

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

COBBLESTONE WIRELESS, LLC,	§	
Plaintiff,	§	
	§	
v.	§	
T-MOBILE USA, INC.	§	CASE NO. 2:22-cv-00477-JRG-RSP
Defendant,	§	(Lead Case)
NOKIA OF AMERICA CORPORATION,	§	
ERICSSON, INC.	§	JURY TRIAL DEMANDED
Intervenors.	§	
COBBLESTONE WIRELESS, LLC,	§	
Plaintiff,	§	
	§	
v.	§	
AT&T SERVICES INC.; AT&T	§	CASE NO. 2:22-cv-00474-JRG-RSP
MOBILITY LLC; AT&T CORP.,	§	(Member Case)
Defendants,	§	
NOKIA OF AMERICA CORPORATION,	§	JURY TRIAL DEMANDED
ERICSSON, INC.	§	
Intervenors.	§	
COBBLESTONE WIRELESS, LLC,	§	
Plaintiff,	§	
	§	
v.	§	
CELLCO PARTNERSHIP d/b/a	§	CASE NO. 2:22-cv-00478-JRG-RSP
VERIZON WIRELESS,	§	(Member Case)
Defendant,	§	
NOKIA OF AMERICA CORPORATION,	§	JURY TRIAL DEMANDED
ERICSSON, INC.	§	
Intervenors.	§	

DEFENDANTS' AND INTERVENORS' PRELIMINARY INVALIDITY CONTENTIONS
FOR U.S. PATENT NO. 10,368,361

Pursuant to Rules 26 and 33 of the Federal Rules of Civil Procedure, Defendants AT&T Corp., AT&T Mobility LLC, AT&T Services Inc., (collectively, “AT&T” or “Defendant”), Cellco Partnership d/b/a Verizon Wireless (collectively, “Verizon” or “Defendant”), T-Mobile USA, Inc. (“T-Mobile” or “Defendant”), Intervenor Nokia of America Corporation (“Nokia” or “Intervenor”) and Ericsson Inc. (“Ericsson” or “Intervenor”), hereby provide their Preliminary Invalidity Contentions with respect to the claims identified by Plaintiff Cobblestone Wireless, LLC (“Plaintiff”) in its previously served Infringement Contentions in the above captioned matters (“Infringement Contentions”).

I. PRELIMINARY STATEMENT AND RESERVATION OF RIGHTS

A. ASSERTED CLAIMS

According to the Infringement Contentions regarding U.S. Patent No. 10,368,361 (the “361 Patent” or the “Asserted Patent”), Plaintiff asserts the following claims, and priority date in its Infringement Contentions (collectively, “Asserted Claims”).

Asserted Patent	Asserted Claims	Asserted Priority Date
U.S. Patent No. 10,368,361 (the 361 Patent)	10-13, 15, and 17	August 1, 2014

Defendants and Intervenor contend that each of the Asserted Claims is invalid under at least one or more of 35 U.S.C. §§ 102, 103, or 112.¹ Pursuant to the Patent Rules, Defendants and Intervenor do not provide any contentions regarding any claims not asserted by Plaintiff. To the extent that the Court permits Plaintiff to assert additional claims against Defendants and/or Intervenor in the future, Defendants and Intervenor reserve all rights to amend or supplement these Preliminary Invalidity Contentions or to otherwise disclose new or supplemental invalidity

¹ Intervenor’s contentions are only for those claims of the patents specifically asserted against its equipment.

contentions regarding such claims. Furthermore, because discovery is ongoing,² Defendants and Intervenor reserve the right to revise, amend, and/or supplement the information provided herein, including identifying, charting, and relying on additional references, should discovery yield additional information or references. Defendants and Intervenor further reserve the right to amend these contentions in response to any claim construction rulings, as permitted by the Patent Rules or with permission of the Court.

The Infringement Contentions are deficient in multiple respects and do not provide Defendants and Intervenor with sufficient information to understand the specific accused features and components and the alleged factual and evidentiary bases for Plaintiff's infringement allegations. Among other things, the Infringement Contentions lack the specificity required by P. R. 3-1, fail to properly identify accused instrumentalities, and fail to explain adequately Plaintiff's infringement theories for numerous claim elements. Plaintiff has prejudiced Defendants' and Intervenor's ability to understand, for purposes of preparing these Preliminary Invalidity Contentions, what Plaintiff alleges to be the scope of the Asserted Claims. If Plaintiff modifies any assertion or contention in its Infringement Contentions, or presents any new assertion or contention relevant to these Preliminary Invalidity Contentions to the extent allowed by the Patent Rules or the Court, Defendants and Intervenor reserve the right to supplement or otherwise amend these initial Invalidity Contentions.

² Defendants' and Intervenor's ongoing efforts include but are not limited to: serving subpoenas on prior artists and inventors regarding prior art, seeking additional information related to the references and systems disclosed in these Preliminary Invalidity Contentions, and seeking additional information related to available prior art systems, as well as Plaintiff's Infringement Contentions and the products accused of infringing therein. In addition, Defendants and Intervenor have not yet had the benefit of taking the deposition of any of the named inventors or those that worked with the named inventors, or of the named inventors, authors, and entities listed on any references or systems identified in these Preliminary Invalidity Contentions. Further, should Plaintiff or any third party identify or produce any further prior art, Defendants and Intervenor reserve the right to review and supplement these Preliminary Invalidity Contentions with any such art.

B. CLAIM CONSTRUCTION

Because the Court has not yet construed any terms of any claim of the Asserted Patent, Defendants' and Intervenor's Preliminary Invalidity Contentions are based on (1) Defendants' and Intervenor's present understanding of the Asserted Claims, and (2) the claim constructions Plaintiff appears to be proposing based on the Infringement Contentions, all without regard to whether Defendants and Intervenor agree with Plaintiff's apparent or expressed claim constructions. Defendants and Intervenor reserve the right to supplement or otherwise amend these Preliminary Invalidity Contentions in response to any proposed claim constructions or alleged supporting evidence offered by Plaintiff, any report from any expert witness for Plaintiff regarding claim construction issues, any claim construction briefing filed by Plaintiff, and any position taken by Plaintiff concerning claim construction, infringement, or invalidity.

Defendants and Intervenor take no position on any matter of claim construction in these Preliminary Invalidity Contentions. If Defendants' and Intervenor's apparent claim constructions herein are consistent with any explicit, apparent, or implied claim constructions in the Infringement Contentions, no inference is intended and no inference should be drawn that Defendants and Intervenor agree with any of Plaintiff's claim constructions. Any statement herein describing or tending to describe any claim element is provided solely for the purpose of understanding and/or applying the cited prior art. Defendants and Intervenor expressly reserve the right (1) to propose any claim construction Defendants and Intervenor consider appropriate, (2) to contest any claim construction proposed by Plaintiff that Defendants and Intervenor consider inappropriate or inaccurate, and/or (3) to take positions with respect to claim construction issues that are inconsistent with, or even contradictory to, claim construction positions expressed or implied in these Preliminary Invalidity Contentions.

Prior art not included in these Preliminary Invalidity Contentions, whether now known to Defendants and Intervenor, might become relevant depending on the claim constructions proposed by Defendants and Intervenor and/or the Court's claim construction rulings. Defendants

and Intervenor reserve all rights to supplement or modify the positions and information in these Preliminary Invalidity Contentions, including without limitation the prior art and grounds of invalidity set forth herein, pursuant to P.R. 3-6 after the Court has construed the asserted claims.

C. ONGOING DISCOVERY AND SUPPLEMENTATION

Defendants' and Intervenor's investigation, including its investigation of prior art and grounds for invalidity, is ongoing. Furthermore, Defendants' and Intervenor's invalidity positions will be the subject of expert testimony. Defendants and Intervenor base these Preliminary Invalidity Contentions on their current knowledge and understanding of the Asserted Claims, Plaintiff's Infringement Contentions, the prior art, and other facts and information available as of the date of these contentions. Defendants and Intervenor reserve the right to supplement these Preliminary Invalidity Contentions, including, without limitation, by adding additional prior art and grounds of invalidity in accordance with the Federal Rules of Civil Procedure, the Local Rules, the local Patent Rules, the Docket Control Order, any Order issued by this Court, or otherwise.

