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

KONINKLIJKE KPN N.V., Plaintiff, vs. TELEFONAKTIEBOLAGET LM ERICSSON and ERICSSON INC., Defendants.	Case No. 2:21-cv-113 JURY TRIAL DEMANDED

DEFENDANTS' INVALIDITY CONTENTIONS

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I. INTRODUCTION

Pursuant to the Court's Docket Control Order in the above-captioned case (Dkt. 43), Defendants Telefonaktiebolaget LM Ericsson and Ericsson Inc. (collectively "Ericsson" or "Defendants") serve these Invalidity Contentions on Plaintiff Koninklijke KPN N.V. ("Plaintiff" or "KPN") for U.S. Patent No. RE 48,089 (the "'089 Patent"), U.S. Patent No. 8,881,235 (the "'235 Patent"), U.S. Patent No. 9,253,637 (the "'637 Patent"), U.S. Patent No. 9,549,426 (the "'426 Patent"), and U.S. Patent No. 9,667,669 (the "'669 Patent") (collectively, the "Asserted Patents"). These Invalidity Contentions are based on Defendants' current knowledge of the Asserted Patents and prior art, along with their understanding of KPN's infringement allegations set forth in its September 15, 2021 Infringement Contentions Pursuant to Local Patent Rules 3-1 and 3-2 ("Infringement Contentions"). Defendants' investigation of the prior art is ongoing, and Defendants expressly reserve the right to supplement these Invalidity Contentions as the case proceeds.

Nothing in these Invalidity Contentions is intended, nor should be construed, as a waiver of any claim construction argument or noninfringement position. Defendants' statements herein (including the accompanying claim charts) reflect Defendants' present understanding of the purported potential scope of the claims that KPN appears to be advocating by way of its Infringement Contentions. They are not to be seen as any acquiescence to KPN's interpretation of any claims. Defendants disagree that any such claim scope is proper. Defendants reserve the right to supplement these contentions to address any supplemental infringement contentions. For purposes of these Invalidity Contentions, Defendants identify prior art references and provide element-by-element claim charts based on the apparent constructions of the Asserted Claims advanced by KPN in its Infringement Contentions (which, for at least some limitations, contradict the plain language of the claim).

Nothing herein shall be interpreted as an admission that: (1) the Asserted Claims are infringed by any of Defendants' products or instrumentalities, (2) any particular feature or aspect of any of the accused instrumentalities practices any limitation of the Asserted Claims, (3) there is 35 U.S.C. § 112 support for any limitation of the Asserted Claims, or (4) any of KPN's proposed or implied constructions are supportable or proper.

Consistent with the Local Patent Rules and the Federal Rules of Civil Procedure, Defendants reserve the right to amend these Invalidity Contentions. The information and documents that Defendants produce are provisional and subject to further revision as follows. Defendants expressly reserve the right to amend their disclosures and document production referenced herein should KPN provide any information that it failed to provide in its Local Patent Rule 3-1 and 3-2 disclosures or should KPN amend its disclosures in any way, whether explicitly or implicitly. Defendants also reserve the right to amend their disclosures if KPN amends its infringement contentions after reviewing Ericsson's source code, as specifically contemplated by Paragraph 3(a)(ii) of the Court's Discovery Order (Dkt. 42). Further, because discovery has only recently begun and because Defendants have not yet completed their search for and analysis of relevant prior art, Defendants reserve the right to amend the information provided herein. Such amendments include, for example, identifying and relying on additional references, should Defendants' further search and analysis yield additional information or references, consistent with the Patent Rules or the Federal Rules of Civil Procedure. Defendants reserve the right to supplement these contentions in light of any additional prior art of which Plaintiff is aware and did not disclose to Defendants in discovery. Also, Defendants anticipate issuing subpoenas to third parties believed to have knowledge, documentation and/or corroborating evidence concerning some of the prior art listed herein and/or additional prior art.

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These third parties include, but are not limited to, the authors, employers of authors, inventors, assignees, or former or current employees of assignees, of the references identified or the Asserted Patents. For example, Defendants anticipate issuing subpoenas to potential prior artists including but not limited to individuals and entities responsible for the development of Nokia's prior art system to the '089 Patent, such as the Nokia NetAct Planner, Nokia Quality Planner and/or Nokia Trace Planner, or successors-in-interest thereto. Defendants reserve the right to supplement these contentions in light of any newly discovered information produced by these or other companies from which Defendants may seek discovery.

Moreover, Defendants reserve the right to revise their ultimate contentions concerning the invalidity of the claims of the Asserted Patents based upon the Court's construction of the claims of the Asserted Patents, any findings as to the priority dates of the Asserted Claims, and/or positions that KPN, Defendants, or any expert witness may take concerning claim interpretation, infringement, and/or invalidity issues.

Prior art not included in this disclosure, whether known or not known to Defendants, may become relevant. In particular, Defendants are currently unaware of the extent, if any, to which KPN will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Defendants. To the extent that such an issue arises, Defendants reserve the right to identify other references that would have made the addition of the allegedly missing limitation to the disclosed device or method obvious or show that the allegedly missing limitation would have been known or readily apparent to one of ordinary skill in the art at the time of the invention in light of the disclosure of the prior art at issue.

Defendants' claim charts in Appendices A-J cite to or reference particular teachings and disclosures of the prior art as applied to features of the Asserted Claims, but persons having

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ordinary skill in the art generally may view an item of prior art in the context of other publications, literature, products, and understanding. As such, the cited portions are only examples, and Defendants reserve the right to rely on uncited portions of the prior-art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation. Defendants further reserve the right to rely on uncited portions of the prior-art references, other publications, and testimony to establish reasons for combining certain cited references that render the Asserted Claims obvious.

The references discussed in the claim charts in Appendices A-J may disclose the elements of the Asserted Claims explicitly and/or inherently, and/or they may be relied upon to show the State of the Art in the relevant time frame. The suggested obviousness combinations are provided in the alternative to Defendants' anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory.

Depending on the Court's construction of the claims of the Asserted Patents, and/or positions that KPN, Defendants, or any expert witness may take concerning claim interpretation, infringement, and/or invalidity issues, one or more of the charted prior-art references may be of greater or lesser relevance and different combinations of these references may be implicated. Given this uncertainty, the charts may reflect alternative applications of the prior art against the Asserted Claims.

Defendants' Invalidity Contentions are based at least in part on certain priority dates that KPN alleges the Asserted Patents are entitled to. Defendants reserve the right to challenge any different priority date that KPN later alleges is appropriate.

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Defendants reserve the right to assert invalidity under 35 U.S.C. §§ 101, 102(c), (d), or (f) to the extent that discovery or further investigation yields information forming the basis for such claims. Defendants reserve the right to assert that the Asserted Patents are invalid under 35 U.S.C. § 102(f) in the event Defendants obtain evidence that the named inventors of the Asserted Patents did not invent the subject matter claimed in the Asserted Patents. Should Defendants obtain such evidence, they will provide the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived.

Pursuant to Local Patent Rules 3-3 and 3-4, Defendants have provided disclosures and related documents pertaining only to the Asserted Claims as identified by KPN in its Infringement Contentions. Defendants reserve the right to modify, amend, or supplement these Invalidity Contentions to show the invalidity of any additional claims that the Court may allow KPN to later assert. Defendants further reserve the right to supplement their P.R. 3-4 document production should they later find additional, responsive documents. Pursuant to P.R. 3-4(b), Defendants are producing concurrently with these Preliminary Invalidity Contentions the following invalidity documents: Ericsson_INV_000000001-10050 and Ericsson_KPN_001467094-99.

II. CLAIM CONSTRUCTION

To the extent that these Invalidity Contentions rely on or otherwise embody particular constructions of terms or phrases in the Asserted Claims, Defendants are not proposing any such constructions as proper constructions of those terms or phrases at this time. The Court established separate deadlines for the parties' proposed claim constructions, and Defendants will disclose their proposed constructions accordingly. For purposes of these Invalidity Contentions, Defendants may adopt alternative claim construction positions. In particular, portions of these Invalidity Contentions, including the claim charts attached as Appendices, may be based on the

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underlying claim constructions and/or interpretations as understood from Plaintiff's Infringement Contentions and/or Plaintiff's proposed claim constructions. Defendants, however, do not concede that Plaintiff's apparent constructions are proper and expressly reserve the right to contest any such constructions. In addition, to the extent that these Invalidity Contentions rely on or otherwise embody a particular order in which the steps of method claims are performed, Defendants do not necessarily propose that the method claims must be limited to such order, although Defendants reserve the right to propose such an order. Moreover, nothing disclosed herein is an admission or acknowledgement that any Accused Instrumentality, or any of Defendants' other products or services, infringes any of the Asserted Claims. Defendants reserve the right to supplement, modify, or otherwise amend these Invalidity Contentions, including based on the Court's claim construction ruling and/or arguments or positions taken during the claim construction process.

Throughout the attached Appendices, Defendants provide examples of where references disclose subject matter recited in preambles, without regard to whether the preambles are properly considered to be limitations of the Asserted Claims. Defendants reserve the right to argue, at the appropriate stage of this case, that the preambles are or are not limitations. Moreover, Defendants reserve the right to argue that certain claim elements of the Asserted Claims do not in fact limit the scope of the Asserted Claims.

III. ASSERTED PATENTS AND CLAIMS

Plaintiff asserts the following patents and claims in its Infringement Contentions against Defendants (with independent claims identified in **bold**)[1]:

[1] The asserted patents and claims are collectively referenced throughout these contentions as the "Asserted Patents" and the "Asserted Claims."

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No.	Asserted Patents	Asserted Claims
1.	USP RE 48,089	**1**, 2, 3, 4, 5, **11**, **13**, 14, **15**
2.	USP 8,881,235	**1**, 4, 5, 6, 7, **11**
3.	USP 9,235,637	**16**, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, **58**, 59
4.	USP 9,549,426	**9**, **10**, 14, **16**, 17
5.	USP 9,667,669	**1**, 2, 3, 6, 8, 10, 11, 12, **21**, 22, 24, 25

For the purposes of these contentions, Defendants only address those claims specifically asserted by Plaintiff. Defendants reserve the right to amend or supplement this disclosure as necessary in light of any changes or amendments made, for any reason, to Plaintiff's infringement theories, Infringement Contentions, or Asserted Claims.

IV. PRIORITY

The Asserted Patents were filed on or purport to claim priority to:

No.	Asserted Patents	KPN's Alleged Conception Date	Alleged Priority Date on Face of Patent
1.	USP RE 48,089	October 28, 2008	December 21, 2009
2.	USP 8,881,235	July 23, 2007	December 15, 2008
3.	USP 9,235,637	September 26, 2007	February 29, 2008
4.	USP 9,549,426[2]	February 1, 2012	July 15, 2013
5.	USP 9,667,669	October 15, 2008	January 19, 2009

To the extent Plaintiff alleges that any prior art relied on in these Invalidity Contentions does not actually qualify as prior art to an Asserted Patents, Defendants reserve the right to rebut

[2] As addressed below in Section IV.D, Petitioner treats the '426 Patent's priority date as July 15, 2013. Therefore, citations to the identified references' qualifications as prior art under 35 U.S.C. § 102, below, should be interpreted as relying on post-AIA 35 U.S.C. § 102.

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those allegations (*e.g.*, by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for the Asserted Patents and/or Asserted Claim).

A. The ’089 Patent Priority Date

KPN’s infringement contentions allege that the Asserted Claims of the ’089 Patent are entitled to a priority date of October 28, 2008. The ’089 Patent was filed on December 18, 2018. The ’089 Patent is a reissue of U.S. Patent No. 8,626,173, which entered national stage under 35 U.S.C. § 371(c)(1)(2) on June 18, 2002 from PCT No. PCT/EP2010/069908. The ’089 Patent claims priority on its face to EP 09180130, filed on December 21, 2009. KPN appears to allege a conception date fourteen months before the filing of this foreign application.

KPN has not provided sufficient evidence to support its contention that the Asserted Claims of the ’089 Patent are entitled to a conception date of October 28, 2008, let alone evidence of diligence or reduction to practice. Nor has KPN provided any evidence that the ’089 Patent is entitled to claim priority back to the foreign EP application. To the extent KPN alleges that any prior art relied on in these invalidity contentions does not qualify as prior art to the ’089 Patent, Defendants reserve the right to rebut those allegations (e.g., by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for the ’089 Patent and/or Asserted Claims).

B. The ’235 Patent Priority Date

KPN’s infringement contentions allege that the Asserted Claims of the ’235 Patent are entitled to a priority date of July 23, 2007. The ’235 Patent entered national stage under 35 U.S.C. § 371(c)(1)(2) on December 15, 2009 from PCT No. PCT/EP2009/67201. The ’235 Patent claims priority on its face to EP08021705, filed on December 15, 2008. KPN appears to allege a conception date seventeen months before the filing of this foreign application.

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KPN has not provided sufficient evidence to support its contention that the Asserted Claims of the ’235 Patent are entitled to a conception date of July 23, 2007, let alone evidence of diligence or reduction to practice. Nor has KPN provided any evidence that the ’235 Patent is entitled to claim priority back to the foreign EP application. To the extent KPN alleges that any prior art relied on in these invalidity contentions does not qualify as prior art to the ’235 Patent, Defendants reserve the right to rebut those allegations (e.g., by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for the ’235 Patent and/or Asserted Claims).

C. The ’637 Patent Priority Date

KPN’s infringement contentions allege that the Asserted Claims of the ’637 Patent are entitled to a priority date of September 26, 2007. The ’637 Patent was filed on June 18, 2013. The ’637 Patent is a continuation of U.S. Patent Application No. 12/919,965, which entered national stage under 35 U.S.C. § 371(c)(1)(2) on February 19, 2009 from PCT No. PCT/EP2009/001214. The ’637 Patent claims priority on its face to EP 08003753, filed on February 29, 2008. KPN appears to allege a conception date five months before the filing of this foreign application.

KPN has not provided sufficient evidence to support its contention that the Asserted Claims of the ’637 Patent are entitled to a conception date of September 26, 2007, let alone evidence of diligence or reduction to practice. Nor has KPN provided any evidence that the ’637 Patent is entitled to claim priority back to the foreign EP application. To the extent KPN alleges that any prior art relied on in these invalidity contentions does not qualify as prior art to the ’637 Patent, Defendants reserve the right to rebut those allegations (e.g., by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for the ’637 Patent and/or Asserted Claims).

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D. The ’426 Patent Priority Date

KPN’s infringement contentions allege that the Asserted Claims of the ’426 Patent are entitled to a priority date of February 1, 2012. The ’426 Patent claims priority on its face to EP 13176452, filed on July 15, 2013. KPN appears to allege a conception date seventeen months before the filing of this foreign application.

KPN has not provided sufficient evidence to support its contention that the Asserted Claims of the ’426 Patent are entitled to a conception date of February 1, 2012, let alone evidence of diligence or reduction to practice. Nor has KPN provided any evidence that the ’426 Patent is entitled to claim priority back to the foreign EP application. To the extent KPN alleges that any prior art relied on in these invalidity contentions does not qualify as prior art to the ’426 Patent, Defendants reserve the right to rebut those allegations (e.g., by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for the ’426 Patent and/or Asserted Claims).

E. The ’669 Patent Priority Date

KPN’s infringement contentions allege that the Asserted Claims of the ’669 Patent are entitled to a priority date of October 15, 2008. The ’669 Patent entered national stage under 35 U.S.C. § 371(c)(1)(2) on July 13, 2011 from PCT No. PCT/EP2010/000278. The ’669 Patent claims priority on its face to EP 09000661, filed on January 19, 2009. KPN appears to allege a conception date three months before the filing of this foreign application.

KPN has not provided sufficient evidence to support its contention that the Asserted Claims of the ’669 Patent are entitled to a conception date of October 15, 2008, let alone evidence of diligence or reduction to practice. Nor has KPN provided any evidence that the ’669 Patent is entitled to claim priority back to the foreign EP application. To the extent KPN alleges that any prior art relied on in these invalidity contentions does not qualify as prior art to the ’669

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Patent, Defendants reserve the right to rebut those allegations (e.g., by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for the ’669 Patent and/or Asserted Claims).

V. STATE OF THE ART

Defendants set forth a summary of their current understanding of the State of the Art for general subject matter for the Asserted Patents. Defendants expressly reserve the right to rely on each of the prior art references discussed in Section VI below with respect to each of the Asserted Claims. Defendants also reserve the right to rely on the discussions of the State of the Art and prior art for the Asserted Patents and their file histories in explaining the State of the Art and the references’ correspondence with the claims of the Asserted Patents. Defendants further expressly reserve the right to supplement their summary of the State of the Art, including for example, by information from any of the authors or named inventors on any of the prior art references, by personnel familiar with systems based on any of the prior art, or by technical experts retained on behalf of any party.

A. Automatic Coverage Assessment of Wireless Networks was Well Known at the Time of the Alleged Invention

At the time of the alleged invention of at least the ’089 Patent, automatic coverage assessment techniques were well known. The ’089 Patent admits conventional techniques of coverage assessments of wireless networks include drive tests. ’089 Patent, 1:46-54, Fig. 1. According to the ’089 Patent, conventional drive tests “consist of measurement routes that are traversed by a measurement terminal often mounted on a vehicle.” *Id.*; *see also, e.g.*, Hogan at 1:36-38, 3:38-40 (describing drive tests in which “operator staff drive throughout the network and conduct and record call quality checks”); Tayloe at 1:44-46 (“Drive team testing requires dispatching a mobile unit into the selected zone of coverage to make first[-]hand observation of

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system conditions."). The '089 Patent admits that conventional drive tests provide "a reasonably accurate indication of the signal strength" "for each base station in included in the measurement," as well as "statistical information from the network nodes about events that can be used to roughly indicate coverage problems such as failed connections, inter-radio access technology (inter-RAT) handovers and cell reselections, etc." '089 Patent at 1:54-62. The purported invention of the '089 Patent seeks to "generat[e] a coverage assessment in a telecommunications infrastructure in a manner that minimizes or eliminates" such drive tests. *Id*. at 2:10-14.

However, at the time of the alleged invention of the '089 Patent, automatic techniques for coverage assessments of wireless networks already were well known. *See, e.g.*, Tayloe, at 1:41-2:36, 2:49-62; Hogan, at 1:61-2:30, 3:15-32, 7:51-8:9; Holma, at 185 ("The planning and optimization process can also be automated with intelligent tools and network elements."), Figs. 8.17-8.18. These well-known coverage assessment techniques included, among other things, generating a coverage map based on obtained measurement information. *See, e.g.*, Hogan, at Abstract ("The visual map can be used for identifying areas of the network that may require remediation to ensure sufficient network coverage"), 1:62-2:39, 3:15-32, 7:51-8:9, 8:28-39; Tayloe, 2:52-62 (describing the network "collect[ing] information relevant to the communication system's actual performance from the mobile unit's perspective," and ultimately "provid[ing] a computer generated representation of the characteristics of the electromagnetic coverage within the target geographic area"), 3:46-50, 4:22-40 (describing "monitoring the signal strength and signal quality of transmissions between the mobile unit and the base station" in order for the "system operator to observe communication system performance during operation and to identify an incidence of degraded service, without waiting for subscribers to call in service complaints"),

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5:17-24 (describing providing location information and signal strength measurements from mobile units "to map the radio coverage characteristics of a geographic area serviced by a cellular radiotelephone communication system," at a "rate[] rapidly approaching real-time.").

B. Measuring Signal Strength of a Second Wireless Access Network was Well Known at the Time of the Alleged Invention

At the time of the alleged invention of at least the '089 Patent, dual-mode UEs performing signal strength measurements of a second wireless access network (at the instruction of a first wireless access network or otherwise) was well known. A book from before the time of the alleged invention depicts "typical measurement tools" used for network performance measurements, below.

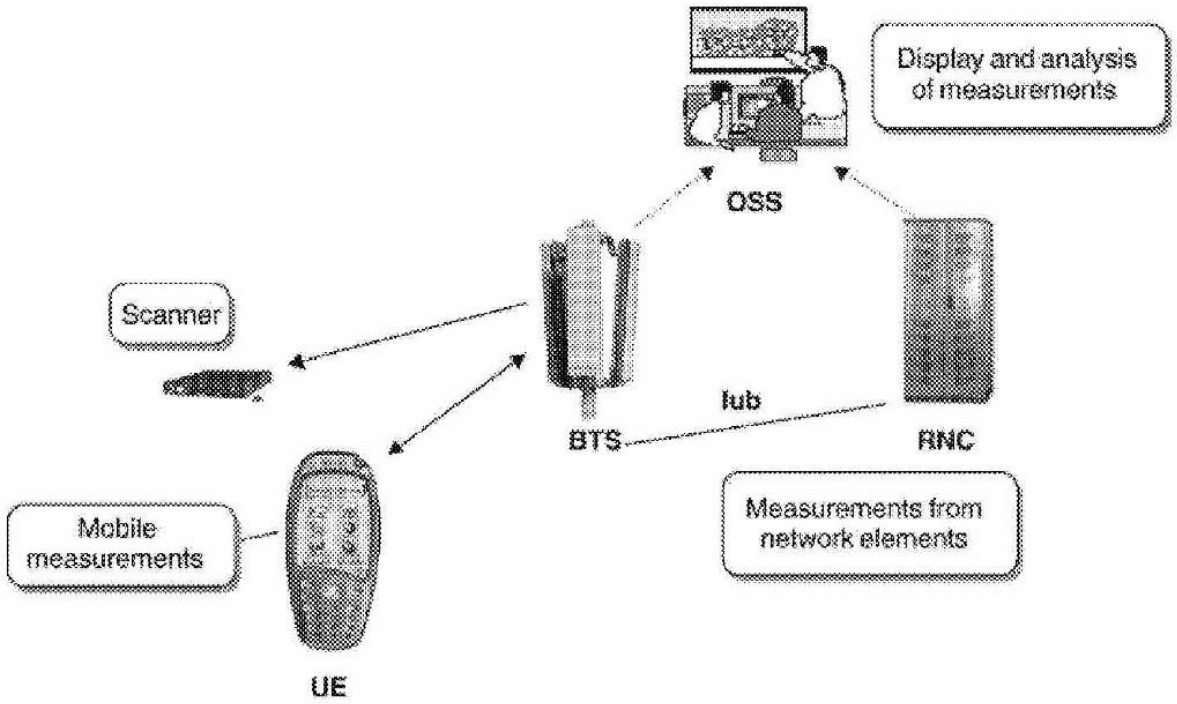

Figure 8.20. Network performance measurements

Holma, at 215 (Figure 8.20). These "typical measurement tools" for network performance measurements include display and analysis of the measurements at the OSS. *Id*.

