable. In presenting an obviousness argument, Petitioner conceded that Huang and Seshimo do not teach all the elements of the claims, including capacitors configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal and forming first and second capacitors on the same semiconductor substrate as the switches. These elements are missing in Huang and Seshimo because these references sought to solve a fundamentally different problem than the ’194 patent. The ’194 patent sought to use capacitors to reduce intermodulation distortion in RF devices, and the claims reflect this effect on intermodulation distortion by requiring the capacitor to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal and by forming first and second capacitors on the same semiconductor substrate as the switches. In contrast to the ’194 patent, Huang and Seshimo are directed to using capacitors to precisely control the DC bias voltages of transistors in an RF device.

The Petition overlooked this fundamental difference. Using the POR as a guidepost, the Reply now attempts to save the Petition by reframing the issue to whether sizing a capacitor and using on-die capacitors were simple design choices. That is not the right question. The right question is whether a POSITA would have been motivated to modify the teachings of Huang and Seshimo to implement capacitors in a way that were never contemplated by Huang and Seshimo's proposed solutions. The Petition failed to answer this question, and so does the Reply. Petitioner's silence is telling—a POSITA would not have been motivated to modify Huang or Seshimo to arrive at the claimed inventions of the '194 patent.

The Board should find that Petitioner has failed to meet its burden with respect to the challenged claims.

II. PETITIONER FAILED TO MEET THE EVIDENTIARY STANDARD REQUIRED FOR PROVING UNPATENTABILITY

As explained in the POR, the Petitioner failed to meet its burden of proving unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016).

Neither Huang nor Seshimo discloses capacitors “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal,” nor forming first and second capacitors on the same substrate as the claimed switch circuits. The Reply concedes this point. *See* Reply, 2 (not disputing Huang/Seshimo

fails to disclose either of these claim elements). The Reply also does not address the Petition's improper reliance on the general knowledge of a POSITA to supply a missing claim limitation by listing a collection of references instead of providing a proper analysis under the obviousness framework accepted by the Board. *See* Reply, 2-3 (not disputing that the Petition relied on the alleged POSITA's general knowledge to supply a missing claim limitation); POR, 32; 35 U.S.C. § 311(b) (“**only** on the basis of prior art consisting of patents or printed publications”)¹; *Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1376-77 (Fed. Cir. 2022) (holding that the basis of a ground in an IPR must rely on prior art patents or printed publications); Director Memorandum, “Enforcement and Non-Waiver of 37 C.F.R. § 42.104(B)(4) and Permissible Uses of General Knowledge in Inter Partes Reviews (July 21, 2025) (“[P]ast efforts by the Office to permit limited use of general knowledge to satisfy a missing claim limitation are ***no longer consistent with Federal Circuit precedent.***”).²

¹ Emphasis added throughout unless indicated otherwise.

² Petitioner argues that the Director Memorandum (July 21, 2025) does not apply to its Petition because the Petition was filed before September 1, 2025. Reply, 3, fn.1.

Instead of providing a proper obviousness analysis, the Reply merely repeats the assertion that selecting the “size of the blocking capacitor” and forming the “respective capacitors [on] the same substrate as the switch circuits” were “simple design choice[s].” Reply, 2. However, the Reply ignores that both Huang and Seshimo include capacitors to block DC signals in order to provide precise DC biasing voltages for transistors, and offers no explanation for why a POSITA would have been motivated to modify those capacitors to perform a fundamentally different purpose—inhibiting a low-frequency blocker signal from mixing with a fundamental-frequency signal, which improves intermodulation distortion. POR, 2, 18-22, 48-49; EX-2001-WentzloffDecl ¶¶ 46-49, 77; EX-2003-LarsonTr, 72:4-13, 122:8-123:6. As explained in the POR, a different motivation and a different solution cannot be substituted by simply labeling the claimed approach a “simple design choice.” POR, 36-37; *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1067-70, 1069 n.4 (Fed. Cir. 2018) (“[m]erely stating that a particular placement of an element is a design choice does not make it obvious.”); *Hesai Tech. Co., Ltd. v. Ouster, Inc.*, IPR2023-01422, Paper 33, 53-54 (determining putting a transformer

The Director Memorandum follows the case law, which the POR also cites and the Reply ignores.

coil *outside* of the stator coil would not have been an obvious design choice when the relied-on references disclose a transformer coil *inside* of the stator coil where the relied-on references “suggest[] that there were good reasons for doing this in their configurations”); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 14-15 (PTAB Aug. 24, 2022) (finding insufficient that “blocking a purchaser” would render obvious “blocking the account of the purchaser” where the only supporting evidence is the opinion of the Petitioner’s expert declarant that merely repeats the assertion for which it is offered to support).