D. PRIORITY DATE OF THE ASSERTED PATENT

Plaintiff's Infringement Contentions contain allegations regarding the priority date to which Plaintiff alleges it is entitled for each of the Asserted Claims. *See e.g.*, March 13, 2023 Infringement Contentions in 2:22-cv-00474-JRG-RSP at 4. Defendants and Intervenor do not agree that Plaintiff is entitled to the alleged priority date for each of the Asserted Claims.

Any reference to an "asserted priority date" in these Preliminary Invalidity Contentions refers to the priority dates identified in Plaintiff's Infringement Contentions. Reference to a "priority date" or an "asserted priority date" or an "alleged priority date" should not be construed to mean that Defendants and Intervenor agree that the Asserted Patent is in fact entitled to such priority date, or that Plaintiff has provided proper notice as to its contentions for priority dates. To the extent Plaintiff alleges that any prior art relied on in these Preliminary Invalidity Contentions does not actually qualify as prior art to the Asserted Patent, Defendants and Intervenor reserve

the right to rebut those allegations (*e.g.*, by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for the Asserted Patent and/or Asserted Claims).³ Likewise, to the extent Plaintiff successfully establishes an invention date before any of the prior-art references relied on by Defendants and Intervenor, then those references serve as evidence of secondary considerations of obviousness, particularly, contemporaneous invention by others.

E. PRIOR ART IDENTIFICATION AND CITATIONS THERETO

In these Preliminary Invalidity Contentions, Defendants and Intervenor identify specific portions of prior art references that disclose the elements of each of the Asserted Claims. While Defendants and Intervenor have identified exemplary prior art references for each element, they do not necessarily identify every disclosure of the same element in each prior art reference. A person of ordinary skill in the art would read a prior art reference as a whole and in the context of other publications, literature, and general knowledge in the field and would rely upon other information including other publications and general scientific or engineering knowledge. Defendants and Intervenor therefore reserve the right to rely upon other unidentified portions of the prior art references and on other publications and prior art products and expert testimony to provide context and to aid understanding and interpretation of the identified portions of the prior art.

Defendants and Intervenor also reserve the right to rely upon (1) other portions of the cited prior art references, other publications, prior art products, and the testimony of experts to establish that the alleged inventions would have been obvious to a person of ordinary skill in the art, including on the basis of modifying or combining certain cited references; (2) admissions relating to prior art in the Asserted Patent or related patents, the prosecution history of the Asserted Patent

³ Defendants and Intervenor reserve the right to rely on additional documents and evidence to rebut any efforts by Plaintiff to allege any reference was not publicly available or otherwise available as prior art.

or related patents, or other admissions obtained during discovery; and (3) foreign counterparts of any U.S. patents identified in Defendants' Preliminary Invalidity Contentions.

Where Defendants and Intervenor identify a particular figure in a prior art reference, the identification should be understood to encompass the caption and description of the figure as well as any text relating to the figure in the remainder of the prior art reference (e.g., if a patent reference, in the specification and prosecution history). Similarly, where an identified portion of text refers to a figure or other material, the identification of the text should be understood to include the referenced figure or other material.

F. INVALIDITY, UNENFORCEABILITY AND/OR INELIGIBILITY BASED ON NON-REQUIRED DISCLOSURE(S)

Defendants and Intervenor reserve the right to prove the invalidity, unenforceability and/or ineligibility of one or more of each of the Asserted Claims on bases other than those required by P.R. 3-3 to be disclosed in these disclosures.

G. NO PATENTABLE WEIGHT

Defendants and Intervenor reserve the right to argue that various portions of each of the Asserted Claims, such as an intended use or result, non-functional descriptive material, and certain preamble language, are entitled to no patentable weight. Mapping of a portion of an Asserted Claim to a prior art reference does not represent that such portion of the claim is entitled to patentable weight when comparing the claimed subject matter to the prior art.

H. INVALIDITY UNDER § 102(A)(1)

The '361 Patent is invalid under 35 U.S.C. § 102(a)(1) because at least the Nokia Flexi Multiradio 10 Base Station and the Ericsson RBS 6000 Series were in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

II. INVALIDITY CONTENTIONS

As explained herein and in Exhibits C-01 through C-08, and Appendix C, Defendants and Intervenor contend that each of the Asserted Claims of the Asserted Patent are invalid under 35 U.S.C. §§ 102, 103, and/or 112.

A. P.R. 3-3(A) – IDENTIFICATION OF PRIOR ART

Pursuant to P. R. 3-3(a), and subject to Defendants’ and Intervenor’s reservation of rights as stated herein, Defendants and Intervenor identify the prior art that anticipates or renders obvious the Asserted Claims of the Asserted Patent in the tables set forth below.⁴ On information and belief, each listed reference qualifies as prior art to the Asserted Patent.⁵

To the extent that any of the following are prior art, Defendants and Intervenor reserve the right to rely upon foreign counterparts of the U.S. patents identified herein; U.S. counterparts of foreign patents and foreign patent applications identified herein; and U.S. and foreign patents and patent applications corresponding to articles and publications identified herein. Defendants and Intervenor also reserve the right to rely upon parent or ancestor patents or patent applications from which any of the patents or patent applications identified herein claim priority to as continuation, divisional, or continuation-in-part applications.

1. 361 Patent

a. Identification of Prior Art Patents

Patent/Publication No.	Country of Origin	Date of Issue/Publication⁶
U.S. Patent Publication No. 2017/0055257 to Zhang (“Zhang-257”)	US	February 23, 2017

⁴ Defendants and Intervenor also hereby identify any systems or products that embody the technology described in any patent or publication identified in these Preliminary Invalidity Contentions. Defendants and Intervenor reserve the right to rely on any documents or other evidence regarding any such systems.

⁵ Defendants and Intervenor may rely on any document produced with the prefix JD-COBB_ to explain the background and/or state of the art to the Asserted Patent.

⁶ For any patent that claims the benefit of a provisional application(s), Defendants and Intervenor may rely on the provisional application(s) for purposes of establishing invalidity.

Patent/Publication No.	Country of Origin	Date of Issue/Publication⁶
International Patent Publication No. WO2009/050649 to Ho (“Ho-649”)	WIPO	April 23, 2009
U.S. Patent Publication No. 2010/0034157 to Stolyar (“Stolyar-157”)	US	February 11, 2010
U.S. Patent Publication No. 2014/0341051 to Gaal (“Gaal-051”)	US	November 20, 2014
U.S. Patent No. 9,713,026 to Gaal (“Gaal-026”)	US	July 18, 2017
U.S. Patent No. 8,428,011 to Inoue (“Inoue-011”)	US	April 23, 2013
U.S. Patent Publication. No. 2015/0365941 to Liu (“Liu-941”)	US	December 17, 2015
U.S. Patent No. 10,057,901 to Zhang (“Zhang-901”)	US	August 21, 2018
U.S. Patent No. 10,963,304 to Wilkes (“Wilkes-304”)	US	March 30, 2021
U.S. Patent No. 9,775,071 to Chen (“Chen-071”)	US	September 26, 2017
U.S. Patent No. 9,635,668 to Golitschek Edler von Elbwart (“Golitschek Edler von Elbwart-668”)	US	April 25, 2017
U.S. Patent No. 9,036,580 to Yin (“Yin-580”)	US	May 19, 2015
U.S. Patent Publication No. 2016/0219613 to Lei (“Lei-613”)	US	July 28, 2016
U.S. Patent Publication No. 2016/0183308 to Eriksson (“Eriksson-308”)	US	June 23, 2016
U.S. Patent Publication No. 2013/0010718 to Horn (“Horn-718”)	US	January 10, 2013
U.S. Patent Publication No. 2013/0215784 to Nordström (“Nordström-784”)	US	August 22, 2013
U.S. Patent Publication No. 2016/0119840 to Loehr (“Loehr-840”)	US	April 28, 2016

