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

AVANT LOCATION TECHNOLOGIES LLC, Plaintiff, v. APPLE, INC., Defendant.	Case No. 2:24-cv-00757 (Lead Case)
AVANT LOCATION TECHNOLOGIES LLC, Plaintiff, v. ECOBEE TECHNOLOGIES ULC d/b/a ECOBEE, Defendant.	Case No. 2:23-cv-00354 (Member Case)

DEFENDANT ECOBEE TECHNOLOGIES ULC's INVALIDITY AND SUBJECT MATTER ELIGIBILITY CONTENTIONS

TABLE OF CONTENTS

I. INTRODUCTION 1
II. GENERAL RESERVATIONS 1
III. IDENTIFICATION OF PRIOR ART (P.R. 3-3(a)) 4
A. Priority Dates of the Asserted Patents 5
B. Prior Art 12
1. Patents and published patent applications 12
2. Printed publications 17
3. Admitted Prior Art 18
IV. INVALIDITY DUE TO ANTICIPATION (P.R. 3-3(b)-(c)) 20
V. INVALIDITY DUE TO OBVIOUSNESS (P.R. 3-3(b)-(c)) 22
A. Exemplary Disclosures 24
B. Exemplary Combinations 24
C. Motivation(s) to Combine 28
VI. INVALIDITY DUE TO INDEFINITENESS OR LACK OF WRITTEN DESCRIPTION UNDER SECTION 112 (P.R. 3-3(d)) 46
VII. SUBJECT MATTER INELIGIBILITY 48
VIII. DOCUMENT PRODUCTION (P.R. 3-4(b)) 49

Avant Location Exhibit No. 2004, IPR2025-01257
Page002

I. INTRODUCTION

Pursuant to the Court's First Amended Docket Control Order (Dkt. 55), its December 31, 2024 Order (Dkt. 63), its Standing Order Regarding Subject Matter Eligibility Contentions, and P.R. 3-3, Defendant ecobee Technologies ULC ("ecobee" or "Defendant"), by and through its undersigned attorneys, hereby serve on Plaintiff Avant Location Technologies LLC ("ALT" or "Plaintiff") its Invalidity Contentions regarding the asserted claims identified by Plaintiff in its First Amended Infringement Contentions ("Infringement Contentions") served January 3, 2025.

The table below summarizes the patents and claims that are presently asserted against Defendant according to Plaintiff's Infringement Contentions. Defendant provides these Contentions only for the presently asserted claims and reserves the right to supplement and/or amend these Contentions to account for any addition or withdrawal of claims that Plaintiff may be permitted or required to make.

Asserted Patent	Asserted Claims
9,485,621 (the "'621 Patent")	1-6, 8, 10-15, and 17
9,622,032 (the "'032 Patent")	1-6
10,009,720 (the "'720 Patent")	1-2, 4-6, 7, and 10-11
8,738,040 (the "'040 Patent")	1, 3-4, and 7-14
9,119,030 (the "'030 Patent")	1-8 and 10-11

II. GENERAL RESERVATIONS

These Invalidity Contentions are subject to the reservations stated herein and to revision and amendment as provided in Rule 26(e) of the Federal Rules of Civil Procedure; the Local Civil Rules and Local Patent Rules of the Eastern District of Texas; the Court's claim constructions; analyses and opinions of expert witnesses concerning claim construction, infringement, invalidity, and unenforceability issues; and any position that Plaintiff takes concerning any of the foregoing.

These Contentions and production of prior art and related documents are provisional and subject to further revision including as follows: Defendant expressly reserves the right to amend these contentions and produce additional documents should Plaintiff provide any further information that it failed to provide in its disclosures or should Plaintiff amend its disclosures in any way. Further, because discovery is ongoing and because Defendant has not yet completed its search for and analysis of relevant prior art, Defendant reserves the right to revise, amend, and/or supplement the information provided herein, including by identifying, charting, and relying on additional references, should Defendant's further search and analysis yield additional information or references, consistent with the Federal Rules of Civil Procedure, local rules of this District, and orders of the Court. Further, Defendant reserves the right to revise, amend, and/or supplement when Plaintiff provides additional discovery.

Prior art not included in these Contentions, whether known or not known to Defendant, may become relevant. For example, Defendant may receive, either via informal request or pursuant to subpoena, documents from third parties who are believed to have knowledge, documentation, and/or corroborating evidence concerning prior art listed herein and/or additional prior art. These third parties include, as applicable and without limitation, the authors, inventors, assignees, and/or licensees of the prior art references listed in these disclosures. If and to the extent Plaintiff contends any limitations of the Asserted Claims are not disclosed in the prior art identified herein, Defendant reserves the right to identify other references that disclose and/or render obvious both any such allegedly missing limitations of any claims and those claims as a whole. Defendant reserves all rights to rely on any reference found in the prosecution histories of the applications leading to the Asserted Patents or otherwise identified in connection with this action.

Defendant offers these Contentions in response to Plaintiff's First Amended Infringement Contentions and base them at least in part upon claim scope and claim constructions expressly and/or impliedly asserted by Plaintiff in and through its Infringement Contentions. Defendant offers these Contentions without prejudice to any position it may ultimately take as to any claim construction issues not yet decided by the Court. Nothing herein should be construed or represented as evidencing any express or implied agreement with any of Plaintiff's claim construction or infringement positions. Defendant expressly reserves the right to contest such claim constructions.

Defendant further intends to rely on admissions concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*: the prosecution history for the Asserted Patents and any related patents and/or patent applications; any deposition testimony of the named inventor(s) on the Asserted Patents and any related patents and/or patent applications in this action or any other action; and the papers filed and any evidence submitted by Plaintiff in connection with this action.

Defendant's claim charts cite to particular teachings and disclosures of the prior art as applied to features of the Asserted Claims. However, persons having 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 Defendant reserves the right to rely on uncited portions of the prior art references and on other publications, expert testimony, and other evidence as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation or any of the Asserted Claims as a whole. Defendant further reserves the right to rely on uncited portions of

the prior art references, other publications, and testimony, including expert testimony, to establish bases for combinations of certain cited references that render the Asserted Claims obvious.

The references discussed in the claim charts 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. Any obviousness combinations are provided in addition and in the alternative to Defendant's anticipation contentions and are not to be construed as an admission or suggestion that any reference included in the combinations does not by itself anticipate.

Defendant reserves the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event Defendant obtains evidence that the inventors named in the Asserted Patents did not themselves invent the subject matter claimed in the respective patents, or that any of the Asserted Patents otherwise fails to name the correct inventor(s). Should Defendant obtain such evidence, Defendant will provide the name of any person from whom, and the circumstances under which, the alleged invention or any part of it was derived, or the name of any person who Defendant contends is inappropriately named or not named as an inventor.

Defendant also reserves the right to challenge any terms of any Asserted Claims under 35 U.S.C. § 112 beyond the grounds outlined herein, including by arguing that they are indefinite, not supported by the written description, or not enabled. Nothing stated herein shall be construed as a waiver of any argument available under 35 U.S.C. §§ 101, 102, 103, and/or 112.

III. IDENTIFICATION OF PRIOR ART (P.R. 3-3(a))

Subject to Defendant's reservations of rights herein, Defendant identifies the prior art of which it is presently aware and that individually or in combination(s) invalidates the Asserted Claims of the Asserted Patents and evidences the state of the art as of the earliest priority dates of each of the Asserted Claims. Defendant's identification of prior art is based on Defendant's present

understanding of the Asserted Claims and any claim constructions expressed or implied in Plaintiff's Infringement Contentions.

A. Priority Dates of the Asserted Patents

The '621, '032, '720, and '030 Patents are not entitled to the March 27, 2007, priority date claimed in Plaintiff's infringement contentions. This is due to multiple breaks in the priority chain, the result of which is that the earliest possible priority date for the '621, '032, '720, and '030 Patents is April 11, 2014 (the filing date of U.S. Patent No. 9,042,910 (the "'910 Patent")). Relevant to the filing date of April 11, 2014, the Asserted Patents are invalid in view of EP 1,841,255, the alleged parent application of the '621, '032, '720, and '030 Patents, as set forth in Exhibits A-00, B-00, C-00, and E-00.

Applicants must make "specific reference" to each application in the chain of priority for a given patent. 35 U.S.C. §§119-20. This requires every intermediate application in a chain of priority to make specific reference to each prior application. *Medtronic CoreValve, LLC v. Edwards Lifesciences Corp*., 741 F.3d 1359, 1363 (Fed. Cir. 2014); *see also id.* at 1366 ("Allocating the responsibility of disclosure through specific references to the patentee eliminates the inefficiencies associated with having the public expend efforts to unearth information when such information is readily available to the patentee."); *id.* ("Congress may well have thought that Section 120 was necessary to eliminate the burden on the public to engage in long and expensive search of previous applications in order to determine the filing date of a later patent."); *Droplets, Inc. v. E*TRADE Bank* 887 F.3d 1309, 1315-18 (Fed. Cir. 2018) (discussing the public notice interest that underlies placing the burden of properly claiming priority on the inventor or patent applicant and repeatedly mentioning that the MPEP provides clear guidance for making a correct priority claim).

Thus, an applicant must include both the application number ***and the correct filing date*** of each prior application in an ADS. 37 C.F.R. §§1.76(b), 1.78(d)(2). The application data sheet controls according to USPTO regulations. 37 C.F.R. §1.76(d). "Even if the Office has recognized a benefit claim by entering it into the Office's database and including it on any of applicant's filing receipts, the ***benefit claim is not a proper benefit claim*** under 35 U.S.C. §119(e) or 35 U.S.C. §120 and 37 C.F.R. §1.78 unless the reference is included in an ADS in compliance with 37 C.F.R. §1.76…." MPEP §211.02(I) (emphasis added).

The '621, '032, '720, and '030 Patents fail to claim priority to the PCT Application No. EP2007/052939 that was filed on March 27, 2007. The priority chain for each of the '621, '032, '720, and '030 Patents has multiple issues. For example, the priority chain breaks at the '910 Patent with an effective filing date of April 11, 2014, because U.S. Patent No. 8,934,922 ("the '922 Patent") claims the wrong filing date for the '040 Patent. The '040 Patent, which matured from U.S. Patent Application No. 12/294,641, was accorded a filing date by the USPTO of April 12, 2010.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/294,641	04/12/2010	2617	540	062403/00002	17	2

CONFIRMATION NO. 1871

31013
KRAMER LEVIN NAFTALIS & FRANKEL LLP
INTELLECTUAL PROPERTY DEPARTMENT
1177 AVENUE OF THE AMERICAS
NEW YORK, NY 10036

FILING RECEIPT

OC000000041171306

But the ADS accompanying the application that matured into the '922 Patent, lists a filing date for the '040 Patent of March 27, 2007.