A. Petitioner Presented a Deficient Obviousness Analysis

In an IPR, “the petitioner’s petition [] guide[s] the life of the litigation.” *SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 358, 366 (2018). The POR exposed that the Petition failed to provide a proper obviousness analysis. Rather than (1) identifying the “general knowledge” that supplies the specific differences between the prior art and the claims at issue, (2) explaining the motivation that a POSITA would have had to modify Huang/Seshimo using the “general knowledge” to arrive at the patented invention, (3) describing how any such modifications would have worked, and (4) providing any reasons to expect success, Petitioner simply cited to several general references and left the burden to the Board. The Board has previously rejected—and the Federal Circuit has upheld—petitions that provided far more support for

obviousness than the Petition does here. *See, e.g., Comcast Cable Commc'ns, LLC v. Promptu Sys. Corp.*, 838 F. App'x 555, 557 (Fed. Cir. 2021) (“[T]he Board simply found that [Petitioner]’s conclusory, threadbare arguments were not enough to establish motivation to combine”); *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1337 (Fed. Cir. 2016) (“The real question is whether that skilled artisan would have plucked one reference out of the sea of prior art ... and combined it with [other] ... elements to address some need present in the field. ... Whether a skilled artisan would be motivated to make a combination includes whether he would select particular references in order to combine their elements.”).

To mask the Petition’s deficiencies, the Reply attempts to reframe the issue as a “simple design choice,” beginning by incorrectly characterizing the prosecution history of the ’194 patent (and the parent ’579 patent). Reply, 1 (“the distinguishing feature over the prior art of record was the particular positioning of first and second capacitors”). By contrast, the Applicant identified the positioning of capacitors and “additional features recited” as nonobvious, and further noted that “the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references.” Ex-1002-194FH, 33-34, 63; *see also* Ex-1037-579FH, 38-40; Ex-1050-WentzloffTr, 51:9-54:17 (“Q: But you’d agree that the only claim feature that the applicant emphasized in this office action response as

distinguishing the prior art was the positioning of the first and second capacitors with respect to the antenna node and further with respect to the shunt arm, is that right?

A: I disagree with that statement. I think that is perhaps extrapolating what they put into this document. They have emphasized portions of claim 1 in the document. That appears to be the only area where they refer back to claim 1. And then they reference that later in that same document, but at the end, they have a disclaimer that the applicant is not conceding in this application that previously pending claims are not patentable over the cited references.”).

The Reply then contends that because the specification allegedly does not disclose “implementation details [] outside of capacitor positioning,” Petitioner may also rely on the general knowledge of a POSITA for the missing limitations. Reply, 2-3, 5-6. Petitioner improperly relies on hindsight bias, ignoring that the references Petitioner selected for its grounds address a different problem and solution—precise DC biasing of transistors. That a POSITA, in view of the teachings of the ’194 patent regarding reducing intermodulation distortion by using a capacitor to perform certain inhibiting, would understand how to implement such a capacitor, does not mean that a POSITA, without the teachings of the ’194 patent and instead having the contrary teachings of Huang/Seshimo to use capacitors for precise DC biasing, would arrive at the claimed subject matter. POR, 3-6; Ex-1001-194patent, 6:15-7:3.

In other words, the '194 patent provides both the motivation and the implementation details of the “configured to inhibit” limitation in relation to intermodulation distortion—disclosures that are entirely missing from Huang and Seshimo. POR, 16, 45-46.