b. Identification Of Prior Art Publications

Title, Author(s), and Publisher	Date of Publication
3GPP TR 36.828 V11.0.0, <i>Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Further enhancements to LTE Time Division Duplex (TDD) for Downlink-Uplink (DL-UL) interference management and traffic adaptation</i> (Release 11)	June 26, 2012
REV-090003r1, <i>LTE-Advanced Physical Layer</i> , Matthew Baker (Alcatel-Lucent), IMT-Advanced Evaluation Workshop 17-18 December 2009, Beijing	December 17, 2009
<i>Wireless Communications</i> , Theodore S. Rappaport (2002) (“Rappaport”).	2002
LTE: The UMTS Long Term Evolution From Theory to Practice by Sesia et al. (“Sesia”)	July 22, 2011
LTE for UMTS OFDMA and SC-FDMA Based Radio Access by Holma & Toskala (“Holma and Toskala (2009)”)	2009
UMTS Networks Architecture, Mobility, and Services by Kaaranen et al. (“Kaaranen”)	2001
WCDMA for UMTS by Holma and Toskala (“Holma and Toskala (2004)”)	2004
LTE for UMTS: Evolution to LTE-Advanced Second Edition (“Holma and Toskala (2011)”)	March 2011
4G LTE/LTE-Advanced for Mobile Broadband by Dahlman and Parkvall (“Dahlman and Parkvall”)	March 20, 2011
LTE-Advanced: A Practical Systems Approach to Understanding 3GPP LTE Releases 10 and 11 Radio Access technologies by Ahmadi (“Ahmadi”)	October 13, 2010
Wong, S. & Wassell, I., <i>Dynamic Allocation Using a Genetic Algorithm for a TDD Broadband Fixed Wireless Access Network</i> , Laboratory for Communications Engineering (2002) (“Wong”)	July 17, 2002
Cooper, W. et al., <i>Modeling dynamic channel-allocation algorithms in multi-BS TDD wireless networks with Internet-based traffic</i> , IEEE Transactions on Vehicular Technology, Vol. 53, No. 3 (May 1, 2004) (“Cooper”)	May 1, 2004

Title, Author(s), and Publisher	Date of Publication
Jeong, W. & Kavehrad, M., Cochanel Interference Reduction in Dynamic-TDD Fixed Wireless Applications, Using Time Slot Allocation Algorithms, IEEE Transactions on Communications, Vol. 50, No. 10 (October 2002) (“Jeong”)	October 2002
A. Roessler, J. at al., LTE-Advanced (3GPP Rel. 12) Technology Introduction White Paper, Rohde & Shwarz (June 2014) (“Roessler”)	June 2014
3GPP TS 36.211 V12.2.0	July 3, 2014
3GPP TS 36.300 V12.2.0	July 4, 2014
3GPP TS 36.213 V12.2.0	July 3, 2014
3GPP TS 36.331 V12.2.0	July 4, 2014
3GPP TS 36.133 V11.9.0	July 4, 2014
3GPP TR 36.828 V11.0.0	June 26, 2012
3GPP TR 21.900 V11.0.1	June 24, 2013
3GPP TR 21.905 V12.0.0	June 25, 2013
3GPP TS 36.214 V11.1.0	December 20, 2012
3GPP TS 36.302 V12.0.0	July 2, 2014
3GPP TS 36.321 V12.2.0	July 2, 2014
Draft Minutes Report RAN#77 v020	July 24, 2014
R1-142772, CR 0158 to TS 36.212, Introduction of Rel 12 features of TDD-FDD CA and eIMTA, 3GPP TSG-RAN WG1 Meeting #77, Huawei (May 19-23, 2014) (“R1-142772”)	June 3, 2014
R1-142771, CR 0191 to TS 36.211, Inclusion of eIMTA, TDD-FDD CA, and coverage enhancements, 3GPP TSG-RAN WG1 Meeting #77, Ericsson (May 19-23, 2013) (“R1-142771”)	June 3, 2014

Title, Author(s), and Publisher	Date of Publication
R1-130015, Interference mitigation schemes for TDD eIMTA, 3GPP TSG RAN WG1 Meeting #72, Huawei & HiSilicon (January 28-February 1, 2013) (“R1-130015”)	January 19, 2013
R1-133580, CSI measurement for eIMTA, 3GPP TSG RAN WG1 Meeting #74, Qualcomm Incorporated (August 19-23, 2013) (“R1-133580”)	August 10, 2013
R1-141949, CSI measurement and reporting in eIMTA, 3GPP TSG RAN WG1 Meeting #77, Qualcomm Incorporated (May 19-23, 2014) (“R1-141949”)	May 10, 2014
R1-112122, Traffic adaptation evaluation methodologies and assumptions for LTE TDD eIMTA, 3GPP TSG RAN WG1 Meeting #66, CATT (August 22-26, 2011) (“R1-112122”)	August 16, 2011
RP-110450, New study item proposal for Further Enhancements to LTE TDD for DL-UL Interface Management and Traffic Adaptation, 3GPP TSG-RAN Meeting #51, Ericsson, CATT, ST-Ericsson (March 15-18, 2010) (“RP-110450”)	April 3, 2011
RP-110855, Report of 3GPP TSG RAN Meeting #51, ETSI MCC (March 15-18, 2011) (“RP-110855”)	June 10, 2011
R1-132296, On CSI measurements for eIMTA, 3GPP TSG-RAN WG1 Meeting #73, Nokia Siemens Networks, Nokia (May 20-24, 2013) (“R1-132296”)	May 11, 2013
R1-135639, Remaining details of CSI enhancements for eIMTA, 3GPP TSG-RAN WG1 Meeting #75, Ericsson (November 11-15, 2013) (“R1-135639”)	November 1, 2014
Nokia demonstrating 3.8 Gbps TDD-FDD LTE throughput, Mobile Asia Expo June 2014, https://www.youtube.com/watch?v=hjdkOmfbQM8 (“Nokia TDD-FDD carrier aggregation video”)	June 1, 2014

c. Identification Of Prior Art Sales/Public Uses

Item Offered for Sale and/or Publicly Used	Date of Offer/Public Use	Person or Entity Who Made and Received Offer, Made Public Use, or Made Information Known
Nokia base station equipment		Nokia
Ericsson base station equipment		Ericsson
Nokia base station equipment demonstrating TDD-FDD LTE throughput, https://www.youtube.com/watch?v=hjdkOmfbQM8 (“Nokia TDD-FDD carrier aggregation video”)	June 1, 2014	Nokia
All systems or products that embody the technology described in any patent or publication identified in these Preliminary Invalidity Contentions.		

B. P.R. 3-3(B) – ANTICIPATION AND OBVIOUSNESS

Pursuant to P.R. 3-3 (b), and subject to Defendants’ and Intervenor’s reservation of rights, Defendants and Intervenor’s attach claim charts hereto that are directed to the prior art references that anticipate each of the Asserted Claims of the Asserted Patent under 35 U.S.C. § 102 either expressly or inherently, and/or the prior art references that, in the alternative, would have rendered the Asserted Claims obvious under 35 U.S.C. § 103. *See* Exs. C-01 through C-08 and Appendix C. Any combinations contained or referenced in Defendants’ and Intervenor’s claim charts are exemplary. Any prior art reference cited herein may be combined with any other reference to demonstrate the invalidity of any of the Asserted Claims, as set forth below and in Appendix C.

To the extent any claim limitation is construed to have a similar meaning, or to encompass similar feature(s) and/or function(s), as any other claim limitation, the citations to prior art

references for each of those claim limitations in Defendants' and Intervenor's claim charts are incorporated by reference with respect to each other.

Defendants' and Intervenor's claim charts provide exemplary citations to the prior art references that teach or suggest every element of each of the Asserted Claims of the Asserted Patent. To the extent that an element of an Asserted Claim is not shown in a chart, the Asserted Claims would have been obvious based on a combination of one or more other prior art references, as set forth below and in Appendix C.

Much of the art cited in these Preliminary Invalidity Contentions reflects common knowledge and the state of the art at the time of the earliest filing date of the Asserted Patent. Defendants and Intervenor may rely on additional citations, references, expert testimony, and other material to provide context or to aid in understanding the cited portions of the references and/or cited features of the systems. Defendants and Intervenor also may rely on expert testimony explaining relevant portions of references, relevant hardware or software products or systems, and other discovery regarding these subject matters. Additionally, Defendants and Intervenor may rely on other portions of any prior art reference for purposes of explaining the background and general technical subject area of the reference.

Where an individual reference is cited with respect to all elements of an Asserted Claim, Defendants contend that the reference anticipates the claim under 35 U.S.C. § 102 and also renders obvious the claim under 35 U.S.C. § 103, both by itself in view of the knowledge of a person of ordinary skill in the art and in combination with the other cited references to the extent the reference is not found to disclose one or more claim elements. A single prior art reference, for example, can establish obviousness where the differences between the disclosures within the reference and the claimed invention would have been obvious to one of ordinary skill in the art. For example, "[c]ombining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness." *Bos. Sci. Scimed, Inc. v. Cordis Corp.*, 554 F.3d 982, 991 (Fed. Cir. 2009). To the extent Plaintiff contends that an embodiment within a particular item of prior art does not fully disclose all limitations of a claim, Defendants and Intervenor

accordingly reserve their rights to rely on other embodiments in that prior art reference, or other information, to show single reference obviousness under 35 U.S.C. § 103.

