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

SPEIR TECHNOLOGIES LTD.,	)	
Plaintiff,	)	C.A. No. 6:22-cv-00077-ADA
v.	)	**JURY TRIAL DEMANDED**
APPLE INC.,	)	
Defendant.	)	

DEFENDANT'S AMENDED PRELIMINARY INVALIDITY CONTENTIONS

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I. INTRODUCTION

Pursuant to the Court's Standing Order Governing Proceedings – Patent Cases (D.I. 25, "OGP") and Scheduling Order (D.I. 33), Defendant Apple Inc. ("Defendant") hereby discloses its Amended Preliminary Invalidity Contentions. Defendant contends that each of the claims asserted by Plaintiff Speir Technologies Ltd. ("Plaintiff" or "Speir") is invalid under 35 U.S.C. §§ 101, 102, 103, and/or 112, for at least the reasons set forth herein. Based on its investigation after service of Defendant's June 14, 2022 Preliminary Invalidity Contentions, Defendant has identified additional prior art, and hereby produces the additional prior art references, on which these Amended Preliminary Invalidity Contentions are based.

In Speir's Preliminary Infringement Contentions, Speir asserts that Defendant infringes the following claims ("Asserted Claims") of United States Patent Nos. 8,345,780 ("the '360 Patent"), 7,321,777 (the "'249 Patent"), 7,110,779 (the "'706 Patent"), and 7,765,399 (the "'399 Patent"), (collectively, the "Patents-in-Suit" or the "Asserted Patents"):

Patent Number	Claims
8,345,780	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, and 14
7,321,777	1, 2, 3, 6, 12, 13, 14, 16, 20, and 21
7,110,779	18, 19, 20, 21, and 23
7,765,399	1, 2, 3, 4, 5, 6, 7, and 9

With respect to each of the Asserted Claims and based on its investigation to date, Defendant hereby provides (1) charts setting forth where in the prior art references each element of the asserted claim(s) are found, (2) an identification of any limitations that are indefinite or lack written description under 35 U.S.C. § 112, and (3) an identification of any claims that are

directed to ineligible subject matter under 35 U.S.C. § 101. These contentions are subject to the Defendant's reservation of rights as set forth below.

Defendant's invalidity contentions address only the claims asserted in Speir's Preliminary Infringement Contentions. To the extent that Speir asserts additional claims against Defendant, Defendant reserves the right to disclose new or supplemental invalidity contentions regarding such claims.

II. RESERVATION OF RIGHTS AND OBJECTIONS

Consistent with the OGP, Defendant amends its Preliminary Invalidity Contentions, and reserves the right to further amend these Amended Preliminary Invalidity Contentions.

Discovery in this case is ongoing and Defendant's investigations are continuing. While Defendant has made diligent efforts, Defendant has not yet completed its search for, and analysis of, relevant prior art and other information, some of which may be in the possession of third parties, and some of which was unavailable to, or not yet known by, Defendant. Defendant bases these Amended Preliminary Invalidity Contentions on its current knowledge and understanding of Plaintiff's Infringement Contentions, the prior art, and other facts and information available as of the date of these contentions. Defendant further reserves the right to revise, amend, or supplement the information provided herein, including by identifying, charting, and relying on additional information, references, systems, and devices, should Defendant's further search and analysis yield such additional information, references, systems, or devices, consistent with the OGP the Federal Rules of Civil Procedure. The OGP contemplates that these Amended Preliminary Invalidity Contentions would be prepared and served in response to Plaintiff's Preliminary Infringement Contentions. However, Plaintiff's Preliminary Infringement Contentions are inadequate and fail to provide proper and complete disclosure of Plaintiff's infringement theories, and Plaintiff's inadequate disclosure has prejudiced Defendant's ability to

prepare these Amended Preliminary Invalidity Contentions. Due to Plaintiff's failure to provide proper and complete disclosure of its Preliminary Infringement Contentions, Defendant reserves the right to further amend these Amend Preliminary Invalidity Contentions should Plaintiff amend or supplement its Preliminary Infringement Contentions and/or its apparent claim constructions. Defendant also reserves the right to further amend these Amended Preliminary Invalidity Contentions in light of positions that Plaintiff and/or its expert witnesses may assert concerning claim construction, infringement, invalidity, and/or subject matter eligibility. In addition, Defendant reserves the right to supplement, amend, or alter the positions taken and information disclosed in these Amended Preliminary Invalidity Contentions, including without limitation, the prior art and grounds of invalidity set forth herein under 35 U.S.C. §§ 101, 102, 103 or 112, to take into account information or defenses that may come to light as a result of Defendant's discovery efforts; additional information obtained as to the priority date(s) of the asserted claim; testimony or documents produced by a party or non-party; and positions that Speir may take concerning infringement or invalidity issues. For example, Defendant has already sought and may seek further discovery from third parties believed to have knowledge, documentation, or corroborating evidence concerning items of prior art, including prior art listed in the Exhibits hereto. Such third parties may include, without limitation, the authors, inventors, assignees, owners, or developers of the references and technologies listed in these disclosures. Defendant further reserves the right to further amend these Amend Preliminary Invalidity Contentions to incorporate information in Speir's possession that Speir has not yet disclosed, including any claim charts, prior art references, invalidity theories, or other information related to invalidity received from any third parties in response to allegations of infringement of the Patents-in-Suit or related patents. Defendant may also rely upon corroborating documents,

products, testimony, and other evidence, including materials obtained through further investigation and third-party discovery of the prior art identified herein, that describe the invalidating features identified in these Amended Preliminary Invalidity Contentions; evidence of the state of the art in the relevant time period (regardless of whether such references themselves qualify as prior art to the Asserted Patent), including prior art listed on the face of the Patents-in-Suit and/or disclosed in the specifications or prosecution histories ("Admitted Prior Art"); and/or expert testimony to provide context to or aid in understanding the cited portions of the identified prior art. Further, Defendant reserves the right to assert invalidity under 35 U.S.C § 102(c), (d), (f), or (g) to the extent that discovery or further investigation yields information forming the basis for such grounds for invalidity. Defendant reserves the right to supplement these contentions based on such discovery and to introduce and use such materials at trial.

The prior art cited in the claim charts is illustrative and not exhaustive. Further, the citations presented in the claim charts for a claim limitation are for exemplary purposes only and should not be deemed exhaustive. Other portions of the identified prior art may additionally, implicitly, expressly, or inherently, disclose one or more limitations of the Asserted Claims or render one or more limitations of the Asserted Claims obvious. Defendant thus reserves the right to rely on such uncited portions of the identified prior art to establish the invalidity of the Asserted Claims, and on other publications and expert testimony shedding light on cited portions of the identified prior art references, including as aids in understanding the cited portions and as providing context thereto and as additional evidence that the prior art discloses a claim limitation. Similarly, where Defendant cites to a patent figure in the charts, it incorporates the accompanying specification text describing that figure and vice-versa. Moreover, Defendant reserves the right to rely on uncited portions of the identified prior art, other prior art, or expert

testimony to provide context to or to aid in understanding the identified prior art. Where Defendant cites to a patent in its Amended Preliminary Invalidity Contentions and Exhibits, it incorporates any related patent publications and vice versa. Where Defendant cites to a U.S. Patent or Patent Publication, it incorporates any related foreign patents or patent publications and vice versa. In the claim charts, claim elements have been numbered to be consistent with the infringement contentions only for convenience, and the numbering should not be understood to be an admission that an element is or is not limiting or part of the preamble of a claim.

Defendant also reserves the right to modify, amend, or further supplement its Amended Preliminary Invalidity Contentions to show the invalidity of any additional claims that the Court may allow Plaintiff to later assert.

To the extent that these Amended Preliminary Invalidity Contentions reflect or otherwise embody particular constructions of terms or phrases in the Asserted Claims, Defendant is not proposing any such constructions as proper constructions of those terms or phrases. Various positions set forth in these Amended Preliminary Invalidity Contentions are predicated on Plaintiff's incorrect and overbroad interpretation of its claims as evidenced by its Preliminary Infringement Contentions provided to Defendant. These Amended Preliminary Invalidity Contentions are not intended to, and do not necessarily, reflect Defendant's interpretation of the true and proper scope of the Asserted Claims. Defendant reserves the right to adopt claim construction positions that differ from or even conflict with positions put forth in these Amended Preliminary Invalidity Contentions. Also, Defendant objects to any attempt to infer any claim constructions from any identification of potential prior art. Further, in instances where Defendant asserts that the Asserted Claims are invalid under 35 U.S.C. § 112 (e.g., no written description, not enabled, and/or indefinite), Defendant has applied the prior art in accordance

with its assumption that Plaintiff contends such Asserted Claims (1) are definite, (2) have written description support, and (3) are enabled, as evidenced by Plaintiff's Preliminary Infringement Contentions. As such, Defendant's Amended Preliminary Invalidity Contentions do not represent its agreement or view as to the meaning, definiteness, written description support for, or enablement of any Asserted Claim. These Amended Preliminary Invalidity Contentions and accompanying documents are not intended to reflect Defendant's claim construction contentions or positions taken by Defendant in claim construction proceedings.

Claim construction proceedings for this action have not yet completed. Accordingly, Defendant reserves the right to modify, amend, or supplement its Amended Preliminary Invalidity Contentions following claim construction rulings from this Court. Defendant also reserves the right to modify, amend, or supplement its Amended Preliminary Invalidity Contentions upon Speir's modification of its asserted claim constructions, including as adopted by Speir in its Infringement Contentions. Unless otherwise stated herein, Defendant takes no position on any matter of claim construction in these Amended Preliminary Invalidity Contentions. Defendant reserves the right to propose any claim construction it considers appropriate and to contest any claim construction it considers inappropriate.

In its Preliminary Infringement Contentions, Plaintiff alleges that each asserted claim of the '780 Patent is entitled to "at least" a priority date of June 4, 2008, that each asserted claim of the '777 Patent is entitled to "at least" a priority date of January 29, 2004, that each asserted claim of the '779 Patent is entitled to "at least" a priority date of January 29, 2004, and that each asserted claim of the '399 Patent is entitled to "at least" a priority date of February 22, 2006. Specifying the alleged priority dates using the "at least" qualifier fails to comply with the OGP, which requires that Plaintiff "identify the priority date (i.e., the earliest date of invention) for

each asserted claim." Accordingly, Plaintiff can assert–and is understood to have asserted–a priority date of only June 4, 2008, for the asserted claims of the '780 Patent, a priority date of only January 29, 2004, for the asserted claims of the '777 Patent, a priority date of only January 29, 2004, for the asserted claims of the '779 Patent, and a priority date of only February 22, 2006, for the asserted claims of the '380 Patent. To the extent that Plaintiff is later permitted to identify a different alleged priority date, and in fact identifies in any manner, a different alleged priority date for any of the Asserted Claims, Defendant reserves the right to respond to and challenge any such date(s). Defendant further reserves the right to amend and/or supplement these Amended Preliminary Invalidity Contentions in response to any identification of a different alleged priority date for any of the Asserted Claims.

Defendant's contentions may change depending on the Court's construction of the Asserted Claims, any findings as to the priority dates of the Asserted Claims, and/or positions that Plaintiff or its experts may take concerning claim construction, infringement, and/or invalidity issues. Prior art not included in these Amended Preliminary Invalidity Contentions, whether known or unknown to Defendant, may become relevant. In particular, Defendant is currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Defendant, or will contend that any of the identified references do not qualify as prior art. To the extent that such an issue arises, Defendant reserves the right to identify other references that, inter alia, would have made the addition of any allegedly missing limitation(s) to the disclosed device or method obvious.