Domestic Benefit/National Stage Information:

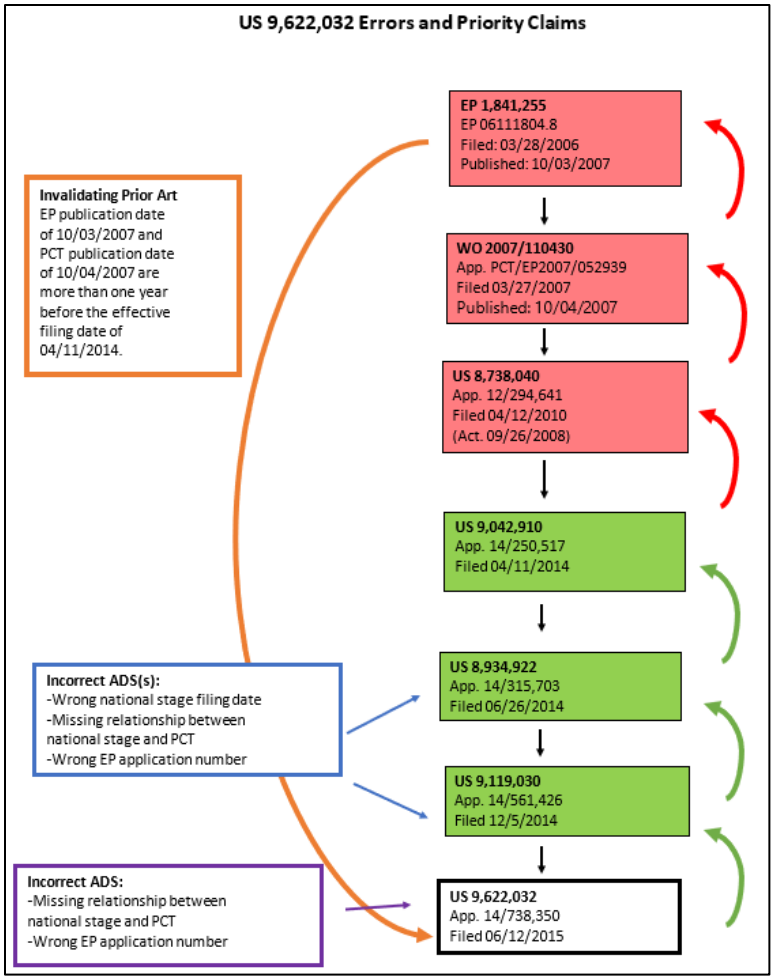
This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR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

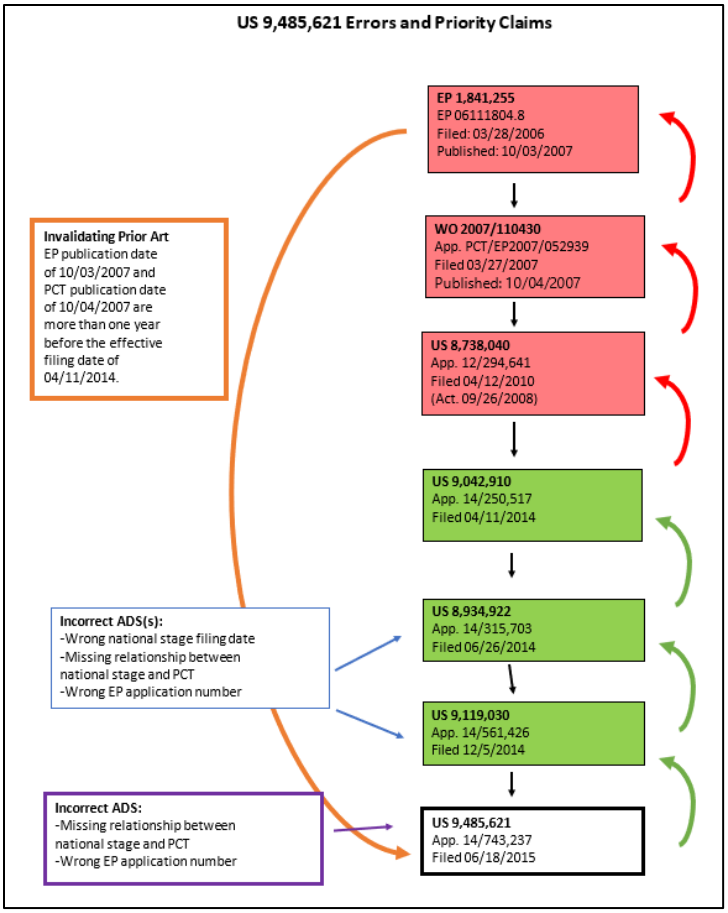
Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	14250517	2014-04-11
Prior Application Status	Patented		Remove

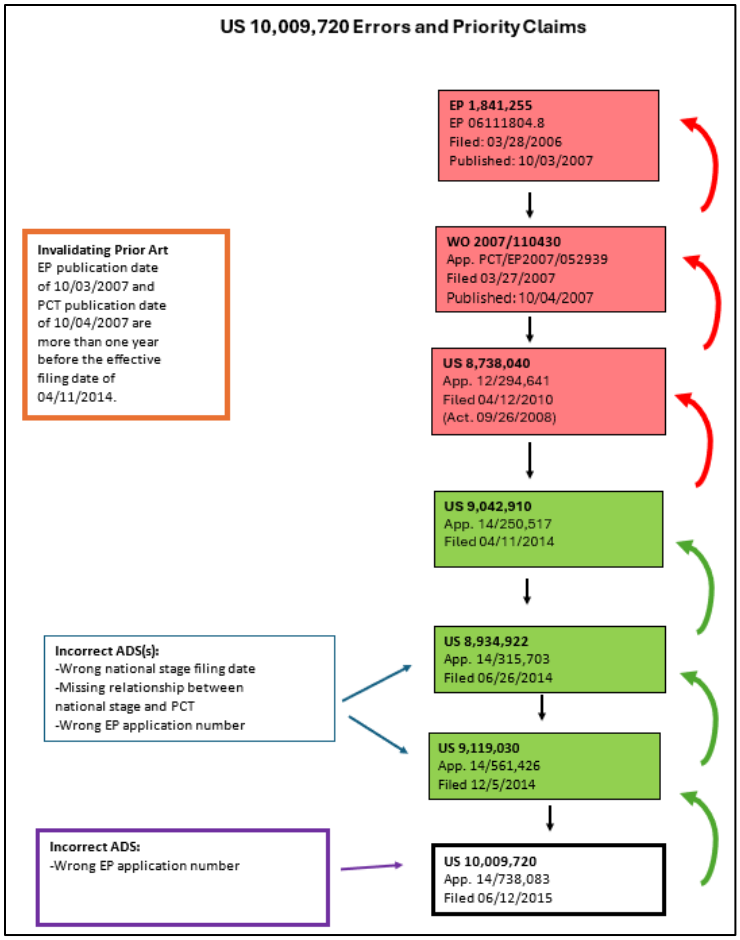
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14250517	Continuation of	12294641	2007-03-27	8738040	2014-05-27

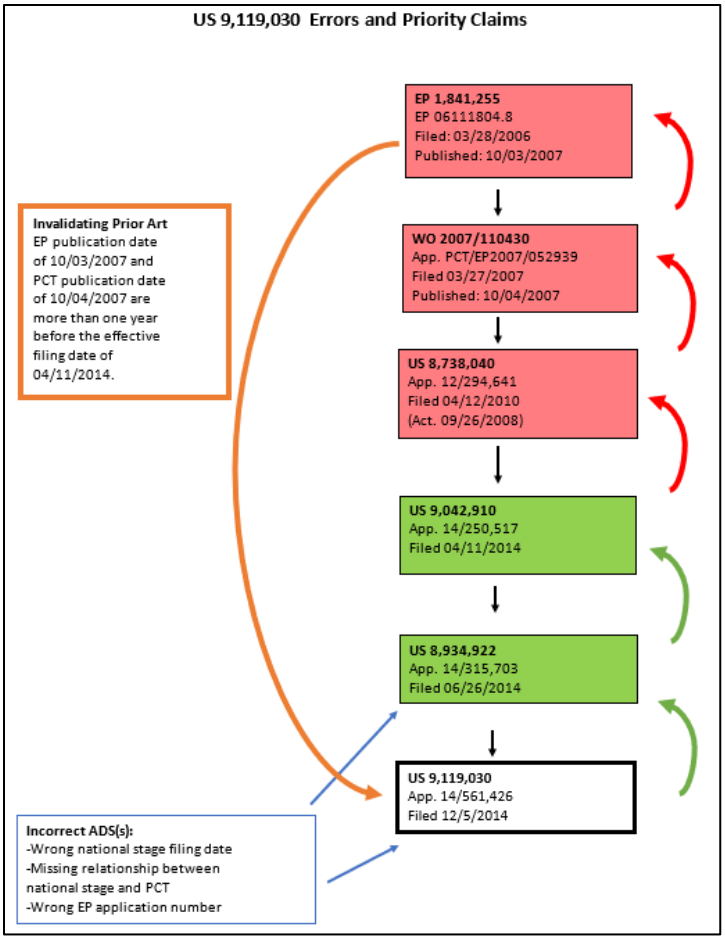
There are other errors in the ADSs of other Patents in the priority chains identified in the below figures, which illustrate where the priority chain breaks for each of the ’621, ’032, ’720, and ’030 Patents:[1]

[1] In the figures below, for U.S. Patent Application No. 12/294,641 (the “’641 Application”), which matured into the ’040 Patent, the filing date is identified as April 12, 2010, is the filing date accorded that application by the USPTO pursuant to official filing receipt mailed April 22, 2010. Defendant notes that there are entries starting on September 26, 2008, in current USPTO records for this application.


US 9,622,032 Errors and Priority Claims
EP 1,841,255
EP 06111804.8
Filed: 03/28/2006
Published: 10/03/2007
Invalidating Prior Art
EP publication date of 10/03/2007 and PCT publication date of 10/04/2007 are more than one year before the effective filing date of 04/11/2014.
WO 2007/110430
App. PCT/EP2007/052939
Filed 03/27/2007
Published: 10/04/2007
US 8,738,040
App. 12/294,641
Filed 04/12/2010
(Act. 09/26/2008)
US 9,042,910
App. 14/250,517
Filed 04/11/2014
Incorrect ADS(s):
-Wrong national stage filing date
-Missing relationship between national stage and PCT
-Wrong EP application number
US 8,934,922
App. 14/315,703
Filed 06/26/2014
US 9,119,030
App. 14/561,426
Filed 12/5/2014
Incorrect ADS:
-Missing relationship between national stage and PCT
-Wrong EP application number
US 9,622,032
App. 14/738,350
Filed 06/12/2015


US 9,485,621 Errors and Priority Claims
EP 1,841,255
EP 06111804.8
Filed: 03/28/2006
Published: 10/03/2007
WO 2007/110430
App. PCT/EP2007/052939
Filed 03/27/2007
Published: 10/04/2007
US 8,738,040
App. 12/294,641
Filed 04/12/2010
(Act. 09/26/2008)
US 9,042,910
App. 14/250,517
Filed 04/11/2014
US 8,934,922
App. 14/315,703
Filed 06/26/2014
US 9,119,030
App. 14/561,426
Filed 12/5/2014
US 9,485,621
App. 14/743,237
Filed 06/18/2015
Invalidating Prior Art
EP publication date of 10/03/2007 and PCT publication date of 10/04/2007 are more than one year before the effective filing date of 04/11/2014.
Incorrect ADS(s):
-Wrong national stage filing date
-Missing relationship between national stage and PCT
-Wrong EP application number
Incorrect ADS:
-Missing relationship between national stage and PCT
-Wrong EP application number


US 10,009,720 Errors and Priority Claims
EP 1,841,255
EP 06111804.8
Filed: 03/28/2006
Published: 10/03/2007
WO 2007/110430
App. PCT/EP2007/052939
Filed 03/27/2007
Published: 10/04/2007
US 8,738,040
App. 12/294,641
Filed 04/12/2010
(Act. 09/26/2008)
US 9,042,910
App. 14/250,517
Filed 04/11/2014
US 8,934,922
App. 14/315,703
Filed 06/26/2014
US 9,119,030
App. 14/561,426
Filed 12/5/2014
US 10,009,720
App. 14/738,083
Filed 06/12/2015
Invalidating Prior Art
EP publication date of 10/03/2007 and PCT publication date of 10/04/2007 are more than one year before the effective filing date of 04/11/2014.
Incorrect ADS(s):
-Wrong national stage filing date
-Missing relationship between national stage and PCT
-Wrong EP application number
Incorrect ADS:
-Wrong EP application number



As shown in the figures above, the ADS accompanying the ’922 Patent, in addition to stating the wrong filing date for the ’040 Patent does not list the relationship between the PCT application (PCT/EP2007/052939) and the national stage application (U.S. App. No. 12/294,641).