Where an individual reference is cited with respect to fewer than all elements of an Asserted Claim, Defendants and Intervenor contend that the reference renders obvious the claim under 35 U.S.C. § 103 in view of each other reference and combination of references that discloses the remaining claim element(s), as indicated in the claim charts submitted herewith. “Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17 (1966)).

Exemplary motivations to combine references are discussed below and in some instances within the accompanying charts. Defendants and Intervenor reserve the right to rely upon any references or assertions identified herein in connection with Defendants’ and Intervenor’s contentions that each Asserted Claim is invalid under 35 U.S.C. § 103 and to rely upon expert testimony addressing such references and assertions. The fact that prior art is identified to anticipate the Asserted Claims presents no obstacle in also relying on that reference as a basis for invalidity based on obviousness. It is established that “a rejection for obviousness under § 103 can be based on a reference which happens to anticipate the claimed subject matter.” *In re Meyer*, 599 F.2d 1026, 1031 (C.C.P.A. 1979). To the extent any cited prior art item may not fully disclose a limitation of an Asserted Claim or is alleged by Plaintiff to lack disclosure of the limitation, such limitation is present and identified in another prior art item as shown in the attached claim charts.

Many of the cited references cite or relate to additional references and/or products, services, or projects. Many of the cited references also cite software, hardware, or systems. Defendants and Intervenor might rely upon such cited additional references and/or products and copies or exemplars of such software, hardware, or systems. Defendants and Intervenor will produce or make available for inspection any such cited references, products, software, hardware, or systems

that it intends to rely upon. Defendants and Intervenor may also rely upon the disclosures of the references cited and/or discussed during the prosecution of the Asserted Patent and/or the assertions presented regarding those references.

Defendants and Intervenor reserve the right to further streamline and reduce the number of anticipation or obviousness references relied upon with respect to a given Asserted Claim and to exchange or otherwise modify the specific references relied upon for anticipation and within each obviousness combination for each Asserted Claim.

C. P.R. 3-3(C) – CLAIM CHARTS

Defendants and Intervenor attach the following claim charts pursuant to P.R. 3-3(c):

- Ex. C-01: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of the prior art 3GPP standards 3GPP TS 36.211 V12.2.0; 3GPP TS 36.300 V12.2.0; 3GPP TS 36.213 V12.2.0; 3GPP TS 36.331 V12.2.0; 3GPP TS 36.133 V11.9.0; and 3GPP TR 36.828 V11.0.0 (“3GPP Standards”)
- Ex. C-02: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of U.S. Patent Publication No. 2017/0055257 (“Zhang--257”)
- Ex. C-03: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of International Patent Publication No. WO2009/050649 (“Ho-649”)
- Ex. C-04: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”)
- Ex. C-05: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of U.S. Patent Publication No. 2014/0341051 (“Gaal-051”)
- Ex. C-06: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of prior art Nokia and/or Ericsson base station equipment
- Ex. C-07: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of R1-132296, On CSI measurements for eIMTA, 3GPP TSG-RAN WG1 Meeting #73, Nokia Siemens Networks, Nokia (May 20-24, 2013) (“R1-132296”)
- Ex. C-08: Summary of Invalidity Analysis of U.S. Patent No. 10,368,361 (“361 Patent”) in view of R1-135639, Remaining Details of CSI enhancement for eIMTA, 3GPP TSG-RAN WG1 Meeting #75, Ericsson (November 11-15, 2013) (“R1-135639”)

The attached claim charts are based, in whole or in part, on Plaintiff's asserted theories of infringement in this case, to the extent discernible from Plaintiff's Infringement Contentions. As an initial matter, all portions of each prior art reference cited in each of the attached claim charts are relied upon to support the disclosure of each patent claim limitation, as all portions provide general support. Representative descriptions and supporting citations are nevertheless provided, but are merely exemplary; they do not necessarily reflect every instance where a particular claim term or claim limitation may be disclosed in or taught by the prior art reference. References to figures or drawings refer to the figures/drawings themselves, as well as to any accompanying text or text necessary to understand the figures or drawings. References to text refers to the text itself, as well as the accompanying figures or drawings that accompany the text. Defendants and Intervenor reserve the right to rely on additional, or different, portions of the prior art references, other publications and expert testimony to establish what these references would have taught one of ordinary skill in the art, or in what manner they would have motivated a particular combination of references. Moreover, in certain instances, representative documents for certain prior art systems are cited, but, again, are merely exemplary; they do not necessarily reflect or include every document relating to the prior art system that exists and that discloses or teaches a particular claim term or claim limitation. Defendants and Intervenor reserve the right to rely on any and all documents that describe or relate to prior art systems, including relying on the system itself. Defendants and Intervenor also reserve the right to rely on the testimony of the authors, named inventors, or anyone else with knowledge of the prior art references and systems identified herein, as well as expert testimony regarding any such references or systems.

D. OBVIOUSNESS AND MOTIVATION TO COMBINE

The primary references identified above, and as further described in Exhibits C-01 through C-08 each discloses, either expressly or inherently, every element of each of the Asserted Claims, thereby anticipating those claims. To the extent Plaintiff contends that any primary reference does not anticipate each of the Asserted Claims, it would have been obvious to combine or modify the primary references with concepts from other prior art, as explained herein and in Appendix C. Each of these combinations is exemplary and representative, and the below does not constitute an exhaustive list of the possible combinations of the primary references, nor the primary references in combination with any additional references noted in Appendix C. Defendants and Intervenor reserve the right to rely on combinations outside of the below listed.

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- 3GPP TS 36.211 V12.2.0 in combination with 3GPP TS 36.300 V12.2.0 and/or 3GPP TS 36.213 V12.2.0 and/or 3GPP TS 36.331 V12.2.0 and/or 3GPP TS 36.133 V11.9.0 and/or 3GPP TR 36.828 V11.0.0 (all collectively, the “3GPP Standards”)
- 3GPP Standards in combination with U.S. Patent Publication No. 2017/0055257 (“Zhang-257”)
- 3GPP Standards in combination with International Patent Publication No. WO2009/050649 (“Ho-649”)
- 3GPP Standards in combination with U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”)
- 3GPP Standards in combination with U.S. Patent Publication No. 2014/0341051 (“Gaal-051”)
- 3GPP Standards in combination with R1-135639
- 3GPP Standards in combination with R1-132296
- R1-135639 in combination with R1-132296 and/or the 3GPP Standards
- U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with International Patent Publication No. WO2009/050649 (“Ho-649”)

- U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with R1-135639 and/or R1-132296
- U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”)
- U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with U.S. Patent Publication No. 2014/0341051 (“Gaal-051”)
- International Patent Publication No. WO2009/050649 (“Ho-649”) in combination with U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”)
- International Patent Publication No. WO2009/050649 (“Ho-649”) in combination with R1-135639 and/or R1-132296
- International Patent Publication No. WO2009/050649 (“Ho-649”) in combination with U.S. Patent Publication No. 2014/0341051 (“Gaal-051”)
- U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”) in combination with U.S. Patent Publication No. 2014/0341051 (“Gaal-051”)
- U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”) in combination with R1-135639 and/or R1-132296
- Any of the above, in combination with any reference noted in Appendix C (361 Patent Obviousness Combinations)

In particular, for each limitation of each of the Asserted Claims that Plaintiff contends is not met by a particular primary reference, Defendants and Intervenor contend that the limitation (and Asserted Claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other primary reference disclosing that limitation, (2) any reference identified in Appendix C as disclosing that limitation, and/or (3) the knowledge of a person of ordinary skill in the art and/or any of the references and concepts discussed herein regarding the relevant background and state of the art. The specific combinations of prior art that Defendants and Intervenor contend render the Asserted Claims obvious are readily determinable as described herein. Defendants’ and Intervenor’s obviousness grounds for each dependent Asserted Claim

incorporate the obviousness grounds for the claim(s) from which the dependent claim depends in addition to any obviousness grounds identified in the charts for the dependent claim.