Because of the uncertainty of claim construction, Defendant reserves the right to further supplement or modify the positions and information in these Amended Preliminary Invalidity

Contentions, including without limitation, the prior art and grounds of invalidity set forth herein, after the Asserted Claims have been construed.

Defendant also reserves the right to challenge the patentability of the Asserted Claims under 35 U.S.C. § 102(f) in the event Defendant obtains evidence that the named inventors of the Patents-in-Suit did not invent the subject matter claimed therein. Should Defendant obtain such evidence, it will provide the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived. Defendant further reserves the right to assert that the Patents-in-Suit are unenforceable due to inequitable conduct.

III. PRIOR ART

A. Identification of Prior Art References

Each of the Asserted Claims is anticipated and/or rendered obvious by prior art. Pursuant to the Court's Scheduling Order, Defendant identifies the prior art references that anticipate and/or render obvious each of the Asserted Claims below and in Exhibits A-01 to A-O, B-01 to B-O, and C-01 to C-O, and D-01 to D-O, which are hereby incorporated by reference as if set forth fully herein.

B. Applicant Admitted Prior Art and Knowledge of a POSITA

Each of the references identified in Section IV below may be used in combination with admissions in the specification regarding the prior art to render obvious the Asserted Claims. More particularly, public admissions by Speir and/or the named inventors, as well as admissions about the prior art in the specifications of the Asserted Patents and the corresponding prosecution histories, are binding, and can be used when determining whether a claim is obvious. *See Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1362 (Fed. Cir. 2007) ("Admissions in the specification regarding the prior art are binding on the patentee for purposes of a later inquiry into obviousness."); *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560,

1570 (Fed.Cir.1988) ("A statement in the patent that something is in the prior art is binding on the applicant and patentee for determinations of anticipation and obviousness."). For example, the specifications identify numerous features of the claims that were known and in-use prior to the alleged invention of the Asserted Patents, non-limiting examples of which are identified below. Collectively, these admissions are referred herein, and in the supporting exhibits, as "Admitted Prior Art" or "APA."

1. '780 Patent's Admitted Prior Art

a) *an orthogonal frequency-division multiplexing (OFDM) wireless transceiver*

An orthogonal frequency-division multiplexing (OFDM) wireless transceiver was known and considered prior art to the '780 Patent. *See, e.g.*:

- '780 Patent, 1:61-67 ("Regardless of the source, there is a desire to reduce the effect of interference in communications. For example, high spectral efficiency wireless communications devices, for example, an RF-7800W-OU440[1], as available from the Harris Corporation of Melbourne, Fla., the assignee of the present application, use high signal-to-noise ratio transmissions and may be susceptible to interference.");

b) *a controller coupled to said wireless transceiver and configured to store short term and long term historical characteristics of interference;*

- '780 Patent, 2:17-28 ("Another approach to interference compensation is disclosed in U.S. Pat. No. 7,039,417 to Lyle et al. The system of Lyle et al. cycles through available channels and evaluates the presence of interference on each channel. The system may also determine the type of electronic device causing the interference, i.e. a cell phone or a microwave. The system assigns a quality-of-service parameter for the channel and moves on to the next channel. Using the table of service parameters for each available channel, the system may select a channel that is interference free or subject to low levels of interference. In other words, this system uses frequency diversity to compensate for interference.").

c) *controller configured to … detect interference;*

[1] The Harris RF-7800W-OU440 is an OFDM device. *See* https://pdf1.alldatasheet.com/datasheet-pdf/view/312571/HARRIS/RF-7800W-OU440.html

- ‘780 Patent, 1:61-67 (“Regardless of the source, there is a desire to reduce the effect of interference in communications. For example, high spectral efficiency wireless communications devices, for example, an RF-7800W-OU440, as available from the Harris Corporation of Melbourne, Fla., the assignee of the present application, use high signal-to-noise ratio transmissions and may be susceptible to interference.”);

> d) *controller configured to … determine a type of the received interference from among a plurality of interference types comprising wideband interference, self interference, and narrowband interference based upon comparing at least one characteristic of a current received signal with the short term and long term historical characteristics of interference,*

- ‘780 Patent, 1:26-33 (“Narrowband interference includes forms of interference that a concentrated around a relatively small frequency bandwidth. Several common approaches to compensating for narrow-band interference may include, for example, forward error correction (FEC), baseband coding (FHS/DSSS spread spectrum), diversity in frequency and/or time, and signal cancellation.”);
- ‘780 Patent, 1:34-40 (“Differently, wideband interference includes forms of interference that are spread out across a relatively large frequency bandwidth. Several common approaches to compensating for wideband interference may include, for example, FEC, adaptive data rate (modulation and channel bandwidth), adaptive power control, diversity in frequency and/or timer and signal cancellation.”);
- ‘780 Patent, 1:47-53 (“Several approaches to compensating for self interference, which are available during planning and development stages of wireless communication systems, include, for example, installation (isolation between antennas), frequency planning, antenna pattern manipulation, synchronization of transmitters, and filtering (duplexing).”);
- ‘780 Patent, 1:61-67 (“Regardless of the source, there is a desire to reduce the effect of interference in communications. For example, high spectral efficiency wireless communications devices, for example, an RF-7800W-OU440, as available from the Harris Corporation of Melbourne, Fla., the assignee of the present application, use high signal-to-noise ratio transmissions and may be susceptible to interference.”);
- ‘780 Patent, 2:1-9 (“An approach to interference in wireless communication systems may be interference compensation. For example, frequency diversity may used to compensate for the interference by adjusting the operating frequency of the wireless communications device to a frequency free of the interference. Another approach to interference compensation is spatial diversity using a plurality of antennas. In this approach, the undesired interference is canceled out using the time shifted variants received at each antenna.”);
- ‘780 Patent, 2:10-16 (“Another approach to interference compensation is disclosed in U.S. Pat. No. 6,115,409 to Upadhyay et al. This system includes an array of antennas for spatial diversity. The system uses the spatial diversity to cancel out the interference. Moreover, the system uses spatial and temporal filters to cancel out wideband and narrowband interference in the antenna array.”);
- ‘780 Patent, 2:17-28 (“Another approach to interference compensation is disclosed in U.S. Pat. No. 7,039,417 to Lyle et al. The system of Lyle et al. cycles through available channels

and evaluates the presence of interference on each channel. The system may also determine the type of electronic device causing the interference, i.e. a cell phone or a microwave. The system assigns a quality-of-service parameter for the channel and moves on to the next channel. Using the table of service parameters for each available channel, the system may select a channel that is interference free or subject to low levels of interference. In other words, this system uses frequency diversity to compensate for interference.”).

e) *controller configured to … set the at least one settable link characteristic to compensate for the received interference based upon the interference type*

- ‘780 Patent, 2:1-9 (“An approach to interference in wireless communication systems may be interference compensation. For example, frequency diversity may used to compensate for the interference by adjusting the operating frequency of the wireless communications device to a frequency free of the interference. Another approach to interference compensation is spatial diversity using a plurality of antennas. In this approach, the undesired interference is canceled out using the time shifted variants received at each antenna.”);
- ‘780 Patent, 2:10-16 (“Another approach to interference compensation is disclosed in U.S. Pat. No. 6,115,409 to Upadhyay et al. This system includes an array of antennas for spatial diversity. The system uses the spatial diversity to cancel out the interference. Moreover, the system uses spatial and temporal filters to cancel out wideband and narrowband interference in the antenna array.”);

2. ‘777 Patent’s and ‘779 Patent’s Admitted Prior Art

a) *wireless device locator*

Wireless device locators, were known and considered prior art to the ‘777 and ‘779 Patents. E.g.:

- ‘777 Patent, 1:14-27 (‘779 Patent, 1:13-26) (“[W]ireless location techniques are used in numerous applications. Perhaps the most basic of these applications is for locating lost articles. By way of example, published U.S. patent application Ser. No. 2003/0034887 to Crabtree et al. discloses a portable article locator system for locating lost articles such as glasses, keys, pets, television remotes, etc. More particularly, a wireless transceiver is attached to a person, animal, or other object. A handheld locator transmits a locator signal to the wireless transceiver which includes a unique address code of the transceiver. If the received code matches that stored by the wireless transceiver, it sends a return signal back to the locator device. The locator device uses the return signal to determine the distance and/or direction to the wireless transceiver from the user’s location.”);
- ‘777 Patent, 1:42-57 (‘779 Patent, 1:41-56) (“In contrast, in some applications it is desirable to determine the location of an unknown signal transmitter. U.S. Pat. No. 5,706,010 to Franke discloses such a system in which a transmitter locator receives a signal from the unknown signal transmitter and processes the signal to determine a bearing to the unknown

signal transmitter. … A range to the unknown signal transmitter is then calculated based upon the round-trip transit time.”);

- ‘777 Patent, 1:58-2:8 (‘779 Patent, 1:57-2:7) (“Still another application in which locating a wireless communications device is often necessary is in cellular telephone networks. That is, it may be necessary to locate particular cellular telephone users for law enforcement or emergency purposes, for example. U.S. Pat. No. 6,292,665 to Hildebrand et al., which is assigned to the present assignee, discloses a method for geolocating a cellular phone initiating a 911 call. A base station transceiver transmits a supervisory audio tone (SAT), which is automatically looped back by the calling cellular phone. … The cellular phone is geolocated based upon the angle of arrival and the range information.”);
- ‘777 Patent, 2:20-29 (‘779 Patent, 2:19-28) (“Another prior art approach for wireless terminal location is to use a direction finding (DF) device which includes a directional antenna for receiving signals when pointed in the direction of a transmitting node. An example of a portable DF device for WLANs is the Yellowjacket 802.11a wi-fi analysis system from Berkeley Varitronics.”).

b) *Estimating a range to said target wireless communications device based upon propagation delays*

Estimating a range to said target wireless communications device based upon determined propagation delays, was known and considered prior art to the ‘777 and ‘779 Patents. E.g.:

- ‘777 Patent, 1:14-27 (‘779 Patent, 1:13-26) (“Wireless location techniques are used in numerous applications. Perhaps the most basic of these applications is for locating lost articles. By way of example, published U.S. patent application Ser. No. 2003/0034887 to Crabtree et al. discloses a portable article locator system for locating lost articles such as glasses, keys, pets, television remotes, etc. More particularly, a wireless transceiver is attached to a person, animal, or other object. A handheld locator transmits a locator signal to the wireless transceiver which includes a unique address code of the transceiver. If the received code matches that stored by the wireless transceiver, it sends a return signal back to the locator device. The locator device uses the return signal to determine the distance and/or direction to the wireless transceiver from the user’s location.”);
- ‘777 Patent, 1:42-57 (‘779 Patent, 1:41-56) (“In contrast, in some applications it is desirable to determine the location of an unknown signal transmitter. U.S. Pat. No. 5,706,010 to Franke discloses such a system in which a transmitter locator receives a signal from the unknown signal transmitter and processes the signal to determine a bearing to the unknown signal transmitter. … A range to the unknown signal transmitter is then calculated based upon the round-trip transit time.”);
- ‘777 Patent, 1:62-2:2 (‘779 Patent, 1:61-2:1) (“U.S. Pat. No. 6,292,665 to Hildebrand et al., which is assigned to the present assignee, discloses a method for geolocating a cellular phone initiating a 911 call. A base station transceiver transmits a supervisory audio tone (SAT), which is automatically looped back by the calling cellular phone. Returned SAT signals are correlated with those transmitted to determine the range of the cellular phone.”).