The correct framework, as set forth in the POR, is to analyze whether a POSITA would have had any reason to modify Huang/Seshimo, given that different capacitors were better suited to achieve Huang/Seshimo's stated objectives, not whether sizing the relied-on capacitor is a “simple design choice.” POR, 36-37. The Petition failed on this point. Under the correct framework, the cases Petitioner relies on actually support Patent Owner. For example, Petitioner cites *In re Fulton* for the proposition that “‘the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination,’ not whether there is something in the prior art as a whole to suggest that the combination is the most desirable combination available.” *In re Fulton*, 391 F.3d 1195, 1200-1202 (Fed. Cir. 2004). But here, the problem is that Petitioner has not shown anything in Huang/Seshimo, taken as a whole, that suggests the desirability of using a capacitor “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal in the switch,” where the references are silent about “inhibiting,” “low-frequency blocker signal,” and

“mixing with a fundamental-frequency signal,” and may even suggest the opposite—using relatively larger capacitors for better DC biasing. Moreover, the Reply criticizes Dr. Wentzloff’s testimony (by mischaracterizing it, as explained below), but offers no affirmative evidence from Petitioner’s own expert to carry its obviousness burden.

B. Huang and Seshimo Fail to Disclose or Render Obvious Claims 2 and 8’s Capacitors “Configured to Inhibit a Low-Frequency Blocker Signal from Mixing with a Fundamental-Frequency Signal in the Switch”

Huang

As explained in the POR, Huang does not disclose or render obvious capacitors “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal in the switch.” Huang teaches a DC biasing technique that selects a particular range for the on-state and off-state bias voltages of the transistors to improve the linearity of the RF device. POR, 20-30. Both experts agree. EX-2001-WentzloffDecl ¶¶ 46, 49; Ex-2003-LarsonTr, 72:4-13, 109:19-111:12. In Huang, the capacitors are DC blocking capacitors that are used to isolate and precisely control the DC bias voltages applied to the transistors to improve device linearity. POR, 29; *see also* Ex-1050-WentzloffTr, 195:3-196:16.

Petitioner concedes that Huang does not disclose capacitors “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency

signal in the switch.” Reply, 5 (failing to argue that Huang discloses this element). Indeed, the Reply argues only that Huang discloses the “positioning” of the capacitors. Reply, 6. Petitioner then repeats its flawed “simpl[e] design choice” argument (Reply, 6-14), which Patent Owner has already rebutted. POR, 31-33, 36-37. This should end the inquiry. Petitioner has failed to carry its burden to show that a POSITA would have been motivated to modify Huang to arrive at the claimed invention of the '194 patent.

Moreover, as Dr. Wentzloff explained, Huang's teachings suggest that a POSITA would instead “be motivated to use the largest possible value for that DC blocking capacitor with ideally the highest quality factor.” Ex-1050-WentzloffTr, 196:5-9. A POSITA would have no motivation to modify Huang's DC blocking capacitor to address intermodulation distortion by configuring it to inhibit low-frequency blocker signals from mixing with a fundamental-frequency in a switch, as claimed in the '194 patent, because Huang instead prevents intermodulation distortion by improving linearity of its switches by precisely DC-biasing transistors and better isolating signal path, thereby minimizing any mixing in the switch and obviating any need to inhibit any signal from mixing in the switch. Ex-1005-Huang, ¶¶43, 56; Ex-1050-WentzloffTr, 195:8-196:9 (“Q. And so if Huang has a more linear switch, what does that mean for the mixing of signals in Huang? A: If the switch is

more linear, then that means for the, for a given amount of blocker signal and fundamental signal, the IMD would be lower. So a more linear switch implies that your switch circuit could tolerate higher amplitude blocker signals going through it because higher amplitude blocker signals and fundamentals through a more linear switch would produce smaller IMD terms. Q. And so then if you could tolerate higher amplitude blocker signals how would a POSITA be motivated to size the capacitors in Huang? A: ... So a POSITA implementing Huang based on those teachings would be motivated to use the largest possible value for that DC blocking capacitor with ideally the highest quality factor as well.”).

The new arguments made in the Reply also fail. Petitioner attempts to mischaracterize the POR as purportedly “not disput[ing] that capacitor size was a design choice.” Reply, 10, 13 (citing POR, 17). Patent Owner, however, made clear that Huang does not “teach or suggest that the size of blocking capacitor 211 can be used to inhibit any low-frequency blocker signal from mixing with a fundamental-frequency signal.” POR, 17. Moreover, as explained in the POR, the Petition failed to offer any evidence or explanation for how a POSITA would understand that Huang’s disclosure of “judiciously chosen resistors and capacitors to ensure low insertion loss along the signal path and high isolation from the off paths” (Ex. 1005-

Huang, ¶ 3) teaches capacitors “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal in the switch.” POR, 17.