The same priority defects that occur in the ’922 Patent also occur in the ’030 Patent. Moreover, the ’621 and the ’032 Patents fail to correctly list the relationship between the PCT application and the national stage application.

In other words, the ’621, ’032, ’720, and ’030 Patents claim priority to the ’922 Patent, but the ’922 Patent fails to make specific reference to the ’040 Patent because it does not provide the correct filing date for that application. Because the ’922 Patent does not properly claim priority to the ’040 Patent, the ’621, ’032, ’720, and ’030 Patents are not entitled to the benefit of the ’040

Patent. Rather, the earliest priority date that the ’621, ’032, ’720, and ’030 Patents could be entitled to is the priority date of the ’910 Patent—April 11, 2014.

Therefore, the ’621, ’032, ’720, and ’030 Patents are invalid under 35 U.S.C. § 102 as anticipated by at least EP 1,841,255, which published on October 3, 2007, more than one year prior to April 11, 2014, and which the ’621, ’032, ’720, and ’030 Patents try, but fail, to claim priority to. The ’621, ’032, ’720, and ’030 Patents are anticipated by at least EP 1,841,255, which published on October 3, 2007, and discloses whatever is claimed by those patents as they rely on the very same disclosure to support the breadth of claims. In other words, anything that could be claimed by the ’621, ’032, ’720, and ’030 Patents based on the disclosure is anticipated by the very same disclosure.

B. Prior Art

Defendant herein identifies prior art with public availability and/or effective filing dates prior to the above-identified priority date, even assuming the ’621, ’032, ’720, and ’030 Patents are entitled to the benefit of the earliest priority date, which they are not.

1. Patents and published patent applications

The following patents and published patent applications qualify as prior art under at least one or more of pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e); or one or more of post-AIA 35 U.S.C. §§ 102(a)(1) and 102(a)(2).

Patent/Publ.	Title	To	Origin	Issued/Publ.
1,841,255	Method and System for Monitoring a Mobile Station Presence in a Special Area	Lafuente	EP	Oct. 3, 2007
6,516,190	Method and Apparatus for Calculating Call Charge Rates in a Mobile Telecommunication System	Linkola	US	Feb. 4, 2003

Patent/Publ.	Title	To	Origin	Issued/Publ.
6,526,267	Method and Apparatus for Detecting the Home Area in a Mobile Station	Jokimies	US	Feb. 25, 2003
6,920,317	Charging of Subscribers with Localized Service Areas in a Mobile Telecommunications Network	Muhonen	US	July 19, 2005
2002/0028671	Service Delivery Method and System	I'Anson	US	Mar. 7, 2002
2002/0094801	Method of Operating a Telecommunication System	Atorf	US	July 18, 2002
2002/0126691	Data Transmission Method and Apparatus	Strong	US	Sep. 12, 2002
2004/0120323	Method and System for Providing Location-Based Services in Multiple Coverage Area Environments	Viikari	US	June 24, 2004
2000/27152	Method and Arrangement for Locating a Mobile Station	Vimpari	WO	May 11, 2000
2004/034721	Provision of Information Regarding a Mobile Station	Kraufvelin	WO	Apr. 22, 2004
7,024,195	Location Based Grouping for Wireless Network Coverage Area	Miriyala	US	Apr. 4, 2006
7,761,103	System and Method for Zone-Based Personalized Information Providing	Sohn	US	July 20, 2010
8,248,991	Method for Receiving Broadcast Service Using Broadcast Zone Identifier in a Mobile Communication System	Kim	US	Aug. 21, 2012
2006/0160527	Methods and Devices for Broadcasting and Accessing a Service Offer Specific to a Geographical Area in a Wireless Telecommunications Network	Tran Xuan	US	July 20, 2006
8,615,256	Method and System for Exploiting Location-Dependent Services in a Cellular Radio System	Putkiranta	US	Dec. 24, 2013

Patent/Publ.	Title	To	Origin	Issued/Publ.
5,835,061	Method and Apparatus for Geographic-Based Communications Service	Stewart	US	Nov. 10, 1998
6,138,003	System and Method for Authorization of Location Services	Kingdon	US	Oct. 24, 2000
6,968,158	Wireless Transmission of Packetized Command and Image Data	Bhuta	US	Nov. 22, 2005
6,985,747	Use of Triggers and a Location Hypercube to Enable Push-Based Location Applications	Chithambaram	US	Jan. 10, 2006
7,096,030	System and Method for Initiating Location-Dependent Applications on Mobile Devices	Huomo	US	Aug. 22, 2006
7,167,713	Monitoring of Call Information in a Wireless Location System	Anderson	US	Jan. 23, 2007
7,310,532	Method of Automatically Updating Presence Information	Knauerhase	US	Dec. 18, 2007
7,848,765	Location-Based Services	Phillips	US	Dec. 7, 2010
7,869,816	Method of Transmitting Area Specific Content	Merheb	US	Jan. 11, 2011
2004/0266453	Provision of Location Information	Maanoja	US	Dec. 30, 2004
2006/0014531	System for MS-Assisted Location Trigger, and Service Methods Thereof	Nam	US	Jan. 19, 2006
6,169,515	Navigation Information System	Mannings	US	Jan. 2, 2001
6,397,040	Telecommunications Apparatus and Method	Titmuss	US	May 28, 2002
6,628,938	Wireless System, A Method of Selecting an Application While Receiving Application Specific Messages and User Location Method Using User Location Awareness	Rachabathuni	US	Sept. 30, 2003
8,320,931	Geo-Fencing in a Wireless Location System	Ward	US	Nov. 27, 2012

Patent/Publ.	Title	To	Origin	Issued/Publ.
9,491,584	Hospitality Venue Navigation, Guide and Local Based Services Applications Utilizing RF Beacons	Mendelson	US	Nov. 8, 2016
2019/0289562	Wireless Network Synchronization of Cells and Client Deices on a Network	Brown	US	Sept. 19, 2019
5,295,180	Cellular Telephone Zone System	Vendetti	US	Mar. 15, 1994
5,787,354	Method and Apparatus for Locating a Radiotelephone Within a Cellular System	Gray	US	July 29, 1998
6,018,653	Multiple-Level Home Area Pricing for Cellular Mobile Telephones	Hietalahti	US	Jan. 25, 2000
6,832,093	Method and System for Restricting the Operation of a Radio Device Within a Certain Area	Ranta	US	Dec. 14, 2004
7,209,758	Method and System for Sharing and/or Centralizing Mobile Positioning Information and Geospatial Data for Roaming Mobile Subscriber Terminals	Moll	US	Apr. 24, 2007
8,531,289	Adaptable User Interface for Monitoring Location Tracking Devices out of GPS Monitoring Range	Scalisi	US	Sept. 10, 2013
2004/0203867	Localization of a Mobile End User Unit by Monitoring a Geographical Area	Schmidt	US	Oct. 14, 2004
2006/0199534	Location and System for Bluetooth Enabled Devices	Smith	US	Sept. 7, 2006
2003/0017843	Method for Multiple Use of a Radiotelephone, and Radiotelephone System Corresponding Subscriber Identification Module and Presence Detecting Device	Noblins	US	Jan. 23, 2003
7,783,299	Advanced Triggers for Location-Based Service Application in a Wireless Location System	Anderson	US	Aug. 24, 2010

Patent/Publ.	Title	To	Origin	Issued/Publ.
2004/0266453	Provision of Location Information	Maanoja	US	Dec. 30, 2004
7,321,773	Area Watcher for Wireless Network	Hines	US	Jan. 22, 2008
7,395,055	Mobile Wireless Presence and Situation Management System and Method	Chitparu	US	July 1, 2008
2008/0095125	Enhanced Site Report by Low Latency Roaming by Passive Scanning in IEEE 802.11 Networks	Soomro	US	Apr. 24, 2008
2003/0040313	Method and Apparatus for Location Area Updating in Cellular Communications	Hogan	US	Feb. 27, 2003
2008/0242298	Unlicensed-Radio Access Networks in a Mobile Communications System	Nylander	US	Oct. 2, 2008
2004/0147221	Apparatus and Method for Determining the Location of a Repeater	Sheynblat	US	July 29, 2004
6,671,506	Mobile Communication System for Home-Zone Service and Method Thereof	Lee	US	Dec. 30, 2003
6,980,814	Mobile Communication System with Mobile Station Position Detection	Nohara	US	Dec. 27, 2005
6,954,630	Method for Location-Based Billing for Mobile Communication	Offer	US	Oct. 11, 2005
6,381,457	Method and Apparatus for Determining if a Mobile Station Is Present in an Area	Carlsson	US	Apr. 30, 2002
2006/0105758	Method and Apparatus to Disable Function of Mobile Station	Maislos	US	May 18, 2006
2006/0234722	Methods, Configuration and Computer Program Having Program Code Means and Computer Program Product for Determining a Position of a Mobile Communications Device Within a Communications Network	Hanebeck	US	Oct. 19, 2006

Patent/Publ.	Title	To	Origin	Issued/Publ.
9,107,031	Service Provision in a Communication System	Muhonen ("Muhonen II")	US	Aug. 11, 2015
9,609,475	Provision of Information Regarding a Mobile Station	Kraufvelin ("Kraufvelin II")	US	Mar. 28, 2017
9,198,153	Provision of Information Regarding a Mobile Station	Kraufvelin ("Kraufvelin III")	US	Nov. 24, 2015

2. Printed publications

The following printed publications qualify as prior art under at least one of pre-AIA 35 U.S.C. §§ 102(a) and 102(b) or post-AIA § 102(a)(1).

