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

GENGHISCOMM HOLDINGS, LLC, Plaintiff, v. SAMSUNG ELECTRONICS AMERICA, INC., Defendant.	Civil Action No. 2:24-CV-00242-RWS-RSP **JURY TRIAL DEMANDED**

SAMSUNG ELECTRONICS AMERICA, INC.'S INVALIDITY CONTENTIONS

Pursuant to Patent Rules 3-3 and 3-4, the Docket Control Order entered by the Court (Dkt. 25), as modified (Dkt. 29), and Paragraph 3 of the Discovery Order (Dkt. 30), Defendant Samsung Electronics America, Inc. ("Defendant" or "Samsung") hereby provides its Invalidity Contentions and accompanying document production with respect to the claims identified by Plaintiff GenghisComm Holdings, LLC ("GenghisComm" or "Plaintiff") in its Patent Rule 3-1 Disclosures.

Samsung's Invalidity Contentions include the accompanying claim charts concerning U.S. Patent Nos. 9,768,842 (the "'842 Patent"), 10,200,227 (the "'227 Patent"), 10,389,568 (the "'568 Patent"), 11,075,786 (the "'786 Patent"), 11,223,508 (the "'508 Patent"), 11,252,005 (the "'005 Patent"), 11,381,285 (the "'285 Patent"), and 11,424,792 (the "'792 Patent") (collectively, the "Patents-in-Suit").

I. Introduction

As disclosed in their P.R. 3-1 Infringement Contentions, Plaintiff asserts the following patents and claims:

Patent	Asserted Claims	Plaintiff's Alleged Priority Date
9,768,842	1, 2, 3, 4, 7, 8, 9	No later than May 14, 2002
10,200,227	22, 24, 25, 26, 28	No later than May 14, 2002
10,389,568	24, 25, 26, 29, 32, 33, 34, 44	No later than May 14, 2002
11,075,786	10, 11, 15, 16, 17, 18	No later than August 2, 2004
11,223,508	17, 18, 19, 20, 21, 22	No later than August 2, 2004
11,252,005	13, 18, 19	No later than August 2, 2004
11,381,285	11, 17, 19	No later than August 2, 2004
11,424,792	8, 9, 10	No later than January 7, 2007

The claims identified above are collectively referred to as "the Asserted Claims" unless reference is made to particularly identified claims one or more of the Patents-in-Suit. By identifying Plaintiff's alleged priority date for the Asserted Claims of each patent above, Defendant does not concede that Plaintiff's claims of priority are correct. In fact, as discussed in Section III, Plaintiff has not made a sufficient showing of entitlement to its alleged priority dates

under applicable case law. *See, e.g.*, *Natural Alternatives Int'l Inc. v. Iancu*, 904 F.3d 1375, 1380 (Fed. Cir. 2018) ("[C]laims in a patent or patent application are not entitled to priority under § 120 at least until the patent owner proves entitlement to the PTO, the Board, or a federal court."). Further, the citation of prior art herein and the accompanying exhibits are not intended to reflect Defendant's claim construction contentions, which will be disclosed in due course in accordance with the Docket Control Order. Instead, Defendant's Invalidity Contentions as set forth herein and in the accompanying exhibits may reflect Plaintiffs' apparent claim constructions based on their Infringement Contentions, with which Defendant disagrees. Indeed, at times, Defendant presents contentions under the assumption that Plaintiff's infringement theories and contentions are correct. This should not be taken as an admission that Defendant agrees with Plaintiff's contentions. Rather, Defendant is merely applying the long-standing principle: "[t]hat which infringes, if later, would anticipate, if earlier." *Peters v. Active Mfg. Co.*, 129 U.S. 530 (1889); *Int'l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1239 (Fed. Cir. 2009) ("[I]t has been well established for over a century that the same test must be used for both infringement and anticipation . . . .").

As further detailed in and supported by these Invalidity Contentions, Defendant contends that each of the Asserted Claims is invalid under at least 35 U.S.C. §§ 102, 103, and/or 112. Defendant reserves the right to prove the invalidity of the Asserted Claims on bases other than those required to be disclosed in these disclosures pursuant to P.R. 3-3.

II. Amendment/Supplementation

Defendant's Invalidity Contentions pertain to the Asserted Claims as identified in Plaintiff's Infringement Contentions. To the extent the Court later allows Plaintiff to amend its infringement contentions and/or assert one or more claims other than the Asserted Claims,

Defendant reserves the right to modify, amend, or supplement these Invalidity Contentions accordingly, for example, to show the invalidity of any such newly Asserted Claims.

These Invalidity Contentions are based on Defendants' current understanding of the Asserted Claims and Plaintiff's apparent view of the scope of those claims as shown, for example, in Plaintiff's Infringement Contentions. A *Markman* Order in this case has not yet been issued, and in no way should these Invalidity Contentions be taken as any admission or acquiescence by Defendant as to the proper scope of the Asserted Claims and/or proper claim constructions of terms and phrases recited in those claims. By identifying prior art that anticipates and/or renders obvious the Asserted Claims, Defendant does not admit that the claim limitations are capable of construction or have a scope that is reasonably certain. Nor does Defendant admit that any claims are supported with an appropriate written description and/or enabling disclosure in the applicable patent specifications. Unless explicitly stated, Defendant does not adopt Plaintiff's apparent claim constructions. Defendant reserves all rights to later challenge or oppose any claim constructions advanced by Plaintiff and to present its own claim construction positions as permitted by the Court.

Defendant further reserves the right to revise these Invalidity Contentions in view of the Court's construction of terms and phrases recited in one or more of the Asserted Claims, additional information obtained during discovery, additional infringement theories put forth by Plaintiff during fact and/or expert discovery, any finding or allegations by Plaintiff as to the priority date(s) of the Asserted Claims, and/or positions that Plaintiff, its fact witnesses, or its expert witness(es) may take concerning claim construction, infringement, and/or invalidity issues, as permitted by the Court. Defendant further reserves the right to supplement its accompanying P.R. 3-4(b) document productions should it later discover additional prior art documents, information, testimony, prior art systems and related documentation, and/or software or hardware code,

including information provided by third parties after the date of service of these Invalidity Contention.

Additionally, Plaintiff has not identified its contentions regarding the qualifications allegedly possessed by a person having ordinary skill in the art ("POSA") for any of the Patents-in-Suit. Thus, Defendant has based its Invalidity Contentions on the (1) educational level and any specialties of the applicants; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; (6) educational level and any specialties of active workers in the field; (7) nature of any testing described in patent (and skills required of those doing such testing). For the avoidance of doubt, Defendant contends that the Asserted Claims are invalid for the reasons set forth in its Invalidity Contentions under any reasonable definition of the level of ordinary skill for each of the Patents-in-Suit which properly considers the aforementioned criteria. Nevertheless, Defendant reserves the right to revise these Invalidity Contentions in response to any position taken by Plaintiff on the level of ordinary skill in the art applicable to a given Asserted Patent.

Defendant may further rely on inventor admissions concerning the scope or state of the prior art relevant to the Asserted Claims, the patent prosecution histories of the Patents-in-Suit, related patents, and/or patent applications, patents or patent applications with similar subject-matter which name Mr. Shattil as an inventor, any deposition or trial testimony of the named inventors of the Patents-in-Suit, journal articles and other publications allegedly related to carrier interferometry and authored by Mr. Shattil, his colleagues and/or acquaintances, and the papers filed and any evidence produced or submitted by Plaintiffs in connection with these cases or other related litigation.

Prior art not included in these Invalidity Contentions, whether known or not known to Defendant, may become relevant. Defendant is currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims are not disclosed in the prior art identified in these Invalidity Contentions. Accordingly, Defendant reserves the right to identify other references that would disclose the allegedly missing limitation(s) of the Asserted Claims.

The references identified in these Invalidity Contentions, which include the attached claim charts, may disclose the elements of the Asserted Claims explicitly and/or inherently, render those elements alone or in combination obvious to those of ordinary skill in the art even absent an explicit or inherent disclosure, and/or they may be relied upon to show the state of the art in the relevant time frame. References identified in these Invalidity Contentions, as well as the "References Cited" on the face of the Patents-in-Suit and the patents cited within the body of the Patents-in-Suit, may be used to illustrate, but not limit the scope of, the state of the art to which the Patents-in-Suit pertain (i.e., at a time prior to the date of alleged inventions of the Asserted Claims of the Patents-in-Suit). Moreover, Defendant reserves the ability to rely on later-identified sources of information, including, but not limited to, witness testimony and other discovery, to establish the state of the art in the relevant time frame pertaining to the Patents-in-Suit.

Because discovery has just recently begun, Defendant anticipates that additional prior art and invalidity bases may be found. Defendant's investigation and analysis of the prior art is continuing, and thus Defendant reserves the right to supplement, amend, and/or revise the information provided herein as Defendant conducts further investigation and/or analysis, including identifying, charting, and relying on additional references.

Additionally, in view of likely third-party discovery that will be taken, Defendants reserve the right to present additional items of prior art under 35 U.S.C. §§ 102 and/or § 103 located during

discovery or further investigation, and to assert contentions of invalidity under 35 U.S.C. § 102. For example, Defendants expect to issue subpoenas to third parties believed to have knowledge, documents, and/or other evidence concerning invalidity of one or more of the Asserted Claims.

In addition to the positions and prior art identified in these Invalidity Contentions (including the accompanying claim charts), Defendant also incorporates by reference all invalidity contentions and subject matter eligibility contentions, prior art,[1] and invalidity claim charts (including, without limitation, all anticipation positions, obviousness positions (including all prior art combinations and motivations to combine), indefiniteness positions, written description positions, and non-enablement positions) concerning one or more of the Patents-in-Suit, as disclosed at any time. This includes, without limitation, disclosures in previous or related litigation, in United States Patent & Trademark Office ("USPTO") proceedings, by Plaintiffs, by any other parties accused of patent infringement by Plaintiff, or by the named inventors or any individuals associated with the prosecution and/or any form of post-grant review or reexamination of the Patents-in-Suit.

Specifically, for example, Defendant identifies, as prior art upon which it may rely to show the invalidity of the Asserted Claims, the prior art references disclosed by parties in any other litigation (including inter partes review and/or reexamination proceedings) involving one or more of the Patents-in-Suit, any patent related (either through a priority claim or through disclosure of similar subject matter allegedly invented by Mr. Shattil) to any of the Patents-in-Suit, and/or any other patent allegedly assigned to Plaintiff claiming priority to the Patents-in-Suit (collectively,

[1] Prior art appearing in the file histories of the Patents-in-Suit is not required to be separately produced by Defendants under P. R. 3-4(b).

"Other Proceedings").[2,3] To the extent Defendant has stipulated or stipulates in the future that they will not pursue certain invalidity grounds in these actions concerning patent claims subject to instituted inter partes review proceedings, Defendant will abide by those stipulations, and nothing in these contentions should be read as suggesting otherwise. Rather, these contentions are intended to put Plaintiff on notice of the grounds of invalidity, within the scope of P.R. 3-3, that Defendant may assert in these actions, including because the conditions of any relevant stipulation are not met (e.g., if the corresponding inter partes review is not instituted) or because the grounds fall outside the scope of such stipulations.

Plaintiff has a present and ongoing duty to produce to Defendant all relevant documents from any Other Proceedings, including, but not limited to, all prior art, invalidity contentions, and expert reports on invalidity (among other relevant items). Defendant reserves the right to supplement or otherwise amend these Invalidity Contentions in response to any relevant discovery provided by Plaintiff, third parties, opening or rebuttal expert reports, fact or expert depositions, or in response to any claim construction ruling(s) issued by this Court (regardless of how and when such ruling is made). Defendant also reserves the right to supplement or otherwise amend these Invalidity Contentions in response to any rebuttal evidence disclosed by Plaintiff or as otherwise may be necessary or appropriate under the circumstances.

III. Response to Plaintiff's Disclosure of Priority Dates

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[2] This includes, without limitation, all invalidity contentions and subject matter eligibility contentions, prior art, and invalidity claim charts (including, without limitation, all anticipation positions, obviousness positions (including all prior art combinations and motivations to combine), indefiniteness positions, written description positions, and non-enablement positions) disclosed and/or asserted in infringement proceeding.

[3] Defendant also reserves the right to rely on Plaintiff's statements, admissions, and disclaimers with respect to any Patents-in-Suit or related patents, including, without limitation, statements made in any reexamination and in any *inter partes* review proceedings pertaining to any Patents-in-Suit or related patents.

Samsung makes these contentions in response to Plaintiff's disclosure of priority dates. Samsung contends that Plaintiff has not demonstrated that any Asserted Claim of any Patent-in-Suit is entitled to the priority date that Plaintiff alleges it is entitled to. Patent claims "are not entitled to an earlier priority date merely because the patentee claims priority." *In re NTP, Inc.*, 654 F.3d 1268, 1276 (Fed. Cir. 2011). Rather, "for a patent's claims to be entitled to an earlier priority date, the patentee must demonstrate that the claims meet the requirements of 35 U.S.C. § 120." *Id.* (emphasis added). Claims in a patent or patent application are not entitled to priority under § 120 at least until the patent owner proves entitlement to the PTO, the Board, or a federal court. *See PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1305-06 (Fed. Cir. 2008). Given the burden on GenghisComm, Samsung's identification of applications lacking disclosure of various claim limitations or aspects of the claimed subject matter is not to be construed as a concession that other limitations are disclosed in any of the applications or patents whether mentioned or not. Samsung refers to its contentions regarding written description and enablement, below. *Infra* §VII.C.

Here, certain of Samsung's invalidity contentions rely on priority dates that differ from those identified by GenghisComm. To date, GenghisComm has not provided the basis for any alleged earlier conception, reduction to practice, or diligence to reduction to practice. Samsung will be pursuing GenghisComm's position on these matters through discovery. Moreover, GenghisComm has not described how the Asserted Claims are entitled to the benefit of earlier filing dates. The burden of coming forward with evidence to show that it is entitled to the benefit of the earlier-claimed priority dates is on GenghisComm. *See Natural Alternatives Int'l Inc. v. Iancu*, 904 F.3d 1375, 1380 (Fed. Cir. 2018). Nevertheless, for the sake of completeness, Samsung

provides the following contentions based on the language of the asserted claims and the express disclosures included explicitly in the earlier-filed applications.

Additionally, various of the specifications associated with the earlier-filed applications include a variety of provisional applications, non-provisional applications, PCT applications, patents, patent publications, journal articles, and/or books which are allegedly incorporated by reference. Samsung's contentions have not evaluated to what extend such material may provide an enabling written description of the alleged invention because "it would be improper to place the burden on the public to unearth and decipher a priority claim when the patentee is the person best suited to understand the genealogy and relationship of her applications." *Droplets, Inc. v. E*TRADE Bank*, 887 F.3d 1309, 1317 (Fed. Cir. 2018). Therefore, Samsung expects that whether statutory support under section 112 is provided in a document allegedly incorporated by reference into any of the earlier-filed applications in the priority chain will be a subject of discovery.

A. U.S. Patent No. 9,768,842

GenghisComm has not demonstrated or even tried to explain how the subject matter of the Asserted Claims of the '842 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the '842 Patent is, at best, entitled only to the benefit of the application leading to the '842 Patent, (i.e., U.S. Patent Application No. 15/283,881, filed Oct. 3, 2016). In the alternative or in addition, Samsung contends that the '842 Patent is, at best, entitled only to the benefit of the filing date of U.S. Patent Application No. 14/967,633 ("the '633 Application"), filed on December 14, 2015. While the '881 Application—the application leading to the '842 Patent—claimed the benefit of U.S. Provisional No. 60/598,187 (filed August 2, 2004), and U.S. Patent Application Nos. 10/145,854 (filed May 14, 2002), 11/187,107 (filed Jul. 22, 2005), 14/168,466 (filed Jan. 30, 2014), and 14/967,633 (filed Dec. 14,

2015), substantial changes were made to the specification (1) when the ’466 Application was filed on January 30, 2014, such that the disclosure of the ’466 Application is not of the same subject matter as the disclosure of the ’107 Application, and (2) when the ’633 Application was filed such that the disclosure of the ’633 Application is not of the same subject matter as either the ’107 Application or the ’466 Application.