c) *Determining a bearing to a target wireless communications device*

Determining a bearing to a target wireless communications device, was known and considered prior art to the '777 and '779 Patents. E.g.:

- '777 Patent, 1:14-27 ('779 Patent, 1:13-26) ("Wireless location techniques are used in numerous applications. Perhaps the most basic of these applications is for locating lost articles. By way of example, published U.S. patent application Ser. No. 2003/0034887 to Crabtree et al. discloses a portable article locator system for locating lost articles such as glasses, keys, pets, television remotes, etc. More particularly, a wireless transceiver is attached to a person, animal, or other object. A handheld locator transmits a locator signal to the wireless transceiver which includes a unique address code of the transceiver. If the received code matches that stored by the wireless transceiver, it sends a return signal back to the locator device. The locator device uses the return signal to determine the distance and/or direction to the wireless transceiver from the user's location. [¶] The locator device includes an antenna array which includes a plurality of omni-directional antennas. The locator unit determines the bearing to the wireless transceiver by switching between antennas in the antenna array and using Doppler processing to determine a direction of a wireless signal received from the transceiver.");
- '777 Patent, 1:42-46 ('779 Patent, 1:41-45) ("In contrast, in some applications it is desirable to determine the location of an unknown signal transmitter. U.S. Pat. No. 5,706,010 to Franke discloses such a system in which a transmitter locator receives a signal from the unknown signal transmitter and processes the signal to determine a bearing to the unknown signal transmitter.");
- '777 Patent, 1:62-2:8 ('779 Patent, 1:61-2:7) ("U.S. Pat. No. 6,292,665 to Hildebrand et al., which is assigned to the present assignee, discloses a method for geolocating a cellular phone initiating a 911 call. A base station transceiver transmits a supervisory audio tone (SAT), which is automatically looped back by the calling cellular phone. … The cellular phone is geolocated based upon the angle of arrival and the range information.");
- '777 Patent, 2:20-25 ('779 Patent, 2:19-24) ("Another prior art approach for wireless terminal location is to use a direction finding (DF) device which includes a directional antenna for receiving signals when pointed in the direction of a transmitting node. An example of a portable DF device for WLANs is the Yellowjacket 802.11a wi-fi analysis system from Berkeley Varitronics.").

d) *a plurality of antenna to determine a bearing to a target wireless communications device*

A plurality of antenna to determine a bearing to a target wireless communications device, was known and considered prior art to the '777 and '779 Patents. E.g.:

- '777 Patent, 1:16-1:33 ('779 Patent, 1:15-1:32) ("By way of example, published U.S. patent application Ser. No. 2003/0034887 to Crabtree et al. discloses a portable article locator system for locating lost articles such as glasses, keys, pets, television remotes, etc. … [¶] The

locator device includes an antenna array which includes a plurality of omni-directional antennas. The locator unit determines the bearing to the wireless transceiver by switching between antennas in the antenna array and using Doppler processing to determine a direction of a wireless signal received from the transceiver.”);

- ‘777 Patent, 1:62-2:8 (‘779 Patent, 1:61-2:7) (“U.S. Pat. No. 6,292,665 to Hildebrand et al., which is assigned to the present assignee, discloses a method for geolocating a cellular phone initiating a 911 call. … [I]ncoming signals from the cellular phone, such as the returned SAT signals, are received by a phased array antenna and subjected to angle of arrival processing to determine the direction of the cellular phone relative to the base station. The cellular phone is geolocated based upon the angle of arrival and the range information.”);

e) *inserting a UID for the target wireless communications device in a location finding signals*

e) inserting a UID for the target wireless communications device in a location finding signals, was known and considered prior art to the ‘777 and ‘779 Patents. E.g.:

- ‘779 Patent, 1:15-22 (“By way of example, published U.S. patent application No. 2003/0034887 to Crabtree et al. discloses a portable article locator system for locating lost articles such as glasses, keys, pets, television remotes, etc. More particularly, a wireless transceiver is attached to a person, animal, or other object. A handheld locator transmits a locator signal to the wireless transceiver which includes a unique address code of the transceiver.”);

f) *a respective reply signal generated by a target wireless communications device based upon the UID in the location finding signals*

e) A respective reply signal generated by a target wireless communications device based upon the UID in the location finding signals, was known and considered prior art to the ‘777 and ‘779 Patents. E.g.:

- ‘779 Patent, 1:15-24 (“By way of example, published U.S. patent application No. 2003/0034887 to Crabtree et al. discloses a portable article locator system for locating lost articles such as glasses, keys, pets, television remotes, etc. More particularly, a wireless transceiver is attached to a person, animal, or other object. A handheld locator transmits a locator signal to the wireless transceiver which includes a unique address code of the transceiver. If the received code matches that stored by the wireless transceiver, it sends a return signal back to the locator device.”);

3. '399 Patent's Admitted Prior Art

a) *a portable mobile computing device including a secure user processor, a non-secure user processor, a communications transceiver, and a cryptographic engine*

A portable computing devices having secure and non-secure processor(s), communication transceiver(s), and cryptographic engines and functions was known and considered prior art to the '399 Patent, *e.g.*,:

- '399 Patent, 1:12-27 ("Mobile computers, which are sometimes called personal digital assistants or PDAs, have the ability to store, process and communicate data. PDAs generally fall into one of several categories which can include handheld PCs, palm size PCs, smart phones, and handheld instruments. PDAs typically include some kind of microprocessor with a commercially available operating system such as Linux, Palm OS, or Widows CE (Pocket PC). Many PDAs also have built in LCD displays, touch sensitive screens, and keypads for the human/machine interface. Some PDAs also include wireless networking capabilities. For example, many such devices can communicate with other devices using well known wireless networking standards such as the IEEE 802.11 family of standards. The foregoing capabilities make these compact devices highly useful for a various business and personal applications.");
- '399 Patent, 1:28-41 ("Currently, there exist a wide variety of PDA devices with conventional operating systems and architectures. These commercially available PDAs with commercial-off-the-shelf (COTS) operating systems and COTS application programs generally satisfy the processing and communications requirements of most users. For example, they include applications for word processing, data storage, spreadsheets, email, internet browsing, time management, contact management, network communications, and voice communications. These applications generally function quite well and have interfaces that are familiar to many users. The familiarity of these applications to users, and the relatively low cost of COTS software are considered advantageous for a variety of reasons.")
- '399 Patent, 1:42-46 ("Some commercially available PDA devices and/or software applications incorporate various security measures in an effort to protect data which is stored, processed or communicated using the device. For example, encryption technology and password protection features are known in the art.")

b) *secure user processor comprising a trusted microprocessor, a trusted operating system executing on said trusted microprocessor, and a trusted application software executing on said trusted microprocessor;*

A secure user processor having a trusted microprocessor, operating system and application software was known and considered prior art to the '399 Patent, *e.g.*,:

- ‘399 Patent, 2:1-4 (“In order to address some of the foregoing problems, personal electronic devices have been developed that are specifically designed to allow for transport of classified data, for example encryption keys.”)
- ‘399 Patent, 2:6-9 (“Secure PDA devices are also known in the art. These devices utilize a trusted operating system, trusted microprocessors, and a trusted human/machine interface. However, they generally do not include wireless communications capabilities.”)
- ‘399 Patent, 3:50-53 (“FIG. 1 shows a simplified block diagram of a secure PDA of the prior art that includes trusted hardware and trusted software (operating system and application software).”); *see also* Fig. 1
- ‘399 Patent, 3:66-4:15 (“Secure PDA **100** utilizes secure user processor **102** comprised of trusted hardware (HW) and trusted software (SW) for securing data that is stored on the device. A user secure file system **103** is provided for storing classified data. A cryptographic engine **104** is provided with trusted hardware and trusted software for providing encryption and decryption services. A crypto secure file system **105** is used to store classified data and files used by the cryptographic engine **104**. A secure human/machine interface (HMI) **106** is also provided. However, for security reasons, PDA devices of this type generally do not include machine input/output (I/O) facilities. Thus PDA **100** does not have a USB port, wireless networking, or cellular telephone communications capabilities. PDA **100** can generally satisfy the requirements for accessing secure file systems. However, the operating system and applications can be expensive and unfamiliar to many users who more often utilize commercial-off-the-shelf (COTS) systems.”)
- ‘399 Patent, 6:53-57 (“Referring now to FIG. 5, there is shown a more detailed block diagram of the portion of PDA **300** including secure processor **302**. Secure processor **302** can be custom-designed processor or can also be one of a variety of well known COTS processors that are widely available.”)
- ‘399 Patent, 7:48-61 (“According to one embodiment of the invention, the secure HMI **308** can be at least partially contained within a shielded enclosure. Moreover, the power supply lines for the secure HMI **308** can be filtered to ensure that signals associated with secure processor **302** are not communicated along the power supply lines back to the non-secure processor **306**. The secure HMI **308** can also be designed to prevent a user from being misled about which application is actually in use. For example, this can be accomplished by means of highly distinctive and easily recognized visual display indications that cannot be obstructed. Such indicators can assure the user regarding the identity of the application with which the user is working. Secure HMI features of this type are implemented in a variety of ways that are known to those skilled in the art.”).

c) *non-secure user processor comprising an untrusted microprocessor, an untrusted operating system executing on said untrusted microprocessor, and an untrusted application software executing on said untrusted microprocessor*

A non-secure user processor having an un-trusted microprocessor, operating system and application software was known and considered prior art to the ‘399 Patent, *e.g.*,:

- ‘399 Patent, 1:28-41 (“Currently, there exist a wide variety of PDA devices with conventional operating systems and architectures. These commercially available PDAs with

commercial-off-the-shelf (COTS) operating systems and COTS application programs generally satisfy the processing and communications requirements of most users. For example, they include applications for word processing, data storage, spreadsheets, email, internet browsing, time management, contact management, network communications, and voice communications. These applications generally function quite well and have interfaces that are familiar to many users. The familiarity of these applications to users, and the relatively low cost of COTS software are considered advantageous for a variety of reasons.")