Author/Editor	Title	Publ. Date
Pangiotakis et al.	Advanced Location Information Management Scheme for Supporting Flexible Service Provisioning in Reconfigurable Mobile Networks	Feb. 19, 2003
Pangiotakis et al.	Generic Framework for the Provision of Efficient Location-Based Charging over Future Mobile Communication Networks	Dec. 10, 2002
Jose et al.	The AROUND Architecture for Dynamic Location-Based Services	Aug. 2003
di Flora et al.	Indoor and Outdoor Location Based Services for Portable Wireless Devices	June 20, 2005
Want et al.	The Active Badge Location System	Jan. 2, 1992
Harter et al.	A Distributed Location System for the Active Office	Feb. 1994
Imielinski et al.	Mobile Computing	Feb. 29, 1996
Want et al.	An Overview of the ParcTab Ubiquitous Computing Environment	Dec. 1995
Hull et al.	Towards Situated Computing	Oct. 1997
Ward et al.	A New Location Technique for the Active Office	Oct. 1997
Ishida et al.	Community Computing and Support Systems	Dec. 15, 1998

Streitz et al.	Cooperative Buildings: Integrating Information Organizations and Architecture	Oct. 1999
Rhodes et al.	Wearable Computing Meets Ubiquitous Computing: Reaping the Best of Both Worlds	Oct. 1999
Bahl et al.	RADAR: An In-Building RF-Based User Location and Tracking System	Mar. 2000
Priyantha et al.	The Cricket Location-Support System	Aug. 1, 2000
Abowd et al.	Ubicomp 2001: Ubiquitous Computing	Sept. 2001
Hightower et al.	Location Systems for Ubiquitous Computing	Aug. 2001
Sarikaya	Geographic Location in the Internet	June 30, 2002
Wallbaum	Wheremops: An Indoor Geolocation System	Dec. 10, 2002
Shoemake	Wi-Fi (IEEE 802.11b) and Bluetooth: Coexistence Issues and Solutions for the 2.4 GHz ISM Band	Feb. 2001

3. Admitted Prior Art

In addition, certain of the references identified above and certain statements in the Asserted Patents constitute Admitted Prior Art. *See, e.g.*, '040 Patent at Cols. 1:22-2:3. Statements in a specification that identify the prior work of others are admissions which can be relied upon for invalidity (including, for example, based on anticipation and obviousness), regardless of whether the Admitted Prior Art would otherwise qualify as prior art under any statutory category. The Admitted Prior Art includes the following:

> Development of short range wireless communication solutions based on the use of Bluetooth, DECT and WIFI within a small area such as homes is strong competition for mobile operators owning wide mobile networks. A mobile telephone network (called also mobile network) includes a large number of base stations and all the data processing means required to provide the telecommunication service to each mobile station serviced by said mobile network.
>
> These short range wireless communication solutions can provide direct connection to fixed networks whose operators offer cheaper rates than those offered

by mobile networks. It can therefore be of interest for mobile network operators to offer different rates depending on the instantaneous location of a mobile station connected to its mobile network, in particular in areas; called special areas, where it could face strong competition from some short range wireless communication solutions.

The published patent application no US20020094801 describes a technical solution: a fixed station sends an encoded first signal and the coverage of said first signal defines a special area. The fixed station and a mobile station using the special area are linked one another via the signal code. But this document does not disclose anything about the content of said coded signal. In order to realize protection against the abuse of the system, in an embodiment, this document proposes to provide the fixed station with receiving and comparison means for an access code that is to be applied to the fixed station via the mobile station in order to put the fixed station into operation.

The international application WO 00/27152 offers another solution for locating a mobile station based on the use of a guide unit that broadcasts a short range radio signal which defines a home area. This document discloses that the short range radio signal contains the identity code of said mobile station that has to identify its own identity code in order to notice to a mobile switching centre that it is located in its home area. This mobile station transmits then a home message to the mobile network, this home message being possibly used notably for defining the price/service connected to telephone calls. In this last, technical solution, the guide unit has to know the identity of the mobile station and this last solution is thought to be used for a home special area.

’040 Patent at Cols. 1:22-2:3.

None of the prior art patents and printed publications identified above that were either filed or issued (for patents) or published (for publications) before the earliest claimed priority date of the Asserted Patents appear to have been abandoned, suppressed, or concealed, so each such reference should also constitute evidence of prior invention pursuant to pre-AIA

35 U.S.C. § 102(g) as applicable to the extent such filing, issuance, or publication took place in the U.S. The persons or entities involved with each such invention include the named inventors on the above-identified patents and the authors listed on the above-identified publications. Investigation, analysis, and discovery are ongoing in this matter, and Defendant reserves all rights to supplement these Invalidity Contentions as appropriate.

IV. INVALIDITY DUE TO ANTICIPATION (P.R. 3-3(b)-(c))

Defendant herein identifies the prior art thus far discovered that Defendant contends anticipates the Asserted Claims of the Asserted Patents. Defendant's identification of anticipatory prior art is based on Defendant's present understanding of the Asserted Claims prior to claim construction by the Court and in view of the apparent constructions Plaintiff is asserting in Plaintiff's Infringement Contentions.

Defendant identifies the below anticipatory prior art ("Anticipatory References"). The corresponding claim charts specifically show where each limitation of the Asserted Claims is disclosed either expressly or inherently in each of the Anticipatory References.

Anticipatory Reference	Asserted Patent	Chart
EP 1,841,255 ("Lafuente")	'621 Patent	A-00
U.S. Pat. No. 7,024,195 ("Miriyala")	'621 Patent	A-01
U.S. Pat. App. Pub. 2002/0028671 ("I'Anson")	'621 Patent	A-02
U.S. Pat. No. 7,869,816 ("Merheb")	'621 Patent	A-03
U.S. Pat. App. Pub. 2006/0014531 ("Nam")	'621 Patent	A-04
U.S. Pat. No. 6,985,747 ("Chithambaram")	'621 Patent	A-05
U.S. Pat. No. 8,615,256 ("Putkiranta")	'621 Patent	A-06
U.S. Pat. No. 7,310,532 ("Knauerhase")	'621 Patent	A-07
PCT Pub. No. 2004/034721 ("Kraufvelin")	'621 Patent	A-08
U.S. Pat. No. 6,169,515 ("Mannings")	'621 Patent	A-09
U.S. Pat. No. 8,248,991 ("Kim")	'621 Patent	A-10
U.S. Pat. No. 7,761,103 ("Sohn")	'621 Patent	A-11
EP 1,841,255 ("Lafuente")	'032 Patent	B-00
U.S. Pat. No. 7,024,195 ("Miriyala")	'032 Patent	B-01
U.S. Pat. App. Pub. 2002/0028671 ("I'Anson")	'032 Patent	B-02
U.S. Pat. No. 7,869,816 ("Merheb")	'032 Patent	B-03
U.S. Pat. App. Pub. 2006/0014531 ("Nam")	'032 Patent	B-04

Anticipatory Reference	Asserted Patent	Chart
U.S. Pat. No. 6,985,747 ("Chithambaram")	'032 Patent	B-05
U.S. Pat. No. 8,615,256 ("Putkiranta")	'032 Patent	B-06
U.S. Pat. No. 7,310,532 ("Knauerhase")	'032 Patent	B-07
PCT Pub. No. 2004/034721 ("Kraufvelin")	'032 Patent	B-08
U.S. Pat. No. 6,169,515 ("Mannings")	'032 Patent	B-09
U.S. Pat. No. 8,248,991 ("Kim")	'032 Patent	B-10
EP 1,841,255 ("Lafuente")	'720 Patent	C-00
U.S. Pat. No. 7,024,195 ("Miriyala")	'720 Patent	C-01
U.S. Pat. App. Pub. 2002/0028671 ("I'Anson")	'720 Patent	C-02
U.S. Pat. App. Pub. 2006/0014531 ("Nam")	'720 Patent	C-03
U.S. Pat. No. 8,615,256 ("Putkiranta")	'720 Patent	C-04
PCT Pub. No. 2000/027152 ("Vimpari")	'720 Patent	C-05
U.S. Pat. App. Pub. 2002/0094801 ("Atorf")	'720 Patent	C-06
U.S. Pat. App. Pub. 2003/0017843 ("Noblins")	'720 Patent	C-07
U.S. Pat. App. Pub. 2004/0147221 ("Sheynblat")	'720 Patent	C-08
U.S. Pat. No. 9,107,031 ("Muhonen II")	'720 Patent	C-09
U.S. Pat. No. 7,024,195 ("Miriyala")	'040 Patent	D-01
U.S. Pat. App. Pub. 2002/0028671 ("I'Anson")	'040 Patent	D-02
U.S. Pat. App. Pub. 2006/0014531 ("Nam")	'040 Patent	D-03
U.S. Pat. No. 8,615,256 ("Putkiranta")	'040 Patent	D-04
U.S. Pat. No. 7,310,532 ("Knauerhase")	'040 Patent	D-05
PCT Pub. No. 2004/034721 ("Kraufvelin")	'040 Patent	D-06
PCT Pub. No. 2000/027152 ("Vimpari")	'040 Patent	D-07
U.S. Pat. App. Pub. 2003/0017843 ("Noblins")	'040 Patent	D-08
U.S. Pat. No. 7,096,030 ("Huomo")	'040 Patent	D-09
U.S. Pat. App. Pub. 2004/0203867 ("Schmidt")	'040 Patent	D-10
U.S. Pat. No. 7,848,765 ("Phillips")	'040 Patent	D-11
EP 1,841,255 ("Lafuente")	'030 Patent	E-00
U.S. Pat. No. 7,024,195 ("Miriyala")	'030 Patent	E-01
U.S. Pat. App. Pub. 2002/0028671 ("I'Anson")	'030 Patent	E-02
U.S. Pat. No. 7,869,816 ("Merheb")	'030 Patent	E-03
U.S. Pat. App. Pub. 2006/0014531 ("Nam")	'030 Patent	E-04
U.S. Pat. No. 6,985,747 ("Chithambaram")	'030 Patent	E-05
U.S. Pat. No. 8,615,256 ("Putkiranta")	'030 Patent	E-06
U.S. Pat. No. 7,310,532 ("Knauerhase")	'030 Patent	E-07
PCT Pub. No. 2004/034721 ("Kraufvelin")	'030 Patent	E-08
U.S. Pat. No. 6,169,515 ("Mannings")	'030 Patent	E-09

Depending on the Court's construction of the Asserted Claims of the Asserted Patents, and/or positions that Plaintiff or its expert witness(es) may take concerning claim construction, infringement, and/or invalidity issues, different ones of the charted prior art references in the

accompanying exhibits may be of greater or lesser relevance, and different combinations of these references may be implicated. Accordingly, the claim charts may reflect alternative applications of the prior art against the Asserted Claims.

Though the above-identified claim charts provide citations to point out where in the prior art references each element may be found, these citations are illustrative only. The references may contain other, uncited disclosures of a given claim element, and Defendant reserves all rights to rely on such other, uncited portions of these references.

V. INVALIDITY DUE TO OBVIOUSNESS (P.R. 3-3(b)-(c))

Defendant herein identifies exemplary disclosures from and combinations of prior art references that Defendant contends render the Asserted Claims (P.R. 3-3(b)-(c)). Each combination of art identified herein would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 415-16 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). The Supreme Court has held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742.

Motivations or reasons to combine the teachings of the prior art references as described herein are found in, for example: the nature of the problem to be solved; the express, implied, and inherent teachings of the individual references themselves and the interrelated teachings of those references and of the prior art as a whole; the knowledge of persons of ordinary skill in the art; the fact that the prior art is generally directed toward the same problem, such that skilled artisans seeking to solve this problem would look to these cited references in combination; the predictability of results obtained in combining the different elements of the prior art; the effects of

demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution; the existence of a known need or problem in the field of endeavor at the time of the invention; the fact that the combination involves no more than applying known methods to yield predictable results, known techniques in the same way, and/or a simple substitution of one known, equivalent element for another to obtain predictable results; the tendency of known work in one field of endeavor to prompt variations based on predictable design incentives and/or market forces either in the same field or a different one; and/or the fact that there were only a finite number of predictable solutions, such that a particular modification, substitution, or combination would have been obvious to try.

Defendant's contentions that the references in this section, in various combinations, render the Asserted Claims of the Asserted Patents obvious under 35 U.S.C. § 103 are in no way an admission or suggestion that each reference does not independently anticipate the Asserted Claims under 35 U.S.C. § 102. Any of these references may be combined with other disclosed references and/or with the knowledge of a person of ordinary skill in the art during the relevant time period to render the Asserted Claims of the Asserted Patents obvious, and, therefore, invalid.