In addition to numerous changes to the description, the ’187 Provisional and the ’854 Application are not incorporated by reference into, for example, the ’107 Application, whereas, in later applications, the specification was modified to include such an incorporation. For instance, independent claim 1 requires “a mapper configured to map the DFT-spread data signal to a plurality of ODFM subcarriers,” which is not fully described within the corners of the various applications leading up to the ’881 Application. As an additional example, independent claim 1 requires “an OFDM spreader,” which “is configured to provide the superposition with a reduced peak-to-average power ratio,” which is not described within the four corners of each of the applications leading up to the ’881 Application. With respect to claim 2 of the ’842 Patent, “the OFDM spreader comprises an N-point DFT and the OFDM modulator comprises an M-point inverse discrete Fourier Transform where M>N” is not found within the four corners of the pre-’633 Application specifications. With respect to claim 4 of the ’842 Patent, “the data symbols comprise reference-signal symbols, which comprise at least one of known training symbols and synchronization symbols,” is not described within the four corners of the pre-’633 Application specifications. With respect to 7 of the ’842 Patent, “a cyclic prefix appender configured to append at least one of a cyclic prefix, a postfix, and a guard interval to the OFDM transmission symbol” is not described within the four corners of at least the pre-’633 Application specifications. With respect to claim 8 of the ’842 Patent, “wherein the OFDM spreader is configured to provide

channel precoding," is not described within the four corners of the pre-'633 Application specifications. With respect to claim 9 of the '842 Patent, "wherein the plurality of data symbols are at least one of time-multiplexed with reference-signal symbols, frequency-multiplexed with reference-signal symbols, and code-multiplexed with reference-signal symbols," is not described within the four corners of the pre-'633 Application specifications.

B. U.S. Patent No. 10,200,227

GenghisComm has not demonstrated or even tried to explain how the subject matter of the Asserted Claims of the '227 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the '227 Patent is, at best, entitled to the benefit of any application before the filing date of the application that led to the '227 Patent (i.e., U.S. Patent Application No. 15/396,567 filed on December 31, 2016). For example, while the '227 Patent claims the benefit of the filing date of U.S. Provisional No. 60/598,187 (filed August 2, 2004), and U.S. Patent Application Nos. 10/145,854 (filed May 14, 2002), 11/187,107 (filed Jul. 22, 2005), and 14/168,466 (filed Jan. 30, 2014), when the '567 Application the specification was substantially changed from that included with the '466 Application. When the '466 Application was filed, the specification was substantially changed from that included with the '107 Application.

In addition to the numerous changes to the description, the '187 Provisional and the '854 Application are not incorporated by reference into, for example, the '107 Application, whereas they are incorporated by reference into the '466 Application. For example, claim 22 of the '227 Patent requires at least the following limitations: "a non-transitory memory coupled to the processor, the non-transitory memory including a set of instructions stored therein and executable by the processor to: perform an invertible transform on a set of data symbols to generate a plurality

N of spread data symbols, . . . map the N spread data symbols to at least N subcarriers of a plurality of M Orthogonal Frequency Division Multiplexing (OFDM) subcarriers to generate a set of complex subcarrier amplitudes" and perform an "M-point inverse discrete Fourier transform . . ." and these features are not found within the four corners of the pre-'567 Application specifications. With respect to claim 25 of the '227 Patent, the feature "wherein M>N" is not found within the four corners of the pre-'567 Application specifications. With respect to claim 28 of the '227 Patent the disclosure of the requirement of the "non-transitory memory further comprises instructions to append at least one of a cyclic prefix, a postfix, and a guard interval to the time-domain sequence," is not found within the four corners of the pre-'567 Application specifications.

C. U.S. Patent No. 10,389,568

GenghisComm has not demonstrated or even tried to explain how the subject matter of the asserted claims of the '568 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the '568 Patent is, at best, entitled to the benefit of the filing date of the application that led to the '568 Patent (i.e., U.S. Patent Application 15/786,270, filed on Oct. 17, 2017). Alternatively or in addition, the '568 Patent is not entitled to a filing date of earlier than May 9, 2016. As yet another alternative, the '568 Patent is not entitled to a filing date of earlier than June 1, 2015.

For example, when the '270 Application was filed, numerous documents were incorporated by reference and those documents were not previously incorporated by reference into the immediate parent application—the '664 Application, thus adding new matter to the specification of the '568 Patent. Insofar as GenghisComm intends to argue that the newly-incorporated by reference documents are properly incorporated by reference via a double-incorporation-by-reference (or multiple incorporation by reference) to the '854 Application, such an argument is

flawed. While the ’270 Application claims the benefit of the priority date of the ’854 Application (and even purports to incorporate it by reference), when the ’107 Application was filed, the specification of the ’107 Application was substantially modified and removed the long list of incorporated by reference documents that were originally found in the ’854 Application specification. And, while the benefit of the filing date of the ’854 Application was claimed, the ’854 Application is not incorporated by reference into the specification of the ’107 Application. Therefore, subject matter that requires the ’854 Application for support under section 112 was removed from the chain of applications and, the attempt to re-introduce that subject matter (including the numerous incorporations by reference) is improper because of a lack of continuity of disclosure. The lack of continuity of disclosure means that the ’568 Application is entitled only to the filing date when the subject matter was re-introduced. *See Zenon Envt’l, Inc. v. United States Filter Corp.*, 506 F.3d 1370, 1378 (Fed. Cir. 2007). Section 120 requires that “each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112.” *See Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997) (citing *In re Hogan*, 559 F.2d 595, 609 (C.C.P.A. 1977)); *see also Holmer v. Harari*, 681 F.3d 1351, 1355 (Fed. Cir. 2012) (“Thus, if any application in the priority chain fails to make the requisite disclosure of subject matter, the later-filed application is not entitled to the benefit of the filing date of applications preceding the break in the priority chain.”).

By way of additional example, while the ’270 Application claimed the benefit of U.S. Provisional No. 60/598,187 (filed August 2, 2004), and U.S. Patent Application Nos. 10/145,854 (filed May 14, 2002), 11/187,107 (filed Jul. 22, 2005), 12/545,572 (Filed Aug. 21, 2009), 14/276,309 (filed May 13, 2014), 14/727,769 (filed June 1, 2015), 15/149,382 (filed May 9, 2016), and 15/489,664 (filed Apr. 17, 2017), and when the ’270 Application was filed, substantial changes

were made to the specification of the earlier-filed ’664 Application thus introducing new matter. Additionally, when the ’382 application was filed, substantial changes were made to the specification of the earlier-filed applications thus introducing new matter.

In addition to numerous changes to the description, the ’187 Provisional and the ’854 Application are not incorporated by reference into, for example, the ’107 Application, whereas, in later applications, the specification was modified to include such an incorporation (see above discussion regarding lack of continuity of disclosure). Various limitations of the asserted claims of the ’568 Patent find written description support for the first time in the ’270 Application. For example, independent claim 24 of the ’568 Patent requires at least the following limitations “a non-transitory computer-readable memory communicatively coupled to the processor, the memory including a set of instructions stored thereon and executable by the processor for: dividing a block of complex-valued symbols into a plurality of sets of complex-valued symbols, transform precoding each of the plurality of sets of complex-valued symbols into a block of transform precoded complex-valued symbols,” and code for “generating an [OFDM] signal comprising a plurality of OFDM subcarriers modulated with the transform-precoded complex-valued symbols . . . .” These limitations are not fully described within the four corners of the ’664 Application specification, or in the alternative, in the ’382 Application specification, or in the alternative, the ’769 Application specification, or in the alternative, the ’107 Application specification. With respect to claim 25 of the ’568 Patent, “the transform precoding spreads the block of complex-valued symbols with a plurality of orthogonal spreading codes comprising complex-valued coefficients of a discrete Fourier transform (DFT) to produce the block of transform-precoded complex-valued symbols” is not fully described within the four corners of the ’664 Application specification, or in the alternative, in the ’382 Application specification, or in the alternative, the

’769 Application specification, or in the alternative, the ’107 Application specification. With respect to claim 26 of the ’568 Patent, “wherein the DFT is a fast Fourier transform (FFT),” is not described within the four corners of the ’664 Application specification, or in the alternative, in the ’382 Application specification, or in the alternative, the ’769 Application specification, or in the alternative, the ’107 Application specification. With respect to claim 29 of the ’568 Patent, “instructions for: mapping the block of transform-precoded complex-valued symbols to physical resource blocks assigned for transmission of a physical uplink shared channel" is not described within the four corners of the ’270 Application specification, or in the alternative, in the ’664 Application specification, or in the alternative, in the ’382 Application specification, or in the alternative, the ’769 Application specification, or in the alternative, the ’107 Application specification. With respect to claim 32 of the ’568 Patent, “wherein the mapping is configured to select the plurality of OFDM subcarriers according to at least one of a frequency division multiple access scheme, and a frequency-hoping scheme” is not described within the four corners of the ’270 Application specification, or in the alternative, in the ’664 Application specification, or in the alternative, in the ’382 Application specification, or in the alternative, the ’769 Application specification, or in the alternative, the ’107 Application specification. With respect to claim 33 of the ’568 Patent, “instructions for: scrambling a block of bits of one subframe of a physical uplink shared channel resulting in a block of scrambled bits; and modulating the block of scrambled bits resulting in the block of complex-valued symbols” is not described within the four corners of the ’270 Application specification, or in the alternative, in the ’664 Application specification, or in the alternative, in the ’382 Application specification, or in the alternative, the ’769 Application specification, or in the alternative, the ’107 Application specification. With respect to claim 34 of the ’568 Patent, “wherein the scrambling is configured to scramble the block of bits into a block

of scrambled bits with at least one pseudo-noise code" is not described within the four corners of the '270 Application specification, or in the alternative, in the '664 Application specification, or in the alternative, in the '382 Application specification, or in the alternative, the '769 Application specification, or in the alternative, the '107 Application specification. With respect to claim 44, "wherein each of the plurality of sets of complex-valued symbols is a single carrier frequency division multiple access (SC-FDMA) symbol" is not described within the four corners of the '270 Application specification, or in the alternative, in the '664 Application specification, or in the alternative, in the '382 Application specification, or in the alternative, the '769 Application specification, or in the alternative, the '107 Application specification.

D. U.S. Patent No. 11,075,786

GenghisComm has not demonstrated or even tried to explain how the subject matter of the Asserted Claims of the '786 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the '786 Patent is not entitled to the benefit of any application before the filing date of the application that led to the '786 Patent (i.e., U.S. Patent Application No. 16/796,888 on February 20, 2020). In fact, changes were made to the specification as filed as the priority claim shifted after the filing of the '888 Application. For example, the specification as originally filed was amended by a preliminary amendment to change the priority claim as follows:

> This application is a continuation of U.S. Pat. Appl. No. 16/502,723, filed July 3, 2019, which is a continuation of U.S. Pat. Appl. No. 14/789,949, filed July 1, 2015, now U.S. Pat. No. 10,355,720, which is a continuation-in-part of U.S. Pat. Appl. No. 13/116,984, filed May 26, 2011, now U.S. Pat. No. 10,014,882, which is a continuation-in-part of U.S. Patent Application No. 12/328,917, filed on December 5, 2008, now U.S. Patent No. 7,965,761, which is a divisional application of U.S. Patent Application No. 11/621,014, filed January 8, 2007, now U.S. Patent No. 7,593,449,

> which is a divisional application of U.S. Patent Application No. 10/131,163, filed April 24, 2002, now U.S. Patent No. 7,430,257.

None of these applications was incorporated by reference into the application leading to the ’786 Patent. Another preliminary amendment was filed on May 1, 2020. This preliminary amendment changed the priority claim and, insofar as any of the newly-identified applications is needed to support any claim of the ’786 Patent, added new matter by attempting to incorporate entirely different applications by reference. The new priority claim is:

> This application is a Continuation of U.S. Patent Appl. No. 16/199,221, filed November 26, 2018, now U.S. Patent No. 10,644,916, which is a Continuation of U.S. Pat. Appl. No. 16/027,191, filed July 3, 2018, now U.S. Patent No. 10/574,497, which is a Continuation of U.S. Patent Appl. No. 15/489,664, filed April 17, 2017, now U.S. Pat. No. 9,800,448, which is a Continuation of U.S. Pat. Appl. No. 15/149,382, filed May 9, 2016, now U.S. Pat. No. 9,628,231, which is a Continuation-in-Part of U.S. Pat. Appl. No. 14/727,769, filed June 1, 2015, which is a Continuation of U.S. Pat. Appl. No. 14/276,309, filed May 13, 2014, now U.S. Pat. No. 9,048,897, which is a Continuation of U.S. Pat. Appl. No. 12/545,572, filed August 21, 2009, now U.S. Pat. No. 9,042,333, which is a Divisional of U.S. Pat. Appl. No. 11/187,107, filed on July 22, 2005, now U.S. Pat. No. 8,670,390, which claims priority to Provisional Appl. No. 60/598,187, filed august 2, 2004, **all of which are hereby incorporated by reference in their entireties** and all of which this application claims priority under at least 35 U.S.C. 120 and/or any other applicable provision in Title 35 of the United States Code.

Therefore, changes were made after filing that sought to incorporate numerous applications that were not incorporated at the time of filing. Therefore, insofar as any of these earlier-filed applications is relied upon for support for any Asserted Claim of the ’786 Patent, the earliest possible effective filing date is May 1, 2020 when this amendment to the specification was made. Moreover, the change of the priority claim from the one made in the originally-filed application data sheet and in the preliminary amendment accompanying the originally-filed ’888 Application results in a lack of continuity of disclosure under 35 U.S.C. § 120. In other words, when the ’888

Application was originally filed, it claimed the benefit of, for example, U.S. Patent Application No. 10/131,163 (though that application was not incorporated by reference into the '888 Application, as discussed above). The '888 Application is largely identical to the '163 Application. But, when the priority claim was changed, the specification of the '888 Application and the disclosure of the subject matter therein no longer had continuity of disclosure with the earlier-filed applications to which priority was now claimed. Therefore, the '888 Application does not get the benefit of any earlier-filed applications under 35 U.S.C. § 120. *See Zenon Envt'l, Inc. v. United States Filter Corp.*, 506 F.3d 1370, 1378 (Fed. Cir. 2007); *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997) (citing *In re Hogan*, 559 F.2d 595, 609 (C.C.P.A. 1977) ("[E]ach application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112."); *see also Holmer v. Harari*, 681 F.3d 1351, 1355 (Fed. Cir. 2012) ("Thus, if any application in the priority chain fails to make the requisite disclosure of subject matter, the later-filed application is not entitled to the benefit of the filing date of applications preceding the break in the priority chain.").

Alternatively, the Asserted Claims of the '786 Patent are, at best, entitled only to the benefit of the filing date U.S. Patent Application No. 15/149,382 ("the '382 Application"), filed on May 9, 2016. While the '382 Application claimed the benefit of U.S. Provisional No. 60/598,187 (filed August 2, 2004), and U.S. Patent Application Nos. 10/145,854 (filed May 14, 2002), 11/187,107 (filed Jul. 22, 2005), 12/545,572 (Filed Aug. 21, 2009), 14/276,309 (filed May 13, 2014), and 14/727,769 (filed June 1, 2015), when the '382 Application was filed, substantial changes were made to the specification of the earlier-filed applications thus introducing new matter.