- '399 Patent, 4:16-36 ("In contrast to the secure PDA in FIG. 1, a commercial PDA/phone architecture is shown in FIG. 2. The commercial PDA/phone **200** can include a non-secure processor **202** comprised of untrusted COTS microprocessor hardware and untrusted COTS software. A user non-secure file system **203** can be used for storing unclassified user files and data. The commercial PDA/phone will make use of COTS hardware and software to satisfy the processing and communications requirements of users. The commercial PDA/phone will make use of a conventional non-secure HMI **206**, and can include non-secure I/O circuitry **204**. The I/O circuitry **204** can include wired and/or wireless LAN transceivers, and cellular telephone transceiver circuitry. A suitable antenna or antennas **210** can be provided for any wireless applications. Audio interface circuitry can also be provided for headset **208**. Significantly, PDA **200** will not generally satisfy the requirements for accessing secure file systems. However, commercial PDA **200** benefits from the economy associated with use of COTS applications and a COTS operating system. Another advantage is that users tend to be well familiar with such operating systems and applications."); *see also* Fig. 2
- '399 Patent, 5:25-35 ("A PDA computer architecture as show in FIG. 3 … can still offer all of the benefits of conventional commercial PDA devices. Such features can include familiar and inexpensive COTS operating systems and applications. Such COTS operating systems and applications can be used with the non-secure processor **306**. The PDA **300** also offers the benefit of wired and wireless LAN communication services, cellular telephone services and so on.")
- '399 Patent, 5:39-52 ("Referring now to FIG. 4, there is shown a more detailed block diagram of a portion of the PDA **300** that includes non-secure processor **306**. As noted above, non-secure processor **306** can be comprised of untrusted processor hardware. For example, the untrusted processor hardware can be any one of a variety of well known COTS processors that are widely available. For example, the un-trusted processor hardware can be selected from the StrongARM or XScale processors (e.g., SA-110 or PXA270) available from Intel Corp. of Santa Clara, Calif., the i.MX or Dragonball family of processors available from Freescale Semiconductor, Inc. of Austin, Tex., or the OMAP family of processors offered for sale by Texas Instruments of Dallas, Tex.")
- '399 Patent, 5:53-61 ("According to one embodiment, non-secure processor **306** can also be comprised of an untrusted COTS operating system. For example any of a variety of well known COTS operating systems suitable for use in a PDA can be used for this purpose. According to one embodiment, the non-secure processor **306** can utilize the Windows CE operating system that is made available by Microsoft Corporation of Redmond, Wash. However, the invention is not limited in this regard and other types of untrusted operating systems can also be used.").

d) *cryptographic engine configured for encrypting any data communicated from said secure user processor to said non-secure user processor, comprising a trusted cryptographic processor, and a trusted operating system executing on said trusted cryptographic processor;*

A cryptographic engine for encrypting data and having a trusted processor and operating systems was known and considered prior art to the '399 Patent, *e.g.*,:

- '399 Patent, 1:42-46 ("Some commercially available PDA devices and/or software applications incorporate various security measures in an effort to protect data which is stored, processed or communicated using the device. For example, encryption technology and password protection features are known in the art.")
- '399 Patent, 2:1-4 ("In order to address some of the foregoing problems, personal electronic devices have been developed that are specifically designed to allow for transport of classified data, for example encryption keys.")
- '399 Patent, 2:6-9 ("Secure PDA devices are also known in the art. These devices utilize a trusted operating system, trusted microprocessors, and a trusted human/machine interface. However, they generally do not include wireless communications capabilities.")
- '399 Patent, 8:14-24 ("Referring now to FIG. 6, there is shown a more detailed block diagram of cryptographic engine **304**. Cryptographic engine **304** can include a cryptographic processor **602** and a cryptographic file system **604** maintained in a data store. Cryptographic engine **304** can be one of several available cryptographic engines. According to one embodiment, the cryptographic engine can be a Sierra II Crypto processor which is available from Harris Corporation of Melbourne, Fla. The cryptographic engine can include configurable key lengths and can be programmed with one or more encryption algorithms.").

e) *a first data communication link communicating data between said secure processor and said cryptographic engine; / a second data communication link communicating data between said non-secure processor and said cryptographic engine;*

A data communication link for communicating data between processor(s), engine(s), and/or modules was known and considered prior art to the '399 Patent, *e.g.*,:

- '399 Patent, 5:17-24 ("The first and second data communication links can be any suitable type serial or parallel type data channels. For example, if the communication link is a parallel type data link then it can conform to any of a number of well known bus standards, including without limitation ISA, EISA, VESA, PCI, EMIF and so on. Alternatively, if a serial data channel is used, then it can be an 12C, SPI, Microwire, Maxim or other type serial data bus.").

f) *a secure human/machine interface configured for enabling bi-directional communication of classified information exclusively between a user and said secure user processor; and a non-secure human/machine interface distinct from said secure human/machine interface and configured for enabling bi-directional communication of unclassified information exclusively between said user and said non-secure user processor;*

Secure and non-secure human/machine interfaces for enabling communication between a user and a computer system/processor was known and considered prior art to the '399 Patent, *e.g.*,:

- '399 Patent, 3:66-4:15 ("Secure PDA **100** utilizes secure user processor **102** comprised of trusted hardware (HW) and trusted software (SW) for securing data that is stored on the device. A user secure file system **103** is provided for storing classified data. A cryptographic engine **104** is provided with trusted hardware and trusted software for providing encryption and decryption services. A crypto secure file system **105** is used to store classified data and files used by the cryptographic engine **104**. A secure human/machine interface (HMI) **106** is also provided. However, for security reasons, PDA devices of this type generally do not include machine input/output (I/O) facilities. Thus PDA **100** does not have a USB port, wireless networking, or cellular telephone communications capabilities. PDA **100** can generally satisfy the requirements for accessing secure file systems. However, the operating system and applications can be expensive and unfamiliar to many users who more often utilize commercial-off-the-shelf (COTS) systems.")
- '399 Patent, 4:16-36 ("In contrast to the secure PDA in FIG. 1, a commercial PDA/phone architecture is shown in FIG. 2. The commercial PDA/phone **200** can include a non-secure processor **202** comprised of untrusted COTS microprocessor hardware and untrusted COTS software. A user non-secure file system **203** can be used for storing unclassified user files and data. The commercial PDA/phone will make use of COTS hardware and software to satisfy the processing and communications requirements of users. The commercial PDA/phone will make use of a conventional non-secure HMI **206**, and can include non-secure I/O circuitry **204**. The I/O circuitry **204** can include wired and/or wireless LAN transceivers, and cellular telephone transceiver circuitry. A suitable antenna or antennas **210** can be provided for any wireless applications. Audio interface circuitry can also be provided for headset **208**. Significantly, PDA **200** will not generally satisfy the requirements for accessing secure file systems. However, commercial PDA **200** benefits from the economy associated with use of COTS applications and a COTS operating system. Another advantage is that users tend to be well familiar with such operating systems and applications.")
- '399 Patent 6:21-42 ("Additional sub-systems connected to non-secure processor **306** can include audio interface **410**. Audio interface **410** can include at least one suitable audio codec, analog to digital and digital to analog conversion circuitry, as well as any necessary audio amplifier circuitry (not shown). Audio interface **410** can also include any other circuitry necessary to allow PDA **300** to output MP3 audio associated with the non-secure

processor **306**. … Audio interfaces for cellular telephones and MP3 audio playback are well known in the art and all such arrangements are contemplated for audio interface **410** within the scope of the present invention.")

- '399 Patent, 6:43-52 ("Non-secure processor **306** can interface with a user through non-secure HMI **310**. Non-secure HMI **310** can include a conventional color display **416** and touch screen controller **414**. Non-secure HMI **206** can also include a keypad/pointing device **412**. HMI interfaces of the type described herein are well known in the art. In this regard it should be understood that the non-secure HMI interface is not limited to the specific embodiments shown. Instead, any other suitable non-secure HMI interface can be used for this purpose.")
- '399 Patent, 6:53-57 ("Referring now to FIG. 5, there is shown a more detailed block diagram of the portion of PDA **300** including secure processor **302**. Secure processor **302** can be custom-designed processor or can also be one of a variety of well known COTS processors that are widely available.")
- '399 Patent, 7:41-44 ("Secure HMI devices are known in the art and typically can include one or more features to ensure trusted communications between the user and the secure processor **302.**")
- '399 Patent, 7:48-61 ("According to one embodiment of the invention, the secure HMI **308** can be at least partially contained within a shielded enclosure. Moreover, the power supply lines for the secure HMI **308** can be filtered to ensure that signals associated with secure processor **302** are not communicated along the power supply lines back to the non-secure processor **306**. The secure HMI **308** can also be designed to prevent a user from being misled about which application is actually in use. For example, this can be accomplished by means of highly distinctive and easily recognized visual display indications that cannot be obstructed. Such indicators can assure the user regarding the identity of the application with which the user is working. Secure HMI features of this type are implemented in a variety of ways that are known to those skilled in the art.").

g) *communications transceiver is operatively coupled to said non-secure user processor and configured for communicating data external to said portable mobile computing device.*

A communications transceiver for communicating data to and from a mobile computing device was known and considered prior art to the '399 Patent, *e.g.*,:

- '399 Patent, 1:12-27 ("Mobile computers, which are sometimes called personal digital assistants or PDAs, have the ability to store, process and communicate data. PDAs generally fall into one of several categories which can include handheld PCs, palm size PCs, smart phones, and handheld instruments. PDAs typically include some kind of microprocessor with a commercially available operating system such as Linux, Palm OS, or Widows CE (Pocket PC). Many PDAs also have built in LCD displays, touch sensitive screens, and keypads for the human/machine interface. Some PDAs also include wireless networking capabilities. For example, many such devices can communicate with other devices using well known wireless networking standards such as the IEEE 802.11 family of standards. The foregoing

capabilities make these compact devices highly useful for a various business and personal applications.”);

- ‘399 Patent, 1:28-41 (“Currently, there exist a wide variety of PDA devices with conventional operating systems and architectures. These commercially available PDAs with commercial-off-the-shelf (COTS) operating systems and COTS application programs generally satisfy the processing and communications requirements of most users. For example, they include applications for word processing, data storage, spreadsheets, email, internet browsing, time management, contact management, network communications, and voice communications. These applications generally function quite well and have interfaces that are familiar to many users. The familiarity of these applications to users, and the relatively low cost of COTS software are considered advantageous for a variety of reasons.”)
- ‘399 Patent, 4:16-36 (“In contrast to the secure PDA in FIG. 1, a commercial PDA/phone architecture is shown in FIG. 2. The commercial PDA/phone **200** can include a non-secure processor **202** comprised of untrusted COTS microprocessor hardware and untrusted COTS software. A user non-secure file system **203** can be used for storing unclassified user files and data. The commercial PDA/phone will make use of COTS hardware and software to satisfy the processing and communications requirements of users. The commercial PDA/phone will make use of a conventional non-secure HMI **206**, and can include non-secure I/O circuitry **204**. The I/O circuitry **204** can include wired and/or wireless LAN transceivers, and cellular telephone transceiver circuitry. A suitable antenna or antennas **210** can be provided for any wireless applications. Audio interface circuitry can also be provided for headset **208**. Significantly, PDA **200** will not generally satisfy the requirements for accessing secure file systems. However, commercial PDA **200** benefits from the economy associated with use of COTS applications and a COTS operating system. Another advantage is that users tend to be well familiar with such operating systems and applications.”)
- ‘399 Patent, 5:25-35 (“A PDA computer architecture as show in FIG. 3 … can still offer all of the benefits of conventional commercial PDA devices. Such features can include familiar and inexpensive COTS operating systems and applications. Such COTS operating systems and applications can be used with the non-secure processor **306**. The PDA **300** also offers the benefit of wired and wireless LAN communication services, cellular telephone services and so on.”)

‘399 Patent, 6:3-20 (“As shown in FIG. 4, I/O interface **312** can include wired connectivity block **406** for USB or other wired connectivity services. Wireless connectivity block **408** can include any wireless transceiver system now known or known in the future for communicating voice and/or data. For example, the wireless connectivity block **408** can be any suitable wireless LAN transceiver system. According to one embodiment of the invention, wireless connectivity block **408** can be configured for operation in accordance with any one of the 802.11 family of wireless network standards. However the invention is not limited in this

regard. Instead, any other wireless networking standard can also be implemented in accordance with the inventive arrangements. Further, wireless connectivity block **408** can also comprise cellular telephone transceiver circuitry. For example, the cellular telephone transceiver circuitry can be designed to operate using any one of a variety of well known cellular telephone transmission protocols such as TDM, GSM, or CDMA.")

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

Subject to Defendant's reservation of rights herein, and with respect to each Asserted Claim in Speir's Infringement Contentions, Defendant provides these Amended Preliminary Invalidity Contentions to describe the factual and legal bases for its contention(s) that the Asserted Claims are invalid under 35 U.S.C. §§ 102 and/ or 103.