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It was well known long before the time of the alleged invention of at least the '089 Patent for UEs to obtain measurement information from a second wireless access network of a different radio access technology (RAT) (inter-RAT) or different frequency band (inter-frequency), including of a next generation network. *See, e.g.*, Weaver, 5:5-20, 7:18-46 & Fig. 2 (describing, for example, a mobile station measuring signals from a second network of a different technology type); Gilhousen, Abstract, 4:19-34 (describing, for example, "a technique is provided for directing communication between the mobile and base stations which includes the step of measuring, at the mobile station, a quantifiable parameter (e.g., signal strength) of a signal transmitted by the second base station" where the first and second base stations are of different cellular systems); Palamara, Abstract, 1:34-51, 2:25-41, 2:47-54, 4:1-6, 4:19-29 (describing, for example, the mobile terminal measuring signals from base stations in adjacent cells and sending them to a base station, where the base stations are of wireless communication systems that "may operate either over the same or over different frequency bands, and may comply with either the same or with different standards"); Muller, 2:39-46, 8:5-16, 8:48-52, 12:62-64, 13:18-21 (describing, for example, a "user equipment unit (UE) monitor[ing], e.g., mak[ing] measurements regarding, the base station control or broadcast channel of each of the cells included in the list maintained by the user equipment unit (UE)," and "provid[ing] measurement reports so that the UTRAN receives real-time knowledge of the network conditions based on one or more parameters measured by the user equipment units (UEs)," where "one set of cells may be included in a network of a first technology type/generation (e.g., UTRAN), while another of the sets of cells may be included in a network of a second technology type/generation (e.g., IS-95, CDMA 2000, etc.").

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It was further well known before the time of the alleged invention of at least the '089 Patent to use such measurement information in the context of coverage assessment techniques. *See, e.g.*, Holma at 217-218 (describing use of coverage assessments to aid in the deployment of next generation technologies such as WCDMA and GSM); Hebron, ¶[0045] (describing the automatic coverage assessment tool "may be configured for use with more than one type of wireless communication network and for future networks").

C. Establishing a Wireless Communications Session was Well Known at the Time of the Alleged Invention

At the time of the alleged invention of at least the '426 Patent, wireless communications session establishment techniques were well known. The '426 Patent admits conventional techniques of registering a UE to a wireless telecommunications system and establishing a communications session thereafter. '426 Patent, 6:51-53 ("FIGS. 2A-2C are prior art sequence diagrams illustrating steps in establishing a communication session for a user equipment in the telecommunications system of FIG. 1."), 7:66-8:49, Figs. 2A, 2B, 2C. Under General Packet Radio Service (GPRS) (i.e., 2G) and Long-Term Evolution (LTE) (i.e., 3G) standards, a user equipment must undergo two processes to communicate with an external data network (e.g., the Internet): 1) registration (also referred to as attachment), and 2) session establishment. Registration allows for device mobility within a network; as a UE moves around within a network, it must register itself with the network nodes through which it will communicate. Completion of mobility management means that the core network has located the UE and has assigned the network nodes through which the UE may communicate with external data networks. As disclosed in the '426 Patent, this process involves a subscriber database system (e.g., a home location register (HLR)) transmitting subscriber data to an attach control node or telecommunications node (e.g., a mobility management entity (MME) for LTE systems, or a

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serving GPRS support node (SGSN) for GPRS systems). *See* '426 Patent, 8:9-13, Figs. 2A, 2C. Subscriber data may include, for example, information related to a UE's identification or the types and qualities of services the UE may use.

To actually communicate with external data networks, however, the core network must also establish a communications session. To do so, the core network identifies and establishes the communication channels through which the UE and external data network may communicate, and it provides session information that facilitates such communication (e.g., packet data protocol (PDP) context information for a GPRS system and evolved packet system (EPS) context information for an LTE system) to the network nodes through which the UE may communicate. The '426 Patent also admits this process as prior art, providing that a UE "is able to request activation of a PDP context procedure known in the art and as illustrated in steps (viii)-(xi) in FIG. 2B." '426 Patent, 8:34-36.

D. Creation and Management of Media Sessions Was Well Known at the Time of the Alleged Invention

One of ordinary skill in the art would have understood that the associated session management techniques accused of infringement in the '669 Patent were already used in the prior art. For example, by at least as early as 2002, 3GPP had standardized technology for providing multimedia services in the context of 3GPP's 2G/3G systems, called the IP Multimedia Subsystem (IMS). IMS relies in part on the Session Initiation Protocol (SIP), which was developed by the Internet Engineering Task Force (IETF) for signalling and controlling multimedia communication sessions—such as voice and video calls—as early as the mid-1990s. SIP was standardized by the IETF as early as 1996, over a decade before the time of the alleged invention of the '669 Patent. RFC 3261, published in June 2002, describes Session Initiation Protocol for "creating, modifying, and terminating sessions with one or more participants." RFC

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3261 at Abstract. Moreover, the '669 Patent admits that IP Multimedia Subsystem (IMS) is enabled by SIP and is defined by certain 3GPP and 3GPP2 standards. '669 Patent, 1:23-29. Accordingly, the use of Session Initiation Protocol (SIP) was well known by the time of the filing of the Asserted Patents.

Further, the SIP INVITE message and its use in the IMS to establish sessions was well known, mature technologies at the time of the alleged invention of the '669 Patent. It was also well known that the SIP protocol included the ability to include a Session Description Protocol (SDP) Offer with a SIP INVITE for initiating a media session. A book from before the time of the alleged invention also describes the use of SDP grouping framework to group media streams, such as an audio and video stream, as shown below.

```
v=0
o=- 289083124 289083124 IN IP6 1080::8:800:200C:417A
t=0 0
c=IN IP6 1080::8:800:200C:417A
a=group:LS 1 2
m=audio 20000 RTP/AVP 0
a=mid:1
m=video 20002 RTP/AVP 31
a=mid:2
```

Figure 10.1: Grouping streams using LS semantics

Ericsson IMS Textbook at 272 (Figure 10.1).

It was also well known long before the time of the alleged invention of at least the '669 Patent that SIP provides a two-way session-description exchange known as the offer/answer model. *See* RFC 3264; Ericsson IMS Textbook at 60; *see also* Ericsson IMS Textbook at 75 (explaining that SIP dialogue is established by the INVITE-200 OK transaction and is terminated by the BYE-200 OK transaction).

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E. Using Signalling to Modify and Terminate Sessions Was Well Known at the Time of the Alleged Invention

Well before the time of the alleged invention of at least the '669 Patent, it was well known that Session Initiation Protocol could be used for "creating, *modifying*, and *terminating* sessions with one or more participants." RFC 3261 at Abstract (emphasis added). In particular, it was established that the conventional Session Initiation Protocol (SIP) protocol permitted the termination of a SIP session by a user terminal using a BYE message. *See* Ericsson IMS Textbook at 71, 75. Further, modification of sessions using re-INVITE messages was also well known before the time of the alleged invention. *See id.* at 15 ("During the session, either Alice or Bob may decide to change the characteristic of the media session. This is accomplished by sending a re-INVITE containing a new media description.").

F. Managing the Use of Network Resources by a Multimedia Session was Well Known at the Time of the Alleged Invention

The use of Quality of Servie (QoS) requriements was well known in circuit switched networks by the late 1990s. By the time of the alleged invention of the '669 Patent, and in addition to the work being performed by 3GPP, numerous companies and individuals had developed technology for exteding the application of QoS requirements from the circuit switched domain to packet-switched networks as well, including Ericsson. *See, e.g.*, Ericsson IMS Textbook at 217 ("IMS supports several end-to-end QoS models"). In particular, it was well known to those of ordinary skill that the desired level of QoS could include resource reservation and allocation requirements and minimum and/or maximum bandwidths. *See, e.g., id.* at 267-68 (describing RSVP, or Resource ReSerVation Protocol); Wright, 2:6-25 ("RSVP protocols are typically used between computers and routers to reach reservations of capacity in IP packet networks. A Sessions Initiation Protocol (SIP) server launches an RSVP protocol, and the RSVP protocol creates the resources in the network or the resource reservation network."). As such, at

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the time of the alleged invention of at least the ’669 Patent, it was well known that QoS policies could be implemented in connection with session management.

G. Methods for Accessing a Mobile Communication Network and Methods for Controlling Such Access were Well Known at the Time of the Alleged Invention

At the time of the alleged invention of at least the ’637 Patent, methods for accessing a mobile communication network were well known. For example, with respect to Global System for Mobile communications (GSM) networks, such methods had long been standardized. *See* GSM TS 04.08 v. 5.0.0. In particular, GSM technical specification 04.08 discloses a procedure for mobile-originated calls, which involves a request—a “CM SERVICE REQUEST” message—to establish a “MM connection.” *Id*., p. 108. The CM SERVICE REQUEST is an access request in the form of a “message [] sent by the mobile station to the network to request a service for the connection management sublayer entities, e.g. circuit switched connection establishment, supplementary services activation, short message transfer.” *Id*., pp. 89, 226. The CM SERVICE REQUEST message contains a “mobile identity,” which includes a unique identifier associated with the terminal (e.g., an international mobile subscriber identity (IMSI)). *Id*., pp. 226, 303. Accordingly, at the time of the alleged invention of at least the ’637 Patent, it was well known that to originate a call in a GSM network, a message (e.g., a CM SERVICE REQUEST message) including a unique identifier (e.g., IMSI) is sent to request access.

At the time of the alleged invention of at least the ’637 Patent, the 3rd Generation Partnership Project (3GPP) had standardized various aspects of mobile communications technology, including methods for gaining access to General Packet Radio Service (GPRS) services for mobile data services, and controlling access to mobile communications networks. For example, 3GPP technical specification TS 23.060 describes, among others, procedures for accessing GPRS services:

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> In order to use GPRS services, an MS shall first make its presence known to the network by performing a GPRS attach. This makes the MS available for SMS over GPRS, paging via the SGSN, and notification of incoming packet data. In order to send and receive packet data by means of GPRS services, the MS shall activate the Packet Data Protocol context that it wants to use. This operation makes the MS known in the corresponding GGSN, and interworking with data networks can commence.

3GPP TS 23.060, p. 18. The '637 Patent admits that such steps of access a telecommunications network are standardized. '637 Patent, 1:29-30 ("The steps of accessing a telecommunications network are standardized in e.g. 3 GGP [sic] TS 23.060 (Release 7).").

The '637 Patent also admits that "operator determined barring (ODS)," which "allows network operators to deny access to particular destinations for certain subscribers" was "already described in 3GGP [sic] TS 23.015 V. 7.0.0.0." '637 Patent, 1:44-49. 3GPP TS 23.015 explains that "Operator Determined Barring (ODB) allows a network operator or service provider to regulate access by subscribers (Circuit/Packet Oriented and Interworking WLAN), by the barring of certain categories of incoming or outgoing calls/ Packet Oriented Services or of roaming." 3GPP TS 23.015, p. 5. As such, at the time of the alleged invention of at least the '637 Patent, it was well known that access to a mobile communications network can be controlled at the subscriber level.

H. Authentication Procedures Were Well Known at the Time of the Alleged Invention

At the time of the alleged invention of at least the '235 Patent, authentication procedures were well known. The '235 Patent admits that conventional authentication procedures such as GSM authentication and key agreement (AKA) and UMTS AKA were used to provide a subscriber access to a network. '235 Patent at 1:35-45. Other authentication procedures that were available before the time of the alleged invention include the following: static passwords (a client presents a single static password to the server for each authentication and the server then

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matches the static password with the password stored for that client); one-time codes (both the client and the server share a secret); scratch lists (a form of one-time codes); short-time codes (both the client and the server share one or more secrets exchanged in advance); challenge/response codes (a modification of the short-time code concept that substitutes a server-specified challenge for the current time); and PKI-based authentication (authentication based on public-key cryptography). Weigold at pp. 36-38.

While the ’235 Patent mentions that the GSM AKA is “vulnerable to so-called false base station attacks wherein an attacker pretends to be a valid base station,” the ’235 Patent acknowledges that “[i]n the UMTS AKA part of these threats are mitigated by using a mutual authentication wherein the mobile device has to authenticate itself to the Visitor Location Register (VLR) and the VLR has to authenticate itself to the mobile device.” ’235 Patent at 1:39-45. The ’235 Patent states that “the UMTS AKA is still vulnerable to security attacks. For example, the UMTS AKA is vulnerable to the so-called man-in-the-middle attacks.” ’235 Patent at 1:49-51. The purported invention of the ’235 Patent seeks to “reduce or eliminate at least one of the drawbacks known in the prior art and to provide in a first aspect of the invention a method for service-based authentication of a terminal to a network.” *Id*. at 1:63-66.

However, at the time of the alleged invention of the ’235 Patent, authentication procedures for reducing or eliminating security attacks such as man-in-the-middle attacks were well known. *See, e.g.*, Weigold, at pp. 36-43. These well-known authentication procedures included, among other things, challenge/response one-time codes, PKI-based authentication methods, procedures for binding authentication information with a security ability of a client, and channel binding (e.g., using a radio bearer identification as an input to the calculation of a message authentication code). *See, e.g.*, Weigold at p. 40-41 (“On the application level, MITM

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attacks can be prevented only by challenge/response one-time codes or PKI-based authentication methods—if both are extended to this end."); Chen at p. 2258 ("The cryptographic binding of the authentication information and the security ability of client gives us a simple way of removing the MitM attack in the T-model."); Williams at p. 6 ("Channel binding: ensuring that no man-in-the-middle exists between two end-points authenticated at one network layer but using a secure channel at a lower network layer. [. . .] Applications can exchange authenticated, integrity-protected verifiers of channel bindings data to prove that the end-points of some channel are the logically the same as the application endpoints and thus, there can be no MITM at the lower layer."); Vialen at Col. 12, lines 17-22 ("As will be discussed in more detail, embodiments of the present invention use a solution where an additional parameter is used as an input to the calculation of the message authentication code MAC-I. The value of this parameter is unique at least to each communication channel which uses the same secret key.").

VI. INVALIDITY BASED ON THE PRIOR ART

The primary prior art references that Defendants rely on for each Asserted Patents are identified in the sections below. The Appendices to these Invalidity Contentions contain claim charts for the primary prior art references selected by Defendants, along with obviousness claim charts for other invalidating prior art.[3] Defendants' proposed combinations of the primary prior art references are separately identified throughout these Invalidity Contentions (including in Section VI.B, below). In addition, reasons to combine each of the Primary References with each other or with other secondary references are provided below in detail.

Defendants' reliance on each prior art reference identified throughout these Invalidity Contentions (whether Primary References or obviousness references) includes the reference

[3] To the extent any of these charts cite a Figure or text related to a Figure, any corresponding text or Figure are incorporated by reference.

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itself, anything incorporated by the reference or described as relevant technology by the reference, any system embodying the reference, and any testimony by those with knowledge of the reference, such as named authors and inventors. All such documents and information shall be considered one prior art reference to the extent they describe a single prior art system, technology or solution. Moreover, while some prior art may be charted separately, Defendants reserve the right to show that combinations of individual charts describe a portion of single prior art system or solution. To the extent that Plaintiff argues that some limitation is not shown in the primary reference, Defendants reserve the right to show that element would have been well known to one of ordinary skill in view of other documents describing the same technology, or was admitted prior art (APA) of the named inventor. Defendants reserve the right to revise, amend, and/or supplement the information provided herein, including by identifying and relying on additional references, based on developments in the case including, without limitation, based on changes in the priority date of any Asserted Claim, newly discovered prior art, depositions and document productions of prior art witnesses, claim construction determinations, challenges by Plaintiff to the authenticity or content of the prior art and positions taken by Plaintiff during the litigation. In particular, Defendants reserve the right to supplement these Invalidity Contentions as discovery reveals further information about prior use and/or prior public knowledge of products, methods, or systems that Defendants have reason to believe anticipate or render obvious one or more Asserted Claims. Defendants further reserve the right to identify and rely on additional prior art in Plaintiff's possession, custody, or control that has not yet been produced or identified to Defendants. For instance, as discussed above, Defendants anticipate seeking discovery from several of the individuals and companies associated with the references below and reserve the right to rely on such discovery and/or supplement these contentions to the

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extent that discovery reveals additional facts and/or prior art bases. Discovery is ongoing, and Defendants reserve the right to rely on additional facts and information as their investigation continues.

For each Asserted Patent, Defendants specifically assert the references listed below as Primary References that invalidate the Asserted Claims under 35 U.S.C. § 102 (a), (b), (e), and/or 35 U.S.C. § 103 in combination with other Primary References and/or secondary references listed in the obviousness appendix. Defendants may rely on any of these references, as well as any system or systems that are disclosed or referenced in any of these references that constitute prior art under 35 U.S.C. § 102 (a) and/or (g). Defendants reserve the right to seek discovery of such systems from individuals and entities with knowledge of those systems, including but not limited to individuals or entities identified on the face of those references, entities who may have later acquired those systems, or anyone who may otherwise be identified as having knowledge of those systems. Defendants reserve the right to supplement their contentions to the extent that evidence of any such systems is discovered as their investigation continues.

Defendants reserve the right to assert that any of the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event Defendants obtain evidence that any one or more of the named inventors did not invent (either alone or in conjunction with others) the subject matter claimed in the Asserted Claims.

Defendants further intend to rely on inventor admissions concerning the scope of the prior art relevant to the Asserted Claims found in, among other things: the patent prosecution history for the Asserted Claims and related patents and/or patent applications, any deposition

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history for the named inventors, and the papers filed and any evidence submitted by KPN in conjunction with this litigation.

Discovery is ongoing, and Defendants' prior art investigation and third-party discovery is therefore not yet complete. Defendants reserve the right to present additional items of prior art under 35 U.S.C. §§102(a), (b), (e) and/or (g), and/or 35 U.S.C. § 103 located during the course of discovery or further investigation. Defendants further reserve the right to assert invalidity under 35 U.S.C. § 102(c), (d), or (f) to the extent that discovery or further investigation yields information forming the basis for such claims.

A. Anticipation

1. Anticipation of USP RE48,089

The following prior art references, including the references identified in Defendants' obviousness appendix, anticipate and/or render obvious (as Primary References, secondary references, and/or general background) the Asserted Claims of the '089 Patent.

Appendix A provides a series of charts, A1 through A14, one for each respective reference identified for the '089 Patent. Based on Defendants' understanding of KPN's Infringement Contentions, each chart identifies specific examples of where each limitation of the Asserted Claims is found in that reference.

(i) 3GPP MDT Solution (Appendix A1)

3GPP specifications and contributions are published as a series of closely related documents available for download on the www.3GPP.org website or near the publication date listed on the face of the document. The following 3GPP specifications and contributions were publicly available at least before the alleged foreign priority date claimed on the face of the '089 Patent, and therefore qualify as prior art under 35 U.S.C. § 102(a):

- TS 45.008 v7.6.0 (2006-11);

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- TS 36.331 v8.7.0 (2009-09);
- R2-092435;
- R2-092703;
- R2-095954;
- R2-096719;
- R2-096737; and
- R2-097513.

These specifications and contributions were intended to describe aspects of a single prior art solution and are therefore intended to act as, and effectively are, a unitary set of documents describing a single prior art solution.

R2-092435 is a publication entitled "Preliminary Analysis on Use Cases and UE Measurements for Minimisation of Drive Tests" for 3GPP TSG-RAN WG2 Meeting #65bis submitted by Telecom Italia. R2-092435 was publicly available on or before March 17, 2009, and therefore qualifies as prior art to the '089 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix A1 provides representative, nonlimiting examples of where R2-02435 discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

R2-092703 is a publication entitled "Use Case Description for Minimisation of Drive Tests," for 3GPP TSG-RAN WG2 Meeting #65bis submitted by Telecom Italia, Qualcomm Europe, T-Mobile, Vodafone, and TeliaSonera. R2-092703 was publicly available on or before April 6, 2009, and therefore qualifies as prior art to the '089 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix A1 provides representative, nonlimiting examples

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of where R2-092703 discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

R2-095954 is a publication entitled “Common Pilot Measurements for MDT” for 3GPP TSG-RAN WG2 Meeting #67bis submitted by NTT Docomo, Inc. R2-095954 was publicly available on or before October 6, 2009 and therefore qualifies as prior art to the ’089 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix A1 provides representative, nonlimiting examples of where R2-095954 discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

R2-096719 is a publication entitled “MDT architecture comparison” for 3GPP TSG-RAN WG2 Meeting #68 submitted by Qualcomm Europe. R2-096719 was publicly available on or before November 2, 2009 and therefore qualifies as prior art to the ’089 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix A1 provides representative, nonlimiting examples of where R2-096719 discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

R2-096737 is a publication entitled “Further Simulations on Network Based Solutions for Coverage Optimization” submitted by Ericsson. R2-096737 was publicly available on or before November 2, 2009 and therefore qualifies as prior art to the ’089 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix A1 provides representative, nonlimiting examples of where R2-096737 discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

R2-097513 is a publication entitled “Study on Minimization of Drive-Tests in Next Generation Networks.” R2-097513 was publicly available on or before November 14, 2009 and

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therefore qualifies as prior art to the ’089 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix A1 provides representative, nonlimiting examples of where R2-097513 discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

3GPP TS 36.331 v8.7.0 is a publication entitled “3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Resource Control (RRC) Protocol Specification (Release 8)” (“TS 36.331”). TS 36.331 was publicly available on or before September 29, 2009, and therefore qualifies as prior art to the ’089 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix A1 provides representative, nonlimiting examples of where TS 36.331 discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

3GPP TS 45.008 v7.6.0 (2006-11) is a publication entitled “3rd Generation Partnership Project; Technical Specification Group GSM/EDGE Radio Access Network; Radio subsystem link control (Release 7)” (“TS 45.008”). TS 45.008 was publicly available on or before November 26, 2006, and therefore qualifies as prior art to the ’089 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix A1 provides representative, nonlimiting examples of where TS 45.008 discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts one or more of these publications do not anticipate the Asserted Claims because they were set forth in different physical documents, it would have been manifestly obvious to combine their respective teachings at least because they expressly teach and motivate one of ordinary skill in the art to combine them. The 3GPP.org website, as well as

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the documents themselves, provide detailed instructions on how these specifications should be used and combined to create working system. Ericsson reserves the right to show that the same or similar concepts were published in earlier versions of 3GPP specifications and/or contributions that qualify as prior art.