In addition to numerous changes to the description, the '187 Provisional and the '854 Application are not incorporated by reference into, for example, the '107 Application, whereas, in

later applications, the specification was modified to include such an incorporation. Various limitations of the asserted claims of the ’786 Patent find written description support for the first time, if at all, in the ’382 application. For example, independent claim 10, requires at least the following limitations: “[A]n apparatus” that “employs a second set of complex-valued codes to recover transmitted data symbols from a received signal,” a computer-readable memory including instructions executable by a processor for “selecting a plurality of subcarriers to be transmitted,” “applying the encoded data symbols to the plurality of subcarriers to produce a spread-Orthogonal Frequency Division Multiplexing (OFDM) signal,” and “wherein the first set of complex-valued codes are complex conjugates of the second set of complex-valued codes.” *See* ’786 Patent, claim 10. These limitations are not described within the four corners of the pre-’382 Application specifications. With respect to claim 11 of the ’786 Patent, disclosure of the requirement that “selecting [a plurality of subcarriers] is responsive to spectrum allocation or is configured to provide for orthogonal frequency division multiple access” is not found within the four corners of the pre-’382 Application specifications. With respect to claim 15 of the ’786 Patent, “wherein the plurality of subcarriers are contiguous subcarriers or interleaved subcarriers” is not described within the four corners of the pre-’382 Application specifications. With respect to claim 16 of the ’786 Patent, “wherein encoding comprises multiplying a vector or matrix of data symbols with a vector or matrix comprising the first set of complex-valued codes” is not described within the four corners of the pre-’382 Application specifications. With respect to claim 18 of the ’786 Patent, “the non-transitory computer-readable memory further includes instructions stored thereon and executable by the processor for adding a cyclic prefix to the spread-OFDM signal before transmitting the spread-OFDM signal” is not described within the four corners of the pre-’382 Application specifications.

E. U.S. Patent No. 11,223,508

GenghisComm has not demonstrated or even tried to explain how the subject matter of the Asserted Claims of the ’508 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the ’508 Patent is, at best, entitled only to the benefit of the application leading to the ’508 Patent, (i.e., U.S. Patent Application No. 16/916,901, filed Jun. 30, 2020). In the alternative or in addition, Samsung contends that the ’508 Patent is, at best, entitled only to the benefit of U.S. Patent Application No. 15/149,382 (“the ’382 Application”), filed on May 9, 2016. While the ’901 Application claimed the benefit of U.S. Provisional No. 60/598,187 (filed August 2, 2004), and U.S. Patent Application Nos. 10/145,854 (filed May 14, 2002), 11/187,107 (filed Jul. 22, 2005), 12/545,572 (Filed Aug. 21, 2009), 14/276,309 (filed May 13, 2014), and 14/727,769 (filed June 1, 2015), 15/149,382 (filed May 9, 2016), 15/489,664 (filed Apr. 17, 2017), 15/786,270 (filed Oct. 17, 2017), and 16/426,240 (filed May 30, 2019) when the ’382 Application was filed, substantial changes were made to the specification of the earlier-filed applications thus introducing new matter. In addition to numerous changes to the description, the ’187 Provisional and the ’854 Application are not incorporated by reference into, for example, the ’107 Application, whereas, in later applications, the specification was modified to include such an incorporation.

Additionally, while the specification of U.S. Patent Application No. 16/916,901, which led to the ’508 Patent, is nearly identical to the specification of the ’382 Application, the specification of the ’382 Application was changed to introduce material that was not properly included when the application leading to the ’568 Patent was added. Thus, continuity of disclosure has not been properly maintained. *See Zenon Envt’l, Inc. v. United States Filter Corp.*, 506 F.3d 1370, 1378 (Fed. Cir. 2007). Section 120 requires that “each application in the chain leading back to the earlier

application must comply with the written description requirement of 35 U.S.C. § 112." *See Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997) (citing *In re Hogan*, 559 F.2d 595, 609 (C.C.P.A. 1977)); see also *Holmer v. Harari*, 681 F.3d 1351, 1355 (Fed. Cir. 2012) ("Thus, if any application in the priority chain fails to make the requisite disclosure of subject matter, the later-filed application is not entitled to the benefit of the filing date of applications preceding the break in the priority chain."). Various limitations of the asserted claims of the '508 Patent find written description support for the first time in the '382 Application. For example, independent claim 17, requires at least the following limitations: "a transceiver-control circuitry configured for: provisioning a consecutive series of Orthogonal Frequency Division Multiplexing (OFDM) subcarriers for uplink or downlink communications; provisioning a plurality of different selectable subcarrier spacings for the consecutive series of OFDM subcarriers; and performing discrete Fourier transform (DFT) coding on a plurality of data symbols to produce DFT coded symbols; . . . wherein provisioning the plurality of different selectable subcarrier spacings comprises providing the single-carrier frequency division multiple access signal with a particular one of a set of different symbol periods by selecting one of the plurality of different selectable subcarrier spacings." These limitations are not described within the four corners of the pre-'382 Application specifications (at the very least). With respect to claim 18 of the '508 Patent, "wherein at least one of the plurality of different selectable subcarrier spacings equals at least one other of the plurality of different selectable subcarrier spacings multiplied by a scaling factor that is a power of two" is not described in the four corners of any application before the '382 Application. With respect to claim 20 of the '508 Patent, "wherein the plurality of different selectable subcarrier spacings comprise integer multiples of a first subcarrier spacing" is not described in the four corners of any application before the '382 Application. With respect to claim 21 of the '508 Patent,

"wherein each of the plurality of different selectable subcarrier spacings is configured for one of a plurality of different deployment scenarios, the plurality of different deployment scenarios comprising different system requirements or different channel characteristics" is not described in the four corners of any application including the '901 Application specification, or in the alternative any pre-'382 Application specifications. With respect to claim 22 of the '508 Patent, "wherein each of the plurality of different selectable subcarrier spacings produces a different number of symbols per frame" is not described in the four corners of any application including the '901 Application specification, or in the alternative any pre-'382 Application specifications.

F. U.S. Patent No. 11,252,005

GenghisComm has not demonstrated or even tried to explain how the subject matter of the Asserted Claims of the '005 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the '005 Patent is, at best, entitled only to the benefit of the filing date of the application leading to the '005 Patent (i.e., U.S. Patent Application No. 16/940,383 ("the '383 Application"), filed July 27, 2020).

For example, the '005 Patent purports to be a "Continuation of application No. 16/199,221, filed on Nov. 26, 2018, now Pat. No. 10,644,961 . . . ." But, when the application for the '005 Patent was filed on July 27, 2020 and Mr. Shattil claimed the benefit of the '221 Application, the '221 Application had already issued as a patent (i.e., the '221 Application issued as U.S. Patent No. 10,644,961 on May 5, 2020). Therefore, there was a lack of copendency between the '383 Application and the '221 Application such that priority claim violates 35 U.S.C. 120's co-pendency requirement. Indeed, when the '383 Application was filed, Mr. Shattil signed a document both (1) claiming the benefit of the '221 application *and* (2) noting that it had issued as a patent months earlier, as shown below:

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
	Continuation of	16199221	2018-11-26	10644916	2020-05-05

Signature: Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature	/Steven J Shattil/			Date (YYYY-MM-DD)	2020-07-27
First Name	Steven	Last Name	Shattil	Registration Number	40170

Additional Signature may be generated within this form by selecting the Add button. Add

The Filing Receipt noted the priority claim as follows:

Inventor(s)
Steve Shattil, Cheyenne, WY;
Applicant(s)
Genghiscomm Holdings, LLC, Boulder, CO;
Assignment For Published Patent Application
Genghiscomm Holdings, LLC, Boulder, CO

Power of Attorney: None

Domestic Priority data as claimed by applicant
This application is a CON of 16/199,221 11/26/2018 PAT 10644916
which is a CON of 16/027,191 07/03/2018 PAT 10574497
which is a CON of 15/642,850 07/06/2017 PAT 10015034
which is a CON of 15/489,664 04/17/2017 PAT 9800448
which is a CON of 15/149,382 05/09/2016 PAT 9628231
which is a CIP of 14/727,769 06/01/2015
which is a CON of 14/276,309 05/13/2014 PAT 9048897
which is a CON of 12/545,572 08/21/2009 PAT 8750264
which is a DIV of 11/187,107 07/22/2005 PAT 8670390
which claims benefit of 60/598,187 08/02/2004

Instructions with the filing receipt explained that it was incumbent on Mr. Shattil to "verify the accuracy of the data presented in this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, **including a properly marked up ADS showing the changes with strike-through for deletions and underlining for additions**." While Mr. Shattil would later make a preliminary amendment to change the first paragraph of the specification, this did not change the priority claim. In fact, not only did the filing receipt require

the submission of the ADS, but the PTO's rules required the specific reference of § 120 to be found in an application data sheet. *See, e.g.*, 37 C.F.R. § 1.78(d)(3) ("[A]ny nonprovisional application . . . that claims the benefit of one or more prior-filed nonprovisional applications . . . must contain or be amended to contain a reference to each such prior-filed application, identifying it by application number (consisting of the series code and serial number) . . . . If the later-filed application is a nonprovisional application, the reference required by this paragraph ***must be included in an application data sheet (§ 1.76(b)(5)).***"); *see also Droplets, Inc.*, 887 F.3d at 1317 ("Section 120 places the burden on the patent owner to provide a clear, unbroken chain of priority. . . . As the Board explained, moreover, the 'burden was on [Droplets] to read and understand the applicable patent laws and rules.'"). Mr. Shattil understood this was a requirement because he was no stranger to submitting amended ADS forms to alter priority claims. No attempt to change the priority claim in an amended ADS was made and thus when the '005 Patent issued, it included a flawed priority claim that claimed that the '005 Patent was a continuation of an application that was no longer copending at the time the application for the '005 Patent was filed. Thus, the priority date of the '005 Patent is no earlier than July 27, 2020.

As an additional reason that GenghisComm's priority claim is dubious, months after the original filing of the application leading to the '005 Patent, Mr. Shattil amended the specification to incorporate by reference two additional applications: 10/414,663 and 10/360,346 and claimed that both applications had been incorporated by reference into "each of the applications and patents to which the present application claims priority and incorporates by reference." But these applications were not incorporated into "each of the applications and patents to which the present application claims priority." In fact, when the '383 Application was filed, it included the following statement in the specification:

> This application is a Continuation-in-Part of U.S. Pat. Appl. No. 14/727,769, entitled "Cooperative Wireless Networks," filed June 1, 2015, which is a Continuation of U.S. Pat. Appl. No. 14/276,309, entitled "Cooperative Wireless Networks," filed May 13, 2014, now U.S. Pat. No. 9,048,897, which is a Continuation of U.S. Pat. Appl. No. 12/545,572, entitled "Cooperative Wireless Networks," filed August 21, 2009, now U.S. Pat. No. 9,042,333, which is a Divisional of U.S. Pat. Appl. No. 11/187,107, entitled "Cooperative Beam-Forming in Wireless Networks," filed on July 22, 2005, now U.S. Pat. No. 8,670,390, which claims priority to Provisional Appl., No. 60/597,187, filed August 2, 2004 and is a Continuation In Part of U.S. Pat. Appl. No. 10/145,854, entitled "Carrier Interferometry Networks," which was filed on May 14, 2002, all of which are incorporated by reference.

But, when the '107 Application was filed, it did not incorporate by reference either the '854 Application or the '187 Provisional Application. Therefore, the attempt to incorporate by reference that subject matter in applications filed after the '107 Application constituted the introduction of new matter. Additionally, the incorporation by reference of earlier applications 10/414,663 and 10/360,346 also amounted to the introduction of new matter, which was not otherwise described within the four corners of the '383 Application when it was filed. The subject matter of the Asserted Claims of the '508 Patent is not fully described by the text of each of the applications to which priority is claimed and thus is not entitled to the benefit of any application before U.S. Patent Application No. 15/149,382 ("the '382 Application"), filed on May 9, 2016. While the '383 Application claimed the benefit of U.S. Provisional No. 60/598,187 (filed August 2, 2004), 11/187,107 (filed Jul. 22, 2005), 12/545,572 (Filed Aug. 21, 2009), 14/276,309 (filed May 13, 2014), 14/727,769 (filed June 1, 2015), 15/149,382 (filed May 9, 2016), 15/489,664 (filed Apr. 17, 2017), 15/642,850 (filed Jul. 6, 2017), 16/027,191 (filed Jul. 3, 2018), and 16/199,221 (filed Nov. 26, 2018), when the '382 application was filed, substantial changes were made to the specification of the earlier-filed applications thus introducing new matter. Therefore, the claims of

the ’005 Patent are, at best, entitled to the effective filing date of July 27, 2020, or alternatively, no earlier than the effective filing date of the ’382 Application (May 9, 2016).

Various limitations of the ’383 Application find support (if at all) for the first time in the specification of the ’382 Application. For example, independent claim 13, requires “at least one non-transitory computer-readable memory in electronic communication with the at least one processor, wherein instructions stored in the at least one non-transitory computer-readable memory are executable by the at least one processor for: producing a set of subcarrier values that equals a product of a complex-valued code matrix with a matrix of data symbols; selecting a set of subcarriers assigned for use by a user device; and modulating the subcarrier values onto the set of subcarriers to produce a plurality of modulated subcarriers; . . . wherein producing the set of subcarrier values employs a plurality of complex-valued codes that shapes interference patterns of the superposition to produce a plurality of cyclic-shifted waveforms that each have one of the data symbols modulated thereon.” These limitations are not described within the four corners of the pre-’382 Application specifications (at best). With respect to claim 19 of the ’005 Patent, “wherein selecting the set of subcarriers comprise selecting one of a plurality of subcarrier spacings” is not described within the four corners of the pre-’382 Application specifications.

G. U.S. Patent No. 11,381,285

GenghisComm has not demonstrated or even tried to explain how the subject matter of the Asserted Claims of the ’285 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the ’285 Patent is not entitled to the benefit of any application before the filing date of the application leading to the ’285 Patent (i.e., U.S. Patent Application No. 17/105,574, filed November 26, 2020). While the ’574 Application claimed the benefit of U.S. Provisional No. 60/598,187 (filed August 2, 2004) and 11/187,107

(filed Jul. 22, 2005), 12/545,572 (Filed Aug. 21, 2009), 14/276,309 (filed May 13, 2014), and 14/727,769 (filed June 1, 2015), when the ’574 application was filed, substantial changes were made to the specification of the earlier-filed applications thus introducing new matter. For instance, the ’574 Application adds new Figures 15-33B and descriptions of those figures.

In addition to numerous changes to the description, the ’187 Provisional is not incorporated by reference into, for example, the ’107 Application, whereas, in later applications, the specification was modified to include such an incorporation. Various limitations of the asserted claims of the ’285 Patent. Various limitations of the ’574 Application find support (if at all) for the first time in the specification of the ’574 Application. For example, independent claim 11, requires “a non-transitory computer-readable memory communicatively coupled to the at least one processor, the non-transitory computer-readable memory including a set of instructions stored thereon and executable by the at least one processor for: encoding a set of data symbols with a set of complex-valued codes, to produce a set of subcarrier values; modulating the set of subcarrier values onto a set of Orthogonal Frequency Division Multiplexing (OFDM) subcarriers assigned for use by the user device, to produce a plurality of modulated subcarriers; . . . wherein the set of subcarrier values comprises a first polyphase code that encodes a first of the set of data symbols and at least a second polyphase code that encodes at least a second of the set of data symbols; wherein the first polyphase code causes constructive and destructive interference between the plurality of modulated subcarriers to produce a first periodic pulse waveform having a peak value that is centered at a first time in an OFDM symbol interval, and the second polyphase code causes constructive and destructive interference between the plurality of modulated subcarriers to produce a second periodic pulse waveform having a peak value that is centered at a second time in the OFDM symbol interval, the second time different from the first time.” These limitations are not

described within the four corners of the pre-'574 Application specification. With respect to claim 19 of the '285 Patent, "wherein selecting the set of subcarriers comprise selecting one of a plurality of subcarrier spacings" is not described within the four corners of the pre-'382 Application specifications.