These combinations are not intended to be exhaustive, as there are many possible combinations of these references, and it is not practical to identify and list all potentially relevant combinations, particularly at this early stage before further factual investigation and claim construction proceedings. Defendant reserves all rights to supplement the obviousness arguments set forth herein using any references listed above and any other references, including those that may become known and/or relevant during the course of discovery. Defendant further reserves all rights to rely upon combinations of references cited herein with references disclosed in the prosecution history of the Asserted Patents.

The Asserted Claims of the Asserted Patents are also invalid under 35 U.S.C. § 103 as obvious in view of each one of the references identified Section IV, *supra*, on their own, in view of the general knowledge and ordinary skill of the POSA, and also in combination with one or more of each other or other prior art identified above.

A. Exemplary Disclosures

Defendant herein identifies the prior art thus discovered that Defendant contends render obvious the Asserted Claims of the Asserted Patents. For each Asserted Patent, charts are provided that specifically identify where each element of the Asserted Claims of the Asserted Patents is found expressly or inherently in the prior art. Defendant reserves all rights to supplement these excerpts with additional excerpts of the prior art set forth in the charts and in additional prior art references.

Asserted Patent	Exhibit
US 9,485,621	F-01
US 9,622,032	F-02
US 10,009,720	F-03
US 8,738,040	F-04
US 9,119,030	F-05

To the extent Plaintiff would contend that any Anticipatory Reference fails to disclose any of limitations of the Asserted Claims, such Anticipatory Reference can be combined with disclosures from any one or more of the references set forth in the charts F-01 to F-05 and/or the knowledge of a person of ordinary skill in the art to render these claim limitations and the claims reciting them obvious under 35 U.S.C. § 103.

B. Exemplary Combinations

Subject to Defendant's reservations of rights and based upon Defendant's present understanding of the scope and asserted meaning of the Asserted Claims, the Court's Claim Construction Order, and in view of Plaintiff's Infringement Contentions, to the extent that any of

the Asserted Claims are not rendered invalid otherwise, for example on anticipatory grounds and/or for failure to comply with the Patent Act (including, but not limited to, 35 U.S.C. §§ 101, 112), Defendant identifies herein illustrative combinations of prior art references that render obvious the Asserted Claims.

In addition to the illustrative combinations of prior art identified herein, Defendant reserves the right to rely on other combinations of the prior art references. Defendant further reserves the right to rely upon combinations disclosed within the file histories of the Asserted Patents and the prior art references cited herein. These illustrative, exemplary obviousness combinations reflect Defendant's present understanding of the potential scope of the Asserted Claims, in view of the Plaintiff's application of the Asserted Claims in its Infringement Contentions and should not be interpreted as Defendant's acquiescence to Plaintiff's interpretation or application of any term, element, or Asserted Claim.

1. '621 Patent

- Miriyala in combination with any of Merheb, Nam, Putkiranta, I'Anson, Kraufvelin, and Jokimies; alternatively, further with any of Chithambaram, Knauerhase, Tran Xuan, Maislos, and Titmuss.
- Any of Merheb and I'Anson in combination with any of Atorf, Knauerhase, Rachabathuni, Sohn, or Kraufvelin; alternatively, further with any of Viikari, Vimpari, Mannings, Kingdon, and Maislos.
- Putkiranta in combination with any of Kim, Merheb, Miriyala, Chithambaram, or Mannings; alternatively, further with any of Jokimies, Knauerhase, Rachabathuni, Titmuss, Tran Xuan, and Sohn.
- Nam in combination with any of Kim, Merheb, Miriyala, Chithambaram, or Mannings; alternatively, further with any of Jokimies, Knauerhase, Titmuss, Tran Xuan, and Sohn.
- Any of Chithambaram, Knauerhase, and Kraufvelin in combination with any of I'Anson, Nam, Putkiranta, Miriyala, or Merheb.

- Any of the combinations identified above in further combination with the knowledge of a person of ordinary skill in the art.

2. ’032 Patent

- Any of Nam or Knauerhase in combination with any of Kraufvelin, Putkiranta, I’Anson, Atorf, Strong and Kim; alternatively, further with any of Bhuta, Imielinski, Anderson, and Chithambaram.
- Miriyala in combination with any of Chithambaram, Merheb, Putkiranta, Atorf, Knauerhase, Sohn, Strong, and Kraufvelin; alternatively, further with any of Nam, Titmuss, Tran Xuan, Imielinski, Atorf, or Viikari.
- Putkiranta in combination with any of I’Anson, Merheb, Miriyala, Bhuta, Anderson, Chithambaram, Strong, and Mannings; alternatively, further with any of Jokimies, Knauerhase, Titmuss, Atorf, Tran Xuan, Nam, and Offer.
- Any of I’Anson or Chithambaram in combination with any of Strong, Miriyala, Kingdon, Vimpari, Jokimies, and Nam; alternatively, further with any of Tran Xuan, Imielinski, Titmuss, Anderson, or Bhuta.
- Any of the combinations identified above in further combination with the knowledge of a person of ordinary skill in the art.

3. ’720 Patent

- Vimpari or Atorf in combination with any of Noblins and Sheynblat.
- Any of Miriyala, I’Anson, Nam, or Putkiranta in combination with any of Nylander, Hietalahti, Sheynblat, Lee, Kraufvelin, and Huomo.
- Any of Noblins, Vimpari, or Miriyala in combination with any of Atorf, Nam, Schmidt, Soomro, Muhonen II, and I’Anson.
- Any of Atorf, I’Anson, and Noblins in combination with any of Vendetti, Sheynblat, Vimpari, Lee, Priyantha, and Knauerhase.
- Any of Vimpari, Nam, Muhonen II, or Putkiranta in combination with any of Mendelson, Ward, Brown, Atorf, Priyantha, and Noblins.
- Any of the combinations identified above in further combination with the knowledge of a person of ordinary skill in the art.

4. ’040 Patent

- Vimpari in combination with Noblins or Sheynblat; alternatively, further in combination with any of Strong or Putkiranta.
- Any of Putkiranta, Nam, Miriyala, and I’Anson in combination with any of Noblins, Hietalahti, Lee, Soomro, Strong, Kraufvelin, and Nylander.
- Any of Noblins, Schmidt, and Putkiranta in combination with any of Atorf, Strong, Vimpari, Brown, Mendelson, Vimpari, and Vendetti.
- Any of Nam, I’Anson, and Phillips in combination with any of Rachabathuni, Ward, Vimpari, Imielinski, Nylander, Putkiranta, Atorf, and Miriyala.
- Any of Knauerhase, Kraufvelin Miriyala, and Vimpari in combination with any of Gray, Huomo, Hietalahti, Noblins, Imielinski, and Sheynblat.
- Any of the combinations identified above in further combination with the knowledge of a person of ordinary skill in the art.

5. ’030 Patent

- Miriyala in combination with any of Merheb, Nam, Putkiranta, I’Anson, Kraufvelin, and Jokimies; alternatively, further with any of Chithambaram, Knauerhase, Tran Xuan, Maislos and Titmuss.
- Any of Merheb or I’Anson in combination with any of Atorf, Knauerhase, Sohn, Rachabathuni, or Kraufvelin; alternatively, further with any of Viikari, Vimpari, Mannings, Kingdon, and Kim.
- Putkiranta in combination with any of Kim, Merheb, Miriyala, Chithambaram, or Mannings; alternatively, further with any of Jokimies, Knauerhase, Titmuss, Tran Xuan, and Sohn.
- Nam in combination with any of Kim, Merheb, Miriyala, Chithambaram, or Mannings; alternatively, further with any of Jokimies, Knauerhase, Titmuss, Maislos, and Sohn.
- Any of Chithambaram, Knauerhase, or Kraufvelin in combination with any of I’Anson, Nam, Putkiranta, Rachabathuni, Miriyala, or Merheb.
- Any of the combinations identified above in further combination with the knowledge of a person of ordinary skill in the art.

C. Motivation(s) to Combine

As set forth below, the alleged inventor was attempting to solve the same or similar problems, with the same or similar needs, as those identified in the prior art and/or otherwise known to one of ordinary skill in the art in view of the prior art disclosures. Accordingly, one of ordinary skill in the art would have been motivated to combine or had reason to combine prior art references at least as identified in the illustrative and exemplary combinations listed herein.

Reference	Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention
Asserted Patents (citations are to the specification of the '621 Patent; however, the Asserted Patents share a common specification)	"This invention relates to a method for monitoring a mobile station presence in a special area. This invention relates also to a mobile system, a server, a radio transmitting device, and a mobile station suitable for carrying out such a method." Col. 1:25–29. "[T]his last technical solution does not allow the mobile network, to add for a mobile station one or more special areas wherein the presence of a mobile station is monitored without having to at least modify one or more guide units broadcasting in such areas. It lacks therefore of flexibility." Col. 2:6–11. "An object of the invention is therefore to provide a method for monitoring the presence of a mobile station in at least one special area, said method providing the flexibility to the mobile telephone network of associating new special areas for this mobile station in a secure way without modifying any radio transmitting device." Col. 2:15–20. "In addition, a method according to the invention is specially suitable to be used in environments like for example airports, company's premises or business centres where the number of different mobile stations to be serviced by the mobile telephone network would be high." Col. 3:10–15.
Miriyala	"Wireless network operators have recently begun to track and deliver services to pre-defined groups of network subscriber mobile stations, such as cell phones and pagers, located within respective network coverage areas. This feature, known generally as location-based grouping, has numerous potential applications. For example, location-based grouping can enable a store owner subscriber to target and send advertising messages to network subscriber mobile stations located near the store, a company to track its service fleet and therefore provide faster and more cost effective customer service by enabling it to identify the service person closest to a customer location, or an individual to be notified if and when friends subscribing to the service are in a pre-defined coverage area location." Col. 1:16–30.

	"In addition, as the location-based grouping of the present invention generates zone traffic information as a result of the above-discussed subscriber registration requirements, service providers can fine tune activation times for push services, such as mass advertising campaigns, during peak traffic hours in specific zones. As a result, the location-based grouping of the present invention enables advertisers to more accurately target their potential customers. As should be appreciated from the foregoing description, the location-based grouping of the present invention enables service providers to provide the group services to specific geographic areas of coverage by enabling the service providers to create high-resolution zones within transmitter coverage areas. As a result, service providers have more control over services offered and, due to their ability to provide services on both a static and dynamic basis, are able to offer business subscribers a wider variety of services." Col. 6:36–52
Merheb	"The present invention provides a method of transmitting area specific content to a mobile terminal via a wireless network that covers at least two areas. Each area of the network has at least one access point that provides coverage for that area. The term 'access point' as used herein encompasses all network components that provide radio coverage for a given area or cell, such as base stations, Node-B's and the like." Col. 1:38-44.
I'Anson	"Recently, much interest has been shown in "location-based", "location-dependent", or "location-aware" services for mobile users, these being services that take account of the current location of the user (or other mobile party). The most basic form of this service is the emergency location service whereby a user in trouble can press a panic button on their mobile phone to send an emergency request-for-assistance message with their location data appended. Another well known location-based service is the provision of traffic and route-guiding information to vehicle drivers based on their current position. A further known service is a "yellow pages" service where a user can find out about amenities (shops, restaurants, theatres, etc.) local to their current location. The term "location-aware services" will be used herein to refer generically to these and similar services where a location dependency exists." [0015].
Nam	"Location-Based Services (LBS) utilize a geographical location of a mobile station (MS) and provide location-specific services. There are hybrid technologies to obtain information based on a current location of a networked MS (or its user), and herein, a Global Positioning System (GPS) equipped MS is required to use the LBS. Such an LBS utilizes a geographic location of an MS (or its user) in various marketing fields including a theater, a shopping mall, or a restaurant, using a cellular phone or a GPS. The LBS may provide more accurate information, and further it may be applied to networked fields and/or be combined with various positioning technologies including a Geographic Information System (GIS) and the GPS." [0005]-[0006].