To the extent Plaintiff asserts that one or more of these 3GPP publications do not anticipate the Asserted Claims, it would have been obvious to combine or modify one or more of these 3GPP publications with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(ii) 3GPP RDT Solution (Appendix A2)

3GPP specifications and contributions are published as a series of closely related documents available for download on the www.3GPP.org website or near the publication date listed on the face of the document. The following 3GPP specifications and contributions were publicly available at least before the alleged priority date of the ’089 Patent, and therefore qualify as prior art under at least 35 U.S.C. § 102(a) and (b):

- 3GPP TS 23.171 v3.11.0 (2004-03);
- 3GPP TS 23.271 v7.9.0 (2007-09);
- 3GPP TS 22.071 v8.0.0 (2007-12);
- 3GPP TS 25.305 v8.0.0 (2007-12).

These specifications were intended to describe aspects of a single prior art solution and are therefore intended to act as, and effectively are, a unitary set of documents describing a single prior art solution.

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3GPP TS 23.171 v3.11.0 (2004-03) is a publication entitled "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Functional stage 2 description of location services in UMTS" ("TS 23.171"). TS 23.171 was publicly available on or before March 31, 2004, and therefore qualifies as prior art to the '089 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix A2 provides representative, nonlimiting examples of where TS 23.171 discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

3GPP TS 23.271 v7.9.0 (2007-09) is a publication entitled "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Functional stage 2 description of Location Services (LCS) (Release 7)" ("TS 23.271"). TS 23.271 was publicly available on or before September 24, 2007, and therefore qualifies as prior art to the '089 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix A2 provides representative, nonlimiting examples of where TS 23.271 discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

3GPP TS 22.071 v8.0.0 (2007-12) is a publication entitled "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Location Services (LCS); Service description; Stage 1" ("TS 22.071"). TS 22.071 was publicly available on or before December 19, 2007, and therefore qualifies as prior art to the '089 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix A2 provides representative, nonlimiting examples of where TS 22.071 discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

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3GPP TS 25.305 v8.0.0 (2007-12) is a publication entitled "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Stage 2 Functional Specification of User Equipment (UE) Positioning in UTRAN (Release 8)" ("TS 25.305"). TS 25.305 was publicly available on or before January 7, 2008, and therefore qualifies as prior art to the '089 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix A2 provides representative, nonlimiting examples of where TS 25.305 discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts one or more of these publications do not anticipate the Asserted Claims because they were set forth in different physical documents, it would have been manifestly obvious to combine their respective teachings at least because they expressly teach and motivate one of ordinary skill in the art to combine them. The 3GPP.org website, as well as the documents themselves, provide detailed instructions on how these specifications should be used and combined to create working system. Ericsson reserves the right to show that the same or similar concepts were published in earlier versions of 3GPP specifications and/or contributions that qualify as prior art.

To the extent Plaintiff asserts that one or more of these 3GPP publications do not anticipate the Asserted Claims, it would have been obvious to combine or modify one or more of these 3GPP publications with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iii) Aerrabotu (Appendix A3)

U.S. Patent Pub. No. 2005/0266845 titled "Apparatus and Method for Multimode Terminals" was filed May 28, 2004 and published December 1, 2005 ("Aerrabotu"). Aerrabotu

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qualifies as prior art to the ’089 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix A3 provides representative, nonlimiting examples of where Aerrabotu discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts Aerrabotu does not anticipate the Asserted Claims, it would have been obvious to combine or modify Aerrabotu with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iv) Bodine (Appendix A4)

U.S. Patent No. 8,406,784 titled “Mobile Device Data Collection for Use in Mobile Communication Network Improvements,” was filed on August 12, 2009 and issued on March 26, 2013 (“Bodine”). Bodine qualifies as prior art to the ’089 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix A4 provides representative, nonlimiting examples of where Bodine discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts Bodine does not anticipate the Asserted Claims, it would have been obvious to combine or modify Bodine with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(v) Fodor (Appendix A5)

U.S. Patent Pub. No. 2002/155831 titled “System and Method for Comparing Data Quality for Multiple Wireless Communication Networks,” was filed on February 27, 2001 and published on October 24, 2002 (“Fodor”). Fodor qualifies as prior art to the ’089 Patent under at least 35 U.S.C. §§ 102(a), (b) and (e). The claim chart attached as Appendix A5 provides

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representative, nonlimiting examples of where Fodor discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts Fodor does not anticipate the Asserted Claims, it would have been obvious to combine or modify Fodor with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(vi) Kazmi (Appendix A6)

WIPO Pub. No. 2008/063109 titled “Scenario Based Measurement Type Selection” was filed November 20, 2006 and published May 29, 2008 (“Kazmi”). Kazmi qualifies as prior art to the ’089 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix A6 provides representative, nonlimiting examples of where Kazmi discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts Kazmi does not anticipate the Asserted Claims, it would have been obvious to combine or modify Kazmi with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(i) Kim (Appendix A7)

U.S. Patent Pub. No. 2003/0218995 titled “Method for Handling Inter-RAT Measurement and Report in Dual-Mode User Equipment” was filed May 15, 2003, claims priority to KR P2002-28246 filed May 21, 2002, and published November 27, 2003 (“Kim”). Kim qualifies as prior art to the ’089 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix A7 provides representative, nonlimiting examples of where Kim discloses,

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either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts Kim does not anticipate the Asserted Claims, it would have been obvious to combine or modify Kim with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(ii) Kuruvilla (Appendix A8)

U.S. Patent Pub. No. 2009/0181664 titled “Method and Apparatus for Network Managed Radio Frequency Coverage and Mobile Distribution Analysis Using Mobile Location Information” was filed January 15, 2008 and published July 26, 2009 (“Kuruvilla”). Kuruvilla qualifies as prior art to the ’089 Patent under at least 35 U.S.C. §§ 102(a) and (e). The claim chart attached as Appendix A8 provides representative, nonlimiting examples of where Kuruvilla discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts Kuruvilla does not anticipate the Asserted Claims, it would have been obvious to combine or modify Kuruvilla with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iii) Martin (Appendix A9)

U.S. Patent No. 6,970,702 titled “Cellular Communications Drive Test System and Method,” was filed on September 26, 2000, claims priority to U.S. App. No. 09.604,755, filed June 28, 2000 and issued on March 29, 2005 (“Martin”). Martin qualifies as prior art to the ’089 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix A9 provides representative, nonlimiting examples of where Martin discloses, either expressly or

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inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts Martin does not anticipate the Asserted Claims, it would have been obvious to combine or modify Martin with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iv) Nokia System (Appendix A10)

On information and belief, the Nokia System, including the Nokia NetAct Planner, Nokia Quality Planner and/or Nokia Trace Planner, was offered for sale, in public use, or otherwise available to the public before the alleged priority date of the claimed invention of the ’089 Patent. Alternatively, documents describing the operation of Nokia’s System were published or otherwise known to the public prior to the alleged priority date of the ’089 Patent. The Nokia System (and/or documents describing the operation of the same) is therefore prior art to the ’089 Patent under at least 35 U.S.C. § 102(a). The Nokia System is described in at least the following documents:

- Niininen, Ari, “Appendix A: Integrated Network Planning Tool: Nokia NetAct Planner,” Fundamentals of Cellular Network Planning & Optimisation (2004).

The claim chart attached as Appendix A10 provides representative, nonlimiting examples of where the Nokia System discloses, either expressly or inherently, each element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that the Nokia System does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Nokia System with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in

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Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(v) Olofsson (Appendix A11)

WIPO Pub. No. 2020/034157 titled "Method and Apparatus of Communication" was filed September 26, 2008 and published April 1, 2010 ("Olofsson"). Olofsson qualifies as prior art to the '089 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix A11 provides representative, nonlimiting examples of where Olofsson discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Olofsson does not anticipate the Asserted Claims, it would have been obvious to combine or modify Olofsson with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(vi) Optimi System (Appendix A12)

On information and belief, the Optimi System, including the Optimi GeoManager, was offered for sale, in public use, or otherwise available to the public before the alleged priority date of the claimed invention of the '089 Patent. Alternatively, documents describing the operation of Optimi's System were published or otherwise known to the public prior to the alleged priority date of the '089 Patent. The Optimi System (and/or documents describing the operation of the same) is therefore prior art to the '089 Patent under at least 35 U.S.C. § 102(a). The Optimi System is described in at least the following documents:

- Optimi xGeoManager (Ericsson_KPN_001467094);
- xGeoManager Accuracy v4 (Ericsson_KPN_001467098)

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- xGeoManager Technical Description (March 2010) (Ericsson_KPN_001467097);
- xGeoManager_Jan10 (Ericsson_KPN_001467096);
- xGeoManager_Solution_Overview_March 2010 (Ericsson_KPN_001467099); and
- WayBackMachine- xGeoManager – Products – Optimi (Ericsson_INV_000004672), available at https://web.archive.org/web/20090916041013/http://www.optimi.com:80/products_xGeoManager.php.

The claim chart attached as Appendix A10 provides representative, nonlimiting examples of where the Optimi System discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that the Optimi System does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Optimi System with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(vii) Tayloe (Appendix A13)

U.S. Patent No. 5,095,500 titled "Cellular Radiotelephone Diagnostic System" was filed October 19, 1990 and issued March 10, 1992 ("Tayloe"). Tayloe qualifies as prior art to the '089 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix A13 provides representative, nonlimiting examples of where Tayloe discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

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To the extent Plaintiff asserts that Tayloe does not anticipate the Asserted Claims, it would have been obvious to combine or modify Tayloe with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(viii) Wacker (Appendix A14)

U.S. Patent No. 7,136,638 titled "Method and System for Analyzing a Network Environment and Network Parameters" was filed October 25, 2002 and issued November 14, 2006 ("Wacker"). Wacker qualifies as prior art to the '089 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix A14 provides representative, nonlimiting examples of where Wacker discloses, either expressly or inherently, each element of the Asserted Claims of the '089 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Wacker does not anticipate the Asserted Claims, it would have been obvious to combine or modify Wacker with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

2. Anticipation of USP 8,881,235

The following prior art references, including the references identified in Defendants' obviousness appendix, anticipate and/or render obvious (as Primary References, secondary references, and/or general background) the Asserted Claims of the '235 Patent.

Appendix B provides a series of charts, B1 through B8, one for each respective reference identified for the '235 Patent. Based on Defendants' understanding of KPN's Infringement

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Contentions, each chart identifies specific examples of where each limitation of the Asserted Claims is found in that reference.

(i) 3GPP Solution (Appendix B1)

3GPP specifications and contributions are published as a series of closely related documents available for download on the www.3GPP.org website or near the publication date listed on the face of the document. The following 3GPP specifications and contributions were publicly available at least before the alleged foreign priority date claimed on the face of the '235 Patent, and therefore qualify as prior art under 35 U.S.C. §§ 102(a) and (b):

- TS 24.302 V1.2.0
- TS 33.402 V8.1.1

These specifications and contributions were intended to describe aspects of a single prior art solution and are therefore intended to act as, and effectively are, a unitary set of documents describing a single prior art solution.

TS 24.302 V1.2.0 is a publication entitled "Technical Specification Group Core Network and Terminals; Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks; Stage 3; (Release 8)." TS 24.302 V1.2.0 was publicly available on or before November 2008 and therefore qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix B1 provides representative, nonlimiting examples of where TS 24.302 V1.2.0 discloses, either expressly or inherently, each element of the Asserted Claims of the '235 Patent, thereby anticipating those claims.

TS 33.402 V8.1.1 is a publication titled "Technical Specification Group Services and System Aspects; 3GPP System Architecture Evolution (SAE); Security aspects of non-3GPP accesses; (Release 8)." TS 33.402 V8.1.1 was publicly available on or before October 2008 and therefore qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The

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claim chart attached as Appendix B1 provides representative, nonlimiting examples of where TS 33.402 V8.1.1 discloses, either expressly or inherently, each element of the Asserted Claims of the ’235 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts one or more of these publications do not anticipate the Asserted Claims because they were set forth in different physical documents, it would have been manifestly obvious to combine their respective teachings at least because they expressly teach and motivate one of ordinary skill in the art to combine them. The 3GPP.org website, as well as the documents themselves, provide detailed instructions on how these specifications should be used and combined to create working system. Ericsson reserves the right to show that the same or similar concepts were published in earlier versions of 3GPP specifications and/or contributions that qualify as prior art.

To the extent Plaintiff asserts that one or more of these 3GPP publications do not anticipate the Asserted Claims, it would have been obvious to combine or modify one or more of these 3GPP publications with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.12, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(ii) Arkko (Appendix B2)

Internet-Draft titled “Authenticated Service Information for the Extensible Authentication Protocol (EAP)” was published by IETF on July 18, 2005 (“Arkko”). Arkko qualifies as prior art to the ’235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix B2 provides representative, nonlimiting examples of where Arkko discloses, either expressly or inherently, each element of the Asserted Claims of the ’235 Patent, thereby anticipating those claims.

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To the extent Plaintiff asserts that Arkko does not anticipate the Asserted Claims, it would have been obvious to combine or modify Arkko with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.12, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iii) Baker (Appendix B3)

International Publication Number WO 2004/010720 A1 titled "Enhanced Security for Wireless Data Transmission Systems" was filed July 21, 2003 and published January 29, 2004 ("Baker"). Baker qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix B3 provides representative, nonlimiting examples of where Baker discloses, either expressly or inherently, each element of the Asserted Claims of the '235 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Baker does not anticipate the Asserted Claims, it would have been obvious to combine or modify Baker with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.13, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iv) Haverinen I (Appendix B4)

RFC 4186 titled "Extensible Authentication Protocol Method for Global System for Mobile Communications (GSM) Subscriber Identity Modules (EAP-SIM)" was published by IETF January 2006 ("Haverinen I"). Haverinen I qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix B4 provides representative, nonlimiting examples of where Haverinen I discloses, either expressly or inherently, each element of the Asserted Claims of the '235 Patent, thereby anticipating those claims.

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To the extent Plaintiff asserts that Haverinen I does not anticipate the Asserted Claims, it would have been obvious to combine or modify Haverinen I with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.14, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(v) Haverinen II (Appendix B5)

U.S. Patent Application Publication No. 2002/0012433 A1 titled "Authentication in a Packet Data Network" was filed January 8, 2001 and published January 31, 2002 ("Haverinen II"). Haverinen II qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix B5 provides representative, nonlimiting examples of where Haverinen II discloses, either expressly or inherently, each element of the Asserted Claims of the '235 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Haverinen II does not anticipate the Asserted Claims, it would have been obvious to combine or modify Haverinen II with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.15, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(vi) USECA (Appendix B6)

USECA's non-patent literature titled "Intermediate Report on UMTS Security Architecture" was published on August 12, 1999 ("USECA"). USECA qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix B6 provides representative, nonlimiting examples of where USECA discloses, either expressly or inherently, each element of the Asserted Claims of the '235 Patent, thereby anticipating those claims.

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To the extent Plaintiff asserts that USECA does not anticipate the Asserted Claims, it would have been obvious to combine or modify USECA with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.16, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(vii) Vialen (Appendix B7)

European Patent Number EP 1432271 B1 titled "Integrity Check in a Communication System" was filed January 23, 2001 and published June 23, 2004 ("Vialen"). Vialen qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix B7 provides representative, nonlimiting examples of where Vialen discloses, either expressly or inherently, each element of the Asserted Claims of the '235 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Vialen does not anticipate the Asserted Claims, it would have been obvious to combine or modify Vialen with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.17, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(viii) Weigold (Appendix B8)

IBM Research's non-patent literature titled "Remote Client Authentication" was published by the IEEE Computer Society July 2008 ("Weigold"). Weigold qualifies as prior art to the '235 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix B8 provides representative, nonlimiting examples of where Weigold discloses, either expressly or inherently, each element of the Asserted Claims of the '235 Patent, thereby anticipating those claims.

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To the extent Plaintiff asserts that Weigold does not anticipate the Asserted Claims, it would have been obvious to combine or modify Weigold with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.18, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

3. Anticipation of USP 9,253,637

The following prior art references, including the references identified in Defendants' obviousness appendix, anticipate and/or render obvious (as Primary References, secondary references, and/or general background) the Asserted Claims of the '637 Patent.

Appendix C provides a series of charts, C1 through C12, one for each respective reference identified for the '637 Patent. Based on Defendants' understanding of KPN's Infringement Contentions, each chart identifies specific examples of where each limitation of the Asserted Claims is found in that reference.

(i) 3GPP Solution (Appendix C1)

3GPP specifications and contributions are published as a series of closely related documents available for download on the www.3GPP.org website at or near the publication date listed on the face of the document. The following 3GPP specifications and contributions were publicly available at least before the alleged priority date of the '637 Patent, and therefore qualify as prior art under 35 U.S.C. §§ 102(a) and (b):

- TS 25.331 V3.21.0
- TS 44.318 V8.0.0

These specifications and contributions were intended to describe aspects of a single prior art solution and are therefore intended to act as, and effectively are, a unitary set of documents describing a single prior art solution.

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TS 25.331 V3.21.0 is a publication entitled "Universal Mobile Telecommunications System (UMTS); Radio Resource Control (RRC) protocol specification." TS 25.331 V3.21.0 was publicly available on or before December 2004 and therefore qualifies as prior art to the '637 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix C1 provides representative, nonlimiting examples of where TS 25.331 V3.21.0 discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

TS 44.318 V8.0.0 is a publication entitled "3rd Generation Partnership Project; Technical Specification Group GSM/EDGE Radio Access Network Generic Access Network (GAN); Mobile GAN interface layer 3 specification (Release 8)." TS 44.318 V8.0.0 was publicly available on or before December 2007 and therefore qualifies as prior art to the '637 Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Appendix C1 provides representative, nonlimiting examples of where TS 44.318 V8.0.0 discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts one or more of these publications do not anticipate the Asserted Claims because they were set forth in different physical documents, it would have been manifestly obvious to combine their respective teachings at least because they expressly teach and motivate one of ordinary skill in the art to combine them. The 3GPP.org website, as well as the documents themselves, provide detailed instructions on how these specifications should be used and combined to create a working system. For example, TS 44.318 V8.0.0 specifically references TS 25.331. *See* TS 44.318 at p. 16. Ericsson reserves the right to show that the same

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or similar concepts were published in earlier versions of the 3GPP specifications and/or contributions that qualify as prior art.

To the extent Plaintiff asserts that one or more of these 3GPP publications does not anticipate the Asserted Claims, it would have been obvious to combine or modify one or more of these 3GPP publications with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and 3, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(ii) Dahlen (Appendix C2)

U.S. Patent No. 8,660,009 titled "Core Network Processing Load Reduction" was filed on October 16, 2010 as a national stage entry of PCT Application No. PCT/SE2008/050117, filed on January 30, 2008. Dahlén issued on February 25, 2014 ("Dahlén"). Dahlén qualifies as prior art to the '637 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix C2 provides representative, nonlimiting examples of where Dahlén discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Dahlén does not anticipate the Asserted Claims, it would have been obvious to combine or modify Dahlén with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iii) Gallagher (Appendix C3)

U.S. Patent Publication No. 2006/0223497 titled "Service Access Control Interface for an Unlicensed Wireless Communication System" was filed February 6, 2006 and published October 5, 2006 ("Gallagher"). Gallagher qualifies as prior art to the '637 Patent under at least 35 U.S.C.

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§§ 102(a) and (b). The claim chart attached as Appendix C3 provides representative, nonlimiting examples of where Gallagher discloses, either expressly or inherently, each element of the Asserted Claims of the ’637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Gallagher does not anticipate the Asserted Claims, it would have been obvious to combine or modify Gallagher with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iv) Gogic (Appendix C4)

U.S. Patent No. 8,380,169 titled “System and Method for Enabling Transaction of Femto Cell Information from a Host Terminal Device to a Guest Terminal Device” was filed on October 9, 2008 and issued on February 19, 2013 (“Gogic”). Gogic claims priority to U.S. Provisional Application No. 60/979,800, which was filed on October 12, 2007. Gogic qualifies as prior art to the ’637 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix C4 provides representative, nonlimiting examples of where Gogic discloses, either expressly or inherently, each element of the Asserted Claims of the ’637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Gogic does not anticipate the Asserted Claims, it would have been obvious to combine or modify Gogic with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

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(v) Mooney (Appendix C5)

U.S. Patent No. 7,840,214 titled "Method of Providing Access Information to an Access Terminal" was filed April 21, 2006 and issued November 23, 2010 ("Mooney"). Mooney qualifies as prior art to the '637 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix C5 provides representative, nonlimiting examples of where Mooney discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Mooney does not anticipate the Asserted Claims, it would have been obvious to combine or modify Mooney with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(vi) Nylander (Appendix C6)

U.S. Patent Publication No. 2007/0183427 titled "Access Control in Radio Access Network Having Pico Base Stations" was filed October 3, 2006 and published August 9, 2007 ("Nylander"). Nylander qualifies as prior art to the '637 Patent under at least 35 U.S.C. §§ 102(a) and (e). The claim chart attached as Appendix C6 provides representative, nonlimiting examples of where Nylander discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Nylander does not anticipate the Asserted Claims, it would have been obvious to combine or modify Nylander with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

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(vii) Obhan (Appendix C7)

U.S. Patent No. 6,275,695 titled "Spectrum Yield Management in a Wireless Communication System" was filed October 8, 1998 and issued August 14, 2001 ("Obhan"). Obhan qualifies as prior art to the '637 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix C7 provides representative, nonlimiting examples of where Obhan discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Obhan does not anticipate the Asserted Claims, it would have been obvious to combine or modify Obhan with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(viii) Patrick (Appendix C8)

U.S. Patent No. 7,995,538 titled "Method and Apparatus for Throttling Access to a Shared Resource" was filed April 7, 2006 and issued August 9, 2011 ("Patrick"). Patrick qualifies as prior art to the '637 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix C8 provides representative, nonlimiting examples of where Patrick discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Patrick does not anticipate the Asserted Claims, it would have been obvious to combine or modify Patrick with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

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(ix) Shatzkamer (Appendix C9)

U.S. Patent No. 8,064,882 titled "Blacklisting of Unlicensed Mobile Access (UMA) Users Via AAA Policy Database" was filed March 9, 2007 and issued November 22, 2011 ("Shatzkamer"). Shatzkamer qualifies as prior art to the '637 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix C9 provides representative, nonlimiting examples of where Shatzkamer discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Shatzkamer does not anticipate the Asserted Claims, it would have been obvious to combine or modify Shatzkamer with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(x) Souma (Appendix C10)

U.S. Patent No. 7,007,087 titled "System and Method for Rejecting Services in a Information Service System" was filed on August 24, 2000 and issued on February 28, 2006 ("Souma"). Souma qualifies as prior art to the '637 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix C10 provides representative, nonlimiting examples of where Souma discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Souma does not anticipate the Asserted Claims, it would have been obvious to combine or modify Souma with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

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(xi) Talley (Appendix C11)

U.S. Patent No. 8,028,327 titled "Method and System for a Low-Cost-Internet-Base Station (LCIB) Granting a Client Device Temporary Access" was filed on January 28, 2008 and issued on September 27, 2011 ("Talley"). Talley qualifies as prior art to the '637 Patent under at least 35 U.S.C. § 102(e). The claim chart attached as Appendix C11 provides representative, nonlimiting examples of where Talley discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Talley does not anticipate the Asserted Claims, it would have been obvious to combine or modify Talley with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(xii) Taniguchi (Appendix C12)

U.S. Patent No. 7,505,755 titled "Data Communication Restriction Method, Data Communication Restriction System and Mobile Terminal" was filed January 11, 2006, published August 3, 2006, and issued March 17, 2009 ("Taniguchi"). Taniguchi qualifies as prior art to the '637 Patent under at least 35 U.S.C. §§ 102(a) and (b). The claim chart attached as Appendix C12 provides representative, nonlimiting examples of where Taniguchi discloses, either expressly or inherently, each element of the Asserted Claims of the '637 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Taniguchi does not anticipate the Asserted Claims, it would have been obvious to combine or modify Taniguchi with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.1, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

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4. Anticipation of USP 9,549,426

The following prior art references, including the references identified in Defendants' obviousness appendix, anticipate and/or render obvious (as Primary References, secondary references, and/or general background) the Asserted Claims of the '426 Patent.