H. U.S. Patent No. 11,424,792

GenghisComm has not demonstrated or even tried to explain how the subject matter of the Asserted Claims of the '792 Patent is fully described by the text of each of the applications to which priority is claimed. Therefore, Samsung contends that the '792 Patent is, at best, only entitled to the filing date of the application leading to the '792 Patent (i.e., U.S. Patent Application No. 17/183,114, filed on Feb. 23, 2021). In the alternative or in addition to the foregoing contention, the earliest possible effective filing date of the '792 Patent is June 8, 2015, which is the filing date of United States Patent Application No. 14/733,013 because there is not continuity of disclosure in each of the earlier filed applications as is required by 35 U.S.C. § 120. *See Zenon Envt'l, Inc. v. United States Filter Corp.*, 506 F.3d 1370, 1378 (Fed. Cir. 2007). Section 120 requires that "each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112." *See Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997) (citing *In re Hogan*, 559 F.2d 595, 609 (C.C.P.A. 1977)); *see also Holmer v. Harari*, 681 F.3d 1351, 1355 (Fed. Cir. 2012) ("Thus, if any application in the priority chain fails to make the requisite disclosure of subject matter, the later-filed application is not entitled to the benefit of the filing date of applications preceding the break in the priority chain."). Here, U.S. Patent Application No. 13/116,984, filed on May 26, 2011, does not include any of the disclosure relied upon to support the various limitations of the asserted claims of the '792 Patent. The '984 Application does not incorporate any earlier-filed application. As filed, the

’984 Application only claimed the benefit of U.S. Provisional Application No. 61/349,097. Even when attempts were made to change the priority claim were made in 2015 and onward, none of these changes to the priority claim changed the specification of the ’984 Application. Thus, even if the change in the priority claim had any effect on whether a benefit to the earlier filing date was claimed, it does not satisfy the continuity of disclosure requirement because a priority claim is not an incorporation by reference. *See, e.g., In re deSeversky*, 474 F.2d 671 (C.C.P.A. 1973) (“[T]he statement that an application is a continuation-in-part of another application is in a broad sense a ‘reference’ to the earlier application, but a mere reference to another application . . . is not an incorporation of anything therein into the application containing such reference for the purposes of the disclosure required by 35 U.S.C. §112.”).

IV. P.R. 3-3(a) – Identification of Prior Art

Pursuant to P.R. 3-3(a), and subject to Defendant’s reservations of rights, Defendant identifies each item of prior art that anticipates or renders obvious the Asserted Claims below. Defendant contends that each of the applications include claims that are not entitled to the benefit of a filing date before March 16, 2013, and, as such, the post-AIA statutes for evaluating prior art apply. *See supra* § III. In addition to the discussion in Section, III, Samsung contends that at least one intervening application in the chain of priority purports to be a “continuation-in-part,” thus indicating that new matter has been added: **’842 Patent:** The ’842 Patent includes a priority claim through U.S. Patent Application No. 14/168,466, filed Jan. 30, 2014, which was allegedly a continuation-in-part of an earlier filed application; **’227 Patent:** The ’227 Patent includes a priority claim through U.S. Patent Application No. 14/168,466, filed Jan. 30, 2014, which was allegedly a continuation-in-part of an earlier filed application; **’568 Patent:** The ’568 Patent includes a priority claim through U.S. Patent Application No. 15/149,382, which was allegedly a continuation-in-part

of an earlier filed application; **'786 Patent:** The '786 Patent includes a priority claim through U.S. Patent Application No. 15/149,382, which was allegedly a continuation-in-part of an earlier filed application; **'508 Patent:** The '508 Patent includes a priority claim through U.S. Patent Application No. 15/149,382, which was allegedly a continuation-in-part of an earlier filed application; **'005 Patent:** The '005 Patent includes a priority claim through U.S. Patent Application No. 15/149,382, which was allegedly a continuation-in-part of an earlier filed application.

Table 1: Prior Art Patents and Applications

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
European Patent Appl. No. 1 037 407 A2	Song et al.	15-Mar-00 / 15-Mar-99	20-Aug-00	Song-407
U.S. Patent No. 6,188,717	Kaiser et al.	17-Nov-97 / 19-Nov-96	13-Feb-01	Kaiser-717
U.S. Patent App. Pub. 2005/0018782 A1	Costa et al.	16-Sep-02 / 18-Sep-01	27-Jan-05	Costa-782
WO 2003/026193 A1	Costa et al.	16-Sep-02 / 18-Sep-01	27-Mar-03	Costa-193
U.S. Patent No. 6,535,501	Böhnke	05-Nov-98/ 07-Nov-97	18-Mar-03	Böhnke-501
U.S. Patent No. 6,609,010	Dolle et al.	11-Nov-99 / 30-Nov-98	19-Aug-03	Dolle-010
WO 2002/054537 A1	Shattil	26-Dec-01 / 30-Dec 00	11-Jul-02	Shattil
U.S. Patent No. 11,032,035	Laroia	15-Mar-01		Laroia-035
U.S. Patent App. Pub. 2002/0006167	McFarland	20-Apr-01 / 22-Apr-00	17-Jan-02	McFarland
U.S. Patent App. Pub. 2002/0172213	Laroia et al.	15-Mar-01	21-Nov-02	Laroia

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. Provisional Pat. App. No. 60/163,141	Shattil	2-Nov-99	21-Mar-02	Shattil-141
U.S. Patent App. Pub. 2003/0081538	Walton et al.	18-Oct-01	1-May-03	Walton
U.S. Patent No. 7,139,320	Singh et al.	11-Oct-01	21-Nov-2006	Singh
U.S. Patent No. 6,891,792	Cimini et al.	14-May-99	10-May-2005	Cimini
U.S. Patent No. 7,039,120	Thoumy et al.	30-Nov-99	02-May-2006	Thoumy
U.S. Patent App. Pub. 2002/0034191	Shattil	16-Jul-01 / 02-Nov-99	21-Mar-02	Shattil-191
U.S. Patent No. 5,828,660	Baum	26-Apr-96	27-Oct-98	Baum
WO 03/053020	Barreto	17-Dec-01	26-Jun-03	Barreto
U.S. Patent No. 6,567,374	Böhnke	16-Feb-99	20-May-374	Böhnke-374
U.S. Patent No. 5,537,435	Carney	8-Apr-94	16-Jul-96	Carney-435
U.S. Patent No. 5,838,732	Carney	31-Oct-94	17-Nov-98	Carney-732
U.S. Patent App. Pub. 2003/016982	Chayat	8-Mar-02	11-Sept-03	Chayat
U.S. Patent App. Pub. 2004/016552	Chen	3-Feb-04	26-Aug-04	Chen
U.S. Patent No. 7,881,181	Dapper	20-Oct-07	1-Feb-11	Dapper
U.S. Patent No. 5,555,268	Fattouche	24-Jan-94	10-Sep-96	Fattouche-268
U.S. Patent No. 6,192,068	Fattouche	3-Oct-96	20-Feb-01	Fattouche-068

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. Patent App. Pub. 2005/0180313	Kim	2-Dec-04	18-Aug-05	Kim-313
U.S. Patent App. Pub. 2002/0172184	Kim	26-Mar-02	21-Nov-02	Kim-184
U.S. Patent No. 5,825,807	Kumar	6-Nov-95	20-Oct-98	Kumar
KR 20060134853A	Kwak	22-June-06	28-Dec-06	Kwak
U.S. Patent App. Pub. 2003/0123383	Korobkov	11-Jun-02	3-Jul-03	Korobkov
U.S. Patent App. Pub. 2003/0072255	Ma	8-Jan-02	17-Apr-03	Ma
U.S. Patent No. 6,686,879	Shattil	16-Jul-01	3-Feb-2004	Shattil
U.S. Patent App. Pub. 2002/0003774	Wang	3-July-01	10-Jan-02	Wang-774
U.S. Patent App. Pub. 2007/0147226	Khandekar	20-Oct-06	28-Jun-07	Khandekar

Table 2: Non-Patent Prior Art Publications

Author or Publisher	Reference Title	Publication / Use Date	Short Name
3GPP	3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Physical layer - General description (Release 4)	4-Apr-01	3GPP-25.201

Author or Publisher	Reference Title	Publication / Use Date	Short Name
3GPP	3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Spreading and modulation (FDD) (Release 4)	4-Apr-01	3GPP-25.213
Armstrong	Peak-to-average power reduction for OFDM by repeated clipping and frequency domain filtering	2002	Armstrong
Berens	Multicarrier Joint Detection CDMA Mobile Communications	4-May-97	Berens-1997
Bracewell	The Fourier Transform and Its Applications	2000	Bracewell
Brüninghaus et al.	On the Duality of Multi-Carrier Spread Spectrum and Single-Carrier Transmission	31-Aug-97	Brüninghaus-1997
Brüninghaus et al.	Multi-Carrier Spread Spectrum and Its Relationship to Single-Carrier Transmission	18-May-98	Brüninghaus-1998
Bury	An Improved MMSE Based Block Decision Feedback Equalizer	31-Dec-99	Bury-1999
Bury	Comparison of Amplitude Distributions for Hadamard Spreading and Fourier Spreading in Multi-Carrier Code Division Multiplexing	2000	Bury-2000
Cvetkovic	Modulating Waveforms for OFDM	1999	Cvetkovic
Czylwik	Comparison Between Adaptive OFDM and Single Carrier Modulation With Frequency Domain Equalization	1997	Czylwik
Doufexi	Design Considerations and Initial Physical Layer Performance Results For A Space Time Coded OFDM 4g Cellular Network	2002	Doufexi
Ericson et al.	Codes on Euclidean Spheres	2001	Ericson

Author or Publisher	Reference Title	Publication / Use Date	Short Name
Fazel	A Flexible and High Performance Cellular Mobile Communications System Based on Orthogonal Multi-Carrier SSMA	1995	Fazel-1995
Fazel	Multi-Carrier Spread Spectrum	1997	Fazel-1997
Fazel	Multi-Carrier Spread Spectrum & Related Topics	2000	Fazel-2000
Fazel	Multi-Carrier and Spread Spectrum Systems	2008	Fazel-2008
Galda	Broadband OFDM-FDMA System for the Uplink of a Wireless LAN	27-Sep-07	Galda-2001
Galda	A Low Complexity Transmitter Structure for OFDM-FDMA Uplink Systems	6-May-02	Galda-2002
Hansen	The Fast Fourier Transform	1991	Hansen
IEEE	IEEE Std 802.11a-1999	30-Dec-99	IEEE
Jones	Digital-signal-processing-principles-devices-and-applications	1990	Jones
Kaiser et al.	A Spread-Spectrum Multi-Carrier Multiple-Access System for Mobile Communications	31-Aug-97	Kaiser-1997
Kaiser	Multi-Carrier CDMA Mobile Radio Systems - Analysis and Optimization of Detection, Decoding, and Channel Estimation	Jan-98	Kaiser-1998
Kaiser	OFDM Code Division Multiplexing with Unequal Error Protection and Flexible Data Rate Adaptation	2001	Kaiser-2001
Kimura	Comparison of OFDM and Multicode MC-CDMA in Frequency Selective Fading Channel	2003	Kimura
Kulkani	Subcarrier Allocation and Bit Loading Algorithms for OFDMA-Based Wireless Networks	2005	Kulkani

Author or Publisher	Reference Title	Publication / Use Date	Short Name
Linder	MC-CDMA in the Context of General Multiuser/ Multisubchannel Transmission Methods*	1999	Linder
Litwin	The Principles of OFDM	2001	Litwin
Matusiak	Implementing Fast Fourier Transform Algorithms of Real-Valued Sequences with the TMS320 DSP Platform	2001	Matusiak
Myung	Single Carrier FDMA for Uplink Wireless Transmission	2006	Myung
Nassar	Multi-Carrier Technologies for Wireless Communication	2002	Nassar-2002
Nassar	Introduction Of Carrier Interference to Spread Spectrum Multiple Access	1999	Nassar-1999
Nassar	Telecommunications Demystified - A Streamlined Course in Digital Communications (and some Analog) for EE Students and Practicing Engineers	2000	Nassar-2000
Natarajan	Crest Factor Considerations in MC-CDMA with Carrier Interferometry Codes	2001	Natarajan-2001
Ochiai	Performance of OFDM-CDMA with Simple Peak Power Reduction.	1999	Ochiai
Panazio	On the Frequency Domain Approach for Spread Spectrum Receivers: Towards a Convergence of DS-CDMA, MC-CDMA and OFDM	2004	Panazio
Park	PAPR Reduction in OFDM Transmission using Hadamard Transform	2000	Park
Rhee	Performance Comparison of OFDM and Multitone with Polyphase Filter Bank for Wireless Communications	1998	Rhee

Author or Publisher	Reference Title	Publication / Use Date	Short Name
Shankar	DFT Algorithms- Analysis and Implementation	1978	Shankar
Sorger	A New Spread-Spectrum Multiple-Access Scheme	31-Aug-97	Sorger-1997
Sorger	Interleaved FDMA-A New Spread-Spectrum Multiple-Access Scheme	Jun-98	Sorger-1998
Taylor	Advanced Demodulation Techniques for Digital Audio Broadcast Signals over Fast Fading Channels	1999	Taylor
Vahlin et al.	Optimal Finite Duration Pulses for OFDM	1996	Vahlin
Weinstein et al.	Data Transmission by Frequency-Division Multiplexing Using the Discrete Fourier Transform	1971	Weinstein
Wiegandt	Overcoming Peak-To-Average Power Ratio Issues in OFDM Via Carrier-Interferometry Codes	2001	Wiegandt
Wiegandt	High-Throughput, High-Performance OFDM via Pseudo-Orthogonal Carrier Interferometry Coding	2001	Wiegandt-2001
3GPP	Proposed Baseline OFDM Systems for Study	8-Oct-02	R1-021246
3GPP	3rd Generation Partnership Project; Technical Specification Release 8	Jun-09	4G Standard
Nassar	Multi-Carrier Technologies for Wireless Communication	2002	Nassar
Barbosa et al.	High-Performance MIMO-OFDM via Carrier Interferometry	2003	Barbosa
3GPP	Proposed Baseline OFDM Systems for Study	2002	R1-021246
3GPP	PAPR Comparison of Uplink MA Schemes	2005	R1-050475
3GPP	Uplink Multiple Access Scheme	2005	R1-050638

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GC EX2013

Author or Publisher	Reference Title	Publication / Use Date	Short Name
3GPP	DFT-Spread OFDM with Pulse Shaping Filter in Frequency Domain in Evolved UTRA Uplink	2005	R1-050702
3GPP	Time vs. frequency domain realization of SC-FDMA transmissions	2006	R1-050881
3GPP	Investigations on Adaptive Control of Roll-off Factor for DFT-Spread OFDM Based SC-FDMA in E-UTRA Uplink	2006	R1-062713
3GPP	3rd Generation Partnership Project; Technical Specification Release 8	2009	4G Standard
Federal Communications Commission	FCC 00-289 - Federal Communications Commission	2000	Fifth Report

Table 3: Prior Art Systems

System Name	Use/Knowledge/Offer Date	Publisher	Short Name
Motorola StarTAC 7868/7868w	December 1998 ~ 2000	Motorola	StarTAC
Samsung Galaxy S III	September 2012	Samsung Electronics	Galaxy S III
Samsung Note II	September 2012	Samsung Electronics	Galaxy Note II
Samsung Galaxy S5	April 2014	Samsung Electronics	Galaxy S5
Samsung Galaxy Note 4	October 2014	Samsung Electronics	Galaxy Note 4
Samsung Galaxy S7	March 2016	Samsung Electronics	Galaxy S7
Samsung Galaxy S10 5G	April 2019	Samsung Electronics	S10 5G
LG V50 ThinQ 5G	April 2019	LG Electronics	ThinQ 5G

For each of the prior art devices identified above, Defendant has listed and produced documents as evidence of the relevant features and functionality to the extent that they are

presently available and have been located. Discovery is ongoing, and Defendant may serve third parties with document subpoenas, and Defendant reserves the right to rely on documents produced by them. Defendant reserves the right to supplement these contentions accordingly. Because Defendants have not yet completed discovery in this case, including taking depositions of the named inventor, and otherwise obtaining discovery from Plaintiff and third parties, Defendant reserves the right to supplement these contentions with facts, documents, or other information learned at a later point through discovery or further investigation.