Defendant reserves the right to rely on any claim chart in Exhibits A-01 through A-07, B-01 through B-05, C-01 through C-05, and D-01 through D-11 standing alone, in combination with the reference(s) in any other claim chart, in combination with any of the references listed in Exhibits A-O, B-O, C-O, and D-O, respectively, and in combination with Applicant's Admitted Prior Art, and/or in view of the knowledge of a person of ordinary skill in the art. A more detailed basis for the below defenses may be set forth in any supplement to these Amended Preliminary Invalidity Contentions and/or expert report(s) to be served by Defendant at a later date.

Numerous prior art references, including those identified in the exhibits hereto, reflect common knowledge and the state of the art prior to the priority dates of the Patents-in-Suit. Defendant further contends that all claims that are anticipated by a particular reference are also rendered obvious by that same reference alone, or in combination with one or more references identified herein. Defendant puts forth below certain exemplary combinations that further demonstrate the obviousness of the asserted claims. Defendant is currently unaware of the extent,

if any, to which Plaintiff will contend that limitations of the claims at issue are not disclosed in the art identified by Defendant as anticipatory. To the extent that an issue arises with any such limitation, Defendant reserves the right to identify other references or combinations that would have made obvious the additional allegedly missing limitation to the disclosed system or method of operation. As it would be unduly burdensome to create detailed claim charts for every invalidating combination, Defendant has provided illustrative examples of such invalidating combinations herein and/or in the charts attached hereto. For at least the reasons described herein, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached claim charts for one of the Patents-in-Suit, to meet the limitations of the Asserted Claims of that patent. It should be recognized that a person of ordinary skill in the art would generally read a prior art reference as a whole and in the context of other publications, literature, and general knowledge in the field. To understand and interpret any specific statement or disclosure in a prior art reference, a person of ordinary skill in the art would rely upon other information including other publications and general scientific or engineering knowledge. As such, Defendant's inclusion of exemplary combinations does not preclude Defendant from identifying other invalidating combinations as appropriate.

Defendant further relies on and incorporates all prior art references cited in and/or on the cover of the Patents-in-Suit and their respective prosecution histories, including for supporting the anticipation and/or obviousness of any Asserted Claim.

Defendant reserves the right to identify additional prior art references including patents, non-patent publications, as well as non-patent and non-publication prior art systems that were

sold, offered for sale, used, etc. prior to the priority dates of the Patents-in-Suit, to the extent any such prior art becomes known during discovery in this case.

To the extent that prior art identified by Defendant as anticipating is found not to anticipate, the prior art establishes that the claimed subject matter was obvious to a person of ordinary skill in the art at the time of the alleged invention. Even if a particular claim element is not expressly found in one of the charted references, those charted references render the relevant Asserted Claims obvious without the need to combine with any other references, having in mind the information generally known to those skilled in the art, common sense, the admitted prior art, and/or routine innovation. Accordingly, Defendant discloses each of the references cited as rendering obvious the Asserted Claims as shown in the charts referenced above. In addition, the charted references in combination with one or more of the other charted references render obvious the Asserted Claims.

As explained in these Amended Preliminary Invalidity Contentions, it would have been obvious to a person of skill in the art at the time of the alleged invention of the Asserted Claims to combine the various references cited for one of the Patents-in-Suit so as to practice the Asserted Claims. In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendant reserves the right to rely on any other combination of prior art references disclosed in these Amended Preliminary Invalidity Contentions. Defendant further reserves the right to rely upon combinations disclosed within the prosecution histories of the references cited in these Amended Preliminary Invalidity Contentions. These obviousness combinations reflect Defendant's present understanding of the potential scope of the claims that Plaintiff appears to be advocating and should not be construed as Defendant's acquiescence to Plaintiff's interpretation of the Asserted Claims.

The U.S. Supreme Court decision in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (2007) ("KSR"), held that a claimed invention can be obvious even if there is no explicit, written teaching, suggestion, or motivation for combining the prior art to produce that invention. Accordingly, Defendant believes that no showing of an express motivation to combine prior art is required to combine the references disclosed in Exhibits A-01 through A-O, B-01 through B-O, C-01 through C-O, and D-01 through D-O, as each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1739-40 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead espousing an "expansive and flexible" approach). The Supreme Court in *KSR* 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. "In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim." *Id*. at 1741-42. "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id*. at 1742. In particular, the Supreme Court emphasized the principle that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id*. at 1739. A key inquiry is whether the "improvement is more than the predictable use of prior art elements according to their established functions." *Id*. at 1740.

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well. In

In re Inland Steel Co., 265 F.3d 1354 (Fed. Cir. 2001), the Federal Circuit allowed two references to be combined as invalidating art when "[the prior art] focus[es] on the same problem that the . . . patent addresses . . . . Moreover, both [prior art references] come from the same field . . . . Finally, the solutions to the identified problems found in the two references correspond well." *Id*. at 1362.

Although Defendant contends that no specific showing of motivation to combine is necessary for the references cited in the attached exhibits, Defendant hereby identifies specific motivations and reasons to combine the cited art. One or more combinations of the prior art references identified herein would have been obvious because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; or a teaching, suggestion, or motivation in the prior art generally.

In addition, it would have been obvious to try combining the prior art references identified herein and in the accompanying appendices and exhibits because there were only a finite number of predictable solutions or because known work in one field of endeavor prompted variations based on predictable design incentives or market forces either in the same field or a different one. In addition, the combination of prior art references identified herein and in the accompanying appendices would have been obvious because the combinations represent known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation to combine the prior art references identified in the attached exhibits includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution

encompassed by the Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art. Thus, a skilled artisan seeking to solve this problem would look to these cited references in combination.

Accordingly, the motivation to combine the teachings of the prior art references disclosed herein is found in the references themselves and: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary skill in the art; (4) the fact that the prior art is generally directed towards relevant methods and systems; or (5) the predictable results obtained in combining the different elements of the prior art.

Furthermore, a person of ordinary skill at the time of the alleged invention had reason to combine or modify one or more of the references listed and charted in Exhibits A-01 to A-O, B-01 to B-O, C-01 to C-O, and D-01 to D-O in light of the knowledge of a person of ordinary skill in the art at the time of the invention and information in the prior art cited herein. The reasons or motivation to combine the prior art would include, for example, the fact that the prior art for the Asserted Claims is in the same field, and one of ordinary skill in the art implementing a device, system, or method in accordance with the Asserted Claims would have been motivated to investigate the various related existing devices, systems, methods, publications, or patents identified in these contentions to address the particular needs. Indeed, the claimed subject matter required nothing more than combining prior art elements according to known methods to yield predictable results. One of ordinary skill in the art would have been motivated to combine the prior art, in that it required only simple substitutions of one known element for another to obtain predictable results.

To the extent any piece of prior art refers to or discusses other pieces of prior art, either expressly or inherently, it would have been obvious to combine those pieces of prior art for that reason. In addition, design incentives and other market forces would have prompted those combinations and modifications. Furthermore, prior art references may arise from common assignees or multiple companies operating within the relevant subject matter. The motivation to combine references includes the common objectives and subject matter of the identified references. Accordingly, the teachings of the individual prior art references, combined with the industry knowledge of a person of ordinary skill in the art at the time of the alleged invention of the Asserted Patents, would render obvious the Asserted Claims.

To the extent Plaintiff challenges a combination of prior art with respect to a particular element, Defendant reserves all rights to supplement these contentions to further specify the reasons to combine the prior art. Defendant may rely on cited or uncited portions of the prior art, other documents, and/or expert testimony to establish that a person of ordinary skill in the art would have been motivated to modify or combine the prior art so as to render the claims invalid as obvious.

A. Anticipation and Obviousness of the '780 Patent

As set forth below and in the accompanying claim charts, each and every one of the Asserted Claims of the '780 Patent is anticipated under 35 U.S.C. § 102 and/or rendered obvious under 35 U.S.C. § 103 in light of at least the following prior art, considered alone or in combination with each other and/or the understanding of a POSITA and the Applicant's Admitted Prior Art discussed in Section III.B.

Prior Art References for the '780 Patent
EP 1,207,631 A1 ("Zhang")

Prior Art References for the '780 Patent
US Patent App. Pub. No. 2003/0026201 A1 ("Arnesen")
US Patent App. Pub. No. 2003/0123559 A1 ("Classon")
US Patent App. Pub. No. 2004/0047324 A1 ("Diener")
US Patent App. Pub. No. 2004/0092281 A1 ("Burchfiel")
US Patent App. Pub. No. 2005/0020297 A1 ("Axness")
US Patent App. Pub. No. 2005/0099973 A1 ("Qiu")
US Patent App. Pub. No. 2005/0152266 A1 ("Hwang")
US Patent App. Pub. No. 2005/0181752 A1 ("Sahota")
US Patent App. Pub. No. 2006/0040617 A1 ("Haub")
US Patent App. Pub. No. 2007/0009053 A1 ("Laroia")
US Patent App. Pub. No. 2007/0155330 A1 ("Pendergrass")
US Patent App. Pub. No. 2007/0165754 A1 ("Kiukkonen")
US Patent App. Pub. No. 2007/0177501 A1 ("Papasakellariou")
US Patent App. Pub. No. 2007/0265843 A1 ("Hetherington")
US Patent App. Pub. No. 2008/0205491 A1 ("Berens")
US Patent App. Pub. No. 2008/0233967 A1 ("Montojo")
US Patent App. Pub. No. 2009/0135972 A1 ("Tanaka")
US Patent App. Pub. No. 2009/0147893 A1 ("Takahashi")
US Patent No. 5,950,110 A ("Hendrickson")
US Patent No. 6,131,013 A ("Bergstrom")
US Patent No. 6,023,463 ("Wiedeman")
US Patent No. 6,621,454 B1 ("Reudink")
US Patent No. 6,701,130 B1 ("Hämäläinen")
US Patent No. 6,724,840 B1 ("Osofsky")
US Patent No. 6,907,272 B2 ("Roy")

Prior Art References for the '780 Patent
US Patent No. 7,152,025 B2 ("Lusky")
US Patent No. 7,292,830 B1 ("Cheung")
US Patent No. 7,379,724 B2 ("Nilsson")
US Patent No. 7,440,730 B2 ("Aloni-lavi")
US Patent No. 7,643,811 B2 ("Reunamaki")
US Patent No. 7,970,065 B2 ("Horiguchi")
US Patent No. 8,009,750 B2 ("Chrabieh")
US Patent No. 8,111,790 B2 ("Farrokhi")
US Patent No. 8,165,235 B2 ("Teng")
US Patent No. 8,171,372 B2("Pan")
US Patent No. 8,699,614 B2 ("Haartsen")
US Patent No. 8,843,170 B2 ("Barberis")
US Patent No. 8,675,509 B2 ("Sampath")
International Patent Pub. No. WO 2002/019743 A2 ("Kitchin")
International Patent Pub. No. WO 2003/090422 A1 ("Pulley")
International Patent Pub. No. WO 2005/062798 A2 ("Scheinert")
International Patent Pub. No. WO 2008/147769 A2 ("Gupta")
International Patent Pub. No. WO 2008/028321 A1 ("Wang")
Arslan, Hüseyin. "Cognitive UWB-OFDM: Pushing ultra-wideband beyond its limit via opportunistic spectrum usage." Journal of Communications and Networks 8.2 (2006): 151-157 ("Arslan")
Shanmugam, Surendran K. "New Enhanced Sensitivity Detection Techniques for GPS L1 C/A and Modernized Signal Acquisition." January, 2008. ("Shanmugam")
Yücek, Tevfik. "Self-interference handling in OFDM based wireless communication systems." (2003). ("Yucek")
3GPP TS 36.331 V8.1.0 (2008-03) ("TS36.331v8.1.0")

Examples of these disclosures and embodiments are identified in the attached Claim Charts in Exhibits A-01 through A-O.