Defendants and Intervenor do not yet have the benefit of Plaintiff's positions on the prior art, including what (if any) elements it contends are missing in each prior art reference, whether Plaintiff agrees that a reference is in fact prior art, and whether Plaintiff agrees that a person of ordinary skill in the art would be motivated to combine specific references. Defendants and Intervenor reserve the right to supplement these obviousness positions (including identifying additional prior art combinations and the associated reasons to combine) as discovery in the case progresses, including expert discovery.

1. Motivation To Combine

For the Asserted Patent, each prior art reference may be combined with one or more other prior art references to render obvious each of the Asserted Claims in combination, as explained in more detail below. The disclosures of these references also may be combined with information known to persons skilled in the art at the time of the alleged invention, and understood and supplemented in view of the common sense of persons skilled in the art at the time of the alleged invention, including any statements in the intrinsic record of the Asserted Patent and related applications.

A person of ordinary skill would have been motivated to combine the prior art cited in the attached claim charts based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. The identified prior art references, including portions cited in the claim charts, address the same or similar technical issues and suggest the same or similar solutions to those issues as the Asserted Claims. On such bases, on an element-by-element basis, Defendants and Intervenor intend to combine one or more prior art references identified in the claim charts attached as Exhibits C-01 through C-08 and/or Appendix C with each

other to address any contention from Plaintiff that a particular prior art item supposedly lacks one or more elements of an Asserted Claim. In other words, Defendants and Intervenor contend that, for each Asserted Patent, each charted prior art reference can be combined with other charted prior art references when a particular prior art item lacks or does not explicitly disclose an element or feature of an Asserted Claim. A person of ordinary skill in the art would have been motivated to make such combinations based on, for example, the below. The below list of motivations to combine is exemplary and representative, and is not an exhaustive list of motivations to combine, nor potential combinations.

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- A person of ordinary skill in the art would have been motivated to combine 3GPP TS 36.211 V12.2.0 in combination with 3GPP TS 36.300 V12.2.0 and/or 3GPP TS 36.213 V12.2.0 and/or 3GPP TS 36.331 V12.2.0 and/or 3GPP TS 36.133 V11.9.0 and/or 3GPP TR 36.828 V11.0.0 (collectively, the “3GPP Standards”), as the 3GPP Standards are technical specifications defining different aspects of the same standard and a person of ordinary skill in the art would understand that the 3GPP Standards were therefore meant to be read together.
- A person of ordinary skill in the art would have been motivated to combine the 3GPP Standards in combination with U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) as the 3GPP Standards show the standardization of the methods and systems disclosed in Zhang-257. Moreover, the 3GPP Standards and Zhang-257 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the 3GPP Standards in combination with International Patent Publication No. WO2009/050649 (“Ho-649”) as the 3GPP Standards show the standardization of the methods and systems disclosed in Ho-649. In addition, Ho-649 explicitly states that its disclosure re-allocation of resources based on channel quality is applicable to systems based on 3GPP. Thus, a person of ordinary skill in the art would be motivated read Ho-649 in view of the 3GPP Standards. Moreover, the 3GPP standards and Ho-649 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the 3GPP Standards in combination with U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”) as the 3GPP Standards show the standardization of the methods

and systems disclosed in Stolyar-157. Moreover, the 3GPP Standards and Stolyar-157 are analogous because they both discuss the dynamic allocation of wireless communication resources.

- A person of ordinary skill in the art would have been motivated to combine the 3GPP Standards in combination with U.S. Patent Publication No. 2014/0341051 (“Gaal-051”) as the 3GPP Standards show the standardization of the methods and systems disclosed in Gaal-051. In addition, a person of ordinary skill in the art would be motivated to read the 3GPP Standards with Gaal-051 because Gaal-051 discloses the eIMTA feature described and specified in the standard. Moreover, the 3GPP standards and Gaal-051 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the 3GPP Standards in combination with R1-135639, as R1-135639 was submitted as a technical contribution to the same 3GPP standard. Thus, a person of ordinary skill in the art would have understood that 3GPP technical contributions were intended to be read and understood in view of the 3GPP Standards.
- A person of ordinary skill in the art would have been motivated to combine the 3GPP Standards in combination with R1-132296, as R1-132296 was submitted as a technical contribution to the same 3GPP standard. Thus, a person of ordinary skill in the art would have understood that 3GPP technical contributions were intended to be read and understood in view of the 3GPP Standards.
- A person of ordinary skill in the art would have been motivated to combine R1-132296 in combination with R1-135639 and/or the 3GPP Standards because R1-132296 and R1-135639 were proposal aimed at improvements to the eIMTA feature in 3GPP LTE, which is defined by the 3GPP Standards.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”) as both discuss dynamic allocation of resources and the procedures for dynamic allocation of resources. Moreover, Zhang-257 and Stolyar-157 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with International Patent Publication No. WO2009/050649 (“Ho-649”) as both discuss dynamic allocation of resources and the procedures for dynamic allocation of resources. Moreover, Zhang-257 and Ho-649 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with U.S. Patent Publication No. 2014/0341051 (“Gaal-051”) as both discuss dynamic

allocation of resources and the procedures for dynamic allocation of resources. Moreover, Zhang-257 and Gaal-051 are analogous because they both discuss the dynamic allocation of wireless communication resources.

- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2017/0055257 (“Zhang-257”) in combination with R1-132296 and/or R1-135639, as each discuss dynamic allocation of resources and the procedures for dynamic allocation of resources.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”) in combination with International Patent Publication No. WO2009/050649 (“Ho-649”) as both discuss dynamic allocation of resources and the procedures for dynamic allocation of resources. Moreover, Stolyar-157 and Ho-649 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”) in combination with U.S. Patent Publication No. 2014/0341051 (“Gaal-051”) as both discuss dynamic allocation of resources and the procedures for dynamic allocation of resources. Moreover, Stolyar-157 and Gaal-051 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2010/0034157 (“Stolyar-157”) in combination with R1-132296 and/or R1-135639, as each discuss dynamic allocation of resources and the procedures for dynamic allocation of resources.
- A person of ordinary skill in the art would have been motivated to combine International Patent Publication No. WO2009/050649 (“Ho-649”) in combination with R1-132296 and/or R1-135639, as each discuss dynamic allocation of resources and the procedures for dynamic allocation of resources.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2014/0341051 (“Gaal-051”) in combination with R1-132296 and/or R1-135639, as each discuss dynamic allocation of resources and the procedures for dynamic allocation of resources.
- A person of ordinary skill in the art would have been motivated to combine the U.S. Patent Publication No. 2014/0341051 (“Gaal-051”) in combination with International Patent Publication No. WO2009/050649 (“Ho-649”) as both discuss dynamic allocation of resources and the procedures for dynamic allocation of resources. Moreover, Gaal-051 and Ho-649 are analogous because they both discuss the dynamic allocation of wireless communication resources.
- A person of ordinary skill in the art would have been motivated to combine the 3GPP Standards in combination with LTE for UMTS: Evolution to LTE-

Advanced, 2d Ed., Edited by Holma, H. and Toskala, A. (2011) (“Holma and Toskala (2011)”) as the 3GPP standards show the standardization of the methods and systems disclosed in Holma and Toskala (2011). A POSITA would have looked to Holma and Toskala 2011 as it describes textbook principles about the standard. Moreover, both references discuss TDD UL-DL configuration and resource allocation scheme. Further the 3GPP Standards and Holma and Toskala 2011 are analogous art as they both disclose TDD UL-DL configuration and allocation schemes.

The suggested obviousness combinations discussed herein are not to be construed to suggest that any reference included in the combinations is not anticipatory. Further, to the extent that Plaintiff contends that any of the anticipatory prior art fails to disclose one or more limitations of the Asserted Claims, Defendants and Intervenor reserve the right to identify other prior art references that, when combined with the anticipatory prior art, would render the claims obvious despite an allegedly missing limitation. Defendants and Intervenor will further specify the motivations to combine the prior art, including through reliance on expert testimony, at the appropriate later stage of this lawsuit.

The decision in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), held that patents that are based on new combinations of elements or components already known in a technical field may be found to have been obvious. The Supreme Court rejected a rigid application of the “teaching, suggestion, or motivation [to combine]” test. *Id.* at 407, 418. “In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim.” *Id.* at 419. “Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.* at 420. The Supreme Court emphasized the principle that “[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 416. A key inquiry is whether the “improvement is more than the predictable use of prior art elements according to their established function.” *Id.* at 417.