	"However, there are problems to be solved in the foregoing conventional technologies. The MSC performs a main role in the communication network and is implemented by directly modifying base station equipment, such as an HLR and a VLR supporting an MS roaming service. Further, direct modification of exchange software (herein, the MSC) is also required, and communication interruption occurs when trigger location function is overly activated, thereby inducing the exchange to be overloaded. It is an advantage of the present invention to provide an MS-Assisted location trigger system and a service method thereof by having a location assistant embedded in an MS to separately process location trigger detection from the MS, thereby setting various user customized services without causing an overload in base station equipment (i.e., HLR)." [0031]-[0032].
Putkiranta	"An object of the present invention is to provide a method and system for making services provided by a network available to the user in various ways depending on the location of the user, without placing large requirements to the network. The objects of the invention are achieved by storing in the memory of the mobile station the information on the basis of which it recognizes that it is situated in a given localized service area and by programming the mobile station such that in response to such recognition it sends an appropriate message to an apparatus that provides services." Col. 2:9–18
Chithambaram	"The prior art methodology presents many problems and limitations. For example, the prior art fails to provide the capability for a wireless network to automatically detect a proximity event (e.g., using a trigger) and alert/notify a LBA (e.g., notify the LBA if a child with a mobile station leaves the school premises during school hours on weekdays). To provide such functionality, applications/LBA must typically continuously poll the wireless location server (e.g., every minute or two) to detect if there are interesting location events. This increases the load on the mobile position server by several orders of magnitude, and severely impacts the throughput (and therefore hardware performance and cost). Further, the absence of a location trigger on the wireless network has resulted in each application/LBA provider building custom/proprietary mechanisms for detecting proximity events. Such mechanisms are fragmented and/or replicated at the application tier at each application provider site." Col. 1:48–66. "In view of the above, it would be desirable to have an application based on in network "push based" or spatial trigger capability. Such a trigger capability would automatically detect proximity events and alert the applications. For example, a user could be notified if a friend is within 1 mile of the user's current location between 3-5 P.M. so that the user can invite the friend to a game of golf. Alternatively, the user could be notified if the user's child leaves the school premises during school hours on weekdays. Further, a coffee shop owner could be notified that a preferred customer is within walking distance and mail out a discount coupon over the wireless

	network **100** to the customer (thus attracting immediate business). Prior art wireless networks **100** lack such capabilities. Further, the lack of such capabilities creates the aforementioned problems." [0021].
Knauerhase	"Some of these mobile devices have a rudimentary notion of user presence information. Presence information may include the reachability of a particular user through a certain system (e.g. connection to an instant messaging system) and availability of the user (e.g., the state of a reachable user, such as "available," or "unavailable.") Users employ presence information to gain information about others who are connected to the system and ready to receive communications. Current systems allow the users to explicitly set the state of their presence information, which persists until the user explicitly changes it. For example, users might explicitly and manually set their presence information to "available" when they turn their mobile device on and "unavailable" prior to turning their mobile device off. Users find this manual process to be cumbersome and easily forgotten, which results in inaccurate presence information, hampering its effectiveness." Col. 1:34–50.
Kraufvelin	"A location-based application may be interested in when a specific subscriber is entering or leaving a geographical area. Different kinds of services are possible if such a mechanism would be in place. It might be useful for various commercial and non-commercial services and similar applications to have information if a mobile station is located within a particular defined geographical area. In some application it might be useful for the network element to be able accomplish the operation for obtaining location information only if the mobile station is detected as being in a selected part of the communication system. For example, various organisations or even individuals may want to send information and/or offer services to a mobile station only in a particular defined geographic area and/or to a certain type of subscriber in a particular geographical area. More detailed examples of these include location based push services like advertisements and parents monitoring the whereabouts of their children. It may be enough if the party requesting for information receives confirmation whether a mobile station is within the defined are or not. It would also be advantageous if the location information could be provided without causing excessive load into the resources of the communication network." Pages 4:28-5:16.
Mannings	An advantage of this preferred arrangement over the fixed beacon systems is that the geographical overlay can be readily modified. Advantageously, the system includes means for storing a digital representation of the geographical overlay, and means for modifying the stored representation such that the configurations of the overlay areas may be selected to meet changing requirements. The overlay areas can be readily combined or subdivided, or their boundaries otherwise altered to meet changing circumstances without any modification to the hardware, simply by reconfiguring the geographical overlay defined in the central database. Moreover, unlike the prior art beacon system discussed above, there is no major cost in street furniture and supporting infrastructure, because existing cellular mobile communications

	systems may be used to transmit the instructions from a central database. If the driver enters an overlay area which is not on the route chosen by the system, an error message can be transmitted. Such messages may be transmitted to a user other than the mobile unit, for instance in order to monitor the whereabouts of valuable cargoes or of personnel working away from a base." Col. 4:18–38.
Sohn	"The present invention relates to a zone-based personalized information providing system and method, and in particular to a zone-based personalized information providing system for providing a mobile communication user located in a specified zone with distinct information. . . . As described as above, a variety of information is provided to a mobile user by using SMS messages in the prior mobile communication network. However, as the mobile communication user is registered as cell-based location, it is impossible to provide a mobile user with zone-based specified information, but only possible to provide extensive contents. . . . The invention is presented to solve the problem said above. Thus, the object of the present invention is to provide a system and method for providing zone-based personalized information to a user of mobile communication terminal located in a specific zone by acquiring MIN information of a mobile communication terminal entering a specific zone, transmitting then the MIN information and transmission information to a SMS server, and transferring the transmission information to the terminal." Col. 1:18–53.
Kim	"It is, therefore, an object of the present invention to provide a method and apparatus for informing an access terminal of the fact that when the access terminal crosses over the boundary between broadcast zones in coverage of a wireless communication system including a plurality of broadcast zones, a broadcast service provided in a new broadcast zone changes. It is another object of the present invention to provide a method and apparatus in which an access terminal crossing over the boundary between broadcast zones in coverage of a wireless communication system comprising a plurality of broadcast zones, receives information concerning a broadcast service provided in a new broadcast zone changes." Col. 2:18–29.
Jokimies	"An aim is to establish that a mobile station is in its home area or in the area where it is mainly used in order to apply local call tariffs and local services." Col. 1:12–14. "An advantage of the invention is that the location of the mobile station is reliably detected. A further advantage is that no equipment changes are required due to the invention. Further, due to the invention the infrastructure of a cellular network does not have to participate when the location is determined. A service control point (SCP) in a cellular network controls call tariffs and services on the basis of the home location register (HLR). The database of the cellular network is situated in the home location register,

	which comprises permanent basic data of mobile subscribers registered in the network." Col. 2:38–49.
Tran Xuan	"The general field of the present invention is that of broadcasting service offers specific to a geographical area containing communicating terminals. This concept of local services, which is also known as service provisioning, enables a service offer to appear spontaneously on a terminal according to its location, any change of location being liable to lead to the appearance of a different offer. The present invention may be used in a local network, i.e. in any type of geographically defined network in which specific services may be implemented." [0001]–[0003] "The above system has the drawback that the calibration method is not reliable over time, as it is very easily disturbed by a change to the environment (addition or removal of partitions, the presence of a crowd, etc.)." [0010].
Atorf	"The invention relates to a method of operating a telecommunication system that enables operation of a mobile telephone at different user rates that are dependent on the instantaneous location." [0001]. "The existing pronounced differences between the high mobile telephone rates and the significantly cheaper fixed network rates have led to the development of a telecommunication system in which the user of a mobile telephone can make a mobile telephone call either at the more expensive mobile telephone rate or at the more attractive fixed network rate, that is, depending on the instantaneous location of the user. Such a known system includes a GSM home base station that is locally installed at the user end and is capable of recognizing a mobile telephone that is present in the local zone. When such a mobile telephone is present in the local zone, a call can be made at the more attractive fixed network rate via the fixed network connection whereto the GSM home base station is connected. However, when the mobile telephone is situated outside the local zone, the call is not made via the fixed network but via the mobile network and at the more expensive mobile telephone rate. A condition in this respect, however, is that the operator of the mobile telephone network should also operate a fixed network via which a call can be made in dependence on the mode of operation. This known system also has the problem that a call that is made via the fixed network because of the mobile telephone is near enough to the GSM home base station is broken off when the person making the call and carrying the mobile telephone leaves the local zone. This is because in that event the GSM home base station no longer recognizes the mobile telephone and the call should take place via the radio network. The person making the call is then forced to dial the relevant number again so as to establish the connection once more. In the reverse case, when the person making the call enters the local zone, the mobile radio connection can remain established despite the adequate nearness to the GSM home base station; however, the call still takes place at the higher mobile telephone rate, so that no benefit can be derived from the advantages offered by this system. When the user wishes to take advantage of the cheaper fixed

	network rate, the call must again be terminated and established again, that is, via the fixed network connection. It is an object of the invention to provide a method that eliminates the described problems." [0002]-[0003].
Strong	"The present application relates to a method and apparatus for transmitting a data messages in a data network including a plurality of stations interconnected by a bus line. The invention relates particularly, but not exclusively, to a method and apparatus for transmitting data between computers interconnected by electrical power lines." [0001]. "However, if larger amounts of data need to be transmitted over larger distances (for example transmission of large amounts of data between computers separated by significant distances), then the rate at which data can be transmitted prevents the prior art arrangement discussed above from being practicable. In particular, the prior art arrangement discussed above can only transmit a maximum of 8 bytes per data frame and the number of data bits per data frame divided by the maximum distance in meters times the data bit rate (the payload) is limited to 1.6. Preferred embodiments of the present invention seek to overcome the above disadvantages of the prior art." [0010]–[0011].
Viikari	"The present invention relates to communications. More particularly, the present invention relates to techniques for providing customized content to wireless communications devices across a communications network." [0002]. "In wireless environments, the location of a portable communications device may affect the type of information desired when its user makes a generic request for information. For instance, when requesting directions to a particular destination, a user would prefer the directions to be based on the user's current location. To provide for such location-based content, a server or content provider that receives a request for content must learn the location of the requesting device. Accordingly, there is a need to provide device location information along with requests." [0006]–[0007].
Vimpari	"The invention relates to a method and arrangement for locating a mobile station. By means of the invention it is observed whether the mobile station is located in a predetermined area. The invention is advantageously applied for defining call tariffs, or for defining available services on the basis of the location of the mobile station in question." Page 1:4-8. "The object of the invention is to eliminate some of the drawbacks of the prior art by creating a completely new solution, where the location of a mobile station within a determined area can be detected accurately, reliably and by means of fairly simple devices." Page 2:13-16.
Rachabathuni	"The present invention relates to context aware wireless devices needing context dependent services. Such services may be location or user specific.