Appendix D provides a series of charts, D1 through D6, one for each respective reference identified for the '426 Patent. Based on Defendants' understanding of KPN's Infringement Contentions, each chart identifies specific examples of where each limitation of the Asserted Claims is found in that reference.

(i) Aerts (Appendix D1)

European Patent Application 1065904 A1 titled "Location registration system for a mobile communications system" was filed June 29, 1999, and published January 3, 2001. ("Aerts"). Aerts qualifies as prior art to the '426 Patent under at least 35 U.S.C. § 102(a)(1). The claim chart attached as Appendix D1 provides representative, nonlimiting examples of where Aerts discloses, either expressly or inherently, each element of the Asserted Claims of the '426 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Aerts does not anticipate the Asserted Claims, it would have been obvious to combine or modify Aerts with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.14, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(ii) Jin (Appendix D2)

U.S. Patent No. 9,131,340 B2 titled "Location Update Processing Method and Device" ("Jin") was filed September 27, 2013 and claims a foreign priority date of April 2, 2011 from Chinese application 2011 1 0084225. Jin qualifies as prior art to the '426 Patent under at least 35 U.S.C. § 102(a)(2). The claim chart attached as Appendix D2 provides representative,

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nonlimiting examples of where Jin discloses, either expressly or inherently, each element of the Asserted Claims of the ’426 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Jin does not anticipate the Asserted Claims, it would have been obvious to combine or modify Jin with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.14, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iii) Zhang (Appendix D3)

U.S. Patent Pub. No. 2009/0318147 A1 titled “Method and Communication System for Storing Address of Network Anchor Point to Network Server” was filed August 31, 2009 and published on December 24, 2009 (“Zhang”). Zhang qualifies as prior art to the ’426 Patent under at least 35 U.S.C. § 102(a)(1). The claim chart attached as Appendix D3 provides representative, nonlimiting examples of where Zhang discloses, either expressly or inherently, each element of the Asserted Claims of the ’426 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Zhang does not anticipate the Asserted Claims, it would have been obvious to combine or modify Zhang with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.14, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iv) 3GPP LTE Standard (Appendix D4)

3GPP specifications are published as a series of closely related documents available for download on the www.3GPP.org website at or near the publication date listed on the face of the document. 3GPP specifications cited herein describe aspects of LTE, a predecessor technology 5G. The following specifications describe aspects of LTE and were publicly available before any alleged critical date of the Asserted Patent:

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- 3GPP TS 23.002 v11.1.0 (2011-12), 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Network architecture; (Release 11), published December 2011;

- 3GPP TS 23.008 v11.2.0 (2011-12), 3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Organization of subscriber data; (Release 11), published December 2011;

- 3GPP TS 23.228 v11.3.0 (2011-12), 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; IP Multimedia Subsystem (IMS); Stage 2 (Release 11), published December 2011;

- 3GPP TS 23.401 v11.0.0 (2011-12), 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; General Packet Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access; (Release 11), published December 2011.

These specifications were intended to describe aspects of a single prior art solution—LTE—and are therefore intended to act as, and effectively are, a unitary set of documents describing a single prior art solution. These specifications describe an LTE network, including an LTE network solution and/or LTE network procedure. Specifically, these specifications describe the prior art and well-known procedure for attaching a UE to a core network and subsequently establishing a communications session with an external data network. Indeed, these specifications describe attaching a UE to a core network and subsequently establishing a communications session using the very same attach procedure that KPN accuses of infringement (with LTE-equivalent nodes). *See* 3GPP 23.228; *see also* 3GPP 23.401. These specifications also show how a telecommunications node (e.g., an MME) may delete subscription data and/or remove default bearers after a precondition is fulfilled. *See, e.g.*, 3GPP TS 23.401 v11.0.0 at 126-127, 135, 154-156, 219-221. Further, these specifications show how a telecommunications node may transmit indications to a UE that communicate the state of the UE's attachment/registration with the telecommunications node, and how the UE may omit or

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otherwise be unable to request a communication session with the telecommunications node based on the attach/registration state of the UE. *See* 3GPP TS 23.228 v11.3.0 at 63, 67-68.

Each LTE specification comprising the 3GPP LTE Standard describes particular aspects of the LTE standard and has provisions for interacting with aspects mandated by the other specifications as described below.

3GPP TS 23.002 v11.1.0 is a technical specification that provides descriptions and configurations of the functional entities comprising an LTE network. 3GPP TS 23.002 v11.1.0 at § 1. Further, TS 23.002 v11.1.0 incorporates by reference portions of 3GPP TS 23.008, 3GPP TS 23.228, and 3GPP TS 23.401. *Id.* at § 2.

3GPP TS 23.008 v11.2.0 lists and categorizes subscriber data used in CS- and PS-domain operation. It also provides a list of "storage facilities"—network entities that may store subscriber data as part of their operation. 3GPP TS 23.008 v11.2.0 § 1.2. TS 23.008 v11.2.0 incorporates by reference portions of 3GPP TS 23.002, 3GPP TS 23.228, and 3GPP TS 23.401. *Id.* at § 0.1.

3GPP TS 23.228 v11.3.0 provides the service description for the IP Multimedia Core Network Subsystem (IMS), including the elements necessary to support IP Multimedia services. 3GPP TS 23.228 v11.3.0 at § 1. IMS is an Access-Network-agnostic protocol that describes how to set up an end-to-end media session, such as a voice call. The specification notes that it does not cover Access Network functionality except as related to the provision of IP Multimedia services, leaving that description to other specifications such as those listed above describing LTE, pointing specifically to 3GPP TS 23.401. *Id.* at § 1, Annex E.1.0. Further, TS 23.228 v11.3.0 incorporates by reference portions of 3GPP TS 23.002 and 3GPP TS 23.401. *Id.* at § 2.

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3GPP TS 23.401 v11.0.0 describes PS-domain architecture and operation within the E-UTRAN architecture (i.e., the architecture used in LTE). 3GPP TS 23.401 v11.0.0 at § 2. TS 23.401 v11.0.0 provides a high-level description of the network entities involved in LTE operation, procedures related to attach and detach, default bearer establishment, dedicated bearer activation, UE state management, and many others. TS 23.401 v11.0.0 incorporates by reference portions of 3GPP TS 23.008 and 3GPP TS 23.228. 3GPP TS 23.401 v11.0.0 at § 2.

Accordingly, the interconnectedness of these documents, and the degree to which each references the others provide further indication that they are intended to describe a single prior art network and/or network/solution. One of ordinary skill would have been motivated, and expressly taught by the references themselves, to look to the interrelated teachings of these specifications for a complete view of the technical aspects of the LTE system.

To the extent Plaintiff alleges that these reference do not qualify as anticipating prior art because they are set forth in different physical documents, it would have nevertheless have been manifestly obvious to combine their respective teachings at least because they expressly teach and motivate one of ordinary skill in the art to combine them to create an LTE-compatible solution, as described in detail above. The 3GPP.org website, as well as the documents themselves, provide detailed instructions on how these specifications should be used and combined to create working system. The specific versions of the standards cited above qualify as prior art to the Asserted Patent under at least 35 U.S.C. § 102(a)(1). The claim chart attached as Exhibit D4 provides representative, non-limiting examples of where the 3GPP LTE Standard discloses, either expressly or inherently, each element of the Asserted Claims of the ’426 Patent, thereby anticipating and/or rendering obvious those claims. In addition, Defendants note that other references provided herein may provide additional details describing the LTE Standard and

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Defendants reserve the right to rely on such references as describing the same technology, or improvements thereto.

To the extent Plaintiff asserts that the 3GPP LTE Standard does not anticipate the Asserted Claims, it would have been obvious to combine or modify 3GPP LTE Standard with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.14, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(v) 3GPP TS 23.060 (Appendix D5)

At least as early as December 2011, 3GPP published a technical specification entitled "General Packet Radio Service (GPRS); Service description; Stage 2 (Release 11)," 3GPP TS 23.060 v11.0.0 (2011-12), referred to herein as "3GPP TS 23.060." 3GPP TS 23.060 qualifies as prior art to the Asserted Patent under at least 35 U.S.C. § 102(a)(1). 3GPP TS 23.060 provides an overall description of GPRS services, including the entities and processes associated with mobility management (e.g., attachment/registration) and session management functions.

To the extent Plaintiff asserts that 3GPP TS 23.060 does not anticipate the Asserted Claims, it would have been obvious to combine or modify 3GPP TS 23.060 with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.14, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(vi) Ericsson Review, 1999 (Appendix D6)

In nearly every year between 1924 and 2003, Ericsson produced and distributed a technology review that highlighted and described the different technological advances the company developed. *See* https://www.ericsson.com/en/about-us/history/sources/lme-review for available versions. In the 1999 edition, referred to herein as "Ericsson Review 1999," the

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Ericsson Review described several features of GPRS, including an attach procedure and a procedure for activating PDP contexts (i.e., session establishment). *See* Ericsson Review 1999 at 85-86, Figs. 5 and 6 ("Before the mobile terminal can communicate with an external packet data network, the packet data protocol (PDP) context must be activated."). Ericsson Review 1999 qualifies as prior art to the '426 Patent under at least 35 U.S.C. § 102(a)(1). The claim chart attached as Appendix D6 provides representative, nonlimiting examples of where Ericsson Review 1999 discloses, either expressly or inherently, each element of the Asserted Claims of the '426 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Ericsson Review 1999 does not anticipate the Asserted Claims, it would have been obvious to combine or modify Ericsson Review 1999 with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.14, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

5. Anticipation of USP 9,667,669

The following prior art references, including the references identified in Defendants' obviousness appendix, anticipate and/or render obvious (as Primary References, secondary references, and/or general background) the Asserted Claims of the '669 Patent.

Appendix E provides a series of charts, E1 through E11, one for each respective reference identified for the '669 Patent. Based on Defendants' understanding of KPN's Infringement Contentions, each chart identifies specific examples of where each limitation of the Asserted Claims is found in that reference.

(i) 3GPP Solution (Appendix E1)

3GPP specifications are published as a series of closely related documents available for download on the www.3GPP.org website at or near the publication date listed on the face of the

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document. 3GPP specifications cited herein describe use of SIP and SDP for IMS-based IPTV. The following specifications describe IMS-based IPTV and were publicly available before any alleged critical date of the '669 Patent:

- 3GPP TS 182.027 v.2.0.0 (2008-02), 3rd Generation Partnership Project; Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IPTV Architecture; IPTV functions supported by the IMS subsystem, published February 2008;

- 3GPP TS 183.063 v.2.1.0 (2008-02), 3rd Generation Partnership Project; Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IMS-based IPTV stage 3 specification, published June 2008;

- 3GPP TS 23.228 v.8.5.0 (2008-06), 3rd Generation Partnership Project, Technical Specification Group Services and System Aspects; IP Multimedia Subsystem (IMS), published June 2008;

- 3GPP TS 24.229 v.8.4.1 (2008-06), 3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP), published June 2008.

These specifications were intended to describe aspects of a single prior art solution and are therefore intended to act as, and effectively are, a unitary set of documents describing a single prior art solution. To the extent that these references do not qualify as anticipating prior art because they are set forth in different physical documents, it would have nevertheless been manifestly obvious to combine their respective teachings at least because they expressly teach and motivate one of ordinary skill in the art to combine them as an IMS-based IPTV solution. The 3GPP.org website, as well as the documents themselves, provide detailed instructions on how these specifications should be used and combined to create working system. The specific versions of the standards cited above qualify as prior art to the Asserted Patent under at least 35 U.S.C. § 102(a). Defendants reserve the right to show that the same or similar concepts were published in earlier versions of the same specifications that qualify as prior art to the Asserted

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Patent under at least 35 U.S.C. § 102(b). The claim chart attached as Exhibit E1 provides representative, non-limiting examples of where the 3GPP solution discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating and/or rendering obvious those claims. In addition, Defendants note that other references provided herein, such as the Ericsson IMS Textbook, may provide additional details regarding IMS, and Defendants reserve the right to rely on such references as describing the same technology, or improvements thereto.

To the extent Plaintiff asserts that the 3GPP solution does not anticipate the Asserted Claims (or otherwise contends that the collective teachings of the 3GPP specifications comprising the 3GPP solution fails to disclose some claim limitation), it would nevertheless have been obvious to combine or modify the 3GPP solution with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(ii) Bell (Appendix E2)

U.S. Patent No. 7,181,526, titled "Announced Session Description," was filed a Great Britain patent on November 27, 1998 and issued February 20, 2007 ("Bell"). Bell qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix E2 provides representative, nonlimiting examples of where Bell discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Bell does not anticipate the Asserted Claims, it would have been obvious to combine or modify Bell with concepts apparent from the State of the Art,

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as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(iii) The Ericsson IMS Textbook (Appendix E3)

The third edition of the textbook entitled "The 3G IP Multimedia Subsystem (IMS): Merging the Internet and Cellular Worlds," written by Ericsson employees Gonzalo Camarillo and Miguel A. Garcia-Martin, was published in 2008. The Ericsson IM Textbook qualifies as prior art to the Asserted Patent under at least 35 U.S.C. §§ 102(a), (b). The claim chart attached as Exhibit E3 provides representative, non-limiting examples of where the Ericsson IMS Textbook discloses, either expressly or inherently, each element of the Asserted Claims of the '669, thereby anticipating those claims.

To the extent Plaintiff asserts that the Ericsson IMS Textbook does not anticipate the Asserted Claims of the '669 Patent, it would have been obvious to combine or modify the Ericsson IMS Textbook with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D. Furthermore, Defendants note that the Ericsson IMS Textbook was expressly intended to explain the development, architecture and operation of the IMS. The Ericsson IMS Textbook teaches that a number of standard bodies were involved in the development of the IMS, including 3GPP, 3GPP2, ITU-R, and Open Mobile Alliance, and that the IMS operates by implementing various Internet protocols that were developed largely by the IETF. Defendants note that the Ericsson IMS Textbook expressly recognizes and describes SIP (RFC 3261 [171]), AAA (RFC 3588 [55]), H.248/MEGACO (ITU-T Recommendation H.248 [122], and Real-Time Transport Protocol (RTP) (RFC 3550 [179] as protocols that are used in the IMS. *See* Ericsson IMS Textbook, at Chapter 3. Defendants expressly reserve the right to show that any concept that Plaintiff asserts

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is missing from the Ericsson IMS Textbook was already known and/or obvious in view of concepts disclosed by these or other IETF protocols or by the 3GPP GPRS Solution (Exhibit E1).

(iv) Foti (Appendix E4)

U.S. Patent Publication No. 2008/0151918, titled "Method of Correlating a Media Session to a Signaling Session," was filed December 22, 2006 and published on June 26, 2008 ("Foti"). Foti qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102(a) and (e). The claim chart attached as Appendix E4 provides representative, nonlimiting examples of where Foti discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Foti does not anticipate the Asserted Claims, it would have been obvious to combine or modify Foti with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(v) IETF Solution (Appendix E3)

The Internet Engineering Task Force (IETF) is a standards organization charged with developing the architecture, protocols, and operation of the public internet. For example, the IETF developed protocols such as Session Initiation Protocol (SIP), Real-Time Transport Protocol (RTP), and numerous others that are implemented by many systems today. IETF Network Working Group RFCs are published as a series of closely related documents available for download on the www.ietf.org website at or near the publication date listed on the face of the document. The RFCs cited herein describe use of Session Initiation Protocol (SIP) and Session Description Protocol (SDP). The following RFCs describe SIP and SDP and were publicly available before any alleged critical date of the '669 Patent:

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- Handley & Jacobson, SDP: Session Description Protocol (RFC 2327), published April 1998;
- Rosenberg et al., SIP: Session Initiated Protocol (RFC 3261), published June 2002;
- Rosenberg & Schulzrinne, An Offer/Answer Model with the Session Description Protocol (SDP) (RFC 3264), published June 2002;
- Camarillo & Marshall, Integration of Resource Management and Session Initiation Protocol (SIP), published October 2002;
- Camarillo et al., Grouping of Media Lines in the Session Description Protocol (SDP) (RFC 3388), published December 2002;
- Hamer et al., Session Authorization Policy Element (RFC 3520), published April 2003;
- Camarillo & Monrad, Mapping of Media Streams to Resource Reservation Flows (RFC 3524), published April 2003;
- Rosenberg, A Framework for Conferencing with the Session Initiation Protocol (SIP) (RFC 4353), published February 2006;
- Li, Forward Error Correction in Grouping Semantics in Session Description Protocol (RFC 4756), published November 2006.

These RFCs were intended to describe aspects of a single prior art solution and are therefore intended to act as, and effectively are, a unitary set of documents describing a single prior art solution. To the extent that these references do not qualify as anticipating prior art because they are set forth in different physical documents, it would have nevertheless been manifestly obvious to combine their respective teachings at least because they expressly teach and motivate one of ordinary skill in the art to combine them as a media session initiation solution. The specific versions of the RFCs cited above qualify as prior art to the Asserted Patent under at least 35 U.S.C. § 102(a). The claim chart attached as Exhibit E5 provides representative, non-limiting examples of where the IETF solution discloses, either expressly or inherently, each element of the Asserted Claims of the ’669 Patent, thereby anticipating and/or

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rendering obvious those claims. In addition, Defendants note that other references provided herein, such as the Ericsson IMS Textbook, may provide additional details regarding IMS, and Defendants reserve the right to rely on such references as describing the same technology, or improvements thereto.

To the extent Plaintiff asserts that the IETF solution does not anticipate the Asserted Claims (or otherwise contends that the collective teachings of the IETF RFCs comprising the IETF solution fails to disclose some claim limitation), it would nevertheless have been obvious to combine or modify the IETF solution with concepts apparent from the state of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D..

(vi) Jansson (Appendix E6)

U.S. Patent Publication No. 2008/0089344, titled "System and Method for Communications" was filed on October 16, 2006 and published on April 17, 2008 ("Jansson"). Jansson qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102 (a) and (e). The claim chart attached as Appendix E6 provides representative, nonlimiting examples of where Jansson discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Jansson does not anticipate the Asserted Claims, it would have been obvious to combine or modify Jansson with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

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(vii) Keller (Appendix E7)

U.S. Patent No. 7,366,780, titled "System and Method for Controlling and Managing Sessions Between Endpoints in a Communications System," was filed December 31, 2002 and issued on April 29, 2008 ("Keller"). Keller qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix E7 provides representative, nonlimiting examples of where Keller discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Keller does not anticipate the Asserted Claims, it would have been obvious to combine or modify Keller with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(viii) Ninokata (Appendix E8)

U.S. Patent Application Publication No. 2001/0025306, titled "Apparatus and Method for Managing a Session on Plural Media," was filed on January 3, 2001 and published on September 27, 2001 ("Ninokata"). Ninokata qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102(a), (b), and (e). The claim chart attached as Appendix E8 provides representative, nonlimiting examples of where Ninokata discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Ninokata does not anticipate the Asserted Claims, it would have been obvious to combine or modify Ninokata with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

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(ix) Noldus (Appendix E9)

U.S. Patent Publication No. 2008/0270611, titled "Method and Device for Providing Correlation Means in Hybrid Telecommunication Networks," was filed as Unites States Provisional Application No. 60/592,491 on July 30, 2004 ("Noldus"). International Application No. PCT/EP2005/007835 was filed on July 19, 2005. The application entered the national stage on April 22, 2008. Noldus published as United States Patent Publication No. 2008/0270611 on October 30, 2008. Noldus qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102(a) and (e). The claim chart attached as Appendix E9 provides representative, nonlimiting examples of where Noldus discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Noldus does not anticipate the Asserted Claims, it would have been obvious to combine or modify Noldus with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(x) Peng (Appendix E10)

U.S. Patent No. 8,307,049, titled "Method and Device for Obtaining Media Description Information of IPTV Services," is a continuation of application No. PCT/CN2008/072775, filed on October 21, 2008 and claims priority to Chinese Patent Application No. 200710181270, filed October 22, 2007 ("Peng"). Peng issued as United States Patent 8,307,049 on November 6, 2012. Peng qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102(a) and (e). The claim chart attached as Appendix E10 provides representative, nonlimiting examples of where Peng discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

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To the extent Plaintiff asserts that Peng does not anticipate the Asserted Claims, it would have been obvious to combine or modify Peng with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

(xi) Rotsten (Appendix E11)

U.S. Patent Publication No. 2004/223489, titled "Multiplexing Media Components of Different Sessions," was filed on May 5, 2004 and published on November 11, 2004 ("Rotsten"). Rotsten qualifies as prior art to the '669 Patent under at least 35 U.S.C. §§ 102(a)b, (b), and (e). The claim chart attached as Appendix E11 provides representative, nonlimiting examples of where Rotsten discloses, either expressly or inherently, each element of the Asserted Claims of the '669 Patent, thereby anticipating those claims.