The Court further held that “in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420. It is sufficient that a combination of elements was “obvious to try” – “When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.” *Id.* at 421. “In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.” *Id.* Finally, the Supreme Court recognized that “[g]ranting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.” *Id.* at 419.

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well together. *See In re Inland Steel Co.*, 265 F.3d 1354, 1362 (Fed. Cir. 2001) (allowing two references to be combined as invalidating art under similar circumstances where the art “focus[ed] on the same problem ... c[a]me from the same field of art [and] ... the identified problem found in the two references correspond[ed] well”).

All of the following rationales recognized in *KSR* support a finding of obviousness with respect to each of the obviousness combinations disclosed herein: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar

devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) “obvious to try,” that is, choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and (7) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. Certain of these rationales are discussed more specifically below. The fact that other rationales are not discussed more specifically should not be interpreted as an admission or concession that the other rationales do not apply.

Multiple teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine two or more of the prior art references set forth herein come from many sources, including the prior art itself (individual references and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the nature of the problem faced, and/or knowledge possessed by a person of ordinary skill. Defendants and Intervenor reserve the right to present expert testimony on, among other things, the teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine any two or more of the prior art references presented in Exhibits C-01 through C-08 and/or Appendix C.

Each limitation of each of the Asserted Claims was well-known to those of ordinary skill in the art at the time. At best, the elements recited in the Asserted Claims are mere combinations and modifications of these well-known elements. A person of ordinary skill in the art would be

able, and motivated, to improve the existing technology in the same or similar manner by combining or modifying the individual elements that were already known in the art to yield predictable results.

2. *Background And State Of The Art*

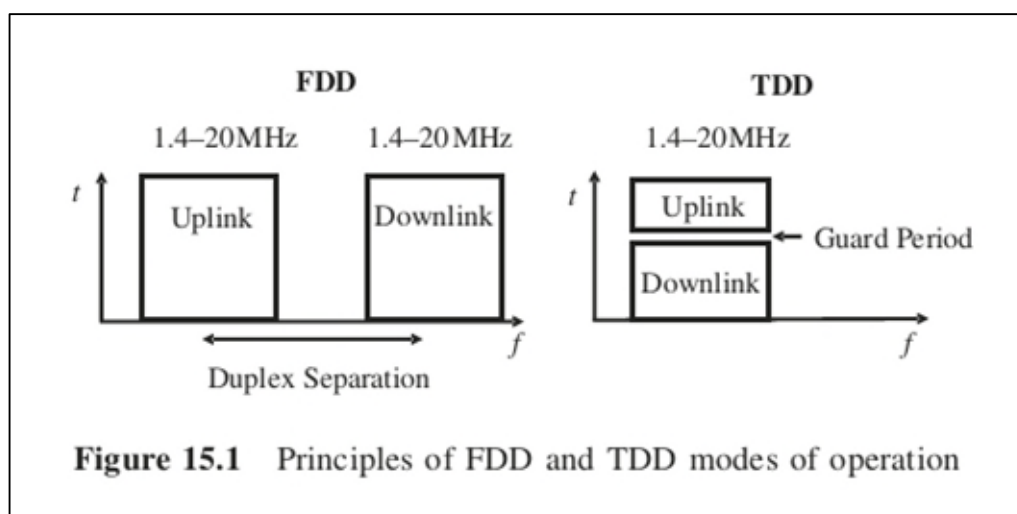
Defendants and Intervenor set forth below a summary of their current understanding of the state of the art as understood as of the asserted priority date of the Asserted Patent for the general subject matter of the Asserted Patent. The information discussed in this section may have formed the background knowledge of a person of ordinary skill in the art at the time the Asserted Patent was filed and may have been used in determining whether and how to combine references to achieve the claimed inventions. *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (stating that “the knowledge [of a person of ordinary skill in the art] is part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious”). Defendants and Intervenor expressly reserve the right to rely on each of the prior art references, systems, concepts, and technologies discussed in this Section with respect to the Asserted Patent.

Defendants and Intervenor contend that, to the extent the primary references identified in these Preliminary Invalidity Contentions do not anticipate the Asserted Claims, it would have been obvious to combine any of the references, systems, concepts, or technologies discussed in this Section with those primary references. Defendants and Intervenor also reserve the right to rely on the discussions of the state of the art and prior art in the Asserted Patent specification and its file history including file histories of related patents and foreign file histories of related patents in explaining the state of the art. Defendants and Intervenor further expressly reserve the right to supplement their summary of the background and state of the art, including, for example, with information from any of the authors or named inventors on any of the prior art references, by

personnel familiar with systems based on any of the prior art references, or any prior art systems related to prior art references, or by technical experts retained on behalf of any party. Defendants and Intervenor also expressly reserve the right to rely on any admissions by any of the named inventors, institutions with which they were associated, and Plaintiff, regarding the state of the art.

a. 361 Patent

The allocation and scheduling of frequency spectrum resources in a wireless network was known in the art prior to the earliest alleged priority date of the '361 Patent. For example, duplex communication schemes, such as time-division duplex (TDD) and frequency-division duplex (FDD) systems were known schemes for allocation of frequency spectrum resources for uplink and downlink traffic. *See* '361 Patent at 3:29-38. The basic principle of TDD known in the art prior to the '361 Patent's earliest alleged priority date is to use the same frequency band for transmission and reception but to alternate the transmission direction in time. Holma and Toskala (2011) at p. 455-56. That is, transmission in the uplink and downlink direction are transmitted on, and share, the same frequency band in a TDD allocation scheme, as shown in the figure below illustrating the differences between FDD and TDD modes.



Id. at 456. A known advantage of TDD in the prior art was the ability to adjust the available system resources, including frequency resources, to either downlink or uplink to perfectly match the uplink and downlink traffic characteristics. *Id.* at 459. In particular, the dynamic allocation of frequency spectrum resources to a shared resource pool based on a channel quality measurement—the subject of the challenged claims—was known in the art prior to the earliest alleged priority date of the '361 Patent.

For example, various articles describe algorithms for allocating resources between uplink and downlink channels in TDD. For example, as early as 2002, in *Cochannel Interference Reduction in Dynamic-TDD Fixed Wireless Applications, Using Time Slot Allocation Algorithms*, the authors were discussing the various algorithms based off channel measurements to use to decide how to allocate channels between uplink and downlink. *See Jeong* at 1-5. Likewise, in 2004, the authors of *Modeling Dynamic Channel-Allocation Algorithms in Multi-BS TDD Wireless Networks With Internet-Based Traffic* modeled the various algorithms to optimize the allocation of resource blocks to avoid packet loss in the network. *See Cooper* at 1-23. In 2002, in a paper titled *Dynamic Channel Allocation Using a Genetic Algorithm for a TDD Broadband Fixed Wireless Access Network*, the authors noted how channels were re-used, which causes co-channel and adjacent channel interference, and modeled the best algorithms to optimize network resources while reducing the amount interference. *See Wong* at 1-5.

Likewise, flexible bandwidth assignment based on channel conditions was long known in the art. Dahlman and Parkvall describe this in Chapter 4 of *4G LTE/LTE-Advanced for Mobile Broadband*. Referring to Figure 4.7 (reproduced below), they state the following:

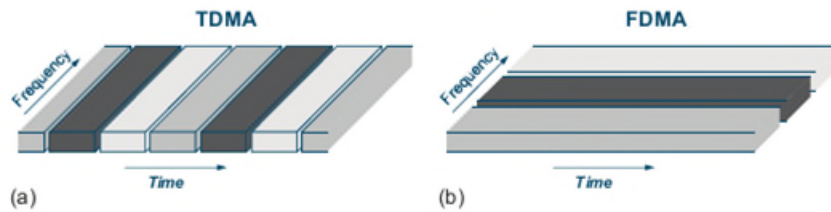


FIGURE 4.6

Orthogonal multiple access: (a) TDMA; (b) FDMA.

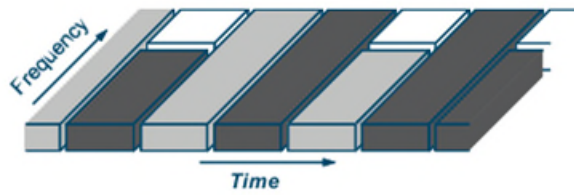


FIGURE 4.7

FDMA with flexible bandwidth assignment.