	Such wireless devices may be cell phones or PDAs (Personal Digital Assistants) with augmented functions, or dedicated devices, or any other suitable wireless device." Col. 1:11-16. "Recent years have seen a great increase in subscribers world-wide to mobile telephone networks and, through advances in technology and the addition of functionalities, cellular telephones have become personal, trusted devices. A result of this is that a mobile information society is developing, with personalised and localised services becoming increasingly more important. Such "Context-Aware" (CA) mobile telephones are used with low power, short-range base stations in places like shopping malls to provide location-specific information. This information might include local maps, information on nearby shops and restaurants, information on exhibitions at museums and so on. The user's CA terminal may be equipped to filter the information received according to pre-stored user preferences or user profiles and the user is only alerted if an item of data of particular interest has been received." Col. 1:19-34.
Mendelson	"Location based services are rapidly expanding. Outdoor location technologies are mainly based on GPS technologies. GPS cannot perform properly indoors and is therefore inadequate. As a result, indoor location systems are appearing on the market. The need for a system arises from various market segments and applications. One example in the market is the GPS based systems that use integrated positioning and navigation systems based on GPS receivers as the primary positioning technology. Subsequent to the events of September 11th' the Federal government mandated that GPS capability be built in to all cellular phones. However, the fact that uninterrupted satellite reception is not possible in many locations is a major limitation of GPS based systems. Densely populated areas and radio-frequency-signal shadowed locations, such as urban centers (a.k.a. "urban canyons"), generally do not allow proper operation of GPS, yet it is in these locations that the need is greatest. There is a clear need for a cost effective system that maintains performance indoors, in urban canyons and in city centers." Col. 1:60-2:13.
Ward	"The present invention relates generally to methods and apparatus for locating wireless devices, also call mobile stations (MS), such as those used in analog or digital cellular systems, personal communications systems (PCS), enhanced specialized mobile radios (ESMRs), and other types of wireless communications systems. More particularly, but not exclusively, the present invention relates to the use of prescribed network message sequences in initiating, or triggering, location-based service applications and re-use of existing radio interface parameters within such message sequences to provide low-accuracy location or to allow tuning of specialized receivers for high accuracy location for a particular subscriber." Col. 1:27-39.

Brown	"In general, embodiments of the present invention relate to a technique for synchronizing (or "coordinating") multiple wireless cells, in any one of which an individual (or "user") can reliably and securely conduct one or more wireless transactions with some device in one or more of the cells. Particularly, in one or more embodiments, wireless cells are synchronized in order to prevent wireless collisions and extend the battery life of individual user units. In addition, embodiments of the present invention relate to a technique for wirelessly communicating with a plurality of client devices without data collision. Particularly, in one or more embodiments, individual client devices are assigned time slots during the client devices may wirelessly communicate. Furthermore, embodiments of the present invention relate to a technique for dynamically varying a cell size in which a secure wireless transaction occurs. Particularly, in one or more embodiments, when a reader device detects the presence of a wireless client device, a cell size of the reader device may be varied in an effort to, for example, add security, to any subsequent transaction between the reader device and the client device." [0068] "In certain cases, the RDC **100** effectively acts as a gatekeeper allowing authorized individuals access to specific information or transactions. In other cases, because an RDC **100** may use proximity detection for determining if a PDK is within a particular geographical area, the RDC **100** may also be used for tracking one or more PDKs within a given area or network. In still other cases, an RDC **100** may be used for both location tracking and secure transaction purposes." [0092]
Schmidt	"Increasingly, localization systems are proposed which use existing cellular telephone network infrastructure. While GPS is a system especially implemented for localization purposes, cellular telephone environments as such do not provide for the localization of person and objects. Therefore, modifications of cellular telephone environments are necessary. All approaches for localization techniques utilizing cellular telephone environments necessitate information concerning the geographical arrangement of cells of a telephone environment. Traditionally, such information has only been available to providers and operators of cellular telephone environments thereby restricting implementation of localization techniques to third parties." [0007] "A common problem for all localization systems and methods utilizing components of an existing cellular telephone environment is that for the determination of a location of a mobile telephone, the infrastructure of the cellular telephone environment or at least parts thereof (cells) is loaded. This loading is mainly due to the specific signal transmissions that are often performed at high rates over short time intervals. Further, many conventional mobile telephone-based localization systems and methods require modifications of mobile telephones to be localized and the infrastructure of an employed cellular telephone network. Examples include mobile telephones

	emitting a specific localization signals and radio base stations including specific units for localization purposes. Moreover, any implementation of a mobile telephone-based localization is in general limited to network and/or service providers of a cellular telephone environment as information and infrastructure modifications for localization purposes are not available to third parties." [0015].
Gray	"It is often desirable for a CTS to determine the geographic location of individual handsets within the CTS. For example, it may be useful to determine which cell, group of cells, or system a particular handset is located in. The location information may be required by the CTS for different reasons. For example, it is common in the cellular telephony art to identify whether a handset is located within its "home" system or "roaming" within a nonsubscribing system." Col. 1:30-38.
Vendetti	"However, with current cellular technology, like the cellular telephone system shown in FIG. 1, the cellular service user has no way of knowing where in the cellular service area the user is. Therefore, cellular service providers have had difficulty creating services that require a user to know his location within the cellular service area. Consequently, a need has developed to provide a system that allows a user to determine whether he is in a particular predefined zone within the cellular service area and to convey that information to the cellular service system. It is further desirable that such a system be compatible with existing cellular technology and should not degrade the operation of an existing cellular system. Finally, such a system should neither require the allocation of more radio frequencies than are currently allocated to cellular telephone systems, nor require a substantial portion of existing cellular frequencies." Col. 2:35-53.
Hietalahti	"It is an object of this invention to provide a method for determining the base station specific special functions of a mobile telephone in an easy and flexible manner. It is also an object of the invention to provide a method with which it can be indicated to the user of a telephone whether a special function is available to him or her. The objects are achieved by using both in the telephone and in the message sent by the base station character sequences, combining of which in the telephone in a manner according to the invention yields a result on the basis of which it can be concluded whether or not the user and his or her phone have access to a given special function." Col. 2:21-33.
Noblins	"Different price rates therefore need to be determined for this mobile for those communications considered to come under local loop operation as they derive from a fixed place, and for those communications considered to concern mobile operation. In other words, a distinction must be made between communications entering and leaving a home and those made in a situation of mobility." [0010].

Chitparu	"Present wireless phones do not include mechanisms to determine a user's location, who the user is with, what the user is doing, or how the user would prefer to be communicated to. This type of knowledge is known as presence and situation information. Presence information relates to both the networks and services that a device is present for (i.e., currently available to utilize). Situation information relates to the situation that the device is currently experiencing, including the physical location of the device, the proximity to other wireless devices, and the environment the user is in." Col. 1:21-30.
Huomo	"However, some applications or services that might be available for use on a mobile device may be of little value, until the user is placed in a particular context or location in which such applications and/or services may be very useful. This has led to a concept generally referred to as location-based services. Generally, existing location-based services have been directed to a situation where a person who is unfamiliar with his/her present surroundings can obtain location information from the wireless network, and then browse for certain information or services in that location. For example, a tourist may be in an unfamiliar city, and may be looking for the nearest one of her favorite franchise restaurants. With her consent, the network can measure her current location. Once her location information has been obtained at the network, she can be notified of her location by the network, thereby allowing her to search/browse for services around that location. Alternatively, after the network has determined the user's location, a network-resident program may be initiated to find services or information in that location. However, such an approach is complex and difficult to scale to large numbers of users and network traffic for frequent location determinations." Col. 1:30-51. "Further, these systems are directed to situations where the user is unfamiliar with his/her surroundings. However, it is more often the case that mobile terminal users are in a location in which they are familiar, and in fact they may frequent such locations on a regular basis. The prior art methods do not address this situation, and instead address the situation where the mobile terminal users need help because they are unfamiliar with their current surroundings. There is a need to provide location-based service and application triggering for users who may return to a location, without imposing heavy burdens on the network infrastructure. The present invention fulfills these and other needs, and offers other advantages over the prior art." Col. 1:61-2:6.
Phillips	"Location systems have been developed for determining and tracking the locations of the users of mobile devices such as cellular phones, including global positioning systems (GPS), as well as various triangulation systems that use cellular telephone signals, broadcast television signals, or the like. Dead reckoning systems also exist for determining locations of devices based on movement in reference to a set of known coordinates. However, to date the

	uses of such systems have been limited. A need exists for improved systems for using location-based information for a variety of purposes." Col. 1:10-19.
Nylander	"The invention concerns mobile communication combining both public mobile access networks and unlicensed access networks. The invention has specific relevance to the transfer of connections between public mobile networks and unlicensed-radio access networks." [0001]. "Recently proposals have been made to extend conventional cellular networks by including access networks that utilise a low power unlicensed-radio interface to communicate with mobile stations. The access networks are designed to be used together with the core elements of a standard public mobile network and consist essentially of plug-in low-power unlicensed radio transceivers, or access points, each designed to establish an unlicensed radio link with a mobile station MS and a controller or interface node connecting the unlicensed radio transceivers with the mobile core network. Suitable unlicensed-radio formats include digital enhanced cordless telecommunications (DECT), wireless LAN and Bluetooth." [0004]
Sheynblat	"The disclosure relates generally to wireless communications, and more particularly to an apparatus and method for determining the location of a repeater." [0003]. "Wireless communication systems incorporate the use of repeaters to extend the service area of a base station. Repeaters extend the range of the base station by amplifying and re-transmitting wireless signals sent between a mobile subscriber and a base station." [0005].
Hogan	"A general objective of the present invention is to provide location area update procedures for mobile terminals where appropriate while at the same time minimizing the amount of location area update signaling required." [0032].
Soomro	"Stations may have no capacity to detect radar themselves. In such regulatory domains, stations perform passive scanning to wait for beacons from access points. The beacons are transmitted at regular fixed intervals of time and are normally spaced farther apart for networking efficiency reasons. The beacons contain information whether a radar is present in an channel or not. This has the drawback that when a station switches channels during roaming, it cannot transmit until it scans for radar or listens for beacons that contain radar information. This scanning for radar and/or listening for beacons leads to longer average wait times for stations performing passive scanning, up to one beacon period per scanned channel." [0005].
Lee	"The present invention relates generally to a mobile communication system and method for providing home zone service in a wireless communication network, and in particular, to a system and method for a communication service provider to easily determine whether a wireless communication subscriber with a single terminal is within the home zone service in order to

	charge the subscriber at a first charge rate for the call inside the home zone service, and to charge at a second charge rate which is higher than the first charge rate, if the subscriber is located outside the home zone service." Col. 18-28.
Nohara	"With spread of a mobile communication system utilizing wireless communication, there has been desired development of a mobile communication system capable of detecting a current position of a mobile station changing every moment such as a portable telephone or a pager and dealing with a diversified communication environment of the mobile station while establishing a stable communication state based on information of detecting thereof." Col. 1:11-18. "It is an object of the present invention to provide a mobile communication system overcoming the conventional problem mentioned above and capable of detecting a position of a mobile station with higher accuracy and dealing with a diversified mobile station communication environment." Col. 1:56-60.
Offer	"In particular, it is an object of the invention to specify a method for location-based billing of a collection of mobile stations in a mobile telecommunication network taking account of the mobility of the subscribers such that the network server can use the simplest way possible to associate the subscribers' mobile stations with this collection irrespective of their specific whereabouts." [0001].
Maislos	"In those systems, in order to receive a call, the base station may locate a recipient (e.g. a mobile station) presence in a coverage area of the base station, and may send a call command which may include at least a ring command, a phone number of a caller and the like. The recipient may receive the call command and may play a tune, sound a ring, vibrate, or may signal with lights according to the mobile station properties. In some areas the ring and/or the tune may be considered as a disturbance to the environment and should be avoided." Col.
Muhonen II	"There are also applications where it might be useful to be able to locate selected mobile stations or subscribers in a defined area. For example, various organisations or even individuals may want to send information and/or offer services to mobile stations only in a particular defined geographic area and/or to certain type of subscribers in a particular geographical area. The mobile stations in a certain area and/or certain types of subscribers may also need to be tracked e.g. for fleet management purposes. There may also be a need for a quick provision of the location information. It may also be advantageous if the location information could be provided without causing excessive load into the resources of the communication network." Col. 2:37-55.
Imielinski et al.	"We focus on TCP because it is the most widely used reliable transport protocol and will be used in at least the first generation of mobile computing environments." Page 209.