In fact, Huang’s “judiciously chosen resistors and capacitors” do not disclose the ’194 patent’s capacitors “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal in the switch,” when Huang is read as a whole and understood in light of what it purported to solve. As explained in the POR, Huang’s DC blocking capacitor should be read in context and for what it is used—to isolate and maintain precisely controlled DC bias voltages applied to the transistors to improve device linearity. POR, 20-30. The Petition was silent on the purported purpose of the DC blocking capacitors in Huang, and even after the Patent Owner explained the purpose of the DC blocking capacitors in Huang, the Reply avoids addressing that purpose. *See* Reply, 6-19 (not responding to the motivation of Huang to improve Nakatsuka).

Instead, the Reply repeats the same failed State of the Art argument and asserts that selecting a capacitor to inhibit a low-frequency blocker signal is merely a “simpl[e] design choice.” Reply, 13. But the Reply provides no expert support explaining why it would be a “simple design choice” in the context of Huang—it is all attorney argument. Reply, 13-14. The Reply cites pages 39-40 of the Petition (Petitioner’s “State of the Art argument”), which improperly list a string of

references followed by a citation to paragraphs in which Dr. Larson merely repeats the Petition. Reply, 13; Petition 39-41; Ex-1003-LarsonDecl, ¶¶ 98-101; POR, 17. Petitioner's State of the Art argument is legally improper, or at minimum incomplete. POR, 33-37. The bottom line is that Petitioner still has not provided any analysis explaining why a POSITA would have been motivated by a "simple design choice" to depart from Huang's DC-blocking capacitors to arrive at the '194 patent's capacitor "configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal in the switch."

And despite having the burden to prove that a POSITA would have been motivated to modify Huang's DC blocking capacitors to arrive at the claimed invention of the '194 patent, the Petition and Reply failed to provide affirmative evidence for Petitioner's "simple design choice" argument. Without this crucial evidence, the Reply turns to mischaracterizing Dr. Wentzloff's testimony. The Reply first argues that paragraph 42 of Huang teaches that some amount of non-linearities would exist in Huang's switches even when the preferred on/off-state bias voltage V_{gsd} is used. Reply, 14-15 ("non-linearities will exist ... in the preferred embodiment"). But this was not argued in the Petition, nor is the attorney argument in the Reply supported by any expert testimony. *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015) ("We see no error in the Board's

rejection of [Petitioner]'s reliance, in its Reply submissions, on previously unidentified portions of a prior-art reference to make a meaningfully distinct contention.”); *SAS Inst. Inc. v. Iancu*, 584 U.S. 357, 363-67; *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1331 (Fed. Cir. 2019) (“[T]he Board did not abuse its discretion in ... disregarding [Petitioner's] new theory first raised in reply.”); *Sirius XM Radio Inc. v. Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung E.V.*, IPR2018-00690, Paper 63, 13-15 (PTAB July 23, 2020) (“Once the Board identifies new issues presented for the first time in reply, the Board will not attempt to sort proper from improper portions of the reply. ... We do not consider the Reply.”); *Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) (“[U]nsworn attorney argument ... is not evidence.”); *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 424 F.3d 1276, 1284 (Fed. Cir. 2005) (“Attorney argument is no substitute for evidence.”).

The Reply also introduces the new argument that the mere existence of non-linearities somehow means Huang teaches capacitors “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal.” Reply, 15 (“[B]ecause of non-linearities in the FETs in RF switches, IMD products would be generated from the mixing of unwanted signals (like blockers) and desired signals (at fundamental frequencies)”). Petitioner's argument lacks any support from

Huang. Instead, Petitioner relies on mischaracterizing Dr. Wentzloff's testimony in an attempt to backfill this missing disclosure. But all Dr. Wentzloff testified was that (1) all capacitors generally block DC signals (EX-1050-WentzloffTr, 83:9-13, 146:9-18); (2) non-linearities exist in RF switches in general (EX-1050-WentzloffTr, 131:15-132:11, 132:22-134:22); and (3) intermodulation distortion is generally higher in more non-linear switches (EX-1050-WentzloffTr, 194:2-12, 194:19-195:2). None of Dr. Wentzloff's testimony Petitioner relies on explains why a POSITA, in view of Huang that already "improves switch linearity specifically with DC biasing" and therefore "could tolerate higher amplitude blocker signals," would deviate from Huang's teachings. Ex-1050, 195:3-196:16.