At the same time, it should be possible to allocate the entire overall transmission bandwidth to a single terminal when the channel conditions are such that the wide bandwidth can be efficiently utilized – that is, when the achievable data rates are not power limited. Thus, an orthogonal uplink transmission scheme should allow for FDMA with flexible bandwidth assignment, as illustrated in Figure 4.7. Flexible bandwidth assignment is straightforward to achieve with an OFDM-based uplink transmission scheme by dynamically allocating different number of subcarriers to different terminals depending on their instantaneous channel conditions. In the next section, it will be discussed how this can also be achieved in the case of low-PAR “single-carrier” transmission, more specifically by means of so-called DFT-spread OFDM.

In addition, 3GPP discussed and adopted Enhanced Interference Mitigation & Traffic Adaptation (eIMTA), an improvement to the LTE TDD mode, prior to the alleged priority date of the '361 Patent. *See, e.g.,* Draft Minutes Report RAN#77 v020 at 87; R1-142772; R1-142771. eIMTA allows dynamic reconfiguration of UL/DL time slots within the LTE frame structure. In

prior art TDD, there are seven possible frame configurations for the allocation of frequency resources for uplink and downlink shown in the table below.

UL/DL Configuration	Subframe number									
	0	1	2	3	4	5	6	7	8	9
0	D	S	U	U	U	D	S	U	U	U
1	D	S	U	U	D	D	S	U	U	D
2	D	S	U	D	D	D	S	U	D	D
3	D	S	U	U	U	D	D	D	D	D
4	D	S	U	U	D	D	D	D	D	D
5	D	S	U	D	D	D	D	D	D	D
6	D	S	U	U	U	D	S	U	U	D

Roessler at 41. Prior to the alleged priority date of the patent, LTE TDD allowed for asymmetric UL-DL allocations by providing these seven different semi-statically configured uplink-downlink configurations. 3GPP TR 36.828 V11.0.0; 3GPP TS 36.211 V12.2.0 Table 4.2-2.

The introduction of eIMTA prior to the '361 Patent allowed the reconfiguration of UL-DL allocation in a flexible way based on channel conditions and traffic load. *Id.* Specifically, subframes can be classified as dynamic subframes whose direction can be dynamically changed (e.g. managed as UL and DL subframes), rather than having a fixed direction (e.g., as either a DL subframe or an UL subframe). Gaal-051 at Para. [0071]. In the eIMTA prior art systems, these TDD DL/UL subframes are dynamically adapted based on actual traffic needs, and as a result of interference or channel state. Thus, it was known in the prior art that dynamic resource allocation and UL or DL directionality for TDD subframes depend on channel and interference measurements. *Id.* at Para. [0087].

eIMTA was proposed and standardized by 3GPP prior to the alleged priority date of the '361 Patent. *See, e.g.,* Draft Minutes Report RAN#77 v020 at 87; R1-142772; R1-142771. During GRAN Meeting #51 in March 2011, a study item "Further Enhancements to LTE TDD for

DL-UL Interference Management and Traffic Adaptation” was agreed. *See* RP-110450; RP-110855 at 77. In the study item, RAN1 was tasked with evaluating the benefits of uplink-downlink resource reconfiguration dependent on interference mitigation and traffic adaptation. RP-110450. T-doc contributions were subsequently made to RAN1 related to the design and development of the eIMTA feature. *See, e.g.*, R1-130015. For example, R1-130015 proposed that the eNodeB’s TDD allocation, or UL-DL configuration and scheduling strategies could be based on the eNodeB’s measurement of interference information, or channel quality. R1-130015 at 2-3 (“And, the eNB can adjust the scheduling strategies to resist the inter-cell interference. . . Firstly, the eNB needs to anticipate or measure the interference information, with differentiating between subframes with and without BS-BS/UE-UE interference, e.g. which group of subframes will suffer or are suffering BS-BS/UE-UE interference, or which group subframes will generate or are suffering BS-BS/UE-UE interference. Secondly, the eNodeB adjusts the scheduling strategies according to the interference information.”). As another example, Nokia proposed an enhancement to channel state information (CSI) with TDD eIMTA because the same CQI for fixed DL subframes are not necessarily valid for TDD eIMTA flexible subframes due to DL-to-DL and UL-to-DL interference. R1-132296 at 1-2. Thus, Nokia proposed configuring a separate CSI measurement and reporting mechanism for eIMTA flexible subframes. *Id.* Thus, the prior art eIMTA enabling flexible UL-DL resource allocation based on channel status was known in the art prior to the alleged priority date of the ’361 Patent. Ericsson also proposed contributions related to CSI measurement and reporting for eIMTA flexible subframes prior to the alleged priority date of the ’361 Patent. R1-135639 at 1-2.

The Meeting Report for RAN1 #77 indicates the change requests introducing the release 12 eIMTA feature into the standards were agreed prior to the alleged priority date of the '361 Patent. *See* Draft Minutes Report RAN#77 v020 at 87; R1-142772; R1-142771.

In addition, carrier aggregation was known in the art prior to the alleged priority date of the '361 Patent. Prior art LTE Release 8 and Release 9 specified system bandwidths of 1.4, 3, 5, 10, 15, and 20 MHz to meet different spectrum and deployment requirements. Ahmadi at 985. A distinctive improvement to these prior art systems was the support of wider bandwidths up to 100 MHz. *Id.* to support wider transmission bandwidths, LTE Release 10 introduced the carrier aggregation concept, where two or more component carriers with arbitrary bandwidths belonging to the same or different frequency bands could be aggregated. *Id.* Using the carrier aggregation scheme, it would be possible to simultaneously schedule a user on multiple component carriers for downlink or uplink data transmission. *Id.* at 986. It was known in the art prior to the alleged priority date of the '361 Patent that carrier aggregation is supported in both the FDD and TDD. *Id.* Notably, prior to the alleged priority date of the '361 Patent, Nokia was the first to demonstrate the use of TDD FDD carrier aggregation at Mobile Asia Expo in June 2014. *See* Nokia TDD-FDD LTE Carrier Aggregation Video.

3. *Secondary Considerations*

A patentee bears the burden of production with respect to evidence of secondary considerations of non-obviousness. *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1373 (Fed. Cir. 2018). As of the date of these Preliminary Invalidity Contentions, Plaintiff has not identified any evidence of secondary considerations.

a. 361 Patent

As shown in these Preliminary Invalidity Contentions, other companies and individuals described, built, and/or patented the exact same concepts in the 361 Patent before Plaintiff ever did—often many years before. Even where others’ invention occurred around the same time as the any of the Asserted Patent, such simultaneous invention demonstrates the obviousness of the 361 Patent.

Additionally, potentially relevant evidence includes any prior art reference cited herein that occurred before or around the alleged invention claimed in the 361 Patent. This also includes any prior art asserted in these Preliminary Invalidity Contentions that Plaintiff is able to pre-date based on its asserted priority dates by proving, *inter alia*, corroborated conception and diligent reduction to practice.

Defendants and Intervenor reserve all rights to further respond to any secondary considerations of non-obviousness raised by Plaintiff, including by updating, modifying, and/or adding to these Preliminary Invalidity Contentions. Defendants and Intervenor are not aware of any unexpected results (none is mentioned in the 361 Patent or its file histories), long felt need, commercial success (or any nexus to any allegedly successful commercial embodiment), or awards for the alleged inventions of the 361 Patent.

E. P.R. 3-3(D): INVALIDITY UNDER 35 U.S.C. § 112

As set forth below, Defendants and Intervenor contend that the Asserted Claims are invalid due to failure to comply with 35 U.S.C. § 112, including as Cobblestone has applied the Asserted Claims for purposes of its infringement contentions, due to the lack of enablement, written description, and/or presence of indefinite terms in the asserted claims.

Defendants’ and Intervenor’s contentions that the Asserted Claims identified in this section are made in the alternative and do not constitute, and should not be interpreted as, admissions regarding the construction or scope of the Asserted Claims identified herein or that the Asserted Claims identified herein would not have been anticipated and/or obvious in light of the prior art.

Plaintiff has not yet provided a claim construction for any of the terms or phrases that Defendants and Intervenor anticipate will be in dispute. Defendants and Intervenor, therefore, cannot provide a complete list of § 112 defenses because Defendants and Intervenor do not know whether Plaintiff will proffer a construction for certain terms and phrases that is broader than, or inconsistent with, the construction that would be supportable by the disclosure set forth in the specification. Defendants and Intervenor offer these contentions without prejudice to any position they may ultimately take as to any claim construction issues.