To the extent Plaintiff asserts that Rotsten does not anticipate the Asserted Claims, it would have been obvious to combine or modify Rotsten with concepts apparent from the State of the Art, as explained in Section V, from other prior art, as explained in Section VI.A and VI.B.5, or in view of the knowledge of one of ordinary skill in the art including as set forth in Section VI.D.

B. Obviousness

The Primary References identified throughout Sections VI.A.1 to VI.A.5 each disclose, either expressly or inherently, every element of the Asserted Claims, thereby anticipating those claims at least under KPN's application of the claims. To the extent Plaintiff contends any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Primary References with concepts from other prior art, as explained throughout this section. In addition to the specific combinations of prior art disclosed herein, Defendants reserve the right to rely on any combination of any prior art references disclosed

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herein. Defendants reserve the right to supplement these obviousness positions (including the actual prior art combinations and the associated reasons to combine) as discovery in the case progresses, including expert discovery.

1. Obviousness of USP RE 48,089 (Appendix F)

The Primary References listed in Section VI.A.1 each disclose, either expressly or inherently, every element of the Asserted Claims of the ’089 Patent, thereby anticipating those claims. To the extent Plaintiff contends that any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Primary References with concepts from other prior art, such as, for example, other prior art identified in other primary reference charts in Appendix A or art identified in Obviousness Appendix F, to render the Asserted Claims invalid. Indeed, all of the prior art relates to the field of wireless telecommunications generally.

Prior art references rendering the Asserted Claims of the ’089 Patent obvious, either alone or in combination with other references in Appendix A, are provided in the table below. The prior art identified in Appendix A renders one or more Asserted Claims of the ’089 Patent obvious when the references are read in combination with one or more of each other, or when read in combination with any of the prior art identified in Appendix F, and/or when read in view of the State of the Art and knowledge of those skilled in the art.

Appendix F – Prior Art	Priority Date
U.S. Patent No. 6,445,917 (“Bark”)	Bark was filed on May 19, 1999 and issued on September 3, 2002. Bark is therefore prior art under at least 35 U.S.C. § 102(b).
U.S. Patent No. 7,917,147 (“Bond”)	Bond was filed on November 22, 2006, published on May 31, 2007, and issued on March 29, 2011. Bond claims priority to GB 0524365.4, filed on November 30, 2005. Bond is therefore prior art under at least 35 U.S.C. § 102(b).

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U.S. Patent No. 6,631,263 ("Corkery")	Corkery was filed on November 6, 1998 and issued on October 7, 2003. Corkery is therefore prior art under at least 35 U.S.C. § 102(b).
U.S. Patent Pub. No. 2008/0176564 ("Eerolainen")	Eerolainen was filed on January 22, 2007 and published on July 24, 2008. Eerolainen is therefore prior art under at least 35 U.S.C. §§ 102(a) and (e).
U.S. Patent No. 6,522,888 ("Garceran')	Garceran was filed on August 31, 1999 and issued on February 18, 2003. Garceran is therefore prior art under at least 35 U.S.C. § 102(b).
U.S. Patent No. 5,697,055 ("Gilhousen")	Gilhousen was filed on October 16, 1994 and issued on December 9, 1997. Gilhousen is therefore prior art under at least 35 U.S.C. § 102(b).
U.S. Patent No. 6,442,393 ("Hogan")	Hogan was filed on November 6, 1998 and issued on August 27, 2002. Hogan is therefore prior art under at least 35 U.S.C. § 102(b).
Holma, Harri, WCDMA for UMTS: A Radio Access for Third Generation Mobile Communications (3d ed. 2004) ("Holma")	Harri Holma's book "WCDMA for UMTS: A Radio Access for Third Generation Mobile Communications (3d ed. 2004) was published in 2004. The Holma book was publicly available on or before 2004, and therefore qualifies as prior art under at least 35 U.S.C. § 102(b).
U.S. Patent No. 8,504,049 ("Iwamura")	Iwamura entered national stage on September 28, 2009 based on PCT App. No. PCT/JP2008/051439, published August 7, 2008, and claims priority to JP 2007-024895, filed February 2, 2007. Iwamura is therefore prior art under at least 35 U.S.C. §§ 102(a) and (e).
U.S. Patent No. 6,845,238 ("Muller")	Muller was filed April 6, 2000 and issued on January 18, 2005. Muller is therefore prior art under at least 35 U.S.C. § 102(b).
U.S. Patent No. 6,654,362 ("Palamara")	Palamara was filed on November 24, 1999 and issued on November 25, 2003. Palamara is therefore prior art under at least 35 U.S.C. § 102(b).
U.S. Patent No. 8,301,156 ("Rio-Romero I")	Rio-Romero I was filed September 25, 2008 and issued October 30, 2012. Rio-Romero I is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent No. 8,301,149 ("Rio-Romero II")	Rio-Romero II was filed February 12, 2009

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	and issued October 30, 2012. Rio-Romero II is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent Pub. No. 2009/268690 ("Sebire")	Sebire was filed on April 23, 2009, claims priority to Provisional Application No. 61/047,664 filed on April 24, 2008, and published on October 29, 2009. Sebire is therefore prior art under at least 35 U.S.C. §§ 102(e).
U.S. Patent No. 7,957,352 ("Vanghi")	Vanghi was filed on February 24, 2004, claims priority to Provisional App. No. 60/508,452 filed on October 2, 2003, published on April 7, 2005, and issued on June 7, 2011. Vanghi is therefore prior art under at least 35 U.S.C. §§ 102(b).

Based on Defendants' present understanding of the Asserted Claims and the apparent constructions Defendants believe KPN is asserting based on its Infringement Contentions, the Asserted Claims are obvious in light of any one or more of the references described in Appendix A in view of any one or more the references described in Appendix F. Each of these combinations has a reasonable expectation of success and yields predictable results.

(i) Example Combinations

The table below provides an identification of exemplary combinations of prior art references that, based on Defendants' present understanding of KPN's Infringement Contentions and apparent reading of the claims, render obvious one or more asserted claims of the '089 Patent. The combinations of Appendix A and Appendix F references identified below are non-exhaustive, and additional examples are apparent from other combinations of Appendix A references. Defendants expressly note that, although certain references charted in Appendix A are listed variously in the left or right column below, Defendants do not thereby imply any restriction as to which Appendix A reference is primary and which Appendix A reference is

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secondary. Defendants reserve the right to rely on either identified reference in the identified combinations as a primary and/or secondary reference.

Reference	Combination References
3GPP MDT Solution (Appendix A1)	3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kuruvilla, Kim, Martin, Nokia System, Optimi System, Olofsson, Tayloe, Wacker and/or one or more references as charted in Appendix F.
3GPP RDT Solution (Appendix A2)	3GPP MDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kuruvilla, Kim, Martin, Nokia System, Optimi System, Olofsson, Tayloe, Wacker and/or one or more references charted in Appendix F.
Aerrabotu (Appendix A3)	3GPP RDT Solution, 3GPP MDT Solution, Bodine, Fodor, Kazmi, Kuruvilla, Martin, Nokia System, Olofsson, Optimi System, Tayloe, Wacker and/or one or more references as charted in Appendix F.
Bodine (Appendix A4)	3GPP MDT Solution, 3GPP RDT Solution, Fodor, Kazmi, Kuruvilla, Martin, Nokia System, Olofsson, Optimi System, Tayloe, Wacker, and/or one or more references as charted in Appendix F.
Fodor (Appendix A5)	3GPP MDT Solution, 3GPP RDT Solution, Bodine, Kazmi, Kim, Kuruvilla, Nokia System Olofsson, Optimi System, Tayloe, Wacker, and/or one or more references as charted in Appendix F.
Kazmi (Appendix A6)	3GPP MDT Solution, 3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kuruvilla, Martin, Nokia System, Olofsson, Optimi System, Tayloe, Wacker and/or one or more references as charted in Appendix F.
Kim (Appendix A7)	3GPP MDT Solution, 3GPP RDT Solution, Bodine, Fodor, Kazmi, Kuruvilla, Martin, Nokia System, Olofsson, Optimi System, Tayloe, Wacker and/or one or more references as charted in Appendix F.
Kuruvilla (Appendix A8)	3GPP MDT Solution, 3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kim, Martin, Nokia System, Olofsson, Optimi System, Tayloe, Wacker and/or one or more references as charted in Appendix F.
Martin (Appendix A9)	3GPP MDT Solution, 3GPP RDT Solution,

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	Aerrabotu, Bodine, Fodor, Kazmi, Kim, Kuruvilla, Nokia System, Olofsson, Optimi System, Tayloe, Wacker and/or one or more references as charted in Appendix F.
Nokia System (Appendix A10)	3GPP MDT Solution, 3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kim, Kuruvilla, Martin, Olofsson, Tayloe, Wacker and/or one or more references as charted in Appendix F.
Olofsson (Appendix A11)	3GPP MDT Solution, 3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kim, Kuruvilla, Martin, Nokia System, Optimi System, Tayloe, Wacker, and/or one or more references as charted in Appendix F.
Optimi System (Appendix A12)	3GPP MDT Solution, 3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kim, Kuruvilla, Muller, Olofsson, Tayloe, Wacker, and/or one or more references charted in Appendix F.
Tayloe (Appendix A13)	3GPP MDT Solution, 3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kim, Kuruvilla, Martin, Nokia System, Olofsson, Optimi System, Wacker and/or one or more references as charted in Appendix F.
Wacker (Appendix A14)	3GPP MDT Solution, 3GPP RDT Solution, Aerrabotu, Bodine, Fodor, Kazmi, Kim, Kuruvilla, Martin, Nokia System, Olofsson, Optimi System, Tayloe and/or one or more references as charted in Appendix F.

It would have been obvious to combine these references for reasons that are readily apparent to one of ordinary skill in the art, and for reasons explained in additional detail in the sections that follow.

(ii) Example Motivations to Combine

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements

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with the independent claims at least as a matter of common sense and routine innovation. Accordingly, Defendants contend that each asserted dependent claim is rendered obvious not only by the combinations explicitly identified in these contentions as rendering a given dependent claim obvious, but also by any combination of references that renders obvious a claim on which a dependent claim depends.

Additional reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by engineers and/or researchers working in the same or similar technical areas, that the references are directed toward the same problem (e.g., evaluating coverage of a network in a more efficient manner than conventional drive tests by using signal strength measurements from existing UEs), the fact that the prior art is all in the field of wireless telecommunications, and one of ordinary skill in the art would be motivated to investigate the various existing wireless telecommunications patents, and other publications identified herein to address her particular needs. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, common sense, would have been obvious to try, or would have been otherwise predictable in the field of wireless telecommunications. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

Moreover, design incentives and other market forces would have prompted those combinations and modifications. For example, a person of ordinary skill in the art would have recognized the benefits and efficiencies of minimizing and/or replacing prior art drive tests with automatic coverage assessment methods. *See, e.g.*, Kuruvilla, ¶[0006] (teaching the benefits of "continuously measur[ing] network coverage within a cell by measuring actual signal strength,"

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in a manner that does not "require a technician to physically visit the various locations," and can "reflect changing RF coverages, due to the physical changing of the landscape in real time"); Tayloe at 1:41-45 (disclosing automatic coverage assessment tools to overcome inefficiencies and disadvantages of conventional drive tests); Martin at 1:20-2:67 (similar); Olofsson at 3:13-4:17 (similar); Corkery at 2:66-3:51 (describing conventional drive tests and that "it would be desirable to provide a technique for constructing a network map that is performed in an automatic fashion and is capable of adapting to changes in the radio environment").

Additionally, some prior art references refer to or discuss other prior art references, illustrating the close technical relationship among the prior art references, either expressly or inherently; therefore, it would have been obvious to combine those pieces of prior art for at least that reason. For example, it would have been obvious to combine or modify Olofsson, Martin, and/or Aerrabotu for this reason. It also would have been obvious to combine or modify Wacker, Holma, and/or the Nokia System for this reason. As another example, it would have been obvious to combine or modify Kazmi and Bark for this reason.

Furthermore, it would have been obvious to combine interrelated teachings of engineers and inventors from the same companies. For example, it would have been obvious to combine or modify Vanghi and Gilhousen, both of which were assigned to Qualcomm. As another example, it would have been obvious to combine or modify Corkery, Rio-Romero I, Rio-Romero II, Bark, Kazmi, Hogan, the Optimi System, and/or Muller, all of which were assigned to Ericsson and/or Optimi (acquired by Ericsson). As an additional example, it would have been obvious to combine or modify Sebire, Eerolainen, and/or Kuruvilla, all of which were assigned to Nokia. It would have been obvious to combine these references for other reasons readily apparent to one

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of ordinary skill in the art and based on one or more other reasons to combine as disclosed herein.

In addition, a person of ordinary skill in the art would have had a reasonable expectation of success in combining the prior art. In light of the references' interrelated and/or express teachings, a person of ordinary skill in the art would have understood that one or more of the prior art references could have been combined without substantial modification or undue experimentation. Additionally, a person of ordinary skill in the art would have understood that combining and/or modifying one or more prior art references would have involved combining prior art elements according to known methods to yield predictable results.

Further, the Asserted Claims would have been obvious to one of ordinary skill in the art because they merely arrange old elements, with each performing the same function that had been known, to perform and yield no more than what one having ordinary skill in the art would expect from such an arrangement. As explained above in the State of the Art (Section V), it was well known to use automatic coverage assessment methods, including generating coverage maps, to minimize or replace conventional drive test techniques. The generic components for performing such techniques (information collector, coverage estimator, network node, UE) were additionally well known and conventional. *See, e.g.*, Kuruvilla, ¶[0008], Figs. 1, 5 (disclosing "data collection module" that "collects RF signal measurements and location information" and "post processing module" that "plots the RF coverage information on a map using data uploaded from the data collection module"); Fodor at ¶[0044], Figs. 2-3 (disclosing automated wireless data quality measurement system and data analysis system). And the techniques for achieving the alleged automatic coverage assessment methods were also well known. For example, as explained above in the State of the Art (Section V), it was additionally well known for dual-

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mode UEs to measure signal strength information from a second wireless access network of a different radio access network (inter-RAT) or frequency band (inter-frequency), including in the context of generating coverage assessments. As an additional example, generic signaling for performing such techniques (such as instructing, obtaining, and providing information) were also well known and conventional. Arranging these well-known and old elements would have been obvious to one of ordinary skill in the art at the time.

In addition, a person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify one or more of the prior art references to apply the automatic coverage assessment techniques to a second wireless access network. A person of ordinary skill in the art would have recognized the benefits of applying such techniques to a second wireless access network in order to use existing UEs to assess coverage of other networks, including emerging or next generation networks. *See, e.g.*, Olofsson, 4:10-15, 5:14-24, 8:25-9:4 (describing benefits of ensuring coverage and service quality for emerging networks of different technology types); Sebire at ¶¶[0005]-[0007].

A person of ordinary skill in the art at the time of the alleged invention also would have been motivated to combine or modify one or more of the prior art references to include an information collector configured to perform the claimed selection. A person of ordinary skill in the art would have recognized the benefits of selecting UEs in order to manage the number of UEs obtaining and reporting measurement information, to reduce network signaling, save UE battery life, and reduce network overload. *See, e.g.*, Olofsson, 10:20-24, 14:18-26; Sebire at ¶[0012] (recognizing that limiting signals measured or UEs participating in measurements may minimize UE battery consumption, allow time for other signal measurements, and save limited bandwidth).

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Similarly, a person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify one or more of the prior art references to include a trigger configured for triggering the claimed selection. A person of ordinary skill in the art would have recognized the benefits of including such a trigger in order to reduce network signaling, save UE battery life, and reduce network overload. *See, e.g.*, Olofsson, 10:20-24, 14:18-26; Sebire at ¶[0012] (recognizing that limiting signals measured or UEs participating in measurements may minimize UE battery consumption, allow time for other signal measurements, and save limited bandwidth). For example, a person of ordinary skill in the art would recognize that using a trigger would ensure automatic coverage assessment methods are performed at a regular time interval, or only in response to certain events or conditions (e.g., only when necessary or poor coverage or QoS conditions may be present).

Finally, a person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify one or more of the prior art references to include well known techniques for obtaining location and associating location information, and providing location information to the coverage estimator, including location information valid upon obtaining the claimed measurement information. A person of ordinary skill in the art would have recognized the benefits of such combinations and/or modifications in order to generate a coverage assessment that includes such location information, which, for example, may allow operators to identify and remedy specific locations with poor coverage. *See, e.g.*, Kuruvilla, Abstract, ¶¶[0033], [0046], [0050].

2. Obviousness of USP 8,881,235 (Appendix G)

The Primary References listed in Section VI.A.12 each disclose, either expressly or inherently, every element of the Asserted Claims of the ’235 Patent, thereby anticipating those claims. To the extent Plaintiff contends that any primary reference does not anticipate the

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Asserted Claims, it would have been obvious to combine or modify the Primary References with concepts from other prior art, such as, for example, other prior art identified in other primary reference charts in Appendix B or art identified in Obviousness Appendix G, to render the Asserted Claims invalid. Indeed, all of the prior art relates to the field of wireless communications.

Prior art references rendering the Asserted Claims of the ’235 Patent obvious, either alone or in combination with other references in Appendix B, are provided in the table below. The prior art identified in Appendix B renders one or more Asserted Claims of the ’235 Patent obvious when the references are read in combination with one or more of each other, or when read in combination with any of the prior art identified in Appendix G, and/or when read in view of the State of the Art and knowledge of those skilled in the art.

Appendix G – Prior Art	**Priority Date**
U.S. Patent Publication No. 2003/0233546 A1 (“Blom”)	Blom was filed on October 22, 2002 and published on December 18, 2003. Blom is therefore prior art under at least 35 U.S.C. §§§ 102(a), (b), and (e).
Modeling of Man-in-the-Middle Attack in the Wireless Networks (“Chen”)	Chen was published by IEEE September 2007. Chen is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent No. 7,190,793 (“Hsu”)	Hsu was filed on August 6, 2004 and issued on March 13, 2007. Hsu is therefore prior art under at least 35 U.S.C. §§§ 102(a), (b), and (e).
U.S. Patent Publication No. 2004/0064706 A1 (“Lin”)	Lin was filed on September 29, 2003 and published on April 1, 2004. Lin is therefore prior art under at least 35 U.S.C. §§§ 102(a), (b), and (e).
U.S. Patent No. 7,607,013 (“Liu”)	Liu was filed on February 28, 2005 and issued on October 20, 2009. Liu is therefore prior art under at least 35 U.S.C. §§§ 102(a), (b), and (e).
U.S. Patent No. 6,671,507 (“Vinck”)	Vinck was filed on June 16, 2000 and issued on December 30, 2003. Vinck is therefore prior art under at least 35 U.S.C. §§§ 102(a), (b), and (e).

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On the Use of Channel Bindings to Secure Channels ("Williams")	Williams was published by IETF on June 29, 2006. Williams is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).

Based on Defendants' present understanding of the Asserted Claims and the apparent constructions Defendants believe KPN is asserting based on its Infringement Contentions, the Asserted Claims are obvious in light of any one or more of the references described in Appendix B in view of any one or more the references described in Appendix G. Each of these combinations has a reasonable expectation of success and yields predictable results.

(i) Example Combinations

The table below provides an identification of exemplary combinations of prior art references that, based on Defendants' present understanding of KPN's Infringement Contentions and apparent reading of the claims, render obvious one or more asserted claims of the '235 Patent. The combinations of Appendix B and Appendix G references identified below are non-exhaustive, and additional examples are apparent from other combinations of Appendix B references. Defendants expressly note that, although certain references charted in Appendix B are listed variously in the left or right column below, Defendants do not thereby imply any restriction as to which Appendix B reference is primary and which Appendix B reference is secondary. Defendants reserve the right to rely on either identified reference in the identified combinations as a primary and/or secondary reference.

Reference	Combination References
3GPP Solution (Appendix B1)	Arkko, Baker, Haverinen I, Haverinen II, USECA, Vialen, Weigold, and/or one or more references as charted in Appendix G.
Arkko (Appendix B2)	3GPP Solution, Baker, Haverinen I, Haverinen II, USECA, Vialen, Weigold, and/or one or more references as charted in Appendix G.
Baker (Appendix B3)	3GPP Solution, Arkko, Haverinen I, Haverinen II, USECA, Vialen, Weigold, and/or one or more references as charted in Appendix G.

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Haverinen I (Appendix B4)	3GPP Solution, Arkko, Baker, Haverinen II, USECA, Vialen, Weigold, and/or one or more references as charted in Appendix G.
Haverinen II (Appendix B5)	3GPP Solution, Arkko, Baker, Haverinen I, USECA, Vialen, Weigold, and/or one or more references as charted in Appendix G.
USECA (Appendix B6)	3GPP Solution, Arkko, Baker, Haverinen I, Haverinen II, Vialen, Weigold, and/or one or more references as charted in Appendix G.
Vialen (Appendix B7)	3GPP Solution, Arkko, Baker, Haverinen I, Haverinen II, USECA, Weigold, and/or one or more references as charted in Appendix G.
Weigold (Appendix B8)	3GPP Solution, Arkko, Baker, Haverinen I, Haverinen II, USECA, Vialen, and/or one or more references as charted in Appendix G.

It would have been obvious to combine these references for reasons that are readily apparent to one of ordinary skill in the art, and for reasons explained in additional detail in the sections that follow.

(ii) Example Motivations to Combine

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation. Accordingly, Defendants contend that each asserted dependent claim is rendered obvious not only by the combinations explicitly identified in these contentions as rendering a given dependent claim obvious, but also by any combination of references that renders obvious a claim on which a dependent claim depends.