In a last attempt to argue that a POSITA would understand that the DC blocking capacitors in Huang could be used to inhibit a low-frequency blocker, Petitioner argues that the DC blocking capacitors in Huang would also block some low-frequency signals. Reply, 17-19. Petitioner's argument appears to be that **any** capacitor discloses this claim element. As a preliminary matter, this is legally improper because it reads out the element that the capacitor is configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal. *Wasica Fin. GmbH v. Cont'l Automotive Systems, Inc.*, 853 F.3d 1272, 1288 n.10 (Fed. Cir. 2017) ("It is highly disfavored to construe terms in a way that renders

them void, meaningless, or superfluous.”); *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950-51 (Fed. Cir. 2006) (rejecting a construction of a term that would render another limitation superfluous). More problematic however, is Petitioner's failure to identify any low-frequency blocker signal allegedly inhibited by the DC blocking capacitors in Huang. As Dr. Wentzloff explained, not all low-frequency signals are low-frequency blocker signals and Petitioner's failure to identify a low-frequency blocker signal is fatal to its Petition. Ex-1050-WentzloffTr, 95:19-96:3 (“A POSITA would understand a blocker to mean a signal at a specific frequency that causes spurious emissions that would then degrade the performance of your radio. So not all signals are necessarily blockers. Not all low frequency signals are necessarily blockers.”).

In any event, Petitioner is now apparently raising a new ground based on Huang in combination with Exhibit 1011. Reply, 18. That was not raised in the Petition, and Petitioner should not be allowed to add a new ground in its Reply. *Henny Penny Corp.*, 938 F.3d at 1331 (Fed. Cir. 2019) (“[T]he Board did not abuse its discretion in ... disregarding [Petitioner's] new theory first raised in reply.”); *Sirius XM Radio Inc.*, IPR2018-00690, Paper 63, 13-15 (PTAB July 23, 2020) (“Once the Board identifies new issues presented for the first time in reply, the Board

will not attempt to sort proper from improper portions of the reply. ... We do not consider the Reply.”).

Seshimo

As explained in the POR, Seshimo also does not disclose or render obvious “inhibiting a low-frequency blocker signal from mixing with a fundamental-frequency signal in the switch using the first capacitor.” POR, 45-50. The Seshimo ground is duplicative of the Huang ground except for the opening paragraphs and citations to each reference (POR, 45), and thus should be rejected for the same reasons. The POR also explained that Seshimo’s capacitors are DC blocking capacitors, like Huang’s, used to improve and isolate the DC bias provided to transistors and are therefore sized to reduce insertion loss. POR, 46-48.

The Reply fails to address any of the POR’s arguments that a POSITA would not have been motivated to modify the capacitors in Seshimo to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch. Instead, the Reply argues that because Seshimo’s Figure 3 components are allegedly integrated on the same semiconductor substrate, this somehow cures the Petition’s deficient analysis of capacitors “configured to inhibit a low-frequency blocker signal from mixing with a fundamental-frequency signal in the switch,” which is a different limitation. Reply, 20.

Petitioner's argument is misplaced, and none of the newly-cited evidence in Seshimo supports Petitioner's argument that a POSITA would have understood Seshimo to disclose capacitors configured to inhibit a low-frequency blocker signal. The Reply cites paragraphs 84, 88, 3, and Figure 3 of Seshimo. Reply, 20. But paragraph 84 merely states, in general terms, that the use of "SOI is also effective," not that the relied-upon capacitor in Figure 3 is formed on the same substrate. Ex-1007, ¶ 84. Likewise, paragraph 88 states that "the inverter circuit and other logic circuits in Embodiments 1 to 3 may be configured as CMOS circuits and integrated on the same semiconductor substrate," not that the relied-upon capacitor is integrated on the same substrate. Ex-1007, ¶ 88. Paragraph 3 is an even broader statement that a CMOS switch can be integrated into an RF IC—which does not preclude capacitors being part of an RF IC but still not formed on the same substrate as claimed. Ex-1007, ¶ 3. None of these cited sections of Seshimo disclose that Seshimo's DC-blocking capacitor can be used for any other purpose than DC-blocking. Petitioner also fails to offer any explanation why, based on these sections of Seshimo, a POSITA would have been motivated to modify the disclosed DC-blocking capacitors to inhibit a low-frequency blocker signal.