Accordingly, Defendants and Intervenor reserve the right to supplement, amend, and/or modify these § 112 invalidity contentions as discovery progresses.

1. Invalidity Under 35 U.S.C. § 112(a)

35 U.S.C. § 112(a) requires that the specification contain a written description of the invention. “[T]he hallmark of written description is disclosure.” *Bos. Sci. Corp. v. Johnson & Johnson*, 647 F.3d 1353, 1361-62 (Fed. Cir. 2011) (citation omitted). The test for whether a specification adequately describes an invention is “whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date [T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art [It] is a question of fact.” *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*); *Bos. Sci.*, 647 F.3d at 1362.

The enablement requirement of Section 112 demands that the patent specification enable “those skilled in the art 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, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993)). “[T]he scope of the claims must be less than or equal to the scope of the enablement.” *Nat’l Recovery Tech., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1196 (Fed. Cir. 1999).

Defendants and Intervenor contend that the following Asserted Claims are invalid under 35 U.S.C. § 112(a). Each Asserted Claim identified below is invalid under 35 U.S.C. § 112(a) because the specification of the Asserted Patent fails to provide a sufficient written description, enabling disclosure and/or fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention the meaning of the term(s) and/or phrase(s):

Asserted Patent	Asserted Claim(s)	Term(s) and/or Phrase(s) Lacking Written Description and Enablement
361 Patent	10-13, 15	quality status module
361 Patent	10-13, 15	scheduler module
361 Patent	10-13, 15	determine, based on the quality status of the first frequency spectrum resource, that the first frequency spectrum resource is a sub-optimal resource, for the uplink channel and the downlink channel, relative to other frequency spectrum resources that are available for use by the wireless base station
361 Patent	17	determine, based on the quality status, that the first frequency spectrum resource is a sub-optimal resource, for the uplink channel and the downlink channel, relative to other frequency spectrum resources that are available for use by the base station
361 Patent	10-13, 15, 17	sub-optimal resource
361 Patent	10-13, 15, 17	determine a quality status of a first frequency spectrum resource / determine a respective quality status of a first frequency spectrum resource and second frequency spectrum resource
361 Patent	17	determine that a channel quality indicator (CQI) of the first frequency spectrum

Asserted Patent	Asserted Claim(s)	Term(s) and/or Phrase(s) Lacking Written Description and Enablement
		resource is less than a respective CQI of one or more other frequency spectrum resources that are available for use by the base station; and
361 Patent	17	determine that a received interference power (RIP) of the first frequency spectrum resources is greater than a respective RIP of the one or more other frequency spectrum resources that are available for use by the base station;
361 Patent	10-13, 15, 17	shared resource pool
361 Patent	10-13, 15, 17	initial directional allocation of communication resources
361 Patent	10-13, 15, 17	updated directional allocation of communication resources
361 Patent	17	select the first frequency spectrum resource from the shared resource pool
361 Patent	11	uplink resource pool
361 Patent	11	downlink resource pool
361 Patent	12	Current resource requests from a wireless device serviced by the wireless base station, current resource requests from the wireless base station, a number of frequency spectrum resources scheduled from an uplink resource pool for uplink channels, and a number of frequency spectrum resources scheduled for a downlink resource pool for downlink channels

Asserted Patent	Asserted Claim(s)	Term(s) and/or Phrase(s) Lacking Written Description and Enablement
361 Patent	13	The initial directional allocation of frequency spectrum resources is based on current resource requests from a wireless device service by the wireless base station, and current resources requests from the wireless base station.
361 Patent	15	multiple resource elements associated with each of the multiple subcarriers

2. *Invalidity Under 35 U.S.C. § 112(b)*

Claims are indefinite under 35 U.S.C. § 112(b) when they “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

In addition to Defendants and Intervenor’s reservation of rights stated above, Defendants and Intervenor note that the Court’s Docket Control Order contemplates that all indefiniteness issues be brought to the Court’s attention through the *Markman* briefing process. Defendants’ and Intervenor’s detailed arguments as to indefiniteness will be presented at that time, *i.e.*, through the *Markman* meet and confer and briefing process.

Defendants and Intervenor contend that the Asserted Claim is invalid under 35 U.S.C. § 112(b). The Asserted Claim(s) identified below is invalid under § 112(b) because they fail to inform, with reasonable certainty, those skilled in the art about the scope of the claimed invention:

Asserted Patent	Asserted Claim(s)	Term(s) and/or Phrase(s) Lacking Written Description and Enablement
361 Patent	10-13, 15	quality status module
361 Patent	10-13, 15	determine, based on the quality status of the first frequency spectrum resource, that the first frequency spectrum resource is a sub-optimal resource, for the uplink channel and the downlink channel,

Asserted Patent	Asserted Claim(s)	Term(s) and/or Phrase(s) Lacking Written Description and Enablement
		relative to other frequency spectrum resources that are available for use by the wireless base station
361 Patent	17	determine, based on the quality status, that the first frequency spectrum resource is a sub-optimal resource, for the uplink channel and the downlink channel, relative to other frequency spectrum resources that are available for use by the base station
361 Patent	10-13, 15, 17	sub-optimal resource
361 Patent	10-13, 15, 17	determine a quality status of a first frequency spectrum resource / determine a respective quality status of a first frequency spectrum resource and second frequency spectrum resource
361 Patent	10-13, 15, 17	quality status
361 Patent	10-13, 15	scheduler module
361 Patent	10-13, 15, 17	shared resource pool
361 Patent	10-13, 15, 17	initial directional allocation of communication resources
361 Patent	10-13, 15, 17	updated directional allocation of communication resources
361 Patent	17	select the first frequency spectrum resource from the shared resource pool
361 Patent	11	uplink resource pool
361 Patent	11	downlink resource pool

Asserted Patent	Asserted Claim(s)	Term(s) and/or Phrase(s) Lacking Written Description and Enablement
361 Patent	13	the initial directional allocation of frequency spectrum resources is based on current resource requests from a wireless device service by the wireless base station, and current resources requests from the wireless base station.
361 Patent	15	multiple resource elements associated with each of the multiple subcarriers

3. *Invalidity Under 35 U.S.C. § 112(f)*

At least asserted claims 10-13, 15, 17 of the 361 patent are invalid under 35 U.S.C. § 112 (f) because they are written in means-plus-function language. Claim 10, for instance, includes a limitation of “a quality status module configured to determine a respective quality status.” Each and every limitation of independent claim 10 is written in purely functional language. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2014). Accordingly, each limitation is a means-plus-function limitation and is governed by 35 U.S.C. § 112(f). The 361 patent specification, however, fails to set forth any algorithm or any corresponding structure for these means-plus-function clauses. Accordingly, at least asserted claim 10-13, 15, 17 of the 361 patent is invalid for failure to particularly point out and distinctly claim the subject matter that the inventor regards as the invention and is therefore indefinite and invalid under §112(b), and also violates § 112(f). Because there is no corresponding structure in the 361 patent specification for these means-plus-function clauses and because Cobblestone did not recite structure in its Infringement Contentions for the 361 patent, Defendants reserve the right to add citations to their invalidity contentions and claim charts to address the structure for these means-plus-function clauses; as the invalidity claim

charts stand, however, there is at least as much structure set forth for the prior art for each limitation as there is in the 361 specification.

III. ACCOMPANYING DOCUMENT PRODUCTION

Pursuant to P.R. 3-4(a), Defendants and Intervenor are producing documentation sufficient to show the operation of any aspects or elements of each Accused Instrumentality identified by Plaintiff in its P.R. 3-1(c) charts.

Additionally, Pursuant to P.R. 3-4(b), Defendants and Intervenor are producing herewith a copy of each prior art reference identified above pursuant to P.R. 3-3(a) which does not appear in the file history of the Asserted Patent as well as additional prior art references. To the extent any such prior art reference is not in English, Defendants and Intervenor have produced to Plaintiff or will produce to Plaintiff an English translation of the portion(s) of the non-English prior art reference (s) relied upon by Defendants and Intervenor.

DATED: May 12, 2023

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the above and foregoing document has been served on May 12, 2023, on the counsel of record via electronic mail.

/s/ David S. Frist
David S. Frist