Additional reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by engineers and/or researchers working in

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the same or similar technical areas, that the references are directed toward the same problem (e.g., preventing misuse of authentication information), the fact that the prior art is all in the field of wireless communication, and one of ordinary skill in the art would be motivated to investigate the various existing wireless communication patents, and other publications identified herein to address her particular needs. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, common sense, would have been obvious to try, or would have been otherwise predictable in the field of wireless communication. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

Moreover, design incentives and other market forces would have prompted those combinations and modifications. For example, a person of ordinary skill in the art would have recognized the benefits and efficiencies of preventing misuse of authentication information. *See, e.g.*, Weigold at p. 40 (explaining the potential attacks such as phishing, malicious software, and man-in-the-middle attacks on different authentication methods and countermeasures); Chen at Abstract (describing how "Man-in-the-Middle attacks will pose an increasingly real threat to wireless network security" and providing a "defense model of removing the vulnerability"); Williams at p. 6 (describing how "[a]pplications can exchange authenticated, integrity-protected verifiers of channel bindings data to prove that the end-points of some channel are the logically the same as the application endpoints and thus, there can be no MITM at the lower layer.").

Additionally, some prior art references refer to or discuss other prior art references, illustrating the close technical relationship among the prior art references, either expressly or inherently; therefore, it would have been obvious to combine those pieces of prior art for at least

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that reason. For example, it would have been obvious to combine or modify Arkko, Haverinen I, and/or Haverinen II for this reason. As another example, it would have been obvious to combine or modify 3GPP TS 24.302 and 3GPP TS 33.402 for this reason.

Furthermore, it would have been obvious to combine interrelated teachings of engineers and inventors from the same companies. For example, it would have been obvious to combine or modify Haverinen I and Haverinen II, both of which include contributions of inventor Haverinen and are associated with Nokia. As another example, it would have been obvious to combine or modify Arkko and Haverinen I, both of which include contributions by an employee of Nokia. As still another example, it would have been obvious to combine or modify Vialen and Haverinen II, both of which were assigned to Nokia Corporation. As an additional example, it would have been obvious to combine or modify Vinck and USECA, both of which include contributions by Bart Vinck and are associated with Siemens. It would have been obvious to combine these references for other reasons readily apparent to one of ordinary skill in the art and based on one or more other reasons to combine as disclosed herein.

In addition, a person of ordinary skill in the art would have had a reasonable expectation of success in combining the prior art. In light of the references' interrelated and/or express teachings, a person of ordinary skill in the art would have understood that one or more of the prior art references could have been combined without substantial modification or undue experimentation. Additionally, a person of ordinary skill in the art would have understood that combining and/or modifying one or more prior art references would have involved combining prior art elements according to known methods to yield predictable results.

Further, the Asserted Claims would have been obvious to one of ordinary skill in the art because they merely arrange old elements, with each performing the same function that had been

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known, to perform and yield no more than what one having ordinary skill in the art would expect from such an arrangement. As explained above in the State of the Art (Section V), it was well known to use authentication methods to prevent the misuse of authentication information. The generic components for performing such techniques (terminal, SGSN, VLR, AuC, HLR) were additionally well known and conventional. *See, e.g.*, Baker at p. 4, lines 31-33 and Figs. 1-4 (disclosing "an MS's security information is stored in an Authentication Center (AuC) 64 which communicates with the SGSN 56 via the HLR 62 for authentication purposes"); Vialen at ¶[0087] and Fig. 1 (disclosing an "HE/AuC sends an ordered array of n authentication vectors (the equivalent of a GSM "triplet") to the VLR/SGSN"). And the techniques for achieving the alleged authentication methods were also well known. For example, as explained above in the State of the Art (Section V), it was additionally well known to use challenge/response one-time codes, PKI-based authentication methods, procedures for binding authentication information with a security ability of a client, and channel binding techniques to prevent the misuse of authentication information. Arranging these well-known and old elements would have been obvious to one of ordinary skill in the art at the time.

A person of ordinary skill in the art at the time of the alleged invention also would have been motivated to combine or modify one or more of the prior art references to determine a response/expected response based on a service code/expected service code associated with an identified communication channel. A person of ordinary skill in the art would have recognized the benefits of channel binding to prevent the misuse of authentication information. *See, e.g.*, Williams at p. 6 (describing the use of channel binding to ensure "that no man-in-the-middle exists between two end-points authenticated at one network layer but using a secure channel at a lower network layer.").

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In addition, a person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify Baker with Vialen. First, person of ordinary skill in the art at the time of the alleged invention would have combined Baker with Vialen to provide for a granular channel binding (e.g., at the radio bearer level). Second, a person of ordinary skill in the art at the time of the alleged invention faced with the man-in-the-middle problem described in Baker would have been motivated to seek out known solutions to that problem. One such solution is channel binding. A person of ordinary skill in the art at the time of the alleged invention thus would have been led to Vialen's granular channel binding solution. Both references are directed to enhancing security measures in wireless communication systems. *See* Baker at Title ("Enhanced security for wireless data transmission systems"); *see also* Vialen at Title ("Integrity check in a communication system").

3. Obviousness of USP 9,253,637 (Appendix H)

The Primary References listed in Section VI.A.1 each disclose, either expressly or inherently, every element of the Asserted Claims of the '637 Patent, thereby anticipating those claims. To the extent Plaintiff contends that any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Primary References with concepts from other prior art, such as, for example, other prior art identified in other primary reference charts in Appendix C or art identified in Obviousness Appendix H, to render the Asserted Claims invalid. Indeed, all of the prior art relates to the field of wireless telecommunications.

Prior art references rendering the Asserted Claims of the '637 Patent obvious, either alone or in combination with other references in Appendix C, are provided in the table below. The prior art identified in Appendix C renders one or more Asserted Claims of the '637 Patent obvious when the references are read in combination with one or more of each other, or when

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read in combination with any of the prior art identified in Appendix H, and/or when read in view of the State of the Art and knowledge of those skilled in the art.

Appendix H – Prior Art	Priority Date
U.S. Patent No. 6,535,736 ("Balogh")	Balogh was filed on December 11, 1998 and issued on March 18, 2003. Balogh is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent No. 7,774,008 ("Benaouda")	Benaouda was filed on December 22, 2006 and issued on August 10, 2010. Benaouda is therefore prior art under at least 35 U.S.C. § 102(e).
European Patent Pub. No. EP 1009176A2 ("Budka")	Budka was filed on November 30, 1999 and published on June 14, 2000. Budka is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent No. 6,226,277 ("Chuah")	Chuah was filed on May 22, 1998 and issued on May 1, 2001. Chuah is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent No. 8,588,738 ("Gholmieh")	Gholmieh was filed on September 26, 2008 and issued on November 19, 2013. Gholmieh claims priority to U.S. Provisional Application No. 60/976,738, which was filed on October 1, 2007. Gholmieh is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent Pub. No. 2002/0180614 ("Gonzalez")	Gonzalez was filed on October 22, 2001 and issued on December 5, 2002. Gonzalez is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent Pub. No. 2007/0169107 ("Huttunen")	Huttunen was filed on September 14, 2006 as a national stage entry of PCT Application No. PCT/FI04/00337, filed on June 1, 2004. Huttunen published on July 19, 2007. Huttunen is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent Pub. No. 2006/0268838 ("Larsson")	Larsson was filed on March 8, 2006 and published on November 30, 2006. Larsson is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent Pub. No. 2007/0268908 ("Linkola")	Linkola was filed on May 17, 2006 and published on November 22, 2007. Linkola is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent Pub. No. 2006/0294387 ("McCracken")	McCracken was filed on May 13, 2004 and published on December 28, 2006.

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	McCracken is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent No. 6,813,496 ("Numminen")	Numminen was filed on February 24, 2003 and published on November 2, 2004. Numminen is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent Pub. No. 2006/0015354 ("Shrum")	Shrum was filed on July 13, 2004 and published on January 19, 2006. Shrum is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
PCT International Pub. No. WO 01/65876 ("Vignisson")	Vignisson was filed on February 29, 2000 and published on September 7, 2001. Vignisson is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).
U.S. Patent No. 8,249,594 ("Vikberg")	Vikberg was filed on March 14, 2011 as a continuation of U.S. Patent Appl. No. 11/574,493, which was filed on February 28, 2007. Vikberg issued on August 21, 2012. Vikberg is therefore prior art under at least 35 U.S.C. § 102(e)
U.S. Patent No. 7,447,774 ("Viswanath")	Viswanath was filed on January 26, 2007 and issued on November 4, 2008. Viswanath claims priority, as a continuation, to U.S. Patent Appl. No. 10/229,492 (issued as U.S. Patent No. 7,185,067), which was filed on August 27, 2002. Viswanath is therefore prior art under at least 35 U.S.C. § 102(e)

Based on Defendants' present understanding of the Asserted Claims and the apparent constructions Defendants believe KPN is asserting based on its Infringement Contentions, the Asserted Claims are obvious in light of any one or more of the references described in Appendix C in view of any one or more the references described in Appendix H. Each of these combinations has a reasonable expectation of success and yields predictable results.

(i) Example Combinations

The table below provides an identification of exemplary combinations of prior art references that, based on Defendants' present understanding of KPN's Infringement Contentions and apparent reading of the claims, render obvious one or more asserted claims of the '637

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Patent. The combinations of Appendix C and Appendix H references identified below are non-exhaustive, and additional examples are apparent from other combinations of Appendix C references. Defendants expressly note that, although certain references charted in Appendix C are listed variously in the left or right column below, Defendants do not thereby imply any restriction as to which Appendix C reference is primary and which Appendix C reference is secondary. Defendants reserve the right to rely on either identified reference in the identified combinations as a primary and/or secondary reference.

Reference	Combination References
3GPP Solution (Appendix C1)	Dahlen, Gallagher, Gogic, Mooney, Nylander, Obhan, Patrick, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Dahlen (Appendix C2)	3GPP Solution, Gallagher, Gogic, Mooney, Nylander, Obhan, Patrick, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Gallagher (Appendix C3)	3GPP Solution, Dahlen, Gogic, Mooney, Nylander, Obhan, Patrick, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Gogic (Appendix C4)	3GPP Solution, Dahlen, Gallagher, Mooney, Nylander, Obhan, Patrick, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Mooney (Appendix C5)	3GPP Solution, Dahlen, Gallagher, Gogic, Nylander, Obhan, Patrick, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Nylander (Appendix C6)	3GPP Solution, Dahlen, Gallagher, Gogic, Mooney, Obhan, Patrick, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Obhan (Appendix C7)	3GPP Solution, Dahlen, Gallagher, Gogic, Mooney, Nylander, Patrick, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Patrick (Appendix C8)	3GPP Solution, Dahlen, Gallagher, Gogic, Mooney, Nylander, Obhan, Shatzkamer, Souma, Talley, Taniguchi, and/or one or more

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	references as charted in Appendix H.
Shatzkamer (Appendix C9)	3GPP Solution, Dahlen, Gallagher, Gogic, Mooney, Nylander, Obhan, Patrick, Souma, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Souma (Appendix C10)	3GPP Solution, Dahlen, Gallagher, Gogic, Mooney, Nylander, Obhan, Patrick, Shatzkamer, Talley, Taniguchi, and/or one or more references as charted in Appendix H.
Talley (Appendix C11)	3GPP Solution, Dahlen, Gallagher, Gogic, Mooney, Nylander, Obhan, Patrick, Shatzkamer, Souma, Taniguchi, and/or one or more references as charted in Appendix H.
Taniguchi (Appendix C12)	3GPP Solution, Dahlen, Gallagher, Gogic, Mooney, Nylander, Obhan, Patrick, Shatzkamer, Souma, Talley, and/or one or more references as charted in Appendix H.

It would have been obvious to combine these references for reasons that are readily apparent to one of ordinary skill in the art, and for reasons explained in additional detail in the sections that follow.

(ii) Example Motivations to Combine

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation. Accordingly, Defendants contend that each asserted dependent claim is rendered obvious not only by the combinations explicitly identified in these contentions as rendering a given dependent claim obvious, but also by any combination of references that renders obvious a claim on which a dependent claim depends.

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Additional reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by engineers and/or researchers working in the same or similar technical areas, that the references are directed toward the same problem (e.g., controlling access to a network and/or controlling network traffic), the fact that the prior art is all in the field of wireless telecommunications and network access technology, and one of ordinary skill in the art would be motivated to investigate the various existing wireless telecommunications and network access technology patents, and other publications identified herein to address her particular needs. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, common sense, would have been obvious to try, or would have been otherwise predictable in the field of wireless telecommunications and network access technology. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art. For instance, a person having ordinary skill in the art would have been motivated to combine Gogic, Nylander, Talley, and/or Gholmieh because both relate to the same problem of controlling the access of guest terminals in a home Node B (e.g., femtocell) network. *See, e.g.*, Gogic at Abstract; Nylander at Abstract; Talley at 2:31-44; Gholmieh at Abstract.

Moreover, design incentives and other market forces would have prompted those combinations and modifications. For example, a person of ordinary skill in the art would have recognized the benefits and efficiencies of providing access deny time interval information to terminals, so that the terminals can avoid expending unnecessary resources in making access requests that will be denied, and the wireless communication network can avoid expending unnecessary resources in denying such access requests. *See, e.g.*, Mooney at 1:51-55 (explaining

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that "[c]ontinuing to attempt to re-access a heavily loaded or overloaded access network may exacerbate the overloading by consuming radiofrequency and/or processor resources associated with the access channels").

Additionally, some prior art references refer to or discuss other prior art references, illustrating the close technical relationship among the prior art references, either expressly or inherently; therefore, it would have been obvious to combine those pieces of prior art for at least that reason. For example, it would have been obvious to combine or modify Gallagher, and/or the 3GPP Solution for this reason.

Furthermore, it would have been obvious to combine interrelated teachings of engineers and inventors from the same companies. For example, it would have been obvious to combine or modify Vignisson, Patrick, Gogic, and/or Gholmieh, which were assigned to Qualcomm. As another example, it would have been obvious to combine or modify Dahlen, Larsson, Gonzalez, and/or Vikberg, which were assigned to Ericsson. It would have been obvious to combine these references for other reasons readily apparent to one of ordinary skill in the art and based on one or more other reasons to combine as disclosed herein.

In addition, a person of ordinary skill in the art would have had a reasonable expectation of success in combining the prior art. In light of the references' interrelated and/or express teachings, a person of ordinary skill in the art would have understood that one or more of the prior art references could have been combined without substantial modification or undue experimentation. As an example, Souma explicitly states that the service use control method disclosed therein "can also be applied in direct to the telephone network such as the hand-held telephone network and data communication service to result in the similar effect." Souma at 20:43-51. Additionally, a person of ordinary skill in the art would have understood that

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combining and/or modifying one or more prior art references would have involved combining prior art elements according to known methods to yield predictable results.

Further, the Asserted Claims would have been obvious to one of ordinary skill in the art because they merely arrange old elements, with each performing the same function that had been known, to perform and yield no more than what one having ordinary skill in the art would expect from such an arrangement. As explained above in the State of the Art (Section V), it was well known to transmit a unique identifier (e.g., IMSI) in an access request. *See also* Shatzkamer ¶ [0015] (explaining that "[t]he IMSI is a unique identifier that is associated with network mobile phone users"); Budka at [0042], [0062] (disclosing that call originations in a GSM network involve receipt of an access request with a unique identifier). It was also well known to deny network access to certain network subscribers during periods of high loading. *See, e.g.*, Obhan at 11:40-47 (disclosing that "[w]hen the actual subscriber loading…compares unfavorably to a respective loading threshold, the [] system may take various actions…[including] limiting access to the system by certain classes of subscribers and reserving bandwidth for other classes of subscribers"); Mooney at 1:28-30 (explaining that "[a] call request from an access terminal may be denied because the system is overloaded and lacks sufficient capacity to support a new call"). Arranging these well-known and old elements would have been obvious to one of ordinary skill in the art at the time.

In addition, person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify one or more of the prior art references to deny terminals access to a network based on a unique identifier associated with the terminal, rather than an access class assigned to the terminal. A person of ordinary skill in the art would have recognized that substituting an access class-based access control method with a unique identifier-

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based access control method could provide finer and more specific access control. *See, e.g.*, Nylander at [0033] (explaining that access control based on access class "cannot be used for fine-grained Access Control," as there are "only [a limited number of] different Access Control Classes," and "[w]ith such a limited number of Access Control Classes, it is impossible to build any logic for access control").

A person of ordinary skill in the art at the time of the alleged invention also would have been motivated to combine or modify one or more of the prior art references to substitute generic terminals subject to access restrictions based on a priority ranking, *see, e.g.*, Souma, at 9:48-52; Taniguchi, at 1:12-30, for terminals executing machine-to-machine applications. For example, a person of ordinary skill in the art would have recognized that machine-to-machine applications, for which transmissions may be deferred, would be considered low priority users and thus good candidates for substitution. *See, e.g.*, Vignisson, at 10:27-29.

4. Obviousness of USP 9,549,426 (Appendix I)

The Primary References listed in Section VI.A.14 each disclose, either expressly or inherently, every element of the Asserted Claims of the '426 Patent, thereby anticipating those claims. To the extent Plaintiff contends that any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Primary References with concepts from other prior art, such as, for example, other prior art identified in other primary reference charts in Appendix D or art identified in Obviousness Appendix I, to render the Asserted Claims invalid. Indeed, all of the prior art relates to the wireless communications field, and specifically the system architecture, entities, and processes for registering/attaching user equipment with a wireless communications system.

Prior art references rendering the Asserted Claims of the '426 Patent obvious, either alone or in combination with other references in Appendix D, are provided in the table below.

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The prior art identified in Appendix D renders one or more Asserted Claims of the ’426 Patent obvious when the references are read in combination with one or more of each other, or when read in combination with any of the prior art identified in Appendix I, and/or when read in view of the State of the Art and knowledge of those skilled in the art.

Appendix I – Prior Art	**Priority Date**
Jörg Eberspächer, Hans-Jörg Vögel, Christian Bettstetter, Christian Hartmann, GSM Architecture, Protocols and Services (3rd Edition) (“Eberspächer”)	Eberspächer was published no later than August 4, 2008. Eberspächer is therefore prior art under at least 35 U.S.C. § 102(a)(1).
U.S. Pub. No. 2006/0268838 A1 to Larsson et al. (“Larsson”)	Larsson was filed on March 8, 2006 and published November 30, 2006. *Larsson* is therefore prior art under at least 35 U.S.C. § 102(a)(1).
EP 1103117 B1 to Hartmaier (“Hartmaier”)	Hartmaier was filed on July 16, 1999 and published October 6, 2004. Hartmaier is therefore prior art under at least 35 U.S.C. § 102(a)(1).
International Patent Application Publication Number WO 98/31163 (“WO ‘163”)	WO ‘163 was filed on January 9, 1998 and published on July 16, 1998. WO ‘163 is therefore prior art under at least 35 U.S.C. § 102(a)(1).
U.S. Patent No. 8,359,638 B2 (“Shaw”)	Shaw was filed on Aug 11, 2010 and claims a prior publication date of December 23, 2010. Shaw is therefore prior art under at least 35 U.S.C. § 102(a)(1).
English Translation of Chinese Publication No. CN 1328925C to Feng, Jianjun, and Wang (“Feng”)	Feng was filed January 14, 2004 and published July 25, 2007. Feng is therefore prior art under at least 35 U.S.C. § 102(a)(1).
U.S. Patent No. 2012/0269167 A1 to Velev (“Velev”)	Velev was filed on June 28, 2012 and was published on October 25, 2012. Velev claims foreign priority over EP 09013641.7 as of October 29, 2009. Velev is therefore prior art under at least 35 U.S.C. § 102(a)(1).
U.S. Patent No. 6,731,932 (“Rune”)	Rune was filed on August 24, 2000 and was issued on May 4, 2004. Rune is therefore prior art under at least 35 U.S.C. § 102(a)(1).
U.S. Patent No. 6,879,825 (“Daly”)	Daly was filed on November 1, 2000 and was issued April 12, 2005. Daly is therefore prior art under at least 35 U.S.C. § 102(a)(1).
U.S. Patent No. 6,115,607 (“Holcman”)	Holcman was filed on January 20, 1998 and issued on September 5, 2000. Holcman is therefore prior art under at least 35 U.S.C. §

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	102(a)(1).
Stefania Sesia, Issam Toufik, Matthew Baker, LTE – The UMTS Long Term Evolution (2nd Edition) ("Sesia")	Sesia was published in 2011. Sesia is therefore prior art under at least 35 U.S.C. § 102(a)(1).
U.S. Patent No. 8,848,668 ("Bachmann")	Bachmann was filed on June 28, 2012, was issued on September 30, 2014, and claims foreign priority to EP 04023829. Bachmann is therefore prior art under at least 35 U.S.C. § 102(a)(2).
U.S. Patent No. 9185545 ("Yeoum")	Yeoum was filed on November 24, 2009 as PCT No. PCT/KR2209/006921 and issued on November 10, 2015. Yeoum is therefore prior art under at least 35 U.S.C. § 102(a)(2).
U.S. Patent No. 2013/0051231 ("Cai")	Cai was filed on May 7, 2010 as PCT No. PCT/CN10/00640 and issued on February 28, 2013. Cai is therefore prior art under at least 35 U.S.C. § 102(a)(1).

Based on Defendants' present understanding of the Asserted Claims and the apparent constructions Defendants believe KPN is asserting based on its Infringement Contentions, the Asserted Claims are obvious in light of any one or more of the references described in Appendix D in view of any one or more the references described in Appendix I. Each of these combinations has a reasonable expectation of success and yields predictable results.

(i) Example Combinations

The table below provides an identification of exemplary combinations of prior art references that, based on Defendants' present understanding of KPN's Infringement Contentions and apparent reading of the claims, render obvious one or more asserted claims of the '426 Patent. The combinations of Appendix D and Appendix I references identified below are non-exhaustive, and additional examples are apparent from other combinations of Appendix D references. Defendants expressly note that, although certain references charted in Appendix D are listed variously in the left or right column below, Defendants do not thereby imply any restriction as to which Appendix D reference is primary and which Appendix D reference is

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secondary. Defendants reserve the right to rely on either identified reference in the identified combinations as a primary and/or secondary reference.