V. P.R. 3-3(b) – Invalidity Grounds

Pursuant to P.R. 3-3(b), Defendant contends that certain prior art references below anticipate one or more Asserted Claims and that to the extent the identified prior art references do not anticipate the Asserted Claims, those claims are invalid as obvious under 35 U.S.C. §103. Each anticipatory prior art reference, either alone or in combination with other prior art, also renders the Asserted Claims invalid as obvious. In particular, each anticipatory prior art reference may be combined with (1) information generally known to persons skilled in the art at the time of the alleged invention, and/or (2) any of the other identified prior art references. To the extent that Plaintiff contends that any of the anticipatory prior art fails to disclose one or more limitations of the Asserted Claims, Defendant contends that any difference between the reference and the corresponding patent claims would have been obvious to one of ordinary skill in the art. Thus, all anticipation charts should be interpreted as both reflecting anticipation by the reference as well as invalidity due to single reference obviousness, to the extent that Plaintiff contends that any limitation is missing.

A. Anticipation

As stated above, Defendant incorporates by reference all other invalidity contentions related to the Patents-in-Suit served on or otherwise provided to Plaintiff, whether past or future. In accordance with P.R. 3-3(a), prior art references anticipating the Asserted Claims are provided below. The prior art listed below anticipates the Asserted Claims under the proper construction of the claims and/or under Plaintiff's apparent interpretation of the claims reflected by Plaintiff's Infringement Contentions.

The Asserted Claims of the Patents-in-Suit are anticipated and/or rendered obvious by prior art. Pursuant to P.R. 3-3(a), Defendant identifies the prior art references that anticipate or render obvious the Asserted Claims for each of the Patents-in-Suit in the claim charts attached hereto and listed below:

Patent	Claim Charts	Appendices
9,768,842	Exs. A1-A17	Appendix A
10,200,227	Exs. B1-B17	Appendix B
10,389,568	Exs. C1-C17	Appendix C
11,075,786	Exs. D1-D20	Appendix D
11,223,508	Exs. E1-E21	Appendix E
11,252,005	Exs. F1-F21	Appendix F
11,381,285	Exs. G1-G20	Appendix G
11,424,792	Exs. H1-H21	Appendix H

The claim charts of Appendices A-H show how the prior art references teach or suggest each and every element of the Asserted Claims. For each reference or combination of references suggested by each chart and/or herein, Defendant indicates whether the prior art renders the claim anticipated and/or obvious pursuant to P.R. 3-3(b). For each limitation of the '842 and/or '508 Patent in which Samsung may contend a claim limitation is to be interpreted under 35 U.S.C. 112(f)/112(6), Samsung has identified the structure(s), act(s), or material(s) in each item of prior art that performs the function(s) recited in the claim language.

In addition to contending that the Asserted Claims are invalid in view of the prior art references cited in the claim charts of Appendices A-H, Defendant further contends that the Asserted Claims are invalid as anticipated and/or obvious under U.S.C. §§ 102 and/or 103 in view of public knowledge and uses and/or offers for sale of products and services related to the subject matter of the cited references. As discovery is ongoing, Defendant continues to investigate these items and to reserve the right to amend or supplement these contentions to include additional information or documents regarding such products and/or systems. In addition to contending that the Asserted Claims are invalid in view of the explicit disclosures of the prior art references cited in the claim charts of Appendices A-H, Defendant further contends that the knowledge of skill evidenced by those references render those claims invalid. Defendant further contends that, even if a prior art reference does not expressly disclose all limitations as arranged or combined in the same manner as an asserted claim, a skilled artisan reading the reference would at once envisage the claimed arrangement or combination. *See, e.g., Kennametal Inc. v. Ingersoll Cutting Tool Co*., 780 F.3d 1376 (Fed. Cir. 2015).

Defendant incorporates by reference, as if set forth fully herein, all prior art cited during the prosecution of the Patents-in-Suit, all prior art cited during any reexamination proceedings of the Patents-in-Suit, all prior art as described in any pending or future *inter partes* review proceedings of the Patents-in-Suit, and all prior art disclosed during any previous litigation proceedings or proceedings involving the Patents-in-Suit or any related patents.

Defendant further identifies and hereby incorporates by reference as if set forth fully herein the prior art references and invalidity contentions as described in any Other Proceedings wherein invalidity contentions have been, or will be, provided regarding Patents-in-Suit, any foreign counterparts, or any parent or child patent of the Patents-in-Suit. Defendant reserves the right to

use any and all portions of the publication, related publications, commercial embodiments of the publication, and other evidence that is discovered in these lawsuits to demonstrate and/or evidence the components, functionality, and capabilities of the devices and systems disclosed in the references charted.

Where Defendant identifies 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 addition to the figure itself. Similarly, where an identified portion of text refers to a figure, embodiment, or other material, the identification should be understood to include the referenced figure, embodiment, or other material as well. Consistent with P.R. 3-3(c), Defendant's citations to specific statements, figures, or disclosures in a prior art reference are sufficient to put Plaintiff on notice where each element of each Asserted Claim is found in the prior art. However, it should be recognized that a person of ordinary skill in the art would generally read a prior art reference as a whole and in the context of other publications, literature, and general knowledge in the field. To understand and interpret any specific statement or disclosure in a prior art reference, a person of ordinary skill in the art would rely upon other information including other publications and general scientific or engineering knowledge. Defendant therefore reserves the right to rely upon other unidentified portions of the prior art references and on other publications and expert testimony to provide context and to aid understanding and interpretation of the identified portions.

Defendant also reserves the right to rely upon other portions of the prior art references, other publications, 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 the basis of modifying or combining certain cited references. To the extent any limitation is deemed not to be exactly met by an item of

prior art, then any purported differences are such that the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art.

To the extent that an element of an Asserted Claim of the ’842 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix A. To the extent that an element of an Asserted Claim of the ’227 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix B. To the extent that an element of an Asserted Claim of the ’568 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix C. To the extent that an element of an Asserted Claim of the ’786 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix D. To the extent that an element of an Asserted Claim of the ’508 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix E. To the extent that an element of an Asserted Claim of the ’005 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix F. To the extent that an element of an Asserted Claim of the ’285 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix G. To the extent that an element of an Asserted Claim of the ’792 Patent is not anticipated, the claim is rendered obvious by combination with one or more other prior art references identified in Appendix H. Additional specificity regarding the obviousness combinations are specified in the appended claim charts for each patent.

B. Obviousness

As stated above, Defendant incorporates by reference all other invalidity contentions related to the Patents-in-Suit served on or otherwise provided to Plaintiff, whether past or in the future. In addition to certain claims being anticipated at least under Plaintiff's apparent claim constructions as indicated above, the Asserted Claims are also invalid as obvious over the same teachings identified for anticipation in view of the knowledge of ordinary skill in the art. *E.g.*, *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) ("Though it is never necessary to so hold, a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for anticipation is the epitome of obviousness." (cleaned up)). Further, the Asserted Claims are obvious over various combinations of the references shown in the claim charts accompanying or incorporated by reference into this disclosure. Insofar as the claims are definite, enabled, and described no Asserted Claim goes beyond combining known elements to achieve predictable results or does more than choose between clear alternatives known to those of skill in the art. Thus, to the extent that an Asserted Claim is not anticipated, it is nevertheless invalid as obvious. Specifically, Defendant asserts that any charted or incorporated reference in combination with one or more other charted or incorporated references renders the Asserted Claims obvious.

In *KSR International Co. v. Teleflex, Inc.*, the United States Supreme Court held that, among other things, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." 550 U.S. 398, 416 (2007); *see also id*. at 417 ("[A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions."). In particular, a patent is obvious where "the content of the prior art, the scope of the patent claim, and the level of ordinary skill are not in material dispute, and the obviousness of the claim is apparent in light of these factors." *Id*. at 427. The Supreme Court found that "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*. at 417.

Moreover, the Supreme Court recognizes that market pressures will motivate a person of ordinary skill to survey known art for solutions to problems. *Id*. at 421 ("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 in the art has good reason to pursue the known options within his or her technical grasp."). When a person of ordinary skill uses an identified, predictable solution to solve a problem, "it is likely the product not of innovation but of ordinary skill and common sense." *Id*. In addition, when 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. *Id*. at 417. If a person of ordinary skill can implement a predictable variation, U.S.C. § 103 bars its patentability. *Id*.

"'[A]ny 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.'" *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1379 (Fed. Cir. 2023) (quoting *KSR*, 550 U.S. at 420). "Additionally, 'universal' motivations known in a particular field to improve technology provide 'a motivation to combine prior art references even absent any hint of suggestion in the references themselves.'" *Id*. (quoting *Intel Corp. v. Qualcomm Inc*., 21 F.4th 784, 797–99 (Fed. Cir. 2021)) (original emphasis). Thus, motivations to combine, as well as the general state of the art, may be found in a variety of places including, but not limited to, in the references defined above, and the specification of the Patents-in-Suit. A person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine any one piece of identified

prior art with any other identified piece of prior art. For at least this reason, it would have been obvious to a person of skill in the art at the time of the alleged invention of the Asserted Claims to combine the various references cited herein so as to practice the Asserted Claims and there is a motivation in the art to make such a combination. Further reasons to combine the references identified in these charts include the nature of the problem being solved, the express, implied, and/or inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, the fact that the prior art is generally directed towards similar methods and systems, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

The law does not require evidence of a specific motivation to combine prior art where the combination would yield expected results and at most simply represents a known alternative or design choice to one of skill in the art. *See Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017); *KSR*, 550 U.S. at 415 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead applying an "expansive and flexible" approach). Indeed, the Supreme Court held that a POSA is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21.

Nevertheless, in addition to the information contained immediately above and elsewhere in these contentions, Defendant identifies additional motivations and reasons to combine. For example, in addition to the specific motivations identified herein, motivation to modify a particular reference or to combine any two or more of the identified references comes from (a) the nature of the problem being solved, (b) the teachings of the prior art, (c) the knowledge of persons of

ordinary skill in the art, (d) the fact that all the references teach systems, apparatuses, and methods related to the subject matter and address the same technical issues described in the Patents-in-Suit, and (e) one would be motivated by considerations of efficiency, effectiveness, convenience, cost-savings, and accessibility, to combine the various teachings of the references. Additionally, one would be motivated to address the alleged problems or achieve the purported objectives identified in the Background sections of the Patents-in-Suit, of the references cited on the face of the Patents-in-Suit, and of the other references cited herein.

In sum, motivations to modify or combine the identified references including the references listed above can be found via, for example, discussions in the cited references, the state of the art discussed in the references, and the knowledge of one of ordinary skill in the art. One of ordinary skill in the art would have been motivated to combine these references, because these references relate to common objectives and subject matter. The references share commonalities in terms of their general subject matter as well as the types of equipment, products, systems, and/or methods used. Further, certain prior art references explicitly or implicitly reference other prior art references, share common authors or inventors, were published in the same journals, were compiled by a common author of a compilation or reference book, were presented at the same conferences, and/or were developed at common companies, schools, or organizations, which would motivate one of ordinary skill in the art to combine them. These references are within the field of the Patents-in-Suit and are directed to similar subject matter within the field. Additionally, the references, and any products, devices, or processes described in the references, existed and/or were invented in the same time period providing further motivation for combination. These disclosures were provided without prejudice to any arguments or objections concerning the relevance of motivation to combine in connection with any invalidity contentions.

Defendant reserves the right to further specify the motivations to combine the prior art in response to positions that Plaintiff may take later in this case and as discovery, including third party discovery, proceeds. Defendant may rely on any and all portions of the prior art, other documents, and expert testimony to establish that a person of ordinary skill in the art would have been motivated to modify or combine the prior art so as to render the claims invalid as obvious.

Moreover, Defendant reserves the right to rely on later identified sources of information, including, but not limited to, witness testimony and other discovery, to establish the state of the art in the relevant time frame pertaining to the Patents-in-Suit.

Additionally, Defendant notes that Plaintiff has neither provided any contention that secondary considerations of non-obviousness exist for any Asserted Patent nor provided any evidence of such secondary considerations. Defendant reserves the right to come forward with evidence to address any allegation of secondary considerations made by GenghisComm in this case, including any showing by GenghisComm that such considerations have sufficient nexus to the claims beyond the features known in the prior art. Proving any such secondary considerations is Plaintiff's burden. *See, e.g., ZUP, LLC v. Nach Mfg., Inc.*, 896 F.3d 1365, 1373 (Fed. Cir. 2018) ("[A] patentee bears the burden of production with respect to evidence of secondary considerations of nonobviousness."). To the extent Plaintiff provides contentions and/or evidence concerning secondary considerations in the future, Defendant reserves all right to rebut those contentions if and when Plaintiff identifies them. Moreover, Defendant further contends that, in any event, the evidence of obviousness for each asserted claim is so overwhelming that secondary considerations are necessarily insufficient to rebut Defendant's showing. *See, e.g., Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1344 (Fed. Cir. 2013) ("[W]here a claimed invention represents no more

than the predictable use of prior art elements according to established functions, as here, evidence of secondary indicia are frequently deemed inadequate to establish non-obviousness.”).

While Defendant reserves the right to rely on any combination of the references reflected in its charts or incorporated herein by reference, Defendant provides the following exemplary and non-exhaustive references and/or combinations evidencing invalidity of the claims of the Patents-in-Suit. The combinations of prior art, which are shown, for example, in Appendices A-H, render obvious the Asserted Claims under the proper construction of the claims and/or under Plaintiff’s apparent interpretation of the claims as set forth by Plaintiff in the Complaint and Infringement Contentions.