Primary Art Reference Combinations	
Reference	In Combination With One Or More Of The Following
Berens	Zhang, Reudlink, Reunamaki, 36.331v8.1.0, Bergstrom, Diener
Reudlink	Zhang, Berens, Reunamaki, 36.331v8.1.0, Bergstrom, Diener
Reunamaki	Zhang, Berens, Reudlink, 36.331v8.1.0, Bergstrom, Diener
Zhang	Berens, Reudlink, Reunamaki, 36.331v8.1.0, Bergstrom, Diener
36.331v8.1.0	Zhang, Berens, Reudlink, Reunamaki, Bergstrom, Diener
Bergstrom	Diener, Zhang, Berens, Reudlink, Reunamaki, 36.331v8.1.0
Diener	Bergstrom, Zhang, Berens, Reudlink, Reunamaki, 36.331v8.1.0

Further, Defendant identifies the following prior art reference, any one of which Defendant may rely on in combination with any row of the prior art set forth above.

Secondary Prior Art References (Ex. A-O)
In Further Combination With One Of The Following Prior Art References
Aloni-Iavi, Cheung, Classon, Nilsson, Pan, Papasekallariou, Roy, Sampath, Teng, Gupta, Hämäläinen, Haub, Hendrickson, Horiguchi, Osofsky, Pendergrass, Qiu, Scheinert, Shamugam, Tanaka, Wiedeman

A person of ordinary skill in the art, at the time of the alleged inventions of the asserted claims of the '780 Patent, would have been motivated to combine the teachings of the prior art references. Each of these references describes methods and/or systems related to detecting interference in wireless locations from a plurality of types of interference.

As such, the prior art references occupy the same technological space and are directed to the same and analogous concepts and problems. This would have led one of skill in the art at the time of the purported inventions of the '780 Patent to consult each reference and combine their teachings to provide the most accurate, effective, and robust system for performing ranging by, e.g., reducing signal noise, improving reception, maximizing mobility, adding functionality, while at the same time providing the user of the ranging system with an accurate, efficient, and robust system.

Because the prior art references disclose similar steps and components that are highly compatible with each other, e.g., wireless communication systems, measuring interference, etc., it would be natural for one of ordinary skill in the art to contemplate adding to, or substituting the teachings of any one of these references with the teachings of any one or more of the other references in order to provide additional functionality, to improve upon the same basic techniques taught in each reference, and/or to solve similar issues recited in each. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) ("[I]f 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[.]").

A person of ordinary skill in the art would have understood that the solutions described in each of the prior art references would have been further enhanced and augmented by the other prior art references, which are directed to the same and similar problems.

Accordingly, combining the teachings of the prior art references is merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of known technique to improve similar devices in the same way; (d) application of a known technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

Defendant will further specify the motivations to combine the prior art, including through reliance on expert testimony, at the appropriate later stage of this lawsuit.

B. Anticipation and Obviousness of the '777 Patent

As set forth below and in the accompanying claim charts, each and every one of the Asserted Claims of the '777 Patent is anticipated under 35 U.S.C. § 102 and/or rendered obvious under 35 U.S.C. § 103 in light of at least the following prior art, considered alone or in combination with each other and/or the understanding of a POSITA and the Applicant's Admitted Prior Art discussed in Section III.B.

Prior Art References for the '777 Patent
EP 1,222,478 B1 ("Forstadius")
US Patent App. Pub. No. 2002/0080759 A1 ("Harrington '759")
US Patent App. Pub. No. 2002/0118655 A1 ("Harrington '655")
US Patent App. Pub. No. 2002/0131386 A1 ("Gwon")
US Patent App. Pub. No. 2002/0171586 A1 ("Mortorana")
US Patent App. Pub. No. 2003/0025602 A1 ("Medema")
US Patent App. Pub. No. 2003/0034887 A1 ("Crabtree '887")
US Patent App. Pub. No. 2003/0043073 A1 ("Gray")
US Patent App. Pub. No. 2003/0117320 A1 ("Kim 320")
US Patent App. Pub. No. 2003/0128163 A1 ("Mizugaki")
US Patent App. Pub. No. 2003/0162550 A1 ("Kuwahara")
US Patent App. Pub. No. 2003/0174048 A1 ("McCorkle")
US Patent App. Pub. No. 2003/0182052 A1 ("DeLorme")
US Patent App. Pub. No. 2003/0182062 A1 ("Chakraborty")
US Patent App. Pub. No. 2003/0191604 A1 ("Kuwahara '604")
US Patent App. Pub. No. 2003/0228846 A1 ("Berliner")
US Patent App. Pub. No. 2003/0232620 A1 ("Runkle '620")
US Patent App. Pub. No. 2004/0072566 A1 ("Kuwahara '566")

Prior Art References for the '777 Patent
US Patent App. Pub. No. 2004/0081139 A1 ("Beckmann")
US Patent App. Pub. No. 2004/0110514 A1 ("Kim '514")
US Patent App. Pub. No. 2004/0196834 A1 ("Ofek '834")
US Patent App. Pub. No. 2004/0203889 A1 ("Karaoguz")
US Patent App. Pub. No. 2004/0266348 A1 ("Deshpande")
US Patent App. Pub. No. 2005/0018611 A1 ("Chan")
US Patent App. Pub. No. 2005/0037775 A1 ("Moeglein")
US Patent App. Pub. No. 2005/0059411 A1 ("Zhengdi")
US Patent App. Pub. No. 2005/0148346 A1 ("Maloney")
US Patent App. Pub. No. 2008/0129591 A1 ("Lamance")
US Patent No. 3,302,199 A ("Kelly")
US Patent No. 3,728,728 A ("Kleiber")
US Patent No. 4,126,859 A ("Bohm")
US Patent No. 4,677,441 A ("Hofgen")
US Patent No. 5,381,444 A ("Tajima")
US Patent No. 5,526,357 A ("Jandrell")
US Patent No. 5,550,549 A ("Procter")
US Patent No. 5,617,410 A ("Matsumoto")
US Patent No. 5,687,196 A ("Proctor '196")
US Patent No. 5,706,010 A ("Franke")
US Patent No. 5,764,526 A ("Douceur")
US Patent No. 5,859,986 A ("Marenin")
US Patent No. 5,974,057 A ("Rozanski")
US Patent No. 6,070,079 A ("Kuwahara '079")
US Patent No. 6,081,229 A ("Soliman '229")

Prior Art References for the '777 Patent
US Patent No. 6,292,665 B1 ("Hildebrand")
US Patent No. 6,397,073 B1 ("Hottinen")
US Patent No. 6,433,739 B1 ("Soliman")
US Patent No. 6,453,168 B1 ("McCrady '168")
US Patent No. 6,515,623 B2 ("Johnson")
US Patent No. 6,574,478 B1 ("Mortensen")
US Patent No. 6,680,923 B1 ("Leon")
US Patent No. 6,711,137 B1 ("Klassen")
US Patent No. 6,738,044 B2 ("Holzrichter")
US Patent No. 6,788,199 B2 ("Crabtree")
US Patent No. 6,804,624 B2 ("Silverman")
US Patent No. 6,865,394 B1 ("Ogino")
US Patent No. 6,990,428 B1 ("Kaiser")
US Patent No. 7,042,868 B2 ("Runkle")
US Patent No. 7,046,987 B2 ("Siegel")
US Patent No. 7,058,414 B1 ("Rofheart")
US Patent No. 7,203,500 B2 ("Leeper")
US Patent No. 7,263,386 B2 ("daCosta")
US Patent No. 7,321,783 B2 ("Kim")
US Patent No. 7,511,604 B2 ("Raphaeli")
US Patent No. 7,616,156 B2 ("Smith '156")
US Patent No. 7,711,375 B2 ("Liu")
US Patent No. 7,787,886B2 ("Markhovsky '886")
US Patent No. 8,064,494 B2 ("Kindred")
US Patent No. 8,073,464 B2 ("Lin")

Prior Art References for the '777 Patent
US Patent No. 8,224,253 B2 ("Ofek")
US Patent No. 8,625,481 B2 ("Duggi")
US Patent No. 8,886,223 B2 ("Markhovsky")
WO 2002/063327 A2 ("Mccrady")
WO 2002/088776 A2 ("Werb")
M.Z. Win, et al., "Ultra-wide bandwidth signal propagation for indoor wireless communications," in Proc. ICC, June 1997. ("Win")
A. Scholtz et al., "UWB radio deployment challenges," in Proc. Personal, Indoor Mobile Radio Communications (PIMRC 2000), vol. 1, 2000, pp. 620–625. ("Scholtz et al.")
Fontana, Robert J. "Experimental results from an ultra wideband precision geolocation system." Ultra-Wideband, Short-Pulse Electromagnetics 5. Springer, Boston, MA, 2002. 215-223. ("Fontana")
H.G. Schantz and L. Fullerton, "The diamond dipole: A Gaussian impulse antenna," in Proc. IEEE AP-S Int. Symp., Boston, MA, July 2001 ("Schantz")
J. M. Cramer, M. Z. Win, and R. A. Scholtz, "Evaluation of multipath characteristics of the impulse radio channel," in Proc. PIMRC, vol. 2, 1998, pp. 864–868. ("Cramer 1")
J. M. Cramer, R. A. Scholtz, and M. Z. Win, "Evaluation of an ultra-wideband propagation channel," IEEE Trans. Antennas Propagat., vol. 50, pp. 561–570, May 2002. ("Cramer 2")
J. M. Cramer, R. A. Scholtz, and M. Z. Win, "Spatio–temporal diversityin ultra-wideband radio," in Proc. WCNC, vol. 2, 1999, pp. 888–892. ("Cramer 3")
JY Lee and RA Scholtz, "Ranging in a Dense Multipath Environment Using an UWB Radio Link," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, December 2002 ("Lee")
Yellowjacket-A, 802.11a WiFi Analysis System, Berkeley Varitronics Systems ("Yellowjacket")
Chlamtac, Imrish, Marco Conti, and Jennifer J.-N. Liu, Mobile ad hoc networking: imperatives and challenges, 2003, https://www.sciencedirect.com/science/article/abs/pii/S1570870503000131 ("Chlamtak")
F.D. Messina, Overview of Secondary Surveillance Radar (SSR) and Identification Friend/Foe (IFF) Systems, https://www.ieee.li/pdf/viewgraphs/overview-of-ssr-and-iff-systems.pdf ("Messina")

Prior Art References for the '777 Patent
IEEE Standard for Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications ("IEEE Standards")
Gudmundson, Björn, Johan Skõld, and Jon K. Ugland. "A comparison of CDMA and TDMA systems." [1992 Proceedings] Vehicular Technology Society 42nd VTS Conference-Frontiers of Technology. IEEE, 1992. ("Gudmundson")
Bruzzese, Stephanie, and Charles McLellan, Dell Inspiron 5100, March 3, 2003, https://www.zdnet.com/product/dell-inspiron 5100, ("Bruzzes")
Smith, Tony, Palm Tungsten C Wi-Fi PDA, October 27, 2003, https://www.theregister.com/2003/10/27/palm_tungsten_c_wifi_pda/ ("Smith")

Examples of these disclosures and embodiments are identified in the attached Claim Charts in Exhibits B-01 through B-O.