Reference	Combination References
Aerts (Appendix D1)	Jin, Zhang, Ericsson Review, 3GPP LTE Standard, 3GPP TS 23.060 v11.0.0, Zhang and/or one or more references as charted in Appendix I.
Jin (Appendix D2)	Aerts, Ericsson Review, 3GPP LTE Standard, TS 23.060 v11.0.0, Zhang and/or one or more references as charted in Appendix I.
Zhang (Appendix D3)	Aerts, Jin, Ericsson Review, 3GPP LTE Standard, 3GPP TS 23.060 v11.0.0 and/or one or more references as charted in Appendix I.
3GPP LTE Standard (Appendix D4)	Aerts, Jin, Zhang, Ericsson Review, 3GPP TS 23.060 v11.0.0, Zhang and/or one or more references as charted in Appendix I.
3GPP TS 23.060 v11.0.0 (Appendix D5)	Aerts, Jin, Zhang, Ericsson Review, 3GPP LTE Standard and/or one or more references as charted in Appendix I.
Ericsson Review (Appendix D6)	Aerts, Jin, Zhang, 3GPP LTE Standard, 3GPP TS 23.060 v11.0.0 and/or one or more references as charted in Appendix I.

(ii) Example Motivations to Combine

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation. Accordingly, Defendants contend that each asserted dependent claim is rendered obvious not only by the combinations explicitly identified in these contentions as rendering a given dependent claim obvious, but also by any combination of references that renders obvious a claim on which a dependent claim depends.

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Additional reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by engineers and/or researchers working in the same or similar technical areas, that the references are directed toward the same problem (e.g., the entities and processes used to attach user equipment to a telecommunications system), the fact that the prior art is all in the field of wireless telecommunications, and one of ordinary skill in the art would be motivated to investigate the various existing wireless telecommunications patents, and other publications identified herein to address her particular needs. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, common sense, would have been obvious to try, or would have been otherwise predictable in the field of wireless telecommunications. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

Moreover, design incentives and other market forces would have prompted those combinations and modifications. For example, one of ordinary skill in the art would have recognized the benefits and efficiencies of transmitting/receiving subscription data in two stages so as to save network resources during connection establishment procedures. *See*, *e.g.*, Aerts at Code 57 (disclosing a method for transmitting subscription data in two stages so as to reduce the load on signaling links); Jin at 1:50-52 (disclosing a method for storing subscription data "so as to reduce a load of a network element of a core network."); Zhang at ¶¶[0004], [0008] (disclosing methods for improving attachment/registration efficiency during handover procedures); Velev at ¶[0039] (noting the desirability of avoiding "the repeated interaction between" a telecommunications node and a subscriber database system.); Rune at 3:61-4:3

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(identifying "a large signalling load" as a disadvantage of frequent location updates in systems wherein UEs move around frequently); Bachmann at 3:1-6 (identifying the slow attach and PDP context activation procedures as a drawback in then-existing system operation); Yeoum at 3:42-49 (disclosing system that reduces propagation delay and traffic load in a telecommunications network); Rune at 8:23-55 (disclosing system designed to "improve the efficiency of the handling of subscriber data."); Holcman at 5:34-53 (identifying inefficient registration procedures as sources of network resource waste); Daly at 2:1-9, 2:61-63 (disclosing a system designed to limit inefficient registration): WO '163 at 3 (disclosing improvements to subscriber database systems to reduce resource usage).

In another example, one of ordinary skill in the art would have recognized that an objective of systems that transmit subscription data in two stages (e.g., as in Aerts) is to minimize the amount of storage resources used in the local database. *See, e.g.*, Aerts at ¶¶[0002], [0003], [0005]. One of ordinary skill in the art also would have recognized that this objective could be achieved by transmitting a second set of subscription information only when the information is needed (e.g., to establish an incoming or outgoing call). One of ordinary skill in the art thus would have been motivated to seek out solutions to further minimize the amount of storage resources used at a telecommunications node (e.g., an MCS2/VLR2, as in Aerts, or similar node, depending on the type of network used) once that node no longer needs certain data for communications. A natural and common sense solution would have been to delete unneeded data if a UE previously connected to the telecommunications node is no longer so connected (e.g., when a handover procedure occurs or when the UE enters an idle state), and one of ordinary skill in the art would have searched for and implemented such solutions—like Feng's disclosed process of deleting unneeded subscriber information or Velev's disclosed process of

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deleting default bearer information under a variety of circumstances—to further conserve storage resources. *See*, *e.g.*, Feng at 2 ("In the VLR in-memory database, the save the memory space, the database needs to regularly delete useless data."); Velev at ¶¶[0037], [0119], [0120]; Zhang at ¶[0075], Fig. 2A.

Additionally, some prior art references refer to or discuss other prior art references, illustrating the close technical relationship among the prior art references, either expressly or inherently; therefore, it would have been obvious to combine those pieces of prior art for at least that reason. For example, it would have been obvious to combine or modify Larsson, Jin, Bachmann, and 3GPP TS 23.060 for this reason. In another example, it would have been obvious to combine Yeoum, Cai, and TS 23.401 of the 3GPP LTE Standard for this reason.

Further, it would have been obvious to combine interrelated teachings of engineers and inventors from the same companies. It would have been obvious to combine or modify Larsson, Rune, and Cai, each of which were assigned to Ericsson. It also would have been obvious to combine or modify Shaw and Daly, both of which were assigned to AT&T. It would have been obvious to combine these references for other reasons readily apparent to one of ordinary skill in the art and based on one or more other reasons to combine as disclosed herein.

In addition, a person of ordinary skill in the art would have had a reasonable expectation of success in combining the prior art. In light of the references' interrelated and/or express teachings, a person of ordinary skill in the art would have understood that one or more of the prior art references could have been combined without substantial modification or undue experimentation. Additionally, a person of ordinary skill in the art would have understood that combining and/or modifying one or more prior art references would have involved combining prior art elements according to known methods to yield predictable results. For example,

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although Aerts and Velev disclose their respective processes in the context of different wireless communications environments (*i.e.*, Aerts discloses a GSM architecture (2G) and Velev discloses an Evolved Packet System (EPS) architecture (LTE)), each patent recognizes that its disclosed process may apply across generations of wireless communications systems. *See* Aerts at ¶[0029] ("[T]he concept of transferring only a limited set of subscriber information from the central register to the local register . . . can be applied in any mobile communications system whose location registration system consists of a central database and local databases allocated to certain service areas."); Velev at ¶ [0105] ("It should be noted that the principles of the invention may however also readily applied to other 3GPP-based core network architectures, such as the Core Network and UTRAN architecture of UMTS."). This is a common feature of telecommunications systems, as much of the operation of any system or architecture is heavily derived from previous generations and designed to be adaptable to future developments. Thus, one of ordinary skill in the art would recognize that the disclosures of the identified references would have been combined and applied across several generations of wireless communications systems.

Further, the Asserted Claims would have been obvious to one of ordinary skill in the art because they merely arrange old elements, with each performing the same function that had been known, to perform and yield no more than what one having ordinary skill in the art would expect from such an arrangement. As explained above in the State of the Art (Section V), it was well known to attach a user equipment to a core network before establishing a communications session with a wireless communications network. The network nodes for performing such processes (e.g., MME, SGSN, HLR, HSS, GGSN, P-GW, MSC, VLR) were additionally known and conventional. *See, e.g.*, Aerts at code 57, ¶[0022] (disclosing a telecommunications node

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(i.e., a MSC/VLR in Aerts) and a subscriber database system (i.e., an HLR in Aerts) used in a two-stage transmission process for transmitting the subscription data of a mobile); Jin at 4:26-63. (disclosing MMEs receiving subscription data from an HSS and SGSNs receiving subscription data from HLRs); Zhang at ¶¶[0063], [0077], [0079], FIG. 1 (disclosing MME, SGSN, GGSN, PDN GW (also referred to as P-GW), and HSS interaction during attach and session establishment procedures); Larsson at ¶[0039] (disclosing SGSN, GGSN, and HSS entities within a system for attaching a mobile station and later establishing a Voice over IP communications session for the MS). And the techniques for achieving the alleged two-stage subscription data transmission processes were also well known. For example, as explained above in the State of the Art (Section V), it was well-known for the data transmission processes required for mobility management (e.g., attachment/registration) to occur before those required for session establishment. Arranging these well-known and old elements would have been obvious to one of ordinary skill in the art at the time, and was, in fact, considered by 3GPP as standard procedure. *See* 3GPP LTE Standards; 3GPP TS 23.060.

In addition, one of ordinary skill in the art would have been motivated to combine or modify one or more of the prior art references to include an authentication procedure where authentication is performed before a location update (e.g., as in Eberspächer). Indeed, authentication procedures frequently precede mobility management and session establishment procedures in the prior art. *See*, *e.g.*, Larsson at ¶[0049], Fig. 8; Zhang at ¶[0072], Fig. 2A; Jin at 11:5, Fig. 3A; Velev at Fig. 4; Yeoum at 8:21-23, Fig. 5; Bachmann at 11:1-6.

Further, one of ordinary skill in the art also would have recognized that the different entities involved in the two-stage transmission of subscription data would have required processors that could carry out the entities' functionality. *See*, *e.g.*, Hartmaier at ¶[0011], Fig. 1

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(disclosing a subscriber database system and a telecommunications node using processors); Shaw at 4:12-20, 12:21-32, Fig. 7 (disclosing a telecommunications node using a processor); Larsson at ¶¶[0030], [0041], Fig. 5 (disclosing a mobile station (also referred to as a UE) using a processor).

Finally, it would have been obvious to one of ordinary skill to incorporate into 3GPP LTE Standard and 3GPP TS 23.060 to the teachings of the other primary references included in Appendices D1-D6 and the other prior art references listed in Appendix I. These publications and patents expressly note their applicability to 3GPP technology and embodiments disclosed therein are expressly intended to be describing 3GPP technology and/or improvements to 3GPP technology. *See, e.g.,* Zhang at ¶[0003] (noting the importance of developing a seamless handover procedure between 3GPP and non-3GPP access technologies); Larsson at ¶[0011] (describing its disclosed operation within the context of 3GPP access technologies); Velev at Abstract (disclosing a method for (re)attaching a UE to a 3GPP access network); Jin at cover page (cross-referencing 3GPP TS 23.060 v10.3.0); Aerts at ¶[0029] (describing its disclosed operation within the context of GSM, GPRS, and UMTS—all 3GPP access networks); Bachmann at 1:63-2:52 (disclosing its operation within the context of 3GPP standards); Yeoum at 2:3-12, Fig. 1 (disclosing its operation within the 3GPP LTE system); Cai at ¶¶[0011], [0036], [0042] (implementing standardized 3GPP steps as part of its disclosure); Rune at 5:13-18 (disclosing enhancements to 3GPP subscriber data management procedures); Larsson at ¶¶ [0049], [0052] (pointing to 3GPP specifications as providing more detail on relevant procedures); Daly at 1:47-67 (disclosing an improvement to GSM—a 3GPP standardized system—operation); Ericsson Review 1999 at 82 (introducing new network nodes implemented along with newly-standardized GPRS); Sesia at 3 (providing overview of 3GPP standard

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development and LTE's position within this framework). As discussed above, the different generations described by the 3GPP LTE Standard and 3GPP TS 23.060 (i.e., LTE and GPRS, respectively) are closely tied regarding their operational procedures, architecture, and overall functionality. *See, e.g.*, 3GPP TS 23.401 (describing both LTE developments and GPRS enhancements in light of the LTE developments). One of ordinary skill in the art would have been motivated to combine the teachings and improvements of the above listed prior art references with the 3GPP LTE Standard and 3GPP TS 23.060 to obtain predictable results.

5. Obviousness of USP 9,667,669 (Appendix J)

The Primary References listed in Section VI.A.5 each disclose, either expressly or inherently, every element of the Asserted Claims of the '669 Patent, thereby anticipating those claims. To the extent Plaintiff contends that any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Primary References with concepts from other prior art, such as, for example, other prior art identified in other primary reference charts in Appendix E or art identified in Obviousness Appendix J, to render the Asserted Claims invalid. Indeed, all of the prior art relates to the field of managing associated sessions in a network.

Prior art references rendering the Asserted Claims of the '669 Patent obvious, either alone or in combination with other references in Appendix E, are provided in the table below. The prior art identified in Appendix E renders one or more Asserted Claims of the '669 Patent obvious when the references are read in combination with one or more of each other, or when read in combination with any of the prior art identified in Appendix E, and/or when read in view of the State of the Art and knowledge of those skilled in the art.

Appendix J – Prior Art	Priority Date
U.S. Patent Publication No. 2009/0235299	Astrom was filed as PCT/EP2006/060279 on

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("Astrom")	February 24, 2006, which entered the national stage under 35 U.S.C. § 371(c)(1)(2) on March 1, 2007. Astrom is therefore prior art under at least at least 35 U.S.C. § 102(e).
U.S. Patent No. 8,180,358 ("Averbuch")	Averbuch was filed on February 15, 2007 and issued on May 15, 2012. Averbuch is therefore prior art under at least 35 U.S.C. §§ 102(a) and (e).
U.S. Patent Publication No. 2011/0131332 ("Bouazizi")	Bouazizi was filed on May 25, 2010, claiming priority to a U.S. Provisional Application No. 61/180,963 filed on May 26, 2009. Bouazizi published on June 2, 2011 issued on May 15, 2012. Bouazizi is therefore prior art under at least 35 U.S.C. § 102 (e).
U.S. Patent No. 8,032, 589 ("Foti II")	Foti II was filed on April 29, 2010, claiming priority to U.S. Provisional Application No. 61/108,710, filed on October 27, 2008, U.S. Provisional application No. 61/118,4452, filed on November 27, 2008, and U.S. Provisional Application No. 61/119,469, filed on December 3, 2008. Foti II issued October 4, 2011. Averbuch is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent No. 9,300,628 ("Mutikainen")	Mutikainen was filed as PCT/EP2008/008570 on October 10, 2008, which entered national stage under 35 U.S.C. § 371(c)(1)(2) on April 11, 2011. Mutikainen issued on March 29, 2016. Mutikainen is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent Publication No. 2007/0171895 ("Oberle")	Oberle was filed on December 28, 2006, claiming priority to European Patent Application No. 060290173, filed on January 20, 2006. Oberle published on July 26, 2007. Oberle is therefore prior art under 35 U.S.C. §§ 102(a), (b), and (e).
U.S. Patent Publication No. 2006/013557 ("Schaedler")	Schaedler was filed on December 16, 2007 and published on June 22, 2006. Schaedler is therefore prior art under at least §§ 102(a), (b), and (e).
PCT International Publication No. WO 2007/114572 ("Song")	Song was filed on March 23, 2007 and published on October 11, 2007. Song is therefore prior art under at least 35 U.S.C. §§ 102(a), (b), and (e).
U.S. Patent No, 7,630,328 ("Wright")	Wright was filed on December 30, 2004, claiming priority to Provisional Application No. 60/602,493 on August 18, 2004. Wright

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	issued on December 8, 2009. Wright is therefore prior art under at least 35 U.S.C. § 102(e).
U.S. Patent Publication No. 2009/0019462 ("Zhang")	Zhang was filed on September 25, 2008, claiming priority to Patent No. 6,981,263, filed on June 29, 2001. Zhang published on January 25, 2009. Zhang is therefore prior art under at least 35 U.S.C. §§ 102(a), (b), and (e).
IETF SIPPING Working Group Internet Draft, The Session Initiation Protocol (SIP) Dialog Correlation Draft ("Loreto")	Loreto was published on June 25, 2006. Loreto is therefore prior art under at least 35 U.S.C. §§ 102(a) and (b).

Based on Defendants' present understanding of the Asserted Claims and the apparent constructions Defendants believe KPN is asserting based on its Infringement Contentions, the Asserted Claims are obvious in light of any one or more of the references described in Appendix E in view of any one or more the references described in Appendix J. Each of these combinations has a reasonable expectation of success and yields predictable results.

(i) Example Combinations

The table below provides an identification of exemplary combinations of prior art references that, based on Defendants' present understanding of KPN's Infringement Contentions and apparent reading of the claims, render obvious one or more asserted claims of the '669 Patent. The combinations of Appendix E and Appendix J references identified below are non-exhaustive, and additional examples are apparent from other combinations of Appendix E references. Defendants expressly note that, although certain references charted in Appendix E are listed variously in the left or right column below, Defendants do not thereby imply any restriction as to which Appendix E reference is primary and which Appendix E reference is secondary. Defendants reserve the right to rely on either identified reference in the identified combinations as a primary and/or secondary reference.

Reference	Combination References

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3GPP Solution (Appendix E1)	Bell, Foti, IETF Solution, Jansson, Keller, Ninokata, Noldus, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Bell (Appendix E2)	3GPP Solution, Ericsson IMS Textbook, Foti, IETF Solution, Keller, Ninokata, Noldus, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Ericsson IMS Textbook (Appendix E3)	3GPP Solution, Bell, Foti, IETF Solution, Jansson, Keller, Ninokata, Noldus, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Foti (Appendix E4)	Bell, 3GPP Solution, Ericsson IMS Textbook, IETF Solution, Keller, Jansson, Ninokata, Peng, Rotsten, and/or one or more references as charted in Appendix J.
IETF Solution (Appendix E5)	3GPP Solution, Bell, Ericsson IMS Textbook, Foti, Jansson, Keller, Ninokata, Noldus, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Jansson (Appendix E6)	3GPP Solution, Bell, Ericsson IMS Textbook, Foti, Keller, Ninokata, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Keller (Appendix E7)	3GPP Solution, Bell, Jansson, Ninokata, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Ninokata (Appendix E8)	3GPP Solution, Foti, IETF Solution, Jansson, Keller, Noldus, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Noldus (Appendix E9)	3GPP Solution, Bell, Ericsson Textbook, Jansson, Keller, Ninokata, Peng, Rotsten, and/or one or more references as charted in Appendix J.
Peng (Appendix E10)	3GPP Solution, Bell, Ericsson IMS Textbook, IETF Solution, Keller, Ninokata, and/or one or more references as charted in Appendix J.
Rotsten (Appendix E11)	3GPP Solution, Bell, Ericsson IMS Textbook, Jansson, Keller, Ninokata, Peng, and/or one or more references as charted in Appendix J.

It would have been obvious to combine these references for reasons that are readily apparent to one of ordinary skill in the art, and for reasons explained in additional detail in the sections that follow.

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(ii) Example Motivations to Combine

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation. Accordingly, Defendants contend that each asserted dependent claim is rendered obvious not only by the combinations explicitly identified in these contentions as rendering a given dependent claim obvious, but also by any combination of references that renders obvious a claim on which a dependent claim depends.

Additional reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by engineers and/or researchers working in the same or similar technical areas, that the references are directed toward the same problem (e.g., associating and managing communication sessions in a network), the fact that the prior art is all in the field of multimedia communications, and one of ordinary skill in the art would be motivated to investigate the various existing multimedia communications patents, and other publications identified herein to address her particular needs. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, common sense, would have been obvious to try, or would have been otherwise predictable in the field of multimedia communications. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

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Moreover, design incentives and other market forces would have prompted those combinations and modifications. For example, a person of ordinary skill in the art would have recognized the benefits and efficiencies of associating different communication sessions with an identifier during session setup and of collectively managing those associated sessions. *See, e.g.*, Bell, 2:29-30 (noting that "[r]ecent increased usage and demand for (multi)media sessions has highlighted a number of limitations in SDP"); Jansson, ¶ [0006] (noting the lack of "inherent [session] correlation mechanisms" and the corresponding need for a system for correlating different communication sessions with a "globally unique correlation identifier during SIP session setup"); Ninokata, ¶ [0017] (describing, with respect to "conventional single-medium session management," the individual management of session information for each medium and noting that a "plurality of media cannot be collectively managed" as part of these conventional systems); Peng, 2:14-37 (disclosing methods to obtain media description information via SIP message to set up sessions to overcome delay- and user experience-related drawbacks from exchanging media control messages after initial SIP session setup); Rotsten, ¶¶ [0009]-[0011], [0013] (disclosing a method of multiplexing different media components of sessions to overcome the shortcomings of maintaining many simultaneous PDP contexts).

Additionally, some prior art references refer to or discuss other prior art references, illustrating the close technical relationship among the prior art references, either expressly or inherently; therefore, it would have been obvious to combine those pieces of prior art for at least that reason. For example, it would have been obvious to combine or modify the IETF Solution, the Ericsson IMS Textbook, Peng and the 3GPP Solution, Bell and the IETF Solution, and Rotsten and the IEFC Solution, and Loreto and Jansson for this reason.

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Furthermore, it would have been obvious to combine interrelated teachings of engineers and inventors from the same companies. It would have been obvious to combine or modify Foti, Jansson, and Noldus, all of which were assigned to Ericsson. Furthermore, the Ericsson IMS Textbook was written by Ericsson employees Gonzalo Camarillo and Miguel A. Garcia-Martin, and Gonzalo Camarillo was an author of the SIPPING Working Group Internet Draft titled "The Session Initiation Protocol (SIP) Dialog Correlation." As another example, it would have been obvious to combine or modify Averbuch and Keller, both of which were assigned to Motorola. As an additional example, it would have been obvious to combine or modify Bouazizi, Mutikainen, and Rotsten, all of which were assigned to Nokia. It would have been obvious to combine these references for other reasons readily apparent to one of ordinary skill in the art and based on one or more other reasons to combine as disclosed herein.

In addition, a person of ordinary skill in the art would have had a reasonable expectation of success in combining the prior art. In light of the references' interrelated and/or express teachings, a person of ordinary skill in the art would have understood that one or more of the prior art references could have been combined without substantial modification or undue experimentation. Additionally, a person of ordinary skill in the art would have understood that combining and/or modifying one or more prior art references would have involved combining prior art elements according to known methods to yield predictable results.

Further, the Asserted Claims would have been obvious to one of ordinary skill in the art because they merely arrange old elements, with each performing the same function that had been known, to perform and yield no more than what one having ordinary skill in the art would expect from such an arrangement. As explained above in the State of the Art (Section V), it was well known to use SIP INVITE, re-INVITE, and BYE messages to initiate, modify, and terminate

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multimedia sessions, respectively. Use of IMS architecture and Session Initiation Protocol were well known and conventional. *See, e.g.*, Bouazizi, ¶ [0026], (stating that "the IMS architecture may provide a service platform that unifies different enablers for multimedia services, and simplifies the setup and management of the multimedia services. A main protocol in IMS is the Session Initiation Protocol (SIP), which may be used for the control and management of a multimedia session."); Foti, ¶ [0002] ("IMS uses the Session Initiation Protocol (SIP) as the service control protocol."); Peng, 1:23-33 (disclosing IMS as providing "plentiful multimedia services by using the features of SIP," and disclosing SIP "as a service control protocol"). Further, multicast transmissions were "becoming increasingly common on the Internet," and association and correlation of SIP sessions was well known. Bell, at 1:10-11; Jansson ¶ [0005], [0008] (stating, in the Background of the Invention section, that correlation "could mean, for example, applying some special charting scheme to a multi-service session comprised of two or more individual sessions"). Further, the techniques for modifying and terminating sessions were also well known. As an additional example, the use of Quality of Service requirements and resource reservation techniques were supported by the IMS and were also well known and conventional. *See, e.g.*, Ericsson IMS Textbook, at 267-68, 271. Because there were a finite number of predictable solutions for providing bandwidth on demand in the art of multimedia communications, it would have been obvious to a person of ordinary skill to pursue the known options. Arranging these well-known and old elements would have been obvious to one of ordinary skill in the art at the time.