Once again, the Reply relies on the same flawed State of the Art argument that Petitioner made in the Huang ground. Reply, 21-22. Petitioner's State of the Art

argument fails for Seshimo for the same reasons described in the Huang ground above. *See supra* 12-16.

**C. Huang and Seshimo Fail to Disclose or Render Obvious Claim 5's
“a [First/Second] Capacitor Formed on the Same Semiconductor
Substrate and Connected in Series with the [First/Second] Switch
Circuit Between the [First/Second] Switch Circuit and the
Antenna Node”**

Huang

As explained in the POR, Huang does not disclose or render obvious “a [first/second] capacitor formed on the same semiconductor substrate and connected in series with the [first/second] switch circuit between the [first/second] switch circuit and the antenna node.” Huang is silent as to whether the disclosed DC blocking capacitors are formed on the same substrate as the other components, and the Petition yet again improperly relies on the general knowledge of a POSITA to supply this missing claim element. POR, 40-43. Moreover, in the context of Huang, a POSITA would have been motivated to select an off-die or off-chip capacitor to better achieve Huang's objective of improving RF switch linearity by reducing insertion loss, which the Petition wholly failed to consider. POR, 42-43; Ex-1050-WentzloffTr, 195:3-7 (explaining Huang and Seshimo improve switch linearity “specifically with DC biasing”), 195:19-196:9 (“a POSITA implementing Huang based on those teachings [of improving switch linearity and insertion loss with DC

blocking capacitors] would be motivated to use the largest possible value for that DC blocking capacitor with ideally the highest quality factor as well.”), 197:17-198:2 (“Q: If a POSITA is motivated to [make] capacitor as large as possible with the highest Q factor as possible, where would it be motivated to place the capacitor? A: A POSITA especially at the time in 2012 would be motivated to put that capacitor off-chip because those provide the highest capacitor density and the highest quality factor of capacitance.”).

The Reply attempts to salvage its lack of analysis by citing general statements from Huang (such as that Huang relates to high power semiconductor switches and a comparison between SOI and pHEMT switches) along with statements from the background art section of the Petition. Reply, 23-24. The Petition's and Reply's use of these general statements from multiple references does not comply with the proper obviousness analysis. POR, 41-43. Once again, the Reply sets forth a deficient “simple design choice” theory and fails to perform a proper obviousness analysis.

Without any affirmative evidence that a POSITA would have been motivated to implement the capacitors on Huang on the same die as the switches, Petition resorts to mischaracterizing Dr. Wentzloff's testimony. Dr. Wentzloff did not testify that “POSITAs implementing Huang would only be ‘motivated to select capacitors

to achieve better insertion loss' and, thus, would only select capacitors with very large capacitance values." Reply, 25-26. What Dr. Wentzloff actually testified was that a POSITA "could choose off-die capacitors over on-die capacitors" because "in the context of Huang, off-die capacitors are known to perform better for DC blocking," and therefore a POSITA "would have been motivated to implement relatively large sized capacitors off-die in Huang to achieve better insertion loss." Ex-2001-WentzloffDecl, ¶ 69; POR, 42-43.

More importantly, Petitioner still failed to address Patent's Owner's argument that the Petition did not present a proper obviousness analysis showing why a POSITA would have been motivated to modify Huang to use an on-die capacitor instead of an off-die or off-chip capacitor. Indeed, as Dr. Wentzloff explained a POSITA would have been motivated to use an off-die capacitor in Huang to achieve better insertion loss. Ex-1050-WentzloffTr, 195:19-196:9, 197:17-198:2. The Petitioner again mischaracterizes Dr. Wentzloff's testimony in an attempt to fill the gap in its deficient analysis. Reply, 26-27 (citing EX-1050-WentzloffTr, 83:14-84:1, 85:2-18, 163:13-166:1, 166:2-167:7, 172:19-173:7). While Dr. Wentzloff testified that a POSITA would, in general, consider trade-offs between on-chip and off-chip capacitors (EX-1050-WentzloffTr, 83:14-84:1, 172:19-173:7) and that RF switches with on-chip capacitors have existed (EX-1050-WentzloffTr, 163:13-166:1, 166:2-