Primary Art Reference Combinations	
Reference	In Combination With One Or More Of The Following
Crabtree	Fontana, Lee, McCorkle, and/or Rofheart
Fontana	Crabtree, Lee, McCorkle, Rofheart
Lee	Crabtree, Fontana, McCorkle, Rofheart
McCorkle	Crabtree, Fontana, Lee, Rofheart
Rofheart	Crabtree, Fontana, Lee, McCorkle

Further, Defendant identifies the following prior art reference, any one of which Defendant may rely on in combination with any row of the prior art set forth above.

Secondary Prior Art References (Ex. B-O)
In Further Combination With One Of The Following Prior Art References
Cramer 2, Cramer 3, Franke, Harrington '759, Hildebrand, Jandrell, Kuwahara '604, Leeper, Markhovsky '886, Martorana, Mizugaki, Ofek '834, Proctor '196, Raphaeli, Smith '156, Tajima

A person of ordinary skill in the art, at the time of the alleged inventions of the asserted claims of the '777 Patent, would have been motivated to combine the teachings of the prior art references. Each of these references describes methods and/or systems related to ranging using a wireless device locator to identify the distance to and/or position of target wireless devices.

As such, the prior art references occupy the same technological space and are directed to the same and analogous concepts and problems. This would have led one of skill in the art at the time of the purported inventions of the '777 Patent to consult each reference and combine their teachings to provide the most accurate, effective, and robust system for performing ranging by, e.g., reducing signal noise, improving reception, maximizing mobility, adding functionality, while at the same time providing the user of the ranging system with an accurate, efficient, and robust system.

Because the prior art references disclose similar steps and components that are highly compatible with each other, e.g., wireless systems, ranging techniques, etc., it would be natural for one of ordinary skill in the art to contemplate adding to, or substituting the teachings of any one of these references with the teachings of any one or more of the other references in order to provide additional functionality, to improve upon the same basic techniques taught in each reference, and/or to solve similar issues recited in each. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) ("[I]f 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[.]").

A person of ordinary skill in the art would have understood that the solutions described in each of the prior art references would have been further enhanced and augmented by the other prior art references, which are directed to the same and similar problems.

Accordingly, combining the teachings of the prior art references is merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of known technique to improve similar devices in the same way; (d) application of a known

technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

Defendant will further specify the motivations to combine the prior art, including through reliance on expert testimony, at the appropriate later stage of this lawsuit.

C. Anticipation and Obviousness of the '779 Patent

As set forth below and in the accompanying claim charts, each and every one of the Asserted Claims of the '779 Patent is anticipated under 35 U.S.C. § 102 and/or rendered obvious under 35 U.S.C. § 103 in light of at least the following prior art, considered alone or in combination with each other and/or the understanding of a POSITA and the Applicant's Admitted Prior Art discussed in Section III.B.

Prior Art References for the '779 Patent
EP 1,222,478 B1 ("Forstadius")
US Patent App. Pub. No. 2002/0080759 A1 ("Harrington '759")
US Patent App. Pub. No. 2002/0118655 A1 ("Harrington '655")
US Patent App. Pub. No. 2002/0131386 A1 ("Gwon")
US Patent App. Pub. No. 2002/0171586 A1 ("Mortorana")
US Patent App. Pub. No. 2003/0025602 A1 ("Medema")
US Patent App. Pub. No. 2003/0034887 A1 ("Crabtree '887")
US Patent App. Pub. No. 2003/0043073 A1 ("Gray")
US Patent App. Pub. No. 2003/0117320 A1 ("Kim '320")
US Patent App. Pub. No. 2003/0128163 A1 ("Mizugaki")
US Patent App. Pub. No. 2003/0162550 A1 ("Kuwahara")

Prior Art References for the '779 Patent
US Patent App. Pub. No. 2003/0174048 A1 ("McCorkle")
US Patent App. Pub. No. 2003/0182052 A1 ("DeLorme")
US Patent App. Pub. No. 2003/0182062 A1 ("Chakraborty")
US Patent App. Pub. No. 2003/0191604 A1 ("Kuwahara '604")
US Patent App. Pub. No. 2003/0228846 A1 ("Berliner")
US Patent App. Pub. No. 2003/0232620 A1 ("Runkle '620")
US Patent App. Pub. No. 2004/0072566 A1 ("Kuwahara '566")
US Patent App. Pub. No. 2004/0081139 A1 ("Beckmann")
US Patent App. Pub. No. 2004/0110514 A1 ("Kim '514")
US Patent App. Pub. No. 2004/0196834 A1 ("Ofek '834")
US Patent App. Pub. No. 2004/0203889 A1 ("Karaoguz")
US Patent App. Pub. No. 2004/0266348 A1 ("Deshpande")
US Patent App. Pub. No. 2005/0018611 A1 ("Chan")
US Patent App. Pub. No. 2005/0037775 A1 ("Moeglein")
US Patent App. Pub. No. 2005/0059411 A1 ("Zhengdi")
US Patent App. Pub. No. 2005/0148346 A1 ("Maloney")
US Patent App. Pub. No. 2008/0129591 A1 ("Lamance")
US Patent No. 3,302,199 A ("Kelly")
US Patent No. 3,728,728 A ("Kleiber")
US Patent No. 4,126,859 A ("Bohm")
US Patent No. 4,677,441 A ("Hofgen")
US Patent No. 5,381,444 A ("Tajima")
US Patent No. 5,526,357 A ("Jandrell")
US Patent No. 5,550,549 A ("Procter")
US Patent No. 5,617,410 A ("Matsumoto")

Prior Art References for the ‘779 Patent
US Patent No. 5,687,196 A (“Proctor ‘196”)
US Patent No. 5,706,010 A (“Franke”)
US Patent No. 5,764,526 A (“Douceur”)
US Patent No. 5,859,986 A (“Marenin”)
US Patent No. 5,974,057 A (“Rozanski”)
US Patent No. 6,070,079 A (“Kuwahara ‘079”)
US Patent No. 6,081,229 A (“Soliman ‘229”)
US Patent No. 6,292,665 B1 (“Hildebrand”)
US Patent No. 6,397,073 B1 (“Hottinen”)
US Patent No. 6,433,739 B1 (“Soliman”)
US Patent No. 6,453,168 B1 (“McCrady ‘168”)
US Patent No. 6,515,623 B2 (“Johnson”)
US Patent No. 6,574,478 B1 (“Mortensen”)
US Patent No. 6,680,923 B1 (“Leon”)
US Patent No. 6,711,137 B1 (“Klassen”)
US Patent No. 6,738,044 B2 (“Holzrichter”)
US Patent No. 6,788,199 B2 (“Crabtree”)
US Patent No. 6,804,624 B2 (“Silverman”)
US Patent No. 6,865,394 B1 (“Ogino”)
US Patent No. 6,990,428 B1 (“Kaiser”)
US Patent No. 7,042,868 B2 (“Runkle”)
US Patent No. 7,046,987 B2 (“Siegel”)
US Patent No. 7,058,414 B1 (“Rofheart”)
US Patent No. 7,203,500 B2 (“Leeper”)
US Patent No. 7,263,386 B2 (“daCosta”)

Prior Art References for the '779 Patent
US Patent No. 7,321,783 B2 ("Kim")
US Patent No. 7,511,604 B2 ("Raphaeli")
US Patent No. 7,616,156 B2 ("Smith '156")
US Patent No. 7,711,375 B2 ("Liu")
US Patent No. 7,787,886B2 ("Markhovsky '886")
US Patent No. 8,064,494 B2 ("Kindred")
US Patent No. 8,073,464 B2 ("Lin")
US Patent No. 8,224,253 B2 ("Ofek")
US Patent No. 8,625,481 B2 ("Duggi")
US Patent No. 8,886,223 B2 ("Markhovsky")
WO 2002/063327 A2 ("Mccrady")
WO 2002/088776 A2 ("Werb")
M.Z. Win, et al., "Ultra-wide bandwidth signal propagation for indoor wireless communications," in Proc. ICC, June 1997. ("Win")
A. Scholtz et al., "UWB radio deployment challenges," in Proc. Personal, Indoor Mobile Radio Communications (PIMRC 2000), vol. 1, 2000, pp. 620–625. ("Scholtz et al.")
Fontana, Robert J. "Experimental results from an ultra wideband precision geolocation system." Ultra-Wideband, Short-Pulse Electromagnetics 5. Springer, Boston, MA, 2002. 215-223. ("Fontana")
H.G. Schantz and L. Fullerton, "The diamond dipole: A Gaussian impulse antenna," in Proc. IEEE AP-S Int. Symp., Boston, MA, July 2001 ("Schantz")
J. M. Cramer, M. Z. Win, and R. A. Scholtz, "Evaluation of multipath characteristics of the impulse radio channel," in Proc. PIMRC, vol. 2, 1998, pp. 864–868. ("Cramer 1")
J. M. Cramer, R. A. Scholtz, and M. Z. Win, "Evaluation of an ultra-wideband propagation channel," IEEE Trans. Antennas Propagat., vol. 50, pp. 561–570, May 2002. ("Cramer 2")
J. M. Cramer, R. A. Scholtz, and M. Z. Win, "Spatio–temporal diversityin ultra-wideband radio," in Proc. WCNC, vol. 2, 1999, pp. 888–892. ("Cramer 3")
JY Lee and RA Scholtz, "Ranging in a Dense Multipath Environment Using an UWB Radio Link," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, December 2002

Prior Art References for the '779 Patent
("Lee")
Yellowjacket-A, 802.11a WiFi Analysis System, Berkeley Varitronics Systems ("Yellowjacket")
Chlamtac, Imrish, Marco Conti, and Jennifer J.-N. Liu, Mobile ad hoc networking: imperatives and challenges, 2003, https://www.sciencedirect.com/science/article/abs/pii/S15708705 03000131 ("Chlamtak")
F.D. Messina, Overview of Secondary Surveillance Radar (SSR) and Identification Friend/Foe (IFF) Systems, https://www.ieee.li/pdf/viewgraphs/overview-of-ssr-and-iff-systems.pdf ("Messina")
IEEE Standard for Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications ("IEEE Standards")
Gudmundson, Björn, Johan Skõld, and Jon K. Ugland. "A comparison of CDMA and TDMA systems." [1992 Proceedings] Vehicular Technology Society 42nd VTS Conference-Frontiers of Technology. IEEE, 1992. ("Gudmundson")
Bruzzese, Stephanie, and Charles McLellan, Dell Inspiron 5100, March 3, 2003, https://www.zdnet.com/product/dell-inspiron 5100, ("Bruzzes")
Smith, Tony, Palm Tungsten C Wi-Fi PDA, October 27, 2003, https://www.theregister.com/2003/10/27/palm_tungsten_c_wifi_pda/ ("Smith")

Examples of these disclosures and embodiments are identified in the attached Claim Charts in Exhibits C-01 through C-O.

Primary Art Reference Combinations	
Reference	In Combination With One Or More Of The Following
Crabtree	Fontana, Lee, McCorkle, and/or Rofheart
Fontana	Crabtree, Lee, McCorkle, Rofheart
Lee	Crabtree, Fontana, McCorkle, Rofheart
McCorkle	Crabtree, Fontana, Lee, Rofheart
Rofheart	Crabtree, Fontana, Lee, McCorkle

Further, Defendant identifies the following prior art reference, any one of which Defendant may rely on in combination with any row of the prior art set forth above.