1. U.S. Patent No. 9,768,842

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix A the prior art references that render obvious the Asserted Claims of the ’842 Patent. To the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix A, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’842 Patent. Moreover, to the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix A, such reference may be combined with any other references listed in Appendix A for such element, thereby rendering the claims invalid for obviousness. Further detail is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’842 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the '842 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products, devices, and/or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those prior art references identified in Appendix A along with the knowledge of one of ordinary skill in the art to meet the limitations of the '842 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the '842 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff's Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references

in Appendix A, for purposes of obviousness depending on the Court's claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant's inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the '842 Patent Asserted Claims represent no more than the result of ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix A to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix A to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the ’842 Patent Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix A is found in the references themselves and also in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results

obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix A because all these references relate to the same area of technology and/or are from analogous art. The ’842 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’842 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the ’842 Patent, one of ordinary skill in the art would have been motivated to combine known prior

art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix A represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’842 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular reference, and the inclusion of such elements in the ’842 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix A for additional motivation to combine. These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be implemented using teachings from another source while not interfering with additional features. For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix A with any other reference or references identified in those charts found in Appendix A (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’842 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants’ current understanding of the Asserted Claims and Plaintiff’s apparent view of the scope of those claims as shown, for example, in Plaintiff’s Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

2. U.S. Patent No. 10,200,227

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix B the prior art references that render obvious the Asserted Claims of the ’227 Patent. To the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix B, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’227 Patent. Moreover, to the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix B, such reference may be combined with any other references listed in Appendix B for such element, thereby rendering the claims invalid for obviousness. Further detail

is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’227 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the ’227 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products, devices, and/or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those prior art references identified in Appendix B along with the knowledge of one of ordinary skill in the art to meet the limitations of the ’227 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the ’227 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any

of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff's Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references in Appendix B, for purposes of obviousness depending on the Court's claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant's inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the '227 Patent Asserted Claims represent no more than the result of ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information

contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix A to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix B to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the ’227 Patent Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix B is found in the references themselves and also in:

(1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix B because all these references relate to the same area of technology and/or are from analogous art. The ’227 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’227 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the

’227 Patent, one of ordinary skill in the art would have been motivated to combine known prior art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix B represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’227 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular reference, and the inclusion of such elements in the ’227 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix B for additional motivation to combine. These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be implemented using teachings from another source while not interfering with additional features.

For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix B with any other reference or references identified in those charts found in Appendix B (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’227 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants’ current understanding of the Asserted Claims and Plaintiff’s apparent view of the scope of those claims as shown, for example, in Plaintiff’s Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

3. U.S. Patent No. 10,89,568

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix C the prior art references that render obvious the Asserted Claims of the ’568 Patent. To the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix C, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’568 Patent. Moreover, to the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references

described in Appendix C, such reference may be combined with any other references listed in Appendix C for such element, thereby rendering the claims invalid for obviousness. Further detail is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’568 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the ’568 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products, devices, and/or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those prior art references identified in Appendix C along with the knowledge of one of ordinary skill in the art to meet the limitations of the ’568 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the ’568 Patent obvious when the references are read in combination with each other, and/or when

read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff's Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references in Appendix C, for purposes of obviousness depending on the Court's claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant's inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the '568 Patent Asserted Claims represent no more than the result of ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many

cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix C to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix C to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the '568 Patent Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix C is found in the references themselves and also in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix C because all these references relate to the same area of technology and/or are from analogous art. The ’568 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’568 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the ’568 Patent, one of ordinary skill in the art would have been motivated to combine known prior art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix C represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’568 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular reference, and the inclusion of such elements in the ’568 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix C for additional motivation to combine. These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be

implemented using teachings from another source while not interfering with additional features. For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix C with any other reference or references identified in those charts found in Appendix C (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’568 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants’ current understanding of the Asserted Claims and Plaintiff’s apparent view of the scope of those claims as shown, for example, in Plaintiff’s Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

4. U.S. Patent No. 11,075,786

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix D the prior art references that render obvious the Asserted Claims of the ’786 Patent. To the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix D, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’786 Patent. Moreover, to the extent

Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix D, such reference may be combined with any other references listed in Appendix D for such element, thereby rendering the claims invalid for obviousness. Further detail is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’786 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the ’786 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products, devices, and/or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those prior art references identified in Appendix D along with the knowledge of one of ordinary skill in the art to meet the limitations of the ’786 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the

’786 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff’s Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references in Appendix D, for purposes of obviousness depending on the Court’s claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the ’786 Patent Asserted Claims represent no more than the result of ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation to combine test, instead espousing an “expansive and flexible” approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person

of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix D to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix D to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the '786 Patent Asserted Claims; the existence of a known need or

problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix D is found in the references themselves and also in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix D because all these references relate to the same area of technology and/or are from analogous art. The ’786 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’786 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the ’786 Patent, one of ordinary skill in the art would have been motivated to combine known prior art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix D represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’786 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular reference, and the inclusion of such elements in the ’786 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix D for additional motivation to combine. These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being

combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be implemented using teachings from another source while not interfering with additional features. For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix D with any other reference or references identified in those charts found in Appendix D (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’786 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants’ current understanding of the Asserted Claims and Plaintiff’s apparent view of the scope of those claims as shown, for example, in Plaintiff’s Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

5. U.S. Patent No. 11,223,508

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix E the prior art references that render obvious the Asserted Claims of the ’508 Patent. To the extent Plaintiff contends that

an element is not disclosed in any one of the anticipatory references described in Appendix E, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’508 Patent. Moreover, to the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix E, such reference may be combined with any other references listed in Appendix E for such element, thereby rendering the claims invalid for obviousness. Further detail is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’508 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the ’508 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products, devices, and/or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references,

including any combination of those prior art references identified in Appendix E along with the knowledge of one of ordinary skill in the art to meet the limitations of the ’508 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the ’508 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff’s Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references in Appendix E, for purposes of obviousness depending on the Court’s claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the ’508 Patent Asserted Claims represent no more than the result of ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation to

combine test, instead espousing an "expansive and flexible" approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix E to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix E to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community

or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the ’508 Patent Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix E is found in the references themselves and also in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix E because all these references relate to the same area of technology and/or are from analogous art. The ’508 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been

obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’508 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the ’508 Patent, one of ordinary skill in the art would have been motivated to combine known prior art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix E represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’508 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular reference, and the inclusion of such elements in the ’508 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix E for additional motivation to combine. These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports

regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be implemented using teachings from another source while not interfering with additional features. For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix E with any other reference or references identified in those charts found in Appendix E (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’508 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants’ current understanding of the Asserted Claims and Plaintiff’s apparent view of the scope of those claims as shown, for example, in Plaintiff’s Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

6. U.S. Patent No. 11,252,005

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix F the prior art references that render obvious the Asserted Claims of the ’005 Patent. To the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix F, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’005 Patent. Moreover, to the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix F, such reference may be combined with any other references listed in Appendix F for such element, thereby rendering the claims invalid for obviousness. Further detail is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’005 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the ’005 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products, devices, and/or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those prior art references identified in Appendix F along with the knowledge of one of ordinary skill in the art to meet the limitations of the ’005 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the ’005 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff’s Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references in Appendix F, for purposes of obviousness depending on the Court’s claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the ’005 Patent Asserted Claims represent no more than the result of ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would

simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix F to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix F to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the ’005 Patent Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix F is found in the references themselves and also in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix F because all these references relate to the same area of technology and/or are from analogous art. The ’005 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior

art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’005 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the ’005 Patent, one of ordinary skill in the art would have been motivated to combine known prior art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix F represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’005 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular reference, and the inclusion of such elements in the ’005 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix F for additional motivation to combine. These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the

motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be implemented using teachings from another source while not interfering with additional features. For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix F with any other reference or references identified in those charts found in Appendix F (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’005 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants’ current understanding of the Asserted Claims and Plaintiff’s apparent view of the scope of those claims as shown, for example, in Plaintiff’s Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and

Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

7. U.S. Patent No. 11,381,285

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix G the prior art references that render obvious the Asserted Claims of the ’285 Patent. To the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix G, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’285 Patent. Moreover, to the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix G, such reference may be combined with any other references listed in Appendix G for such element, thereby rendering the claims invalid for obviousness. Further detail is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’285 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the ’285 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products, devices, and/or processes described in the references existed and/or were invented before or during

the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those prior art references identified in Appendix G along with the knowledge of one of ordinary skill in the art to meet the limitations of the ’285 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the ’285 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff’s Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references in Appendix G, for purposes of obviousness depending on the Court’s claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the ’285 Patent Asserted Claims represent no more than the result of

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ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix G to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix

G to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the ’285 Patent Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix G is found in the references themselves and also in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix G because all these references relate to the same area of technology and/or are from

analogous art. The ’285 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’285 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the ’285 Patent, one of ordinary skill in the art would have been motivated to combine known prior art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix G represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’285 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular reference, and the inclusion of such elements in the ’285 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix G for additional motivation to combine.

These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be implemented using teachings from another source while not interfering with additional features. For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix G with any other reference or references identified in those charts found in Appendix G (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’285 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants’ current understanding of the Asserted Claims and Plaintiff’s apparent view of the scope of those claims as shown, for example, in Plaintiff’s Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant’s inclusion of exemplary combinations

does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

8. U.S. Patent No. 11,424,792

Pursuant to P.R. 3-3(a) and (b), Defendant identifies in Appendix H the prior art references that render obvious the Asserted Claims of the ’792 Patent. To the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix H, the limitation would have been obvious in light of the disclosures within the reference and the knowledge of one of ordinary skill in the art at the time of the ’792 Patent. Moreover, to the extent Plaintiff contends that an element is not disclosed in any one of the anticipatory references described in Appendix H, such reference may be combined with any other references listed in Appendix H for such element, thereby rendering the claims invalid for obviousness. Further detail is provided in the appended charts. To the extent a finder of fact determines that a limitation of any of the ’792 Patent Asserted Claims is not disclosed by one of the references identified above pursuant to P.R. 3-3(a), the claim is nevertheless unpatentable as obvious because they contain nothing that constitutes a patentable innovation.

The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the ’792 Patent and are directed to similar subject matter within that field. Additionally, or in the alternative, the references are reasonably pertinent to the problem being solved. Additionally, any products,

devices, and/or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

a. Obviousness Rationale and Motivations to Combine

Obviousness: For at least the reasons described in these contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those prior art references identified in Appendix H along with the knowledge of one of ordinary skill in the art to meet the limitations of the ’792 Patent Asserted Claims. As a result, the references identified herein render one or more Asserted Claims of the ’792 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed in each of the claim charts may be combined with one another to render obvious (and therefore invalid) each of Plaintiff’s Asserted Claims. Defendant may rely upon a subset of the identified references or all of the references identified herein, including all references in Appendix H, for purposes of obviousness depending on the Court’s claim construction, positions taken by Plaintiff during this litigation, and further investigation and discovery.

Reservation of Rights: Moreover, as mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. As such, Defendant’s inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

No More Than Ordinary Variations of Prior Art; No Unexpected Results: To the extent not anticipated, the '792 Patent Asserted Claims represent no more than the result of ordinary variations of the prior art. Defendant further believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 550 U.S. at 415–16 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach); *Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co*., 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420–21. Nevertheless, in addition to the information contained elsewhere in these contentions, Defendant identifies motivation and reason to combine the cited art.

Predictable Results; Obvious to Try: Combining the prior art references identified in Appendix H to achieve the claimed subject matter would have been obvious because the relevant teachings of the references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references, thus yielding the claimed subject matter (insofar as the claims are fully enabled) because there were only a finite number of predictable solutions and/or because known work in one field of

endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Further, combining prior art references identified in Appendix H to achieve the claimed subject matter would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Interrelated Teachings: Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; common authorship; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the ’792 Patent Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Summary of Motivations to Combine: Thus, the motivation to combine the teachings of the prior art references disclosed in Appendix H is found in the references themselves and also in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Same Area of Technology: Additionally, it would have been obvious to one of ordinary skill in the art to consult and/or combine any of the prior art listed in the charts included with Appendix H because all these references relate to the same area of technology and/or are from analogous art. The ’792 Patent Asserted Claims merely unite old elements, well known in the field, with no change in their respective function or result. Given the interrelated teachings of the prior art, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art, it would have been obvious for one of ordinary skill in the art to combine these familiar elements, disclosed and/or embodied in the prior art listed above to practice the ’792 Patent Asserted Claims.

Same Technical Issues: A person of ordinary skill would have been motivated to combine the above prior art based on 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. For the ’792 Patent, one of ordinary skill in the art would have been motivated to combine known prior art solutions described in these references relating to skipping uplink grants when there is no data or control information to transmit.

Known Elements; Obvious to Try: Moreover, any alleged differences between the claimed subject matter and each of the references included in the appended charts included in Appendix H represented design choices available to a person of ordinary skill. Based on the state of the art, a POSA would have been familiar with basic elements of the ’792 Patent’s claims. Such claim elements were within the knowledge of a POSA, whether or not disclosed in any particular

reference, and the inclusion of such elements in the ’792 Patent’s claims does not render them novel or non-obvious.

In addition to the specific examples provided above, Defendant reserves the right to rely on the disclosures of the references listed in Appendix H for additional motivation to combine. These examples of combinations are given merely to illustrate various motivations to combine and are not intended to provide an exhaustive list of every possible combination to which the motivation may apply. Defendant reserves the right to contend that the motivations to combine provided herein apply to other combinations at the appropriate time, e.g., in expert reports regarding invalidity. To the extent one or more of identified combinations is posed as a combination of only two references, it does not indicate that the two references that are being combined for one purpose could not be joined by a third reference (or more additional references) whose combination serves the same or a different purpose. Indeed, many of the features recited in the Asserted Claims are componentized features/functions whereby the feature could be implemented using teachings from another source while not interfering with additional features. For that reason, a POSA may have reasonably looked to and been motivated to combine three or more references in order to achieve a specific outcome.

b. Combinations

For at least the reasons described above, it would have been obvious to one of ordinary skill in the art to combine the prior art references identified in the charts included with Appendix H with any other reference or references identified in those charts found in Appendix H (along with the knowledge of one of ordinary skill in the art) to arrive at the subject matter recited in the Asserted Claims of the ’792 Patent.

As mentioned above, Defendant has not yet completed its search or discovery concerning additional prior art. Moreover, the exemplary combinations are provided based on Defendants' current understanding of the Asserted Claims and Plaintiff's apparent view of the scope of those claims as shown, for example, in Plaintiff's Infringement Contentions. Further, a Markman Order has not yet been issued in this case. As such, Defendant's inclusion of exemplary combinations does not preclude it from identifying other invalidating combinations as appropriate, and Defendant reserves the right to identify additional specific combinations as well as to detail and explain such combinations.

VI. P.R. 3-3(c) – Claim Charts

Pursuant to Rule 3-3(c), Defendants identify invalidity claim charts identifying disclosures in the references identified above as to the Asserted Claims of the Patents-in-Suit are provided in attached Appendix A ('842 Patent), Appendix B ('227 Patent), Appendix C ('568 Patent), Appendix D ('786 Patent), Appendix E ('508 Patent), Appendix F ('005 Patent), Appendix G ('285 Patent), and Appendix H ('792 Patent).

Defendant has identified relevant portions and/or features of the prior art. However, the identified prior art may contain additional descriptions of or alternative support for the claim limitations. Defendant may rely on uncited portions or features of the identified prior art, other documents, and expert testimony, to provide context or to aid in understanding the identified prior art and the state of the art. Citations to a particular figure in a reference include the caption and description of the figure and any text relating to the figure. Similarly, citations to particular text referring to a figure include the figure and caption as well. Portions relevant to dependent claims incorporate by reference the citations to the chain of claims from which that dependent claim derives. Likewise, portions related to subsequent limitations that refer to claim elements identified,

described, and/or cited to in earlier limitations may rely on the citations related to those portions of the claim chart that identify and/or describe these elements.

Throughout the invalidity claim charts in Appendices A–H, Defendant provides exemplary citations showing where references disclose subject matter recited in preambles of the Asserted Claims, regardless of whether the preambles limit the claims. Defendants reserve the right to argue that the preambles are or are not limitations. Further, where an entry in a claim chart corresponding to a given limitation refers back to the discussion of another claim, the entry incorporates all evidence cited for the other claim.