In addition, a person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify one or more of the prior art references to associate two or more sessions within a composition session with a common identifier. A person of

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ordinary skill in the art would have recognized the benefits of such combinations and/or modifications in order to facilitate grouping of media sessions, to allow for collective management of said grouped media sessions, to utilize resources efficiently, and to provide a better user experience. *See, e.g.*, Ericsson IMS Textbook, page 197 (noting that combinational services are "especially useful when the terminal uses a low-bandwidth or high-delay" PS access); Jansson, ¶ [0006] (explaining the lack of "inherent [session] correlation mechanisms" and the corresponding need for a system for correlating different communication sessions with a "globally unique correlation identifier during SIP session setup"); Keller, 1:60-2:4, 2:58-64 (noting scalability and faster call set-up benefits resulting from call control architecture); Ninokata, ¶ [0017]; RFC 3388, at Section 5 (stating that it would be "desirable to allow expression of how different media streams within a session description relate to each other"); Noldus, ¶ [0006] (recognizing desirability of determining relationship between media sessions); Rotsten, ¶ [0024] (disclosing a solution to enable optimized radio and packet core resource usage). Accordingly, association of sessions using a common identifier was a well-documented technique with well-known and predictable benefits.

Further, a person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify one or more of the prior art references to modify or terminate the sessions making up the composite session. Like the benefits described above with respect to composition session initiation, a person of ordinary skill in the art would have recognized similar benefits that would result from applying modification and termination techniques to a composite session. For example, a person of ordinary skill in the art would recognize that modification and termination via composite session signaling would simplify

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multimedia session management, decrease delay due to network congestion, and improve efficiency. *See, e.g.*, Keller, 1:60-2:4; RFC 3261, at Section 14.

A person of ordinary skill in the art at the time of the alleged invention also would have been motivated to combine or modify one or more of the prior art references to include well known techniques for session management based on bandwidth. A person of ordinary skill in the art would have recognized the benefits of initiating and/or modifying a composition session based on resource availability with respect to providing bandwidth on demand and ensuring that multimedia sessions could take place with the desired quality of service. *See, e.g.*, Bell, 2:40-48 (recognizing the increasing desirability of guaranteed QoS and the need to define QoS policies for an entire session and individual streams in terms of required resources and bandwidth); Noldus, ¶ [0012] (noting desirability of influencing QoS of a PS-session during an ongoing CS-call); Wright, 1:42-48 ("Before a customer is offered a service application, the service provider should know whether hat service application can be delivered and supported at a level of quality the customer accepts."). Indeed, QoS policies, including resource reservation requirements and allocation requirements were well known features of packet-switched networks by the time of the alleged invention. *See, e.g.*, Ericsson IMS Textbook, 267-68, 271; Keller, 5:62-67.

Finally, a person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or modify one or more of the prior art references to include signaling a duration for associated sessions. A person of ordinary skill in the art would have recognized the benefits of such combinations and/or modifications. For example, one would have been motivated to include composition session signaling related to session duration to facilitate conservation and more distributed allocation of resources. As another example, one of ordinary skill in the art would have been motivated by commercial and/or market forces to

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ensure that a subscriber was not using the service for a longer period than he or she had paid for. *See, e.g.*, Keller, 11:9-12 (disclosing a session time limit policy).

C. Applicants' Admitted Prior Art

Statements made by the Applicants in the specification and/or during prosecution of the Asserted Patents and any related patents/applications, such as in the "Background of the Invention" section that describes the related art known to the Applicants, are admissions that can be relied upon for both anticipation and obviousness determinations, regardless of whether the admitted prior art would otherwise qualify as prior art under the statutory categories set forth in 35 U.S.C. § 102. See MPEP §§ 2129 and 608.01(c). To the extent Plaintiff contends that the Asserted Claims are not invalid as anticipated by and/or obvious in view of the prior art under 35 U.S.C. §§ 102 and 103, Defendants reserve the right to rely on Applicants' "Admitted Prior Art" to demonstrate the invalidity of the Asserted Claims.

D. Knowledge of One of Ordinary Skill in the Art

To the extent that Plaintiff contends that any particular feature or element of the Asserted Claims is a novel aspect of the claimed subject matter, Defendants reserve the right to illustrate that the particular feature was widely known, understood, and implemented by those of ordinary skill in the art at the time of the alleged invention, and that it would have been obvious to combine and/or modify the prior art identified throughout these Invalidity Contentions with the knowledge of one of ordinary skill in the art. Defendants reserve the right to illustrate the knowledge of one of ordinary skill in the art using any of the prior art references identified throughout these Invalidity Contentions, expert testimony, learned treatises, and/or testimony of prior art fact witnesses.

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E. Secondary Considerations

As of the date these Invalidity Contentions were served, Plaintiff has not identified any secondary considerations of non-obviousness. Defendants reserve all rights to respond to any secondary considerations of non-obviousness raised by Plaintiff, including by updating, modifying, and/or adding to these Invalidity Contentions.

VII. INVALIDITY UNDER 35 U.S.C. § 112

Defendants allege that the Asserted Claims are invalid under 35 U.S.C. § 112 for being indefinite (Section 112, ¶ 2) and for failing to satisfy the written description and enablement requirements (Section 112, ¶ 1). Defendants reserve all rights to amend their Invalidity Contentions under 35 U.S.C. § 112, including after the Asserted Claims are ultimately construed by the Court, in response to any interpretation of the Asserted Claims embodied in Plaintiff's infringement positions, and/or to account for any changes in the law concerning invalidity under 35 U.S.C. § 112. Defendants also reserve the right to provide additional explanation and/or argument for their Invalidity Contentions under Section 112, including, for example, based on expert testimony.

A. USP RE48,089

1. Indefiniteness

The Supreme Court has held that patent claims need to provide "reasonable certainty . . . about the scope of the invention" in order to avoid invalidity based on indefiniteness. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2123 (2014). The Asserted Claims of the '089 Patent are invalid as indefinite under Section 112, ¶ 2 for failing to particularly point out and distinctly claim the subject matter which the Applicants regarded as the alleged invention. For example, as demonstrated either individually or collectively by the claim elements addressed below, the Asserted Claims fail to inform those skilled in the art about the scope of the invention

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with reasonable certainty, rendering the Asserted Claims (and any claims depending therefrom) invalid as indefinite:

Claim Terms	Asserted Claims
"information collector" / "information collector is [further] configured to" / "information collector carries out operations including collecting information from terminals by:"	Claims 1-6, 11, 15
"coverage estimator" / "coverage estimator is configured to: / "coverage estimator carries out operations including generating the coverage assessment for the second wireless access network by:"	Claims 1-6, 11, 13-14
"means for measuring signals from the second wireless access network"	Claim 11
"means for providing the measurement information to at least one of an information collector or a coverage estimator based on the measured signals"	Claim 11
"means for selecting one or more terminals from at least part of the plurality of terminals"	Claims 13-14
"means for instructing the selected one or more terminals to measure signals from the second wireless access network"	Claims 13-14
"means for obtaining measurement information indicative of the signals measured from the second wireless access network by the selected one or more terminals"	Claims 13-14
"means for providing the measurement information to the coverage estimator"	Claims 13-14
"means for obtaining measurement information from an information collector"	Claim 15
"means for generating the coverage assessment for the second wireless access network of the telecommunications infrastructure based on the obtained measurement information"	Claim 15

The above limitations fail to set forth the scope of the alleged invention with reasonable certainty. The scope of these terms is not reasonably certain. As an example, the scope of "information collector" and "coverage estimator" is not reasonably certain to the extent that the specification does not disclose sufficient structure for these nonce terms. As another example, "means for measuring signals from the second wireless access network" is not reasonably certain

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to the extent that the specification does not disclose sufficient structure within the generic terminal 5 for this means-plus-function term. These limitations are required by all Asserted Claims. Accordingly, all Asserted Claims are invalid as indefinite.

2. Lack of Written Description

The Asserted Claims of the ’089 Patent are also invalid for failure to comply with the written description requirement under Section 112, ¶ 1. For example, the ’089 Patent does not contain written description support at least for the following claim terms, either individually or collectively, rendering the Asserted Claims in which they appear (and any claims depending therefrom) invalid for lack of written description:

Claim Terms	Asserted Claims
“information collector” / “information collector is [further] configured to” / “information collector carries out operations including collecting information from terminals by:”	Claims 1-6, 11, 15
“coverage estimator” / “coverage estimator is configured to: / “coverage estimator carries out operations including generating the coverage assessment for the second wireless access network by:”	Claims 1-6, 11, 13-14
“means for measuring signals from the second wireless access network”	Claim 11
“means for providing the measurement information to at least one of an information collector or a coverage estimator based on the measured signals”	Claim 11
“means for selecting one or more terminals from at least part of the plurality of terminals”	Claims 13-14
“means for instructing the selected one or more terminals to measure signals from the second wireless access network”	Claims 13-14
“means for obtaining measurement information indicative of the signals measured from the second wireless access network by the selected one or more terminals”	Claims 13-14
“means for providing the measurement information to the coverage estimator”	Claims 13-14
“means for obtaining measurement information from an information collector”	Claim 15

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"means for generating the coverage assessment for the second wireless access network of the telecommunications infrastructure based on the obtained measurement information"	Claim 15

At least under KPN's apparent interpretation and application of the Asserted Claims, the '089 Patent does not provide sufficient written description support for the above claim terms. For example, at least under KPN's apparent interpretation and application of the Asserted Claims, the specification does not adequately describe a "coverage estimator." Moreover, the specification does not provide written description support for the full scope of the claim to the extent the scope of the claims is interpreted to cover the accused embodiments, which are not described in the specification. These limitations are required by all Asserted Claims. Accordingly, all Asserted Claims are invalid for lack of written description.

3. Lack of Enablement

The Asserted Claims of the '089 Patent are also invalid for failure to comply with the enablement requirement under Section 112, ¶ 1. For example, the '089 Patent fails to provide an enabling disclosure with respect to the following claim terms, either individually or collectively, rendering the Asserted Claims in which they appear (and any claims depending therefrom) invalid for lack of enablement:

Claim Terms	Asserted Claims
"select[ing] one or more terminals from at least part of the plurality of the terminals, the at least part of the plurality of the terminals capable of communicating with both the first wireless access network and the second wireless access network"	Claims 1-6, 11, 13-15
"generat[ing] the coverage assessment for the second wireless access network of the telecommunications infrastructure"	Claims 1-6, 11, 13-15

At least under KPN's apparent interpretation and application of the Asserted Claims, the '089 Patent does not enable the above claim terms. For example, at least under KPN's apparent

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interpretation and application of the Asserted Claims, the specification does not adequately enable a person of ordinary skill in the art to "generate the coverage assessment for the second wireless access network of the telecommunications infrastructure." Moreover, the specification does not provide enablement for the full scope of the claim to the extent the scope of the claims is interpreted to cover the accused embodiments, which are not described or enabled in the specification. These limitations are required by all Asserted Claims. Accordingly, all Asserted Claims are invalid for lack of enablement.

B. USP 8,881,235

1. Indefiniteness

The Supreme Court has held that patent claims need to provide "reasonable certainty . . . about the scope of the invention" in order to avoid invalidity based on indefiniteness. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2123 (2014). The Asserted Claims of the '235 Patent are invalid as indefinite under Section 112, ¶ 2 for failing to particularly point out and distinctly claim the subject matter which the Applicants regarded as the alleged invention. For example, as demonstrated either individually or collectively by the claim elements addressed below, the Asserted Claims fail to inform those skilled in the art about the scope of the invention with reasonable certainty, rendering the Asserted Claims (and any claims depending therefrom) invalid as indefinite:

Claim Terms	Asserted Claims
"wherein the authentication response depends on the identified communication channel in that the response is calculated on the basis of the information in the authentication request and the determined service code"	Claim 1
"thereby securely including information regarding the identified communication channel through which the authentication request was received into the response"	Claim 1

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"a receiver configured to receive an authentication data request"	Claim 11
"a first generator configured to determine an expected service code associated with the type of communication channel via which the authentication data request was received by the network"	Claim 11
"a second generator configured to generate in response to the receipt of an authentication data request a modified expected response, wherein the modification of the expected response depends on the determined expected service code"	Claim 11

The above limitations fail to set forth the scope of the alleged invention with reasonable certainty. The scope of these terms is not reasonably certain. As an example, the scope of "the information" recited in Claim 1 is not reasonably certain for lack of antecedent basis. As another example, the scope of "an authentication data request," the authentication data request," and "an authentication data request," as recited in Claim 11 in that order, is not reasonably certain for lack of proper antecedent basis. As still another example, the scope of "a first generator" and "a second generator" are not reasonably certain to the extent that the specification does not disclose sufficient structure for these means-plus-function terms. These limitations are required by all Asserted Claims. Accordingly, all Asserted Claims are invalid as indefinite.

2. Lack of Written Description

Asserted Claim 11 of the '235 Patent is also invalid for failure to comply with the written description requirement under Section 112, ¶ 1. For example, the '235 Patent does not contain written description support at least for the following claim terms, either individually or collectively, rendering Asserted Claim 11 in which it appears invalid for lack of written description:

Claim Terms	Asserted Claims
"a receiver configured to receive an authentication data request"	Claim 11

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"a first generator configured to determine an expected service code associated with the type of communication channel via which the authentication data request was received by the network"	Claim 11
"a second generator configured to generate in response to the receipt of an authentication data request a modified expected response, wherein the modification of the expected response depends on the determined expected service code"	Claim 11

At least under KPN's apparent interpretation and application of the Asserted Claims, the '235 Patent does not provide sufficient written description support for the above claim terms. For example, at least under KPN's apparent interpretation and application of the Asserted Claims, the specification does not adequately describe "a first generator" and "a second generator." Moreover, the specification does not provide written description support for the full scope of the claim to the extent the scope of the claims is interpreted to cover the accused embodiments, which are not described in the specification. Accordingly, Asserted Claim 11 is invalid for lack of written description.

Asserted Claim 11 of the '235 Patent is also invalid for failure to comply with the enablement requirement under Section 112, ¶ 1. For example, the '235 Patent fails to provide an enabling disclosure with respect to the following claim terms, either individually or collectively, rendering Asserted Claim 11 in which it appears invalid for lack of enablement:

Claim Terms	Asserted Claims
"a first generator configured to determine an expected service code associated with the type of communication channel via which the authentication data request was received by the network"	Claim 11
"a second generator configured to generate in response to the receipt of an authentication data request a modified expected response, wherein the modification of the expected response depends on the determined expected service code"	Claim 11

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At least under KPN's apparent interpretation and application of the Asserted Claims, the '235 Patent does not enable the above claim terms. For example, at least under KPN's apparent interpretation and application of the Asserted Claims, the specification does not adequately enable a person of ordinary skill in the art to "generate in response to the receipt of an authentication data request a modified expected response, wherein the modification of the expected response depends on the determined expected service code." Moreover, the specification does not provide enablement for the full scope of the claim to the extent the scope of the claims is interpreted to cover the accused embodiments, which are not described or enabled in the specification. These limitations are required by Asserted Claim 11. Accordingly, Asserted Claim 11 is invalid for lack of enablement.

C. USP 9,253,637

1. Indefiniteness

The Supreme Court has held that patent claims need to provide "reasonable certainty . . . about the scope of the invention" in order to avoid invalidity based on indefiniteness. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2123 (2014). The Asserted Claims of the '637 Patent are invalid as indefinite under Section 112, ¶ 2 for failing to particularly point out and distinctly claim the subject matter which the Applicants regarded as the alleged invention. For example, as demonstrated either individually or collectively by the claim elements addressed below, the Asserted Claims fail to inform those skilled in the art about the scope of the invention with reasonable certainty, rendering the Asserted Claims (and any claims depending therefrom) invalid as indefinite:

Claim Terms	Asserted Claims
"a class of applications that do not require immediate transfer of data"	16-20, 23-28, 58-59
"message receiver"	58

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"within of the access deny time interval"	16-20, 23-28

The above limitations fail to set forth the scope of the alleged invention with reasonable certainty. The scope of these terms is not reasonably certain. For example, the scope of "a class of applications that do not require immediate transfer of data" is not reasonably certain, particularly with respect to how to determine how to identify an application that "do[es] not require immediate transfer of data." In addition, the specification does not set forth any objective criteria or standard for determining how and whether a "transfer of data" is "immediate." As another example, the scope of "message receiver" is not reasonably certain to the extent that the specification does not disclose sufficient structure for these nonce terms. Even assuming that the recited functions of "message receiver" are performed by a special purpose computer, the limitation is indefinite because there is not disclosure of the specific algorithm or other instructions used to perform the function and/or because the specification lacks other disclosure of sufficient structure for the recited means. As a further example, the meaning and scope of "within of" is not reasonably clear.

2. Lack of Enablement

The Asserted Claims of the '637 Patent are also invalid for failure to comply with the enablement requirement under Section 112, ¶ 1. For example, the '637 Patent fails to provide an enabling disclosure with respect to the following claim terms, either individually or collectively, rendering the Asserted Claims in which they appear (and any claims depending therefrom) invalid for lack of enablement:

Claim Terms	Asserted Claims
"the at least one terminal transmits an access request to the telecommunications network only outside the access deny time interval"	16-20, 23-28

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"an access request operation for transmitting an access request to the telecommunications network in accordance with the access deny time interval"	58-59

At least under KPN's apparent interpretation and application of the Asserted Claims, the '637 Patent does not enable the above claim terms. For example, at least under KPN's apparent interpretation and application of the Asserted Claims, the specification does not adequately enable "transmit[ting] an access request to the telecommunications network only outside the access deny time interval." Moreover, the specification does not provide enablement for the full scope of the claim to the extent the scope of the claims is interpreted to cover the accused embodiments, which are not described or enabled in the specification. These limitations are required by all Asserted Claims. Accordingly, all Asserted Claims are invalid for lack of enablement.

D. USP 9,667,669

1. Indefiniteness

The Supreme Court has held that patent claims need to provide "reasonable certainty . . . about the scope of the invention" in order to avoid invalidity based on indefiniteness. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2123 (2014). The Asserted Claims of the '669 Patent are invalid as indefinite under Section 112, ¶ 2 for failing to particularly point out and distinctly claim the subject matter which the Applicants regarded as the alleged invention. For example, as demonstrated either individually or collectively by the claim elements addressed below, the Asserted Claims fail to inform those skilled in the art about the scope of the invention with reasonable certainty, rendering the Asserted Claims (and any claims depending therefrom) invalid as indefinite:

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Claim Terms	Asserted Claims
"the two or more sessions" / "the two or more associated sessions" / "the one or more sessions identified by the session identifiers"	Claims 1-3, 6, 8, 10-12, 21-22, 24-25
"wherein providing the composition session identifier comprises … sending a request for initiating the composition session … to the network element … the request comprising the composition session identifier"	Claim 2
"optionally, resource reservation information and/or resource allocation information"	Claim 3
"two or more associated session identifiers"	Claim 11
"modifying, using the [signaling in the] composition session comprises"	Claim 22, 24-25

The above limitations fail to set forth the scope of the alleged invention with reasonable certainty. The scope of these terms is not reasonably certain. As an example, claim 1 requires that "after providing the composition session identifier, exchanging the identifier" with the network "a first time." Yet claim 2 further specifies that providing the composition identifier "comprises . . . sending a request for initiating the composition session . . . to the network element . . . the request comprising the composition session identifier." The scope of claim 2 is not reasonably ascertainable because the composition session identifier cannot be exchanged "a first time" with the network element *after* the providing step if the providing step is defined to include sending the identifier to the network element. These limitations are required by all Asserted Claims. Accordingly, all Asserted Claims are invalid as indefinite.

2. Lack of Enablement

The Asserted Claims of the '669 Patent are also invalid for failure to comply with the enablement requirement under Section 112, ¶ 1. For example, the '669 Patent fails to provide an enabling disclosure with respect to the following claim terms, either individually or collectively,

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rendering the Asserted Claims in which they appear (and any claims depending therefrom) invalid for lack of enablement:

Claim Terms	Asserted Claims
"wherein providing the composition session identifier comprises … sending a request for initiating the composition session … to the network element … the request comprising the composition session identifier"	Claim 2

At least under KPN's apparent interpretation and application of the Asserted Claims, the '669 Patent does not enable the above claim terms. For example, at least under KPN's apparent interpretation and application of the Asserted Claims, the specification does not adequately enable the claim 2 requirement of "sending a request for initiating the composition session . . . to the network element . . . the request comprising the composition session identifier" in view of the claim 1 requirement that "after providing the composition session identifier, exchanging the identifier" with the network "a first time." At least under KPN's apparent interpretation and application of the Asserted Claims, the '669 Patent does not enable the above claim terms. For example, at least under KPN's apparent interpretation and application of the Asserted Claims, the specification does not adequately enable a person of ordinary skill in the art to "generate the coverage assessment for the second wireless access network of the telecommunications infrastructure." Moreover, the specification does not provide enablement for the full scope of the claim to the extent the scope of the claims is interpreted to cover the accused embodiments, which are not described or enabled in the specification. These limitations are required by all Asserted Claims. Accordingly, all Asserted Claims are invalid for lack of enablement.

VIII. ADDITIONAL INVALIDITY CONTENTIONS

Precise identification of all of the bases upon which the Asserted Claims are invalid and/or unenforceable, including inequitable conduct, improper inventorship, and the judicially-

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created non-statutory obviousness-type double patenting doctrine, are likely to be revealed only after further developments in the case, including fact and expert discovery. Defendants expressly reserve the right to amend or supplement these Invalidity Contentions to address any additional invalidity arguments that become apparent in view of any relevant facts and information revealed during the course of discovery.

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Dated: November 16, 2021

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CERTIFICATE OF SERVICE

I hereby certify that counsel of record who are deemed to have consented to electronic service are being served this 16th day of November, 2021, with a copy of this document via e-mail.

/s/ Douglas M. Kubehl
Douglas M. Kubehl

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