Secondary Prior Art References (Ex. B-O)

In Further Combination With One Of The Following Prior Art References
Cramer 2, Cramer 3, Franke, Gwon, Harrington ’759, Hildebrand, Jandrell, Jandrell, Kuwahara ’604, Leeper, Markhovsky ’886, Martorana, Mizugaki, Ofek ’834, Proctor ’196, Raphaeli, Raphaeli, Runkle, Smith ’156, Tajima, Werb

A person of ordinary skill in the art, at the time of the alleged inventions of the asserted claims of the ‘779 Patent, would have been motivated to combine the teachings of the prior art references. Each of these references describes methods and/or systems related to ranging using a wireless device locator to identify the distance to and/or position of target wireless devices.

As such, the prior art references occupy the same technological space and are directed to the same and analogous concepts and problems. This would have led one of skill in the art at the time of the purported inventions of the ‘779 Patent to consult each reference and combine their teachings to provide the most accurate, effective, and robust system for performing ranging by, e.g., reducing signal noise, improving reception, maximizing mobility, adding functionality, while at the same time providing the user of the ranging system with an accurate, efficient, and robust system.

Because the prior art references disclose similar steps and components that are highly compatible with each other, e.g., wireless systems, ranging techniques, etc., it would be natural for one of ordinary skill in the art to contemplate adding to, or substituting the teachings of any one of these references with the teachings of any one or more of the other references in order to provide additional functionality, to improve upon the same basic techniques taught in each reference, and/or to solve similar issues recited in each. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (“[I]f 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[.]”).

A person of ordinary skill in the art would have understood that the solutions described in each of the prior art references would have been further enhanced and augmented by the other prior art references, which are directed to the same and similar problems.

Accordingly, combining the teachings of the prior art references is merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of known technique to improve similar devices in the same way; (d) application of a known technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

Defendant will further specify the motivations to combine the prior art, including through reliance on expert testimony, at the appropriate later stage of this lawsuit.

D. Anticipation and Obviousness of the '399 Patent

As set forth below and in the accompanying claim charts, each and every one of the Asserted Claims of the '399 Patent is anticipated under 35 U.S.C. § 102 and/or rendered obvious under 35 U.S.C. § 103 in light of at least the following prior art, considered alone or in combination with each other and/or the understanding of a POSITA and the Applicant's Admitted Prior Art discussed in Section III.B.

Prior Art References for the '399 Patent
EU Patent Pub. No. 1056014 ("Proudler")
US Patent App. Pub. No. 2003/0231649 A1 ("Awoseyi")
U.S. Patent Pub. No. 2004/0082368 ("Yoon")
US Patent App. Pub. No. 2005/0190159 A1 ("Skarine")

Prior Art References for the '399 Patent
US Patent App. Pub. No. 2006/0195907 A1 ("Delfs")
US Patent App. Pub. No. 2008/0228985 A1 ("Gulick")
US Patent App. Pub. No. 2010/0191959 A1 ("Czajkowski")
US Patent No. 6,151,677 A ("Walter")
US Patent No. 6,662,020 B1 ("Aaro")
US Patent No. 7,043,643 B1 ("Doe")
US Patent No. 7,047,405 B2 ("Mauro")
US Patent No. 7,216,237 B2 ("Vanstone")
US Patent No. 7,293,700 B2 ("Shibasaki")
US Patent No. 7,500,098 B2 ("Paatero")
U.S. Patent No. 7,571,475 ("Moon")
US Patent No. 7,636,858 B2 ("Khan")
US Patent No. 7,716,720 B2 ("Marek")
US Patent No. 7,788,505 B2 ("Porter")
US Patent No. 7,886,094 B1 ("Tamasi")
US Patent No. 8,028,164 B2 ("Paatero 164")
US Patent No. 8,295,484 B2 ("Buer")
US Patent No. 8,473,750 B2 ("Cox")
US Patent No. 9,570,103 B2 ("Starr")
Bell, David M, "*Multi-Rate Secure Processor Terminal Architecture Study. Volume 1. Terminal Architecture*" RADC-TR-81-77, Vol. 1, ADB0588979, June 1981 ("Harris")

Examples of these disclosures and embodiments are identified in the attached Claim Charts in Exhibits D-01 through D-O.

Primary Art Reference Combinations	
Reference	In Combination With One Or More Of The Following
Aaro	Vanstone, Buer, Delfs, Mauro, Walter, Shibasaki, Cox, Harris, Proudler, Marek
Vanstone	Aaro, Buer, Delfs, Mauro, Walter, Shibasaki, Cox, Harris, Proudler, Marek
Buer	Aaro, Vanstone, Delfs, Mauro, Walter, Shibasaki, Cox, Harris, Proudler, Marek
Delfs	Aaro, Vanstone, Buer, Mauro, Walter, Shibasaki, Cox, Harris, Proudler, Marek
Mauro	Aaro, Vanstone, Buer, Delfs, Walter, Shibasaki, Cox, Harris, Proudler, Marek
Walter	Aaro, Vanstone, Buer, Delfs, Mauro, Shibasaki, Cox, Harris, Proudler, Marek
Shibasaki	Aaro, Vanstone, Buer, Delfs, Mauro, Walter, Cox, Harris, Proudler, Marek
Cox	Aaro, Vanstone, Buer, Delfs, Mauro, Walter, Shibasaki Harris, Proudler, Marek
Harris	Aaro, Vanstone, Buer, Delfs, Mauro, Walter, Shibasaki, Cox, Proudler, Marek
Proudler	Aaro, Vanstone, Buer, Delfs, Mauro, Walter, Shibasaki, Cox, Harris, Marek
Marek	Aaro, Vanstone, Buer, Delfs, Mauro, Walter, Shibasaki, Cox, Harris, Proudler

Further, Defendant identifies the following prior art reference, any one of which Defendant may rely on in combination with any row of the prior art set forth above.

Secondary Prior Art References (Ex. D-O)
In Further Combination With One Of The Following Prior Art References
Khan, Awoseyi, Paatero, Porter, Paatero 164, Doe, Skarine, Yoon, Moon

A person of ordinary skill in the art, at the time of the alleged inventions of the asserted claims of the '399 Patent, would have been motivated to combine the teachings of the prior art references. Each of these references describes methods and/or systems related to the use of a computing system for secure transmission, storage, manipulation, encryption, processing, and/or presentation of data and information, and the use of security techniques to accomplish such use.

As such, the prior art references occupy the same technological space and are directed to the same and analogous concepts and problems. This would have led one of skill in the art at the time of the purported inventions of the '399 Patent to consult each reference and combine their teachings to provide the most reliable, effective, and robust system for securing data on a computing device, and enabling secure information processing on a computing device, *e.g.*, increasing system security, minimizing system vulnerability to exploitation or nefarious attacks,

while at the same time providing the user of the computing system with an efficient and robust computing platform.

Because the prior art references disclose similar steps and components that are highly compatible with each other, e.g., secure and non-secure processing areas and circuitry, encryption techniques, human-machine interface, etc., it would be natural for one of ordinary skill in the art to contemplate adding to, or substituting the teachings of any one of these references with the teachings of any one or more of the other references in order to provide additional functionality, to improve upon the same basic techniques taught in each reference, and/or to solve similar issues recited in each. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) ("[I]f 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[.]").

A person of ordinary skill in the art would have understood that the solutions described in each of the prior art references would have been further enhanced and augmented by the other prior art references, which are directed to the same and similar problems.

Accordingly, combining the teachings of the prior art references is merely: (a) a combination of prior art elements according to known methods to yield predictable results; (b) a simple substitution of one known element for another to obtain predictable results; (c) a use of known technique to improve similar devices in the same way; (d) application of a known technique to a known device ready for improvement to yield predictable results; (e) obvious to try; and/or (f) known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces since the variations are predictable to one of ordinary skill in the art.

Defendant will further specify the motivations to combine the prior art, including through reliance on expert testimony, at the appropriate later stage of this lawsuit.

V. INVALIDITY UNDER 35 U.S.C. § 112

Defendant contends that certain Asserted Claims of the Patents-in-Suit are invalid under 35 U.S.C. § 112 because: (1) the claims are not enabled; (2) the claims lack adequate written description; and/or (3) the claims are indefinite. Defendant's contentions that the following claims are invalid under 35 U.S.C. § 112 are made in the alternative and do not constitute, and should not be interpreted as, admissions regarding the construction or scope of the claims of the Patents-in-Suit, or that any of the claims of the Patents-in-Suit are not anticipated or rendered obvious by prior art. The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e) to the extent appropriate, e.g., in light of further investigation and discovery regarding the defenses, the Court's construction of the claims at issue, and/or review and analysis of expert witnesses. Defendant offers these contentions without prejudice to any position it may ultimately take as to any claim construction issues.

35 U.S.C. § 112(a) requires a patent to describe "the manner and process of making and using [the claimed invention], in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same." A patent must disclose enough to permit a person of skill in the art, after reading the specification, to practice the claimed invention without undue experimentation. *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008). Moreover, "[t]he full scope of the claimed invention must be enabled." *Id*. at 999-1000. "Enabling the full scope of each claim is 'part of the quid pro quo of the patent bargain.'" *Id.*

35 U.S.C. § 112(a) requires a patent specification to contain "a written description of the invention." The written description "must do more than merely disclose that which would render the claimed invention obvious." *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1377 (Fed. Cir. 2009). The written description must "clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed" by the time of the application filing date. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Thus, a written description is inadequate where the claim in question exceeds the scope of what the patent discloses by (for example) omitting an attribute of the described invention from the limitations, thereby over-extending the reach of the claim. *ICU*, 558 F.3d at 1377-78. To satisfy the written description requirement, "the applicant must 'convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention,' and demonstrate that by disclosure in the specification of the patent." *Carnegie Mellon Univ. v. Hoffmann-La Roche Inc.*, 541 F.3d 1115, 1122 (Fed. Cir. 2008) (quoting *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991)).

35 U.S.C. § 112(b) requires that a patent claim "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instrs., Inc.,* 134 S.Ct. 2120, 2124 (2014).

A. The '780 Patent

The following claim elements, at least under Speir's apparent interpretations as to their meaning and/or scope, lack written description support in the specification, are not enabled by the specification, and/or are indefinite. Accordingly, the claims in which they appear are invalid:

- "short term" (claims 1, 9, 12)
- "long term" (claims 1, 9, 12)
- "current received signal" (claims 1,9, 12)
- "determin[ing] a type of received interference from among a plurality of interference types" / "interference type" (claims 1, 9, 12)

B. The '777 Patent

The following claim elements, at least under Speir's apparent interpretations as to their meaning and/or scope, lack written description support in the specification, are not enabled by the specification, and/or are indefinite. Accordingly, the claims in which they appear are invalid:

- "[using the controller for] determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon [a/the] known device latency of [the/said] target wireless communications device" (claims 1, 12, 20)

C. The '779 Patent

The following claim elements, at least under Speir's apparent interpretations as to their meaning and/or scope, lack written description support in the specification, are not enabled by the specification, and/or are indefinite. Accordingly, the claims in which they appear are invalid:

- "determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon a known device latency of the target wireless communications device" (claim 18)
- "The wireless device locator of claim 18 wherein the target wireless communications device generates unsolicited signals including the UID thereof" (claim 20)

D