As noted above, the Asserted Claims have not yet been construed. Additional portions of the references may become relevant after claim construction. Defendant's contentions are based on the information presently available, and Defendant reserves all rights to provide their claim construction positions in accordance with the Docket Control Order in this case.

VII. P.R. 3-3(d) – Other Grounds for Invalidity

Pursuant to Rule 3-3(d), Defendant hereby identifies grounds of invalidity for the Patents-in-Suit based on Obviousness Type Double Patenting, lack of written description under 35 U.S.C. §112(a); lack of enablement under 35 U.S.C. §112(a); and indefiniteness under 35 U.S.C. §112(b). These contentions shall not be construed as an admission that any claim construction advanced by Defendant in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Defendant from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to Plaintiff's purported construction of the claim language or of other positions advanced by Plaintiffs during the course of this litigation. Defendant's invalidity contentions under 35 U.S.C. § 112 may depend, in part, on the Court's

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claim construction, as well as Plaintiffs' alleged scope of the Asserted Claims. Consequently, Defendants only identify the issues under 35 U.S.C. § 112 of which they are presently aware.

A. Invalidity Over Samsung 4G and 5G Products Under The Doctrine Of That Which Infringes, If Later, Anticipates, If Earlier.

Samsung has provided contentions regarding the proper effective filing date of the various Asserted Claims of the Patents-in-Suit in Section III, *supra*. GenghisComm has not yet even tried to justify its alleged priority dates disclosed in its Infringement Contentions. Under certain priority dates advanced in Section III, Samsung contends that if GenghisComm is successful in establishing infringement, the Asserted Claims of the Patents-in-Suit are invalid on (1) the very standards that GengihsComm cites in support of its infringement contentions, and (2) at least the following products: Samsung Galaxy S III, Samsung Galaxy Note II, Samsung Galaxy S5, Samsung Galaxy Note 4, Samsung Galaxy S7 (all as to the '842, '227, '568, and '786 Patents); and Samsung Galaxy S10 5G and LG V50 ThinQ 5G (each as to the '508, '005, '285, and '792 Patent). Each of these products is prior art under post-AIA 35 U.S.C. § 102(a)(1) to the respective Asserted Claims of the Patents-in-Suit. To be clear, Samsung's contention in this regard assumes that Plaintiff establishes infringement based on the implementation of the 4G LTE specification and/or the 5G NR specification and under the applicable priority dates alleged in Section III, *supra*. This contention is presented under the well-known doctrine of "[t]hat which infringes, if later, would anticipate, if earlier." *Peters v. Active Mfg. Co.*, 129 U.S. 530 (1889); *Int'l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1239 (Fed. Cir. 2009) ("[I]t has been well established for over a century that the same test must be used for both infringement and anticipation . . . ."). Samsung incorporates Plaintiff's claim charts and contentions by reference in presenting this contention, but makes no admission that those charts in fact establish infringement.

B. Obviousness Type Double Patenting

Samsung contends that at least the Asserted Claims of the ’786 Patent, the ’508 Patent, the ’005 Patent, the ’285 Patent, and the ’792 Patent are invalid for obviousness-type double patenting. GenghisComm has tactically modified its priority claims for patents with patentably indistinct claims in an effort to obtain an improper time-wise extension of patent term by obtaining patentably indistinct claims between various applications that have different expiration dates.

“Obviousness-type double patenting is a judicially-created doctrine designed to prevent claims in separate applications or patents that do not recite the ‘same’ invention, but nonetheless claim inventions so alike that granting both exclusive rights would effectively extend the life of patent protection.” *In re Hubbell*, 709 F.3d 1140, 1145 (Fed. Cir. 2013) (internal quotation marks omitted). Under this doctrine, the court must determine “whether the claimed invention in the application for the second patent would have been obvious from the subject matter of the claims in the first patent, in light of the prior art.” *In re Longi*, 759 F.2d 887, 893 (Fed. Cir. 1985).

Obviousness-type double patenting requires a two-step analysis: “First, the court construes the claim[s] in the earlier patent and the claim[s] in the later patent and determines the differences. Second, the court determines whether those differences render the claims patentably distinct.” *Abbvie Inc. v. Mathilda & Terence Kennedy Inst, of Rheumatology Trust*, 764 F.3d 1366, 1374 (Fed. Cir. 2014) (quotations omitted). “A later claim that is not patentably distinct from . . . an earlier claim is invalid for obviousness-type double patenting.” *Id*. (quotations omitted). “For a patent to qualify as an obviousness-type double patenting (‘ODP’) reference, its expiration date must fall before that of the challenged patent.” *Allergan USA, Inc. v. MSN Labs. Priv. Ltd*., No. 19-1727-RGA, 2023 U.S. Dist. LEXIS 172641, at *11 (D. Del. Sep. 27, 2023) (quoting *Gilead Scis., Inc. v. Natco Pharma Ltd*., 753 F.3d 1208, 1215–17 (Fed. Cir. 2014)).

Typically, once a patent expires, its subject matter enters the public domain. *See Ultra Precision Mfg., Ltd. v. Ford Motor Co*., 411 F.3d 1369, 1378 (Fed. Cir. 2005) ("Federal patent law reflects the objectives of Congress, which include . . . 'promot[ing] disclosure of inventions to stimulate further innovation and to permit the public to practice the invention once the patent expires[.]'"). However, one could not practice the methods claimed in the '755 Patent after it expired (but before the expiration of the '237 Patent) because the same conduct would also infringe the claims of the '237 Patent. *See General Foods Corp. v. Studiengesellschaft Kohle GmbH*, 972 F.2d 1272, 1282–83 (Fed. Cir. 1992) (assessing whether claims of first expired patent would be infringed by practicing the claims of the second expired patent). "[I]t is a bedrock principle of our patent system that when a patent expires, the public is free to use not only the same invention claimed in the expired patent but also obvious or patentably indistinct modifications of that invention." *Gilead Scis., Inc. v. Natco Pharma Ltd*., 753 F.3d 1208, 1214 (Fed. Cir. 2014). "And that principle is violated when a patent expires and the public is nevertheless barred from practicing obvious modifications of the invention claimed in that patent because the inventor holds another later-expiring patent with claims for obvious modifications of the invention." *Id*. GenghisComm has violated these principles as to a number of Patents-in-Suit as discussed below and reflected in various claim charts included with these contentions.

1. U.S. Patent No. 11,075,786

The Asserted Claims of the '786 Patent are only obvious variations of claim 19 of the '208 Patent. As explained in connection with Claim Chart Exhibit D-18, the Asserted Claims of the '786 Patent are invalid for obviousness-type double patenting.

Because GenghisComm has already enjoyed the benefits of an improperly extended patent term, a terminal disclaimer cannot be used to terminally disclaim the term of the '786 Patent to the

’208 Patent. *See Boehringer Ingelhelm Int’l GMBH v. Barr Labs., Inc.*, 592 F.3d 1340, 1347 (Fed. Cir. 2010) (“By failing to terminally disclaim a later patent prior to the expiration of an earlier related patent, a patentee enjoys an unjustified advantage — a purported time extension of the right to exclude from the date of the expiration of the earlier patent. The patentee cannot undo this unjustified timewise extension by retroactively disclaiming the term of the later patent because it has already enjoyed rights that it seeks to disclaim.”). Therefore, the Asserted Claims of the ’768 Patent are invalid.

2. U.S. Patent No. 11,223,508

The Asserted Claims of the ’508 Patent are only obvious variations of claim 19 of the ’208 Patent. As explained in connection with the Claim Chart Exhibit E-20, the Asserted Claims of the ’508 Patent are invalid for obviousness-type double patenting.

Because GenghisComm has already enjoyed the benefits of an improperly extended patent term, a terminal disclaimer cannot be used to terminally disclaim the term of the ’508 Patent to the ’208 Patent. *See Boehringer Ingelhelm Int’l GMBH v. Barr Labs., Inc.*, 592 F.3d 1340, 1347 (Fed. Cir. 2010) (“By failing to terminally disclaim a later patent prior to the expiration of an earlier related patent, a patentee enjoys an unjustified advantage — a purported time extension of the right to exclude from the date of the expiration of the earlier patent. The patentee cannot undo this unjustified timewise extension by retroactively disclaiming the term of the later patent because it has already enjoyed rights that it seeks to disclaim.”). Therefore, the Asserted Claims of the ’508 Patent are invalid.

3. U.S. Patent No. 11,252,005

The Asserted Claims of the ’005 Patent are only obvious variations of claim 6 of U.S. Patent No. 10,230,559 (“the ’559 Patent”). As explained in connection with the Claim Chart

Exhibit F-19, the Asserted Claims of the ’005 Patent are invalid for obviousness-typed double patenting.

Because GenghisComm has already enjoyed the benefits of an improperly extended patent term, a terminal disclaimer cannot be used to terminally disclaim the term of the ’005 Patent to the ’082 Patent. *See Boehringer Ingelhelm Int’l GMBH v. Barr Labs., Inc.*, 592 F.3d 1340, 1347 (Fed. Cir. 2010) (“By failing to terminally disclaim a later patent prior to the expiration of an earlier related patent, a patentee enjoys an unjustified advantage — a purported time extension of the right to exclude from the date of the expiration of the earlier patent. The patentee cannot undo this unjustified timewise extension by retroactively disclaiming the term of the later patent because it has already enjoyed rights that it seeks to disclaim.”). Therefore, the Asserted Claims of the ’005 Patent are invalid.

4. U.S. Patent No. 11,381,285

The Asserted Claims of the ’285 Patent are only obvious variations of claim 19 of the ’208 Patent. As explained in connection with the Claim Chart Exhibit G-18, the Asserted Claims of the ’285 Patent are invalid for obviousness-type double patenting.

Because GenghisComm has already enjoyed the benefits of an improperly extended patent term, a terminal disclaimer cannot be used to terminally disclaim the term of the ’285 Patent to either or both of the ’208 and ’082 Patents. *See Boehringer Ingelhelm Int’l GMBH v. Barr Labs., Inc.*, 592 F.3d 1340, 1347 (Fed. Cir. 2010) (“By failing to terminally disclaim a later patent prior to the expiration of an earlier related patent, a patentee enjoys an unjustified advantage — a purported time extension of the right to exclude from the date of the expiration of the earlier patent. The patentee cannot undo this unjustified timewise extension by retroactively disclaiming the term

of the later patent because it has already enjoyed rights that it seeks to disclaim."). Therefore, the Asserted Claims of the '285 Patent are invalid.

5. U.S. Patent No. 11,424,792

The Asserted Claims of the '792 Patent are only obvious variations of claim 19 of U.S. Patent No. 10,009,208 ("the '208 Patent"). As explained in connection with the Claim Chart Exhibit H-18, the Asserted Claims of the '792 Patent are invalid for obviousness-type double patenting.

The Asserted Claims of the '792 Patent are only obvious variations of claim 6 of U.S. Patent No. 10,230,559 ("the '559 Patent"). As explained in connection with the Claim Chart Exhibit H-19, the Asserted Claims of the '792 Patent are invalid for obviousness-type double patenting.

Because GenghisComm has already enjoyed the benefits of an improperly extended patent term, a terminal disclaimer cannot be used to terminally disclaim the term of the '792 Patent to the '559 Patent. *See Boehringer Ingelhelm Int'l GMBH v. Barr Labs., Inc.*, 592 F.3d 1340, 1347 (Fed. Cir. 2010) ("By failing to terminally disclaim a later patent prior to the expiration of an earlier related patent, a patentee enjoys an unjustified advantage—a purported time extension of the right to exclude from the date of the expiration of the earlier patent. The patentee cannot undo this unjustified timewise extension by retroactively disclaiming the term of the later patent because it has already enjoyed rights that it seeks to disclaim."). Therefore, the Asserted Claims of the '792 Patent are invalid.

C. Lack of Written Description and Lack of Enablement under 35 U.S.C. §112(a)

Various Asserted Claims of the Patents-in-Suit are not supported by sufficient written description, at least under certain interpretations of the claims. As such, under those interpretations,

the Patents-in-Suit do not provide sufficient written description to establish that the inventors were in possession of the alleged inventions recited in the various Asserted Claims at the time of the alleged invention under the various priority dates set forth *supra* § III and in GenghisComm's Infringement Contentions. *Ariad Pharms., Inc. v. Eli Lilly & Co*., 598 F.3d 1336, 1351 (Fed. Cir. 2010). In other words, the applicant did not describe their purported inventions in a manner that "reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date" at least under certain interpretations of the claims. *Id*.

Additionally, or in the alternative, the full scope of the claimed subject matter is not enabled such as to permit a POSA to make and use the full scope of the claimed invention at least as of the earliest claimed priority dates alleged by GenghisComm. *See, e.g.*, *Amgen Inc. v. Sanofi*, 598 U.S. 594, 611 (2023) ("If a patent claims an entire class of processes, machines, manufactures, or compositions of matter, the patent's specification must enable a person skilled in the art to make and use the entire class. In other words, the specification must enable the full scope of the invention as defined by its claims. The more one claims, the more one must enable.").

1. U.S. Patent No. 9,768,842

The following aspects of the Asserted Claims of the '842 Patent lack written description and/or are not fully enabled at least certain claim constructions:

"[A]n OFDM spreader configured to spread a plurality of data symbols with Fourier coefficients to generate a discrete Fourier Transform (DFT)-spread data signal." This term is mentioned in the '842 Patent specification but is coined and lacks a description of its full structure and function. For example, the phrase "OFDM spreader" has not been present in all of the applications to which priority has been claimed. For instance, "OFDM spreader" is not described by that term in U.S. Patent Application No. 14/168,466 filed January 30, 2014. Nor does it appear

in earlier applications in the chain of priority. As another example, "a mapper configured to map the DFT-spread data signal to a plurality of OFDM subcarriers" is not sufficiently described under certain interpretations of the claims. This term was first introduced into the chain of priority in connection with the application issuing as U.S. Patent No. 9,485,063 and is not sufficiently described in subsequent applications under certain interpretations of the claims. Additionally, the specification does not describe and/or enable "wherein the OFDM spreader is configured to provide the superposition with a reduced peak-to-average power ratio."

"[W]herein the OFDM spreader comprises an N-point DFT and the OFDM modulator comprises an M-point inverse discrete Fourier Transform, wherein M>N" is not described in each of the specifications to which priority is claimed. For instance, "OFDM spreader" is not described by that term in U.S. Patent Application No. 14/168,466 filed January 30, 2014. Nor does it appear in earlier applications in the chain of priority.

"[W]herein the data symbols comprise reference-signal symbols, which comprise at least one of known training symbols and synchronization symbols," is not sufficiently described and/or enabled because "reference-signal symbols," as described in the '842 Patent do not "comprise" training or synchronization signals/symbols, and are instead described as being examples of reference signals/symbols.

"[A] cyclic prefix appender configured to append at least one of a cyclic prefix, a postfix, and a guard interval to the OFDM transmission signal" is not fully described by the specifications under certain interpretations of the claims of the '842 Patent.

"[W]herein the plurality of data symbols are at least one of time-multiplexed with reference-signal symbols, frequency-multiplexed with reference-signal symbols, and code-multiplexed with reference-signal symbols" is not fully described and/or enabled by the '842

Patent. For example, the ’842 Patent describes these multiplexing techniques to be alternatives and by claiming “at least one of,” the claim contemplates using more than one of the claimed multiplexing techniques. Under *SuperGuide Corp. v. DirectTV Enterprises, Inc.*, 358 F.3d 870 (Fed. Cir. 2004), at least one of each of these schemes must be used.

2. U.S. Patent No. 10,200,227

Samsung incorporates by reference the file history of the proceedings pending before the USPTO in connection with the reexamination of the ’227 Patent relating to the Asserted Claims. The file history includes certain discussions of limitations where the Patent Office has disagreed that there is written support for certain limitations found in various applications being relied upon by GenghisComm. Insofar as the USPTO concludes that those limitations are not disclosed, Samsung intends to rely on the USPTO’s findings and conclusions.