167:7), he also explained, specifically for Huang, that a POSITA would not have been motivated to include the capacitors on the same chip as the switches. Ex-1050-WentzloffTr, 195:3-7 (explaining Huang and Seshimo improve switch linearity “specifically with DC biasing”), 195:19-196:9 (“a POSITA implementing Huang based on those teachings [of improving switch linearity and insertion loss with DC blocking capacitors] would be motivated to use the largest possible value for that DC blocking capacitor with ideally the highest quality factor as well.”), 197:17-198:2 (“Q: If a POSITA is motivated to [make] capacitor as large as possible with the highest Q factor as possible, where would it be motivated to place the capacitor? A: A POSITA especially at the time in 2012 would be motivated to put that capacitor off-chip because those provide the highest capacitor density and the highest quality factor of capacitance.”).

Petitioner entirely ignores Dr. Wentzloff's testimony on Huang and instead tries to rely on general statements to prove that a POSITA would have been motivated to modify Huang to place the capacitors on the same die as the switches. Petitioner had the burden to present obviousness by preponderance of evidence and failed to meet that burden.

Seshimo

As explained in the POR, Seshimo also does not disclose or render obvious “a [first/second] capacitor formed on the same semiconductor substrate and connected in series with the [first/second] switch circuit between the [first/second] switch circuit and the antenna node.” POR, 50-53. Like Huang, Seshimo is silent as to whether the DC-blocking capacitors are on the same substrate as the other components, and the Petition improperly relies on the general knowledge of a POSITA to supply a missing claim element. POR, 50-51. As also noted above, the Seshimo ground is duplicative of the Huang ground and should be rejected for the same reasons.

Seshimo's capacitors are DC-blocking capacitors used, like the capacitors in Huang, to help DC-bias transistors by reducing insertion loss. POR, 47-48. The Reply again argues that discrete disclosures such as “using CMOS processes” and “configured as CMOS circuits and integrated on the same semiconductor substrate” disclose this element. Reply, 27. As explained above, none of these statements discloses that the relied-upon capacitor is formed on the same substrate as the other claimed switch-circuit components. Ex-1050-WentzloffTr, 195:3-7 (explaining Huang and Seshimo improve switch linearity “specifically with DC biasing”), 195:19-196:9 (“a POSITA implementing Huang based on those teachings [of

improving switch linearity and insertion loss with DC blocking capacitors] would be motivated to use the largest possible value for that DC blocking capacitor with ideally the highest quality factor as well.”), 197:17-198:2 (“Q: If a POSITA is motivated to [make] capacitor as large as possible with the highest Q factor as possible, where would it be motivated to place the capacitor? A: A POSITA especially at the time in 2012 would be motivated to put that capacitor off-chip because those provide the highest capacitor density and the highest quality factor of capacitance.”). The Reply also repeats the same State of the Art argument, which as set forth above and in the POR, is an improper and incomplete obviousness analysis.

III. CONCLUSION

Petitioner has failed to meet its burden to demonstrate that the challenged claims are unpatentable in view of the asserted references. As such, Patent Owner respectfully requests that the Board confirm the patentability of the challenged claims.

Dated: February 6, 2026

Respectfully submitted,

By: /Haixia Lin/

Haixia Lin (Reg. No. 61,318)
Wilmer Cutler Pickering Hale and Dorr LLP
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037
Tel. 202-663-6029
Email: Haixia.Lin@wilmerhale.com
Lead Counsel for Patent Owner

CERTIFICATE OF SERVICE

I hereby certify that, on February 6, 2026, I caused a true and correct copy of:

- Patent Owner's Sur-Reply
- Certificate of Word Count

to be served via electronic mail on the following attorneys of record:

CJTyson@duanemorris.com

PDMcPherson@duanemorris.com

dmitchell@duanemorris.com

/Jungyeon Kim/

Jungyeon Kim (Reg. No. 82,377)
Email: john.kim@wilmerhale.com

CERTIFICATE OF WORD COUNT UNDER 37 C.F.R. § 42.24(d)

I hereby certify that the foregoing Patent Owner's Sur-Reply contains 5239 words, including text-based images, as measured by the word-processing software used to prepare the document, in compliance with 37 C.F.R. § 42.24(d).

/Jungyeon Kim/

Jungyeon Kim (Reg. No. 82,377)
Email: john.kim@wilmerhale.com

Date: February 6, 2026