Priyantha et al.	"The emergence of network-enabled devices and the promise of ubiquitous network connectivity has made the development of pervasive computing environments an attractive research goal. A compelling set of applications enabled by these technology trends are context-aware, location-dependent ones, which adapt their behavior and user interface to the current location in space, for which they need to know their physical location with some degree of accuracy." Page 32. "Our goal is to develop a system that allows applications running on user devices and service nodes to learn their physical location." Page 33.

Accordingly, the teaching, suggestion, motivation, or other reason to modify or combine the prior art in the manner of the Asserted Claims can be found in the explicit and/or implicit teachings of each of the prior art references and the prior art as a whole, the general knowledge of those skilled in the art, including knowledge of trends in the field, and knowledge that the art is of special interest or importance in the field, and from the fact that the references are directed to the same or similar or otherwise complementary location monitoring methods and one of ordinary skill in the art at the relevant time would have had reason to or otherwise been motivated by considerations such as accurately determining locations of mobile devices, identifying when a user is located in a certain area, providing services dependent on user location, ensuring that such services are provided in certain areas but not others, reducing the need to make extensive modifications to existing network infrastructure to perform location monitoring, leveraging the increasing prevalence of mobile phones and computer networks, reducing fraud, and solving one or more of the above-listed problems or needs, and other concerns common to location monitoring and location-based services, so as to combine the various teachings and disclosures and arrive at the alleged inventions of the Asserted Claims. Additionally, the prior art references and exemplary problems/needs listed above demonstrate that there were, at the time of each alleged invention, a number of known, identified, predictable solutions that persons of ordinary skill in the art would have known how to successfully combine, making the claimed alleged inventions obvious.

Defendant contends that one of ordinary skill would have had ample reason to combine the references disclosed herewith, including as disclosed in the accompanying charts. The Supreme Court has held that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. *KSR Int'l*, 550 U.S. at 416. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. *Id.* at 416-17. For example, market forces, such as the growing number of people with mobile phones and the concomitant expectation of services provided to such phones would have prompted a person of ordinary skill to combine techniques set forth in the disclosed prior art for determining mobile device location with techniques set forth in the disclosed prior for managing which mobile devices receive services/rates and where they receive such services/rates. Moreover, the proliferation of computer networks, and the devices defining such networks, would have prompted a person of ordinary skill in the art to use such devices to determine mobile device location, thereby leveraging existing hardware infrastructure to create techniques for providing location-based services. If a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. For example, numerous prior art references identified herein disclose improving the ability to identify device locations in a radio network. Moreover, numerous prior art references identified herein disclose improvements to location detection and monitoring for providing location-based services to mobile phones that communicate with devices emitting radio signals. *Id.*

In order to determine whether there is an apparent reason to combine the known elements in the fashion claimed by the patent at issue, a court can look to interrelated teachings of multiple

patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. *Id.* at 417-18. For example, obviousness can be demonstrated by showing there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims. *Id.* at 420. Any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed. *Id.* Common sense also teaches that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. *Id.*

Thus, the motivation to combine the teachings of the patents and other prior art disclosed herein is found in the references themselves as specified in Exhibits A-01 through F-05 and in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; and/or (4) the predictable results obtained in combining the different elements of the prior art. "The combination of familiar elements with known methods is obvious when it provides no functionality except for yielding predictable results." *AdvanceMe Inc. v. RapidPay, LLC*, 509 F. Supp. 2d 593, 610 (E.D. Tex. 2007) (citing *KSR Int'l*, 550 US at 414-15). Moreover, the Supreme Court has held that a showing of a motivation to combine is not required to prove obviousness. *KSR Int'l*, 550 US 398.

The references identified in Exhibits A-01 through F-05 provide interrelated teachings related to monitoring a location of a mobile device. These references describe common and well-known techniques for using network technology to determine whether a mobile device is located in an area in which a service or rate is to be provided. These references purport to provide improvements and benefits to prior technologies in the same technical field, such as systems and

techniques for determining mobile device location, providing location-based services, and ensuring that an area in which the service is provided is the correct area. One of ordinary skill in the art would have looked to the concepts in any of these references when seeking to solve the problems purportedly solved by the Asserted Patents. In addition, one of ordinary skill in the art would have been motivated to combine these references by education, knowledge, and experience, by the state of the prior art as a whole, by the nature of the problem to be solved, and/or by common sense. Moreover, market and design forces would have motivated those of ordinary skill to combine various teachings within each reference. One of ordinary skill would have been motivated to apply known techniques with known benefits to a base system with predictable results. One of ordinary skill would have also found it obvious to use known alternatives as a matter of simple substitution to obtain the well-known benefits of the known alternatives. Defendant reserves the right to identify additional evidence of motivation to combine.

Based on Defendant's present understanding of the Asserted Claims and Plaintiff's apparent construction of the Asserted Claims in its Infringement Contentions, the Asserted Claims are obvious in light of each reference in Exhibits A-01 through F-05, either taken alone or in combination with one or more other references in Exhibits A-01 through F-05 or in view of the knowledge of one of ordinary skill in the art or in view of other references representative of the state of the art and the knowledge of a POSA or in view of references identified in Defendant's Subject Matter Eligibility Contentions. Each of these combinations yields predictable results.

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 modification. Accordingly, Defendant contends 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 companies in the same field, that the references are directed toward the same problem, the fact that the prior art is all in the same field, and one of ordinary skill in the art would be motivated to investigate the various existing 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 modification, ordinary skill, common sense, would have been obvious to try, or would have been otherwise predictable in the related and overlapping fields of managing the provision of location-based services to users, determining the locations of such users, and ensuring that such users are in fact in areas in which the services are to be provided. As set forth in the Exhibits F-01 through F-05, teachings from the prior art references in these overlapping fields complement one another and fit together like pieces in a puzzle.

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. Because there were a finite number of predictable solutions for determining the location of a mobile device with fixed radio transmission devices, with regard to any claimed feature, it would have been obvious to a person of ordinary skill in the art to pursue

the known options. A person skilled in the art would have been familiar with all the claimed elements that the patentee used to distinguish the prior art during prosecution. The identified prior art references merely use those familiar elements for their primary or well-known purposes and in a manner well within the ordinary level of skill in the art. Accordingly, common sense and the knowledge of one having the ordinary skill in the art would have rendered the asserted claims invalid at the time of the alleged invention. It would have also 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.

Much of the prior art identified above, including in the attached claim chart Exhibits, reflects common knowledge and the state of the art prior to the filing date of each of the Asserted Patents and/or at the time each alleged invention was purportedly made. In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. The inclusion of certain exemplary and illustrative combinations herein does not exclude other combinations based on the claim charts attached hereto and the disclosures and teachings of the prior art references, as there are many possible prior art combinations of the references listed herein, and it is not practical to identify and list all potentially relevant combinations – and Defendant reserves the right to do so as the cases and discovery progress.

VI. INVALIDITY DUE TO INDEFINITENESS OR LACK OF WRITTEN DESCRIPTION UNDER SECTION 112 (P.R. 3-3(d))

A. Indefiniteness under § 112

Defendant identifies below claim terms or phrases that Defendant contends render one or more Asserted Claims indefinite.

All Asserted Claims of the ’621, ’032, ’040, and ’030 Patents are indefinite for lack of reasonable certainty about the meaning and scope of “checking data.”

All Asserted Claims are indefinite for lack of reasonable certainty about the meaning and scope of “distinctive defining signal.”

All Asserted Claims are indefinite for lack of reasonable certainty about the meaning and scope of a “distinctive defining signal” that “defines a special area by its coverage” and a “distinctive defining signal” that “defines a special area.”

All Asserted Claims of the ’621, ’040, and ’030 Patents and claim 2 of the ’720 Patent are indefinite for lack of reasonable certainty about the meaning and scope of an “updating signal uncorrelated to any mobile station phone call establishment.”

All Asserted Claims of the ’032 and ’621 Patents are indefinite for lack of reasonable certainty about the meaning and scope of “the provider of presence related services being different than the mobile telephone network.”

Claim 1 of the ’720 Patent and each claim that depends therefrom are indefinite for lack of reasonable certainty about the meaning and scope of “information indicating whether or not the radio communication defining device is in a predetermined environment” and “information indicative of whether or not the radio communication defining device is located in the predetermined environment.”

Claim 7 of the ’720 Patent and each claim that depends therefrom are indefinite for lack of reasonable certainty about the meaning and scope of “wherein the distinctive defining signal includes second information indicating whether or not the radio communication defining device is located in a predetermined environment and the second information allowing the mobile station to

generate an updating signal that enables presence related services for the mobile station to be adjusted based on one or more of tariffs and service flags generated based on the updating signal."

B. Lack of Written Description under § 112

Defendant identifies below claim terms or phrases that Defendant contends renders one or more Asserted Claims invalid because the specification fails to describe such claims in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention at the time of filing.

All Asserted Claims of the '621, '040, and '030 Patents and claim 2 of the '720 Patent are invalid because they lack an adequate written description of an "updating signal uncorrelated to any mobile station phone call establishment."

All Asserted Claims of the '032 and '621 Patents are indefinite for lack of reasonable certainty about the meaning and scope of "the provider of presence related services being different than the mobile telephone network."

VII. SUBJECT MATTER INELIGIBILITY

As set forth in the Court's Standing Order Regarding Subject Matter Eligibility Contentions, attached as G-01 through H-03 are charts identifying for the Asserted Claims of the Asserted Patents:

- each exception to eligibility (*e.g.*, abstract idea) to which each Asserted Claim is directed and the factual and legal basis therefor;
- whether one or more of the Asserted Claims are representative of any other Asserted Claims;

- a description of the industry, at the relevant time, in which the Asserted Claims are alleged to be well understood, routine, and conventional, and the factual and legal basis therefor;
- a description of how each element of each Asserted Claim, both individually and in combination with the other elements of that claim, was well understood, routine, and conventional, in the relevant industry at the relevant time, and the legal and factual basis therefor; and
- other factual and/or legal bases for how the Asserted Claims are otherwise ineligible for patent protection.

VIII. INCORPORATION BY REFERENCE

ecobee incorporates by references as if repeated herein in full any arguments regarding the invalidity or subject matter ineligibility of the Asserted Patents disclosed by Apple, Inc. in *Avant Location Techs., LLC v. Apple Inc.*, No. 2:24-cv-00757 (E.D. Tex.), by Defendants in *Avant Location Techs., LLC v. Fibar Grp. SA*, No. 2:24-cv-00165 (E.D. Tex.), or by any other entity that has alleged that the Asserted Patents are invalid under 35 U.S.C. § 101 *et seq.*

IX. DOCUMENT PRODUCTION (P.R. 3-4(b))

Defendant has produced or is producing herewith each item identified above that does not appear in the file history of the Asserted Patents.

Dated: March 14, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on March 14, 2025, all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via email.

/s/ Jeremy Miller
Jeremy Miller