Additionally, the following aspects of the Asserted Claims of the ’227 Patent lack written description and/or are not fully enabled at least certain claim constructions:

Instructions for performing “an invertible transform on a set of data symbols to generate a plurality N of spread data symbols, the invertible transform comprising complex-valued spreading codes,” insofar as the “invertible transform” is broader than the disclosed transforms and the “complex-valued spreading codes” are broader than the disclosed spreading codes.

Instructions to “map the N spread data symbols to at least N subcarriers of a plurality M of Orthogonal Frequency Division Multiplexing (OFDM) subcarriers to generate a set of complex subcarrier amplitudes” is not fully disclosed or enabled by the specification. For example, the variables N and M are not defined. In fact, Asserted Claims 22, 24, 26, and 28 cover a scenario where M is less than N and mapping N spread data symbols to “at least N subcarriers” of “a

plurality M of" OFDM subcarriers makes no sense where N is greater than M. *See also* '227 Patent, claim 25 ("wherein M>N" means that M=N and M<N are within the scope of other claims).

"[W]herein the invertible transform is configured to provide the superposition with a reduced peak-to-average power ratio" is not described insofar as the invertible transform is broader than the disclosed transforms and "reduced peak-to-average power ratio" can be reasonably ascertained.

Additionally, claim 24 suggests that the remainder of the Asserted Claims are broader than including the claimed processor, memory, and instructions are not necessarily on User Equipment. Under certain interpretations of the claims, claims 22, 25, 26, and 28 are not fully described and/or enabled.

3. U.S. Patent No. 10,389,568

The following aspects of the Asserted Claims of the '568 Patent lack written description and/or are not fully enabled at least certain claim constructions:

Instructions for "dividing a block of complex-valued symbols into a plurality of sets fo complex-valued symbols" is not sufficiently described and/or enabled as claimed. Instructions for "transform precoding each of the plurality of sets of complex-valued symbols into a block of transform precoded complex-valued symbols" is not sufficiently described and/or enabled as claimed. The full scope of "generating an Orthogonal Frequency Division Multiplex (OFDM) signal comprising a plurality of OFDM subcarriers modulated with the transform-precoded complex-valued symbols" is not enabled by the specification of the '568 Patent. "[W]herein the transform precoding generates a plurality of orthogonal spreading codes to provide a superposition of the plurality of OFDM subcarriers with a reduced peak-to-average power ratio" is not sufficiently described and/or enabled. "[W]herein the transform precoding spreads the block of

complex-valued symbols with a plurality of orthogonal spreading codes comprising complex-valued coefficients of a discrete Fourier transform (DFT) to produce the block of transform-precoded complex-valued symbols" is not sufficiently described and/or enabled. Using a "fast Fourier transform (FFT)" is not sufficiently described and/or enabled in the text of the '568 Patent. Instructions for "mapping the block of transform-precoded complex-valued symbols to physical resource blocks assigned for transmission of a physical uplink shared channel" is not sufficiently described and/or enabled in the text of the '568 Patent. Instructions for mapping where "the mapping is configured to select the plurality of OFDM subcarriers according to at least one of a frequency division multiple access scheme, a time division multiple access scheme, a space division multiple access scheme, a code division multiple access scheme, and a frequency-hoping scheme," is not sufficiently described and/or enabled by the text of the '568 Patent because the claim encompasses scenarios where more than one scheme is simultaneously used (i.e., "at least one of") and, under *SuperGuide Corp. v. DirectTV Enterprises, Inc.*, 358 F.3d 870 (Fed. Cir. 2004), at least one of each of these schemes must be used. Instructions for "scrambling a block of bits of one subframe of a physical uplink shared channel resulting in a block of scrambled bits; and modulating the block of scrambled bits resulting in the block of complex-valued symbols" is not sufficiently described and/or enabled by the text of the '568 Patent. Additionally, instructions "wherein the scrambling is configured to scramble the block of bits into a block of scrambled bits with at least one pseudo-noise code" is not sufficiently described and/or enabled by the text of the '568 Patent. "[W]herein each of the plurality of sets of complex-valued symbols is a single carrier frequency division multiple access (SC-FDMA) symbol" is not sufficiently described and/or enabled by the text of the '568 Patent.

4. U.S. Patent No. 11,075,786

The following aspects of the Asserted Claims of the ’786 Patent lack written description and/or are not fully enabled at least certain claim constructions:

“An apparatus for communication in a wireless communication network that employs a first set of complex-valued codes to encode data symbols to be transmitted, and employs a second set of complex-valued codes to recover transmitted data symbols from a received signal . . . . wherein the first set of complex-valued codes are complex conjugates of the second set of complex-valued codes” is not sufficiently described and/or enabled by the ’786 Patent.

Instructions for “selecting a plurality of subcarriers to be transmitted” and “applying the encoded data symbols to the plurality of subcarriers to produce a spread-Orthogonal Frequency Division Multiplexing (OFDM) signal” is not fully described and/or enabled by the ’786 Patent. Among other things, the production of a “spread-Orthogonal Frequency Division Multiplexing (OFDM) signal” is not limited to being performed using an inverse Fourier Transform as is described. Thus, the scope of this claim is not fully supported. Instructions “wherein selecting is responsive to spectrum allocation or is configured to provide for orthogonal frequency division multiple access” is not sufficiently described and/or supported by the ’786 Patent specification. Instructions “wherein encoding comprises multiplying a vector or matrix of data symbols with a vector or matrix comprising the first set of complex-valued codes” is not sufficiently described and/or supported by the ’786 Patent specification.

5. U.S. Patent No. 11,223,508

The following aspects of the Asserted Claims of the ’508 Patent lack written description and/or are not fully enabled under at least certain claim constructions:

“[T]ransceiver-control circuitry configured for: provisioning a consecutive series of Orthogonal Frequency Division Multiplexing (OFDM) subcarriers for uplink or downlink

communications; provisioning a plurality of different selectable subcarrier spacings for the consecutive series of OFDM subcarriers . . . wherein provisioning the plurality of different selectable subcarrier spacings comprises providing the single-carrier frequency division multiple access signal with a particular one of a set of different symbol periods by selecting one of the plurality of different selectable subcarrier spacings." is not sufficiently described and/or enabled by the specification of the '508 Patent. "[W]herein at least one of the plurality of different selectable subcarrier spacings equals at least one other of the plurality of different selectable subcarrier spacings multiplied by a scaling factor that is a power of two" is not sufficiently described and/or enabled by the specification of the '508 Patent. "[W]herein the plurality of different selectable subcarrier spacings comprise integer multiples of a first subcarrier spacing" is not sufficiently descried and/or enabled by the specification of the '508 Patent. "[W]herein each of the plurality of different selectable subcarrier spacings is configured for one of a plurality of different deployment scenarios, the plurality of different deployment scenarios comprising different system requirements or different channel characteristics" is not sufficiently described and/or enabled by the specification of the '508 Patent. "[W]herein each of the plurality of different selectable subcarrier spacings produces a different number of symbols per frame" is not sufficiently described and/or enabled by the specification of the '508 Patent.

6. U.S. Patent No. 11,252,005

The following aspects of the Asserted Claims of the '005 Patent lack written description and/or are not fully enabled under at least certain claim constructions:

Instructions for "producing a set of subcarrier values that equals a product of a complex-valued code matrix with a matrix of data symbols . . . wherein producing the set of subcarrier values employs a plurality of complex-valued codes that shapes interference patterns of the

superposition to produce a plurality of cyclic-shifted waveforms that each have one of the data symbols modulated thereon" is not sufficiently described and/or enabled by the '005 Patent at least because this limitation claims all ways of generated values that equals the claimed product and that produce the claimed "cyclic-shifted waveforms." Instructions for "producing a set of subcarrier values that equals a product of a complex-valued code matrix with a matrix of data symbols" is not sufficiently described and/or enabled by the '005 Patent insofar as there must be a matrix of data symbols and a matrix multiplication is performed. Instructions for "selecting a set of subcarriers assigned for use by a user device" is not sufficiently described and/or enabled by the '005 Patent. The full scope of instructions for "modulating the subcarrier values onto the set of subcarriers to produce a plurality of modulated subcarriers" is not fully enabled by the specification of the '005 Patent. "[W]herein selecting the set of subcarriers comprises selecting one of a plurality of selectable subcarrier spacings" is not sufficiently described and/or enabled by the '005 Patent.

7. U.S. Patent No. 11,381,285

The following aspects of the Asserted Claims of the '005 Patent lack written description and/or are not fully enabled under at least certain claim constructions:

Instructions for producing subcarrier values "selecting one of a set of subcarrier frequency spacings" is not sufficiently described and/or enabled by the '285 Patent. Moreover, the full scope of "modulating the set of subcarrier values onto a set of Orthogonal Frequency Division Multiplexing (OFDM) subcarriers assigned for use by the user device, to produce a plurality of modulated subcarriers" is not fully enabled by the specification of the '285 Patent.

8. U.S. Patent No. 11,424,792

The following aspects of the Asserted Claims of the ’792 Patent lack written description and/or are not fully enabled under at least certain claim constructions:

Instructions to perform “provisioning a set of Orthogonal Frequency Division Multiplexing (OFDM) subcarriers for mobile radio communications . . . wherein provisioning comprises selecting one of a plurality of different selectable subcarrier spacings, to provide for the one of the plurality of different symbol durations” is not sufficiently described and/or enabled by the specification of the ’792 Patent. Moreover, the full scope of “modulating the encoded data symbols onto the OFDM subcarriers to produce a superposition signal that resembles a single-carrier signal and has one of a plurality of different symbol durations” is not enabled by the specification of the ’792 Patent. “[W]herein at least one of the plurality of different selectable subcarrier spacings equals at least one other of the plurality of different selectable subcarrier spacings multiplied by a scaling factor that is a power of two” is not sufficiently described and/or enabled by the ’792 Patent specification.

D. Indefiniteness under 35 U.S.C. §112(b)

Under § 112(b), “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the 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*., 572 U.S. 898, 901 (2014). “[T]he second paragraph of § 112 contains two requirements: first, the claim must set forth what the applicant regards as his invention, and second, it must do so with sufficient particularity and distinctness, i.e., the claim must be sufficiently definite.” *Allen Eng’g Corp. v. Bartell Indus., Inc*., 299 F.3d 1336, 1348 (Fed. Cir. 2002) (quotations and alterations omitted). “Where it would be apparent to one of skill in the art, based

on the specification, that the invention set forth in a claim is not what the patentee regarded as his invention," the claim is "invalid under § 112, paragraph 2." *Id*. at 1349.

1. U.S. Patent No. 9,768,842

Samsung contends that the following terms render the Asserted Claims of the '842 Patent invalid as indefinite under the apparent view of the claims alleged by GengishComm:

- "an OFDM spreader configured to spread a plurality of data symbols with Fourier coefficients to generate a discrete Fourier Transform (DFT)-spread data signal" (claim 1);
- "a mapper configured to map the DFT-spread data signal to a plurality of OFDM subcarriers" (claim 1);
- "provide the superposition with a reduced peak-to-average power ratio" (claim 1);
- "a cyclic prefix appender configured to append at least one of a cyclic prefix, a postfix, and a guard interval to the OFDM transmission signal" (claim 7); and
- "OFDM spreader is configured to provide channel precoding" (claim 8).

2. U.S. Patent No. 10,200,227

Samsung contends that the following terms render the Asserted Claims of the '227 Patent invalid as indefinite under the apparent view of the claims alleged by GengishComm:

- "the invertible transform is configured to provide the superposition with a reduced peak-to-average power ratio" (claim 22).

3. U.S. Patent No. 10,389,568

Samsung contends that the following terms render the Asserted Claims of the '568 Patent invalid as indefinite under the apparent view of the claims alleged by GengishComm:

- "wherein the transform precoding generates a plurality of orthogonal spreading codes to provide a superposition of the plurality of OFDM subcarriers with a reduced peak-to-average power ratio" (claim 24); and
- "[W]herein each of the plurality of sets of complex-valued symbols is a single carrier frequency division multiple access (SC-FDMA) symbol" (claim 44).

4. U.S. Patent No. 11,075,786

Samsung contends that the following terms render the Asserted Claims of the '786 Patent invalid as indefinite under the apparent view of the claims alleged by GengishComm:

- "An apparatus for communication in a wireless communication network that employs a first set of complex-valued codes to encode data symbols to be transmitted, and employs a second set of complex-valued codes to recover transmitted data symbols from a received signal . . . . wherein the first set of complex-valued codes are complex conjugates of the second set of complex-valued codes" (claim 10).

5. U.S. Patent No. 11,223,508

Samsung contends that the following terms render the Asserted Claims of the '508 Patent invalid as indefinite under the apparent view of the claims alleged by GengishComm:

- "provisioning a plurality of different selectable subcarrier spacings for the consecutive series of OFDM subcarriers . . . wherein provisioning the plurality of different selectable subcarrier spacings comprises providing the single-carrier frequency division multiple access signal with a particular one of a set of different symbol periods by selecting one of the plurality of different selectable subcarrier spacings" (claim 17); and

- "wherein each of the plurality of different selectable subcarrier spacings is configured for one of a plurality of different deployment scenarios, the plurality of different deployment scenarios comprising different system requirements or different channel characteristics" (claim 21).

6. U.S. Patent No. 11,252,005

Samsung contends that the following terms render the Asserted Claims of the '005 Patent invalid as indefinite under the apparent view of the claims alleged by GengishComm:

- "a plurality of cyclic-shifted waveforms that each have one of the data symbols modulated thereon" (claim 13).

7. U.S. Patent No. 11,424,792

Samsung contends that the following terms render the Asserted Claims of the '005 Patent invalid as indefinite under the apparent view of the claims alleged by GengishComm:

- "modulating the encoded data symbols onto the OFDM subcarriers to produce a superposition signal that that resembles a single-carrier signal" (claim 8).

VIII. P.R. 3-4 – Productions

Pursuant to P.R. 3-4(a), Defendant has produced and/or made available for inspection documents and other materials sufficient to show the operation of any aspects or elements of the Accused Products identified by Plaintiff in their P.R. 3-1(c) charts. Defendant Samsung is not in possession, custody or control of detailed technical documentation related to the operation of the accused functionality, which is likely found in hardware and/or software embodied on chipsets included in Samsung 4G and 5G devices. Such information will need to be obtained from suppliers such as Qualcomm, MediaTek, and/or Samsung's parent corporation or other corporate affiliate.

Additionally, and pursuant to P.R. 3-4(b), Defendants are concurrently producing a copy of each item of prior art identified herein. These prior art references and corroborating evidence are cited in attached invalidity claim charts in Appendices A–H. Defendant will also make available for inspection any prior art systems or devices upon request to the extent Defendants acquire such systems or devices. References that were cited during prosecution of the Patents-in-Suit may not be contained in Defendant's production as they are not required to be under the Local Patent Rules. Defendants' search for prior art references, additional documentation, and/or corroborating evidence concerning prior art systems and devices is ongoing. Accordingly, Defendants reserve the right to supplement their production as Defendants obtain additional prior art references, documentation, and/or corroborating evidence concerning invalidity during the course of discovery. Defendants reserve the right to supplement their P.R. 3-4 document production pursuant to the Patent Local Rules and the orders of the Court.

Date: October 17, 2024

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CERTIFICATE OF SERVICE

The undersigned certifies that Plaintiff's counsel of record were served with a true and correct copy of the foregoing document by electronic mail on October 17, 2024.

/s/ Andrew R. Sommer
Andrew R. Sommer

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