UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

INTELLECTUAL VENTURES I LLC, Plaintiff, v. TCL ELECTRONICS HOLDINGS LTD. and TCL INDUSTRIES HOLDINGS CO., LTD., Defendants.	Civil Action No. 6:23-cv-309 JURY TRIAL DEMANDED

DEFENDANTS' FINAL INVALIDITY CONTENTIONS

I. INTRODUCTION

Pursuant to the Scheduling Order (Dkt. 26), TCL Electronics Holdings Ltd. and TCL Industries Holdings Co., Ltd. (collectively, "Defendants" or "TCL") provide these Final Invalidity Contentions to Intellectual Ventures I LLC ("Plaintiff" or "IV") for U.S. Patent Nos. 7,623,439 (the "'439 Patent") and 7,089,443 (the "'443 Patent") (collectively, the "Patents-in-Suit" or "Asserted Patents").

These Final Invalidity Contentions are made as to only the claims of the Patents-in-Suit that Plaintiff has charted in Plaintiff's Disclosure of Infringement Contentions (the "Infringement Contentions") served on February 5, 2024 (the "Asserted Claims"):

Asserted Patent	Asserted Claims
'439 Patent	1–3, 7–11, 13–16, 18
'443 Patent	1, 4–5, 8, 10

Although the cover pleading to Plaintiff's Infringement Contentions states that "TCL infringes at least each of the claims of the '439 Patent as set forth in the claim charts attached hereto as Exhibit A through A-2" and "TCL infringes at least each of the claims of the '443 Patent as set forth in the claim chart attached hereto as Exhibit B," Plaintiff's attached claim charts do not set forth any infringement contentions for claims 4–6, 12, 17, and 19–21 of the '439 Patent or claims 2–3, 6–7, 9, and 11–12 of the '443 Patent. Accordingly, TCL understands that Plaintiff does not currently assert, and/or has waived any contention, that TCL is infringing those claims. If Plaintiff is granted leave by the Court to supplement its infringement contentions to assert one or more of the unasserted claims, TCL reserves the right to supplement its invalidity contentions to set forth where in the prior art the elements of the newly asserted claims are found.

Third-party discovery is not complete. Accordingly, Defendants reserve the right to supplement and amend these final contentions to the extent additional information becomes available during discovery. For example, Defendants may serve third-party discovery on the inventors, on any prior assignees of the Patents-in-Suit, and on companies that may have relevant prior art. Defendants reserve the right to supplement and/or amend their invalidity contentions to include new prior art discovered from Plaintiff, these third-party sources, or other sources. Defendants also may serve additional third-party discovery in the future including, but not limited to, based on discovery received from Plaintiff and/or the above-referenced third parties, and reserves the right to supplement and/or amend its contentions accordingly.

Plaintiff has not yet produced in discovery the invalidity contentions served on Plaintiff by other Defendants for which Plaintiff has asserted one or both of the Asserted Patents. Such invalidity contentions include those that may have been served by the Defendants in *Intellectual Ventures I LLC et al. v. Lenovo Group Limited*, No. 6:23-cv-307 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. Zebra Technologies Corp*., No. 6:23-cv-292 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. TP-Link Corp. Ltd*., No. 6:23-cv-308 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. OnePlus Technology (Shenzen) Co., Ltd*., No. 6:23-cv-290 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. TP-Link Corp. Ltd*., No. 6:23-cv-291 (W.D. Tex.); *Intellectual Ventures II LLC v. Lenovo Group Limited*, No. 6:23-cv-68 (W.D. Tex.); and *Intellectual Ventures I LLC et al v. Hewlett Packard Enter. Co*., No. 1:22-cv-1350 (D. Del.), and further including all charts, cover pleadings, exhibits, prior art, and invalidity arguments including, but not limited to, arguments based on 35 U.S.C. §§ 101, 102, 103, 112, and otherwise. Defendants hereby notify Plaintiff that Defendants incorporate by reference any such contentions once they have been produced by Plaintiff to Defendants.

II. RESERVATIONS

A. General Reservation of Rights

The information provided in these final invalidity contentions shall not be deemed an admission regarding the scope of any claims or the proper construction of those claims or any claim terms. Defendants do not waive the right to contest any claim constructions or to take positions during the claim construction proceedings in this case that may be inconsistent with the Final invalidity contentions herein.

In certain instances, Defendants have applied the claims to the prior art in view of Plaintiff's allegations, admissions, or positions for purposes of these Final invalidity contentions only. This disclosure of Final invalidity contentions is not intended to be, and is not, an admission that any Asserted Claim is infringed by any of Defendants' products, that any particular feature or aspect of any of the accused products practices any limitations of the Asserted Claims, or that any of the constructions implicit in Plaintiff's Infringement Contentions are reasonable, supportable, or proper. Rather, in some instances, Defendants' application of the claims to the prior art is intended to apply Plaintiff's apparent interpretation of the claims.

B. Plaintiff's Infringement Contentions

Plaintiff's Infringement Contentions are deficient in multiple respects and do not provide Defendants with sufficient information to understand the specific accused features and components and the alleged factual and evidentiary bases for Plaintiff's allegations. Plaintiff has thus substantially prejudiced Defendants' ability to understand, for purposes of preparing these Contentions, what Plaintiff alleges to be the scope of the Asserted Claims. Additionally, while Plaintiff purports to accuse 140 products collectively across its Infringement Contentions, Plaintiff has, in fact, provided specific claim charts for only a limited number of products with respect to

the Asserted Patents. Plaintiff has only provided specific claim charts for, at most, two products with respect to the ’439 Patent and one product with respect to the ’443 Patent.

In addition, Plaintiff’s Infringement Contentions do not present any substantive contentions of any alleged infringement under the doctrine of equivalents (“DOE”) for the ’443 Patent and instead provide only a boilerplate reservation of rights to identify an element as present under DOE at a later date. As to the ’439 Patent, Plaintiff’s Infringement Contentions present only a limited analysis of infringement under DOE for a single element of claim 1. As a result, Plaintiff has waived any and all DOE theories for all Asserted Claims of the ’443 Patent and the ’439 Patent. If Plaintiff is granted leave by the Court to pursue a DOE theory, Defendants reserve the right to amend and supplement these Final invalidity contentions.

If Plaintiff modifies any assertion or contention in its Infringement Contentions, or presents any new assertion or contention relevant to these Contentions, Defendants reserve the right to move to strike any such modification or new assertion or contention, and to supplement or otherwise amend these Contentions. Defendants further reserve the right to supplement or otherwise amend these Contentions in the event the Court orders or allows Plaintiff to amend its infringement contentions.

C. The Intrinsic Record

Defendants further reserve the right to rely on applicable industry standards and prior art cited in the file histories of the Asserted Patents and any related U.S. and foreign patent applications as invalidating references or to show the state of the art. Defendants further reserve the right to rely on the patent applicant’s admissions concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*: the patent prosecution history for the Asserted Patents and any related patents and/or parent applications or reexaminations (or *inter partes* review or post-grant review proceedings); any deposition testimony of a named inventor of the Asserted

Patents; any deposition testimony or other admissions by Plaintiff; and the papers filed and any evidence submitted by Plaintiff in connection with this litigation or any other litigation involving the Asserted Patents.

D. Rebuttal Evidence

Prior art not included in these final invalidity contentions, whether known or not known to Defendants, may become relevant. In particular, Defendants currently are unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims of the Asserted Patents are not disclosed in the prior art identified herein or otherwise contend the Asserted Patents are not invalid. To the extent that such an issue arises, Defendants reserve the right to identify other references that would anticipate and/or render obvious the allegedly missing limitation(s) or the disclosed device or method, or otherwise rebut Plaintiff's argument(s).

E. Contextual Evidence

Defendants' claim charts cite particular teachings and disclosures of the prior art as applied to the limitations of each of the Asserted Claims. However, persons having ordinary skill in the art generally may view an item of prior art in the context of his or her experience and training, other publications, literature, products, and understandings. Moreover, common sense may be employed as part of the obviousness analysis. As such, Defendants may rely on the cited portions of the prior art references and on other publications, expert testimony, and common sense as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation or the claimed subject matter as a whole. Defendants further reserve the right to rely on uncited portions of the prior art references, other publications, and testimony, including expert testimony, to establish bases for combinations of certain cited references that render the Asserted Claims anticipated and/or obvious. The references discussed in the corresponding claim charts may disclose the limitations of the Asserted Claims

explicitly and/or inherently, and/or they may be relied on to show the state of the art in the relevant time frame. Any suggested obviousness combinations are provided in the alternative to anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory.

III. PRIORITY DATE OF ASSERTED PATENTS

Defendants contend that Plaintiff has failed to meet its burden to show entitlement to its asserted priority dates. For example, Plaintiff has not demonstrated that any of the Asserted Claims are entitled to the dates of any provisional application or are entitled to a priority date earlier than the filing of the applications that issued as the Asserted Patents. Plaintiff has not identified the alleged date of conception for the Asserted Patents or produced any documents evidencing the conception and reduction to practice for each claimed invention, as required by the Court's Standing Order Governing Proceedings – Patent Cases.

Defendants have focused on prior art that predates the priority date alleged by Plaintiff. Defendants reserve the right to amend their Contentions with additional prior art and/or with additional invalidity charts if Plaintiff changes its position and alleges any earlier or later priority dates, including based on any alleged dates of conception.

Nothing herein constitutes an admission concerning the priority date, conception date, or date of reduction to practice of any Asserted Claim.

A. The '439 Patent (Asserted Claims 1–3, 7–11, 13–16, and 18)

The '439 Patent claims priority to U.S. Provisional Application No. 60/572,481, filed on May 20, 2004. Plaintiff has not demonstrated that the '439 Patent is entitled to claim the benefit of that provisional application's filing date. To the extent the provisional application does not support the full scope of the Asserted Claims, the priority date of the '439 Patent should be the filing date of the application from which the '439 Patent issued—May 4, 2005.

B. The ’443 Patent (Asserted Claims 1, 4–5, 8, and 10)

The ’443 Patent claims priority to U.S. Provisional Application No. 60/441,759, filed on January 23, 2003. Plaintiff has not demonstrated that the ’443 Patent is entitled to claim the benefit of that provisional application’s filing date. To the extent the provisional application does not support the full scope of the Asserted Claims, the priority date of the ’443 Patent should be the filing date of the application from which the ’443 Patent issued—January 23, 2004.

IV. INVALIDITY UNDER 35 U.S.C. §§ 102 AND 103

Defendants identify the following prior art now known to Defendants that anticipates or renders obvious the Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103,[1] either expressly or inherently as understood by a person of ordinary skill in the art (“POSITA”).

Exhibits A-1 through A-15 and B-1 through B-20 (collectively, Exhibits) provide detailed claim charts showing where each claim limitation may be found in the particular references being charted. Each of these Exhibits is without prejudice to the Defendants’ indefiniteness positions under 35 U.S.C. § 112 and assume that such positions have been rejected by the Court. Nothing in the Exhibits should be taken as a concession that the claims are not indefinite.

Defendants also incorporate as if fully set forth in these Final contentions the complete prosecution histories for the Asserted Patents and related patents, including the prior art and supporting documents cited in those prosecution histories. Defendants may cite or rely on the prosecution histories, the examiner’s findings, and the prior art cited in the prosecution history to support or provide context for these Final invalidity contentions.

---

[1] Throughout these Contentions, Defendants apply pre-AIA sections to the Asserted Patents based on their filing date. All references to 35 U.S.C. throughout these Contentions should be understood to apply the appropriate pre-AIA sections accordingly.

Defendants rely on not only the prior art disclosed in these Final invalidity contentions, but also any commercial embodiments and accompanying literature (or other evidence and/or witness testimony) of the various assignees that correspond to the respective disclosures found within the prior art disclosed in these contentions. The assignees' various and respective commercial embodiments and/or corresponding literature (or other evidence and/or witness testimony) anticipate and/or render obvious the claims of the Asserted Patents for at least the reasons disclosed in these Final invalidity contentions and claim charts, as well as for other independent reasons found within the commercial embodiments and corresponding literature. Defendants also reserve the right to rely on related patents, published applications, foreign patents or publications, and other patent documents as necessary to establish prior art status or clarify the disclosures cited. Defendants further reserve the right to rely on the earliest publication or priority dates to which each of the prior art references are entitled, including dates on which a claim of priority may be based for patent references that are any of a divisional, continuation, or continuation-in-part of an earlier filed patent application.

Defendants reserve the right to revise their claim charts to rely on any of these references to prove the invalidity of the claims of the Asserted Patents in a manner consistent with Federal Circuit case law, the Federal Rules of Civil Procedure, the Court's Local Rules, and this Court's Orders.

A. Prior Art References

The following patents and publications are prior art to the Asserted Claims of the Asserted Patents under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103. The prior art listed below anticipates either expressly or inherently as understood by a POSITA and/or renders obvious the Asserted Claims of the Asserted Patents. Charts setting forth where in the prior art each element

of the Asserted Claims in the patents is found are served herewith as Exhibits A-1 through A-15 and B-1 through B-20.

1. Prior Art Patents and Printed Publications

a. The ’439 Patent

Prior Art Reference	Effective Filing Date	Date of Issue or Publication
U.S. Patent No. 7,586,881 (“Broadcom”)	February 13, 2004	August 18, 2005
U.S. Patent Application Publication No. 2003/0099304 (“Gore”)	November 28, 2001	May 29, 2003
U.S. Patent Application Publication No. 2002/0126706 (“Laroia ’706”)	March 5, 2002	September 12, 2002
U.S. Patent Application Publication No. 2002/0196731 (“Laroia ’731”)	June 19, 2001	December 26, 2002
U.S. Patent Application Publication No. 2005/0265275 (“Qualcomm ’275)	May 7, 2004	December 1, 2005
U.S. Patent No. 7,453,793 (“Qualcomm ’793”)	April 10, 2003	November 18, 2008
U.S. Patent Application Publication No. 2003/0095533 (“Samsung”)	November 10, 2001	May 22, 2003
U.S. Patent Application Publication No. 2004/0004934 (“Zhu”)	March 27, 2003	January 8, 2004
“On the Equivalence of Space-Time Block Coding with Multipath Propagation and/or Cyclic Delay Diversity in OFDM” (“Dammann”)	n/a	February 25, 2002
U.S. Patent No. 5,961,575 (“Hervin”)	February 26, 1996	October 5, 1999
U.S. Patent Application Publication No. 2002/0122499 (“Kannan”)	December 22, 2000	September 5, 2002
Admitted Prior Art of the ’439 Patent	n/a	n/a
802.11a Standard	n/a	1999

Prior Art Reference	Effective Filing Date	Date of Issue or Publication
European Patent EP1573936B1 ("Bauch")	September 30, 2003	July 26, 2006
International Application Publication No. WO 2005/041441	September 30, 2003	May 6, 2005
Ye (Geoffrey) Li, et al., "Channel Estimation for OFDM Systems with Transmitter Diversity in Mobile Wireless Channels"	n/a	March 3, 1999
U.S. Patent Provisional Application No. 60/539,699 ("Hammerschmidt '699")	January 27, 2004	n/a
U.S. Patent Provisional Application No. 60/572,137 ("Naguib '137")	May 17, 2004	n/a
U.S. Patent No. 6,842,487 ("Larsson '487")	September 22, 2000	January 11, 2005
U.S. Patent No. 7,082,159 ("Larsson '159")	November 29, 2000	July 25, 2006
U.S. Patent No. 7,167,526 ("Liang '526")	June 7, 2001	January 23, 2007
U.S. Patent Application Publication No. 2004/0071222 ("Liang '222")	June 7, 2001	April 15, 2004
U.S. Patent No. 7,414,962 ("Izumi")	April 17, 2001	August 19, 2008
U.S. Patent No. 8,194,771 ("Hammerschmidt '771")	January 27, 2004	June 5, 2012
U.S. Patent No. 8,233,555 ("Naguib '555")	May 17, 2004	July 31, 2012
U.S. Patent No. 9,100,076 ("Naguib '076")	May 17, 2004	August 4, 2015
International Application Publication No. WO 2002/025857 ("Larsson '857")	September 22, 2000	March 28, 2002

b. The '443 Patent

Prior Art Reference	Effective Filing Date	Date of Issue or Publication
U.S. Patent No. 6,895,520 ("Altmejd")	March 2, 2001	May 17, 2005

Prior Art Reference	Effective Filing Date	Date of Issue or Publication
U.S. Patent No. 6,047,248 ("Georgiou")	April 29, 1996	April 4, 2000
Japanese Application No. JPH08202549A ("Kasai")	January 30, 1995	August 9, 1996
U.S. Patent No. 5,502,838 ("Kikinis")	April 28, 1994	March 26, 1996
U.S. Patent No. 6,954,872 ("Parikh '872")	September 28, 2001	October 11, 2005
U.S. Patent No. 6,908,227 ("Rusu")	August 23, 2002	June 21, 2005
U.S. Patent Application Publication No. 2003/0030326 A1 ("Shenai")	August 10, 2001	February 13, 2002
U.S. Patent Application Publication No. 2002/0169990 A1 ("Sherburne")	March 21, 2001	November 14, 2002
Alfred L. Crouch, et al., "Test Development for a Third-Version ColdFire Microprocessor"	n/a	Oct.-Dec. 2000
Anoop Iyer, et al., "Power Efficiency of Voltage Scaling in Multiple Clock, Multiple Voltage Cores"	n/a	November 10-14, 2002
Thomas Meincke, et al., "Globally Asynchronous Locally Synchronous Architecture for Large High-Performance ASICs"	n/a	May 30-June 2, 1999
Jens Muttersbach, et al., "Practical Design of Globally-Asynchronous Locally-Synchronous Systems"	n/a	April 2-6, 2000
U.S. Patent No. 5,553,276 ("Dean")	June 30, 1993	September 3, 1996
U.S. Patent No. 5,710,910 ("Kehl")	September 30, 1994	January 20, 1998
U.S. Patent No. 6,915,361 ("Alpert")	October 3, 2002	July 5, 2005
U.S. Patent No. 7,076,681 ("Bose")	July 2, 2002	July 11, 2006
U.S. Patent No. 7,161,999 ("Parikh '999")	January 2, 2002	January 9, 2007
U.S. Patent Application Publication No. 2003/0071657 ("Soerensen")	August 29, 2001	April 17, 2003

Prior Art Reference	Effective Filing Date	Date of Issue or Publication
Padmanabhan Pillai et al., "Real-Time Voltage Scaling for Low-Power Embedded Operating Systems" ("Pillai")	n/a	October 21, 2001
A. Hemani et al., "Lowering power consumption in clock by using Globally Asynchronous Locally Synchronous design style" ("Hemani")	n/a	June 1, 1999
T. Njolstad et al., "A socket interface for GALS using locally dynamic voltage scaling for rate-adaptive energy saving."	n/a	September 12, 2001
P. Liljeberg, et al., "Asynchronous interface for locally clocked modules in ULSI systems." ("Liljeberg")	n/a	May 1, 2001
Intel XScale Series Processor ("XScale")	n/a	n/a
Oracle/Sun UltraSparc IIi Series Processor ("UltraSparc IIi")	n/a	n/a
Oracle/Sun UltraSparc III Series Processor ("UltraSparc III")	n/a	n/a

Defendants also identify each of the prior art references identified in any other cases or proceedings involving the '439 Patent or '443 Patent, including, but not limited to: *Intellectual Ventures I LLC et al. v. Lenovo Group Limited*, No. 6:23-cv-307 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. Zebra Technologies Corp.*, No. 6:23-cv-292 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. TP-Link Corp. Ltd.*, No. 6:23-cv-308 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. OnePlus Technology (Shenzen) Co., Ltd.*, No. 6:23-cv-290 (W.D. Tex.); *Intellectual Ventures I LLC et al. v. TP-Link Corp. Ltd.*, No. 6:23-cv-291 (W.D. Tex.); *Intellectual Ventures II LLC v. Lenovo Group Limited*, No. 6:23-cv-68 (W.D. Tex.); and *Intellectual Ventures I LLC et al v. Hewlett Packard Enter. Co.*, No. 1:22-cv-1350 (D. Del.). Once Plaintiff produces in discovery any

such identifications, including any invalidity contentions and/or interrogatory responses, Defendants will supplement and/or amend these Final invalidity contentions if and as necessary.

Defendants' investigation into prior art patent and publication references remains ongoing, and Defendants reserve the right to identify and rely on additional patent or publication references that are identified through further investigation or discovery. Defendants reserve the right to supplement as further prior art is identified through investigation or discovery.

Defendants reserve the right to rely on prior art systems that correspond to or practice the disclosures in the above identified publications. Defendants' investigation of such products and systems is ongoing and Defendants reserve the right to seek discovery and supplement its invalidity contentions based on information learned about those products and systems. Defendants expect to further investigate said systems once discovery opens, including through potential third-party subpoenas, and reserve the right to supplement these contentions and accompanying claim charts after further investigation.

2. Prior Art Systems and Products

Defendants also contend that the Asserted Claims are invalid based on public knowledge of, uses, offers for sale, or sales of products and services that are prior art under 35 U.S.C. § 102(a) and/or (b); and/or prior inventions made in the United States by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious under 35 U.S.C. § 103 the Asserted Claims. For example, this includes prior art products discussed in certain patents and/or publications listed in Section IV.A.1, such as, but not limited to:

- Cisco Systems, Inc. Aironet 1200 Series Access Point
- Oracle/Sun UltraSparc IIi

- Oracle/Sun UltraSparc III
- Intel StrongArm
- Intel XScale

For example, systems and products developed by companies such as, but not limited to, Cisco, Intel, Manchester, Oracle, DEC and HP may constitute prior art. Defendants have not completed third-party discovery from companies and sources that may have relevant prior art. Defendants reserve the right to conduct such discovery and supplement their Contentions to include any prior art systems and products that render the Asserted Claims invalid. Defendants may use physical samples, executable software, or source code as evidence of the relevant functionality of these prior art products or services. Defendants will make available for inspection any physical samples of products, systems, or software listed above, and/or any source code therefor, that they have in their possession or that becomes available in the future during discovery.

B. Anticipation

Defendants contend that the Asserted Claims of the Asserted Patents are invalid as anticipated under 35 U.S.C. § 102 in view of each of the prior art references charted in the following Exhibits:

Asserted Patent	Claim Chart Exhibits
’439 Patent	A-1 through A-15
’443 Patent	B-1 through B-20

The cited portions of prior art references identified in the attached claim charts are exemplary only and representative of the content and teaching of the prior art references, and should be understood in the context of the reference as a whole and as they would be understood by a POSITA. To the extent any item of prior art cited above is deemed not to disclose, explicitly

or inherently, any limitation of an Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding Asserted Claim would have been either inherent to the art, or obvious to a POSITA, even if Defendants have not specifically denoted that the art is to be combined with the knowledge of a POSITA.

C. Obviousness

The claims of the each Asserted Patent are rendered obvious by the references identified in the attached claim charts, either alone in view of the knowledge of a POSITA or in combination with each other. Defendants contend that each prior art reference can be used in combination with each identified reference, and provides the following exemplary combinations:

'443 Patent Claims	Ground
1, 4, 5, 8, 10	Obvious over Iyer*[2]
1, 4, 5, 8, 10	Obvious over Njolstad*
1, 4, 5, 8, 10	Obvious over Njolstad in view of Liljeberg*
1, 4, 5, 8, 10	Obvious over Soerensen*
1, 4, 5, 8, 10	Obvious over Soerensen in view of Hemani*
1, 4, 5, 8, 10	Obvious over Soerensen in view of Moore*
1, 4, 5, 8, 10	Obvious over Iyer in view of Njolstad
1, 4, 5, 8, 10	Obvious over Iyer in view of XScale and Hemani
1, 4, 5, 8, 10	Obvious over Iyer in view of Hemani and Njolstad
1, 4, 5, 8, 10	Obvious over Iyer in view of Pillai
1, 4, 5, 8, 10	Obvious over Iyer in view of Liljeberg

[2] Each ground with an asterisk is asserted in IPR2024-01245. Defendants stipulate that, if the IPR is instituted, Defendants will not pursue in this litigation the same grounds asserted at IPR. *See Sand Revolution II, LLC v. Continental Intermodal Group—Trucking LLC*, IPR2019-01393, Paper 24 at 12 (P.T.A.B. June 16, 2020).

1, 4, 5, 8, 10	Obvious over Iyer in view of Hemani and Liljeberg
1, 4, 5, 8, 10	Obvious over Iyer in view of Pillai and Njolstad
1, 4, 5, 8, 10	Obvious over Soerensen in view of Iyer
1, 4, 5, 8, 10	Obvious over Soerensen in view of Liljeberg
1, 4, 5, 8, 10	Obvious over Soerensen in view of Njolstad
1, 4, 5, 8, 10	Obvious over Soerensen in view of Liljeberg and Njolstad
1, 4, 5, 8, 10	Obvious over Soerensen in view of XScale
1, 4, 5, 8, 10	Obvious over Soerensen in view of Pillai and Njolstad
1, 4, 5, 8, 10	Obvious over Njolstad in view of Pillai
1, 4, 5, 8, 10	Obvious over Njolstad in view of Hemani
1, 4, 5, 8, 10	Obvious over Njolstad in view of Hemani and Pillai
1, 4, 5, 8, 10	Obvious over Hemani in view of Iyer
1, 4, 5, 8, 10	Obvious over Hemani in view of Liljeberg
1, 4, 5, 8, 10	Obvious over Hemani in view of Pillai and Njolstad
1, 4, 5, 8, 10	Obvious over XScale in view of Iyer
1, 4, 5, 8, 10	Obvious over XScale in view of Njolstad
1, 4, 5, 8, 10	Obvious over XScale in view of UltraSparcIII and UltraSparcIIi
1, 4, 5, 8, 10	Obvious over XScale in view of Pillai
1, 4, 5, 8, 10	Obvious over XScale in view of Hemani and Njolstad
1, 4, 5, 8, 10	Obvious over XScale in view of Njolstad and Liljeberg
1, 4, 5, 8, 10	Obvious over XScale in view of Hemani and Liljeberg
1, 4, 5, 8, 10	Obvious over XScale in view of Pillai and Njolstad
1, 4, 5, 8, 10	Obvious over XScale in view of Iyer and Liljeberg
1, 4, 5, 8, 10	Obvious over XScale in view of Hemani

1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Iyer
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Njolstad
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of UltraSparcIII
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Pillai
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Hemani and Njolstad
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Njolstad and Liljeberg
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Hemani and Liljeberg
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Pillai and Njolstad
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Iyer and Liljeberg
1, 4, 5, 8, 10	Obvious over UltraSparcIIi in view of Hemani
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Iyer
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Njolstad
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of UltraSparcIIi
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Pillai
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Hemani and Njolstad
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Njolstad and Liljeberg
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Hemani and Liljeberg
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Pillai and Njolstad
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Iyer and Liljeberg
1, 4, 5, 8, 10	Obvious over UltraSparcIII in view of Hemani

‘439 Patent Claims	Ground
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’487 in view of IEEE*
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Dammann in view of Bauch and IEEE*
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Larsson ’487
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Larsson ’487 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Larsson ’487 and Larsson ’159
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Larsson ’159 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Liang
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Broadcom
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Gore
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Laroia ’706
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Laroia ’731
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Qualcomm ’275
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Qualcomm ’793
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Samsung

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Zhu
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Larsson ’857 and IEEE Standard 802.11
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Liang
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Liang and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Broadcom and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Gore and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Laroia ’706 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Laroia ’731 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Qualcomm ’275 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Qualcomm ’793 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Samsung and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Zhu and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Larsson ’857 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Gore

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Laroia ’706
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Laroia ’731
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Qualcomm ’275
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Qualcomm ’793
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Samsung
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Zhu
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Larsson ’857 and Dammann
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Dammann
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Dammann and IEEE 802.11 Standard
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’487
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Bauch
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Bauch and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Aironet 1200 and Liang
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Dammann

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Broadcom
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Gore
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Laroia ’706
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Laroia ’731
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Qualcomm ’275
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Qualcomm ’793
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Samsung
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Zhu
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Dammann and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Broadcom and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Gore and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Laroia ’706 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Laroia ’731 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Qualcomm ’275 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Qualcomm ’793 and IEEE 802.11 Standards

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Samsung and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Zhu and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Larsson ’159 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Liang
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Dammann
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Broadcom
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Gore
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Laroia ’706
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Laroia ’731
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Qualcomm ’275
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Qualcomm ’793
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Qualcomm ’275 and Qualcomm ’793
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Samsung
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Zhu
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Bauch and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Liang and IEE 802.11 Standards

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Dammann and IEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Bauch
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Larsson ’857
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of IEEE 802.11 Standards and Larsson ’487
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Bauch and Qualcomm ’275
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Larsson ’857 and Qualcomm ’275
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Qualcomm ’275 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Qualcomm ’793 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Dammann and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Dammann and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Qualcomm ’275 in view of Qualcomm ’793 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’159
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’487 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Liang in view of AAPA

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Gore in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Laroia ’706 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Laroia ’731 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Qualcomm ’275 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Qualcomm ’793 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Samsung in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Zhu in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’159 in view of AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Liang and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Broadcom and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Gore and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Laroia ’706 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Laroia ’731 and AAPA

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Qualcomm ’275 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Qualcomm ’793 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Samsung and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Bauch in view of Zhu and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Qualcomm ’275 and APPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Qualcomm ’793 and APPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Samsung and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Zhu and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Bauch and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Liang and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Broadcom and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Gore and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Laroia ’706 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Laroia ’731 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of IEEE 802.11 Standards and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Larsson ’857 and AAPA

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Larsson ’159 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Aironet 1200 in view of Larsson ’159
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Qualcomm ’275 in view of Qualcomm ’793
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Qualcomm ’275 in view of Qualcomm ’793 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Bauch and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of IEEE 802.11 Standards and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Aironet 1200 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Dammann and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Broadcom and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Gore and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Laroia ’706 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Laroia ’731 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Qualcomm ’275 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Qualcomm ’793 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Samsung and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Larsson ’159 and AAPA

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Larsson ’857 in view of Zhu and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Qualcomm ’275 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Qualcomm ’275 and IEEE 802.11 Standards
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Qualcomm ’275 and Zhu
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Larsson '487
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Larsson '159
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Liang
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Dammann
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Gore
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Qualcomm ’275
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Qualcomm ’793
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Samsung
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Zhu
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Larsson ’487 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Larsson ’159 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Liang and AAPA

1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Dammann and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Gore and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Qualcomm '275 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Qualcomm '793 and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Samsung and AAPA
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	Obvious over Broadcom in view of Zhu and AAPA

1. Scope and Content

All prior art contained in Defendants' invalidity contentions are within the scope and content of the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 399 (2007). The '439 Patent is directed towards "communication systems, and, more particularly, … wireless communication systems and methods." '439 Patent, 1:14–16. All prior art references listed in Section IV.A.1.a, and other prior art incorporated by reference within these contentions, are within the scope and content of communication systems and wireless communication systems. Also, the '443 Patent is directed towards "microprocessors." '443 Patent, 1:19–21. All prior art references listed in Section IV.A.1.b, and other prior art incorporated by reference within these contentions, are within the scope and content of microprocessors, including microprocessors having multiple clock domains and/or microprocessors with scalable parameters. Therefore, the references contained within Defendants' invalidity contentions are within the scope and content of the prior art.

2. Level of Skill in the Art

A POSITA as of the time of the respective alleged invention of the Asserted Claims or the later actual filing date of each Asserted Patent, would have had a Bachelor's degree in electrical engineering, computer engineering, computer science, or a related field, with at least two years of experience in the field of microarchitecture, microprocessor control systems, and/or wireless communication systems and protocols, with an allowance for additional education or experience that might substitute for those requirements. The Asserted Patents are obvious using the aforementioned level of skill, which Defendants are using for purposes of these Contentions; however, Defendants reserve the right to increase the skill level once they obtain discovery into the factors that may be considered in determining the level of ordinary skill in the art including: (1) type of problems encountered in the art; (2) prior art solutions to those problems; (3) rapidity with which innovations are made; (4) sophistication of the technology; and (5) educational level of active workers in the field. *In re* GPAC Inc., 57 F.3d 1573, 1579 (Fed. Cir. 1995).

3. Motivation to Combine

The United States Supreme Court clarified the standard for what types of inventions are patentable in *KSR Int'l Co. v Teleflex Inc*., emphasizing that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. 550 U.S. at 402. In that regard, a patent claim may be obvious if the combination of elements was obvious to try or there existed at the time of inventions a known problem for which there was an obvious solution encompassed by the patent's claims. In addition, when a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, whether in the same field or a different one. If a POSITA can implement a predictable variation, § 103 likely bars its patentability.

"[T]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id*. at 401. Because the Asserted Patents simply arrange old elements with each performing the same function it had been known to perform and yields no more than what one would expect from such an arrangement, the combination is obvious. *Id*. at 417. The Asserted Claims are therefore invalid under 35 U.S.C. § 103 because they do nothing more than combine known techniques and apparatuses according to their known and ordinary uses to yield predictable results.

The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id*. Accordingly, a POSITA at the time of the alleged invention would have been motivated to combine or adapt known or familiar methods in the art, especially where market forces prompt such variations.

A POSITA at the time of the alleged invention of each of the Asserted Patents would have been motivated to combine or adapt known or familiar methods in the art, especially where market forces prompt such variations. Moreover, although identifying a recognized problem or need in the prior art is one way to demonstrate motivation, Defendants are not required to demonstrate that there was an explicit problem with the prior art. As the Federal Circuit has explained, the motivation analysis is not limited by the problem or need recognized by the inventors. *See PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197 (Fed. Cir. 2014). Indeed, a motivation

"may be found in many different places and forms," *Allergan, Inc. v. Sandoz Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013), and it need not be expressly stated in the references at all, *Alza Corp. v. Mylan Lab'ys, Inc.*, 464 F.3d 1286, 1291 (Fed. Cir. 2006), let alone originate from the reference to be modified. A motivation "may be found explicitly or implicitly in market forces; design incentives; the interrelated teachings of multiple patents; any need or problem known in the field of endeavor at the time of invention and addressed by the patent; and the background knowledge, creativity, and common sense of the person of ordinary skill." *Adapt Pharma Operations Ltd. v. Teva Pharms. USA, Inc.*, 25 F.4th 1354, 1365 (Fed. Cir. 2022) (cleaned up).

In addition, each of the above-identified references describes methods that were known to offer improvements and benefits to the art, and, accordingly, one of skill in the art would have been motivated to combine or modify the references as identified in each of the combinations above. *KSR*, 550 U.S. at 416. For example, Larsson '159, Larsson '487, Larsson '857, and Bauch are all directed to the known, similar method of improving wireless communication systems by utilizing diversity and cyclic prefixes—the problem, and purported improvements, that the '439 Patent identified. *See* '439 Patent, 1:32–56; Larsson '159, 1:34–63 (discussing interference in communication systems); Larsson '487, 1:10–33 (discussing same); Larsson '857 at 1 (same); Bauch ¶¶ 0002–0003 (discussing same). The combinations listed in the table above were all obvious to try as only one of two options in order to achieve cyclic diversity, which the '439 Patent acknowledges are equivalent. '439 Patent, 8:5–23. As known in the prior art, admitted by the '439 Patent, cyclic shifting was beneficial to reduce symbol transmission interference. *See id.* 3:50–58, Fig. 5. Using cyclic shifts was advantageous over time delay (linear diversity) and non-diverse transmission systems (single antenna). *See id.* at 3:6–15, 4:5–22. Moreover, cyclic shifting complied with the IEEE 802.11 standard at the time of the '439 Patent's alleged invention. *See id.*

1:22–32. Thus, the limited solutions available, combined with a focus of complying with IEEE 802.11 standards, indicates that all the above combinations would have been obvious to try. A POSITA would have had a reasonably expectation of success with the above combinations because they are all directed to the same fundamental concepts—transmitting data with 802.11 compliant OFDM systems. Indeed, a POSITA would have been surprised to learn that combining an OFDM transmission system with a specific 802.11 compliant transmitter device would not lead to success. The features in the art (*e.g.*, transmitters, processors, OFDM signals, symbol data, antennas, receivers, processing data, and cyclic shifts) were well-known, embodied in practicing products, and in use across the industry. In other words, combining the above well-known features to improve upon the prior art would have led to predictable results. These predictable results would also not alter the fundamental operation of the primary reference—transmitting data. In fact, a POSITA would try the combinations above to improve transmission, reduce packet error rate, and mitigate multipath or other interferences, as cyclic shifting was known to do. *See also* applicant-admitted prior art in the ’439 Patent regarding well-known aspects of cyclic shifting.

Regarding the ’443 Patent, the Patent itself notes that at least the UltraSparc and XScale references were foundational in the field and thus a POSITA would be motivated to modify these existing architectures in seeking to improve the communication or efficiency of a microprocessor. *See* ‘443 Patent at 2:5, 9:40. Furthermore, each of the Iyer, Soerensen, Njolstad, Hemani, Liljeberg and Pillai references are concerned with efficiency and communication in a multi-domain processor, and thus a POSITA would be motivated to combine their teachings in designing a processor where these characteristics are improved. *See, e.g.*, Iyer at Abstract (discussing power efficiency and performance in a Globally Asynchronous, Locally Synchronous design); Soerensen at Abstract (discussing power and performance in a multiple clock domain environment); Hemani

at Abstract (discussing "power" and "performance" in a GALS design style); Njolstad at Abstract (discussing a power-focused approach to the GALS paradigm); Liljeberg at Abstract (discussing communication in a globally asynchronous locally synchronous system). Furthermore, while the asserted references all relate to a narrow subject area within the same field of endeavor, their teachings are complementary, and thus a POSITA would be motivated to combine the teachings of multiple references in the design of a power-efficient high-performance microprocessor. For instance, Hemani—which is focused on power modulation—acknowledges an inter-domain communication requirement, but provides a POSITA with a multitude of options for this step. *See* Hemani at 2, 5. Conversely, Liljeberg provides detailed instructions for the implementation of the communication requirement. *See* Liljeberg at 2 ("Interface Units"). Thus, each reference is targeted to the similar method of improving microprocessors and microprocessor systems by improving communication and efficiency between and within different clock domains. *See* '443 Patent, 4:13–25. Because the above references, as an example, describe systems and methods that were known to offer improvements and benefits to the art, one of skill in the art would have been motivated to combine or modify the references as identified in each of the combinations above. As an additional example, the combinations set forth above would have been supported by market incentives to produce efficient and cost-effective processors, including processors that are power efficient which is important for cost purposes. Additionally, the combinations proposed above overcomes technical issues associated with long-wire delays, such that asynchronous domains enhances stability and uniformity in processing and signal propagation, as discussed at least in Njolstad, Liljeberg, Hemani, Soerensen, and the other references as discussed above.

Further still, since there were a finite number of predictable solutions, a POSITA had a good reason to pursue the known options. The above-identified prior art references merely use

those familiar elements for their primary or well-known purpose in a manner well within the ordinary level of skill in the art. Accordingly, common sense and the knowledge of the prior art render the Asserted Claims invalid under § 102 or § 103.

At this time, Defendants are unaware of publications and patents that were authored by other employees of the company, or assigned to the same assignee, or authored, developed, or invented by the same individual(s), and related to the same subject matter. However, to the extent that information is discovered during the court of this litigation, a skilled artisan would have been motivated to combine the different publications and patents that were authored by employees of the company or assigned to the same assignee and related to the same subject matter. Moreover, a skilled artisan would have been motivated to combine different references that were authored, developed, or invented by the same individual(s) related to the same subject matter. The common assignee, inventor/author/architect references themselves demonstrate that the references relate to continued work in a common field of effort and continued related developments in that field. A skilled artisan would, therefore, combine the references. Further, based on the teachings of the references and/or the knowledge of one of ordinary skill, one of skill in the art would have been motivated to combine different references from the same company or related to the use implementation of the same standard.

A POSITA would also have been motivated to combine the above prior art based on his/her knowledge, the nature of the problem to be solved, and the teachings of the prior art. The identified prior art addresses the same or similar technical issues and suggests the same or similar solutions to those issues. Moreover, some of the prior art refer to or discuss other prior art, illustrating the close technical relationship among the prior art. As one example, the references listed above are directed to the same or similar technology.

Should any prior art cited above be deemed not to disclose, explicitly or inherently, any limitation of a claim, Defendants reserve the right to argue that any such difference between that prior art and the corresponding claim would have been obvious to one of ordinary skill in the art. To the extent that such an argument is deemed a "combination" analysis for purposes of obviousness, Defendants disclose its present intention to rely on the separate combination of the knowledge of a POSITA with each item of prior art identified above. The knowledge of a POSITA is demonstrated by the full list of references above, the prior art produced, the state of the art, and common sense.

The Asserted Claims are rendered obvious by each of the references, either alone or in combination with other references. All concepts disclosed in the Asserted Claims represent well-known features in the microarchitecture and/or wireless communication technology fields. Such concepts and features were all well known in the prior art and would have been available to a POSITA to, for example, implement multiple clock domain microarchitecture, or to modify such a system, rendering each Asserted Claim obvious. Further, it would have been obvious to combine all references that mention using a digital transmission scheme, a standard for a network, or the schemes/standards themselves, including orthogonal frequency division multiplexing ("OFDM") schemes or 802.11 standards.

Defendants reserve the right to rely on combinations disclosed within the prosecution history of the references cited herein. These obviousness combinations reflect Defendants' present understanding of the potential scope of the claims that Plaintiff appears to be advocating and should not be seen as Defendants' acquiescence to Plaintiff's interpretation of the Asserted Claims.

4. No Secondary Considerations

No secondary considerations exist to show that the Asserted Patents are nonobvious. Currently, Defendants are unaware of any secondary considerations regarding the Asserted

Patents. *KSR*, 550 U.S. at 399. Plaintiff has not provided any evidence of "commercial success, long felt but unsolved needs, failure of others, etc." *Id.* Therefore, no secondary considerations exist that indicate the Asserted Patents are nonobvious. *See also* IPR2024-0124 at p. 72; IPR2024-0124, Ex. 1003 at p. 132–36; IPR2024-01245, Ex. 1003 at p. 119–16.

Further, secondary considerations do not need to be considered before concluding a *prima facie* case of obviousness exists. *Adapt Pharma Operations*, 25 F.4th at 1372; *Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1371 (Fed. Cir. 2011) ("A strong case of prima facie obviousness . . . cannot be overcome by a far weaker showing of objective indicia of nonobviousness."); *Bristol-Myers Squibb Co. v. Teva Pharms. USA, Inc.*, 752 F.3d 967, 977 (Fed. Cir. 2014) ("While secondary considerations must be taken into account, they do not necessarily control the obviousness determination."). Therefore, to the extent Plaintiff comes forward with secondary considerations, Plaintiff's evidence does not overcome the *prima facie* obviousness of the Asserted Patents.

Defendants reserve the right to amend or supplement these contentions regarding anticipation or obviousness of the Asserted Patents, in view of further information from Plaintiff, information discovered during discovery, or a claim construction ruling by the Court. Plaintiff has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Plaintiff alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the Asserted Claims obvious.

V. INVALIDITY UNDER 35 U.S.C. § 112

The grounds identified below both individually and collectively render certain of the Asserted Claims invalid under the statutory requirements of 35 U.S.C. § 112. By identifying certain claim language below, Defendants do not imply that such language is entitled to any patentable weight when comparing the claim as a whole to the prior art. Defendants' identifications are made based on Defendants' present understanding of the Asserted Claims and Plaintiff's apparent interpretation of these claims as reflected in its Infringement Contentions, and Defendants reserve the right to amend these identifications, including in response to claim constructions and claim interpretations that would render claim limitations not enabled, lacking in written description, or indefinite. Defendants also reserve the right to assert that a claim is indefinite, not enabled, or fails to meet the written description requirement based on any claim construction position Plaintiff may take in this case or based on any claim construction the Court may adopt in this case. To the extent a claim limitation is contained within a limitation identified below or encompasses a limitation identified below, that claim limitation also renders the claim invalid under 35 U.S.C. § 112.

A. Lack of Enablement and Written Description under 35 U.S.C. § 112 ¶ 1

Section 112 of Title 35 of the U.S. Code includes an enablement requirement: "The specification shall contain a written description . . . of the manner and process of making and using [the invention] in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same." 35 U.S.C. § 112, ¶ 1. To satisfy the enablement requirement, the disclosure "must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366 (Fed. Cir. 1997); *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1381 (Fed. Cir. 2012); *Sitrick*

v. Dreamworks, LLC, 516 F.3d 993, 999 (Fed. Cir. 2008). If a specification teaches away from a substantial portion of the claim or does not enable the full scope of the claim, there is no enablement. *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 1239–1241, 1244–1245 (Fed. Cir. 2003); *see also MagSil Corp.*, 687 F.3d at 1383–84 (Fed. Cir. 2012).

35 U.S.C. § 112 further includes a written description requirement: "The specification shall contain a written description of the invention." 35 U.S.C. § 112, ¶ 1. "To satisfy the written description requirement, a patent applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." *ICU Med. Inc. v. Alaris Medical Sys., Inc.*, 558 F.3d 1368, 1377 (Fed. Cir. 2009) (internal quotation marks and citations omitted); *see also Synthes USA, LLC v. Spinal Kinetics, Inc.*, 734 F.3d 1332, 1340 (Fed. Cir. 2013). "The test [for written description support] requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed." *Ariad Pharms., Inc. v. Eli Lilly & Co*., 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*).

The specification must describe the claimed invention in sufficient detail so that a POSITA can recognize what is claimed. "The appearance of mere indistinct words in a specification or a claim, even an original claim, does not necessarily satisfy that requirement." *Univ. of Rochester v. G.D. Searle & Co*., 358 F.3d 916, 923 (Fed. Cir. 2004) (internal quotation marks and citations omitted).

For instance, Claims 1, 4, 5, 8, and 10 in the '443 Patent are invalid under § 112, first paragraph, because the '443 Patent fails to provide adequate written description to show that the inventors possessed the alleged invention as claimed. For instance, the specification admits that

the inventors of the '443 Patent only ever simulated their alleged invention using third-party software and did not ever practice the claimed invention, and that further underlying these simulations were a number of unvalidated and unsupportable assumptions. *See* '443 Patent at 8:27-34 ("Our simulation testbed is based on the SimpleScalar toolset [6] with the Wattch [5] power estimation extensions. The original SimpleScalar model supports out-of-order execution using a centralized Register Update Unit (RUU) [29]. We have modified this structure to more closely model the microarchitecture of the Alpha 21264 microprocessor [20]."); *id.* at 7:66-8:5 ("We assume the arbitration and synchronization circuits developed by Sjogren and Myers [28] that detect whether the source and destination clock edges are sufficiently far apart (at minimum, Ts) such that a source-generated signal can be successfully clocked at the destination. The destination clock is enabled only under these conditions. We assume a Ts of 30% of the period of the highest frequency."); *id.* at 8:61-65 ("We selected a mix of compute-bound, memory-bound, and multimedia applications from the MediaBench, Olden, and SPEC2000 benchmark suites. Table 2 specifies the benchmarks used along with the window of instructions simulated"); *id.* at 9:40-41 ("We assume two models for dynamic voltage and frequency scaling"). Additionally, for instance, Claim 8(e) claims the method of "dynamically controlling the clock frequency and the voltage in ***each*** of the plurality of domains independently of the clock frequencies and the voltages in others of the plurality of domains." However, the '443 patent specification admits that the inventors were not able to practice the claimed invention:

> Unfortunately, it turns out to be difficult to capture the behavior of the front end in terms of dependencies among events. Unlike the time between, say, the beginning and the end of an add in the floating-point domain, the time between fetch and dispatch is not a constant number of cycles. In addition, experiments with manually selected reconfiguration points suggested that scaling of the front was seldom as beneficial as scaling of other domains. As a result, we have chosen to run the front at a steady 1 GHz, and to apply the shaker algorithm to events **in the other 3 domains only**. Since the front end typically accounts for

> 20% of the total chip energy, this choice implies that any energy improvements we may obtain must come from the remaining 80%. Future attempts to address the front end may yield greater savings than are reported here.

761 Patent at 12:5-19.

Consistent with the '443 Patent specification's speculation, the inventors admitted that they were unsure whether their preferred embodiment could be practiced as conceived. *See* '443 Patent at 6:24-26 ("We also believe that these divisions would result in a physically realizable floorplan for an MCD processor."). The '443 Patent further admits that the inventors' simulation was laden with artificialities, including a synthetically prepared offline algorithm that the inventors applied to a discrete set of tasks. *See* '443 Patent at 10:4-9. ("More concretely, we employ an off-line tool that analyzes a trace collected during a full-speed run of an application in an attempt to determine the minimum frequencies and voltages that could have been used by various domains during various parts of the run without significantly increasing execution time."). Thus, the inventors' entire exercise is admittedly speculative and uncertain. *See* '443 Patent at 10:14-16. ("It is unclear whether this experimental methodology will overestimate or underestimate the benefits that might be achieved by realistic on-line control algorithms."). Additionally, for instance, the '443 Patent lists a number of further artificialities underlying the claimed invention. *See* '443 Patent at 10:33-34 ("Our model assumes a normal distribution of jitter with a mean of zero."); *id.* at 9:53-55 ("For the XScale model, we assume that frequency changes occur as soon as the voltage changes, i.e., as the voltage is changed, the frequency is changed accordingly."); *id.* at 8:5-6 ("We assume a Ts of 30% of the period of the highest frequency."); *id.* at 6:66-67 ("we assume that the Full and Empty flags are generated far enough in advance").

To the extent that the claims are not obvious in view of at least the combinations set forth above, then the claims would be invalid for failing to enable one of ordinary skill in the art to make and use the claimed systems. As discussed above, the inventors made a large number of

speculative assertions about the operability of the products they were modifying through their simulation methodologies; to the extent those speculative assertions are sufficient to provide adequate written description, they are similarly supportive of the obviousness combinations described above, and to the extent they are not, then they relatedly demonstrate the lack of enablement by the patent.

All asserted claims of the ’443 patent fail the written description and, conditionally as described in the preceding paragraph, the enablement requirement.

All asserted claims of the ’439 patent fail the written description and enablement requirement, at least because the patent specification does not teach or disclose how “at least a non-zero number of the samples from the symbol data portion of the first OFDM packet are shifted into the guard interval portion of the shifted version and a same non-zero number of samples from the guard interval portion of the first OFDM packet are shifted out of the guard interval portion of the shifted version.”

B. Indefiniteness Under 35 U.S.C. § 112 ¶ 2

Section 112, ¶ 2 includes a definiteness requirement: “[T]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112, ¶ 2. “[A] patent is invalid for indefiniteness if its claims, read in light of the patent’s specification and prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The definiteness requirement requires that the claim must set forth what the applicant regards as the invention, and do so with sufficient particularity and definiteness. *See Allen Eng’g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1348 (Fed. Cir. 2002). Where it would be apparent to one

of skill in the art, based on the patent specification, that the "invention" set forth in a claim is not what the patent applicant regarded as the invention, the claim is invalid. *Id.*

Based on Defendants' present understanding of the Asserted Claims and Plaintiff's apparent interpretation of these claims as reflected in its Infringement Contentions, the following limitations of the Asserted Claims may fail to satisfy the requirements of § 112, ¶ 2 because the precise scope of at least the terms listed below cannot be determined with reasonable certainty by a POSITA when reading the claims in light of the specification and prosecution history:

Asserted Patent	**Asserted Claim(s)**	**Claim Term/Limitation**
'439	1, 8	"substantially simultaneously"
'439	2, 11	"less than approximately"
'439	8, 9, 13-15, 18	"transmit processor(s)"
'439	9, 10	"cyclic extension module(s)"
'439	13	"Inverse Fast Fourier (IFFT) module"
'439	16	"the transmitter"
'439	18	"suitable instruction execution system"
'443	8	"operating the microprocessor such that each domain operates synchronously, while the domains operate asynchronously relative to one another"

VI. INVALIDITY UNDER 35 U.S.C. § 101

Defendants assert that each Asserted Claim is directed to ineligible subject matter under 35 U.S.C. § 101. To be patentable subject matter under § 101, a claim must be directed to one of four eligible subject matter categories: "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. "Claims that fall within one of the four subject matter categories may nevertheless be ineligible if they encompass laws of nature, physical phenomena,

or abstract ideas." *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). The Supreme Court established a two-step test for deciding the subject matter eligibility of claims under § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). First, the claims must be analyzed to determine whether they are drawn to one of the statutory exceptions. *Id.* Claims that invoke generic computer components instead of reciting specific improvements in computer capabilities are abstract under this first step. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016). Second, the elements of the claims must be viewed both individually and as an ordered combination to see if there is an "inventive concept." *Id.* The mere fact that a claim recites or implies that an abstract idea is implemented using a general-purpose computer does not supply an inventive concept necessary to satisfy § 101. *See Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016); *Alice*, 134 S. Ct. at 2357-59.

At present, including in view of current legal precedents regarding patent eligibility under 35 U.S.C. § 101, Defendants contend that the following Asserted Claims—at least as apparently construed by Plaintiff in its Infringement Contentions—are directed to ineligible subject matter under 35 U.S.C. § 101 and applicable case law[3]:

---

[3] *See, e.g.*, *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012); *Trading Techs. Int'l, Inc. v. IBG, LLC*, 921 F.3d 1084 (Fed. Cir. 2019); *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759 (Fed. Cir. 2019); *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161 (Fed. Cir. 2018); *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335 (Fed. Cir. 2018); *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121 (Fed. Cir. 2018); *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329 (Fed. Cir. 2017), cert. denied, 139 S. Ct. 378 (2018); *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332 (Fed. Cir. 2017); *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (Fed. Cir. 2016); *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253 (Fed. Cir. 2016); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016); *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369 (Fed. Cir. 2016); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363 (Fed. Cir. 2015); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343 (Fed. Cir. 2015); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359 (Fed. Cir. 2015); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343 (Fed. Cir. 2014); *DDR*

Asserted Patent	Claims
’439 Patent	1–3, 7–11, 13–16, 18
’443 Patent	1, 4–5, 8, 10

At present, including in view of current legal precedents regarding patent eligibility under 35 U.S.C. § 101, Defendants contend that the Asserted Claims of the ’439 Patent are directed to the abstract idea of generating and transmitting information in data packets. To the extent any elements of the Asserted Claims of the ’439 Patent (in either the independent or dependent claims) are not fully encompassed within the abstract idea, those elements are well understood, routine, and/or conventional as demonstrated in the claim charts attached as Exhibits A-1 through A-15, including relevant prior art patents, publications, systems, and products identified in Section IV.A. For example, processors, radio transmitters, radio antennas, memory devices, and application specific integrated circuits (“ASICs”) were well known and conventional well before 2004. Similarly, OFDM transmission schemes, signal conversion using Inverse Fast Fourier Transform algorithms, as well as transmission using 802.11 protocols were well known and conventional well before 2004.

In addition, Defendants contend that the Asserted Claims of the ’443 Patent are directed to the abstract idea of calibrating the operation of a circuit. To the extent any elements of the Asserted Claims of the ’443 Patent (in either the independent or dependent claims) are not fully encompassed within the abstract idea, those elements are well understood, routine, and/or conventional as demonstrated in the claim charts attached as Exhibits B-1 through B-20, including

---

Holdings, LLC v. Hotels.com, L.P., 773 F.3d 1245 (Fed. Cir. 2014); *buySAFE, Inc. v. LGL, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366 (Fed. Cir. 2011).

relevant prior art patents, publications, systems, and products identified in Section IV.A. For example, microprocessors, clocks and clock domains, voltage inputs, and communication queues were well known and conventional by 2003.

This identification is Final and Defendants reserve the right to supplement its contentions, including to modify the abstract idea to which the Asserted Claims are directed and provide additional evidence that the claimed concepts are well understood, routine, and/or conventional.

VII. DOCUMENT PRODUCTION ACCOMPANYING FINAL INVALIDITY CONTENTIONS

Defendants are producing and/or making available for inspection documents required under the Court's Scheduling Order under a separate letter, subject to confidentiality and notice obligations owed by Defendants to third parties and the entrance of a final Protective Order in this case.

Defendants reserve the right to continue to supplement this production as it obtains additional prior art references, documentation, and/or corroborating evidence concerning invalidity during the course of discovery. Defendants also reserve the right to produce and rely on additional documents relating to its products in view of, for example, additional information revealed during discovery regarding Plaintiff's allegations and/or amendments to Plaintiff's Infringement Contentions.

Dated: September 23, 2024

Respectfully submitted,

/s/ Joshua Glucoft

Kat Li
Texas State Bar No. 24070142
kat.li@kirkland.com
Michael T. Dinnella
Texas State Bar No. 24136809
michael.dinnella@kirkland.com
KIRKLAND & ELLIS LLP
401 Congress Avenue
Austin, TX 78701
Tel: (512) 678-9100

Russell E. Levine, P.C.
IL State Bar No. 6193834 (admitted in W.D. Tex.)
russell.levine@kirkland.com
KIRKLAND & ELLIS LLP
333 West Wolf Point Plaza
Chicago, IL 60654
Tel: (312) 862-2000

Joshua Glucoft
CA State Bar No. 301249 (admitted in W.D. Tex.)
josh.glucoft@kirkland.com
KIRKLAND & ELLIS LLP
2049 Century Park East, Suite 3700
Los Angeles, CA 90067
Tel: (310) 552-4200
David Levin (admitted *pro hac vice*)
david.levin@kirkland.com

Attorneys for Defendants TCL Electronics Holdings Ltd. and TCL Industries Holdings Co., Ltd.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing document, along with all exhibits, was served on all counsel of record via email on September 23, 2024.

Joshua Glucoft
Joshua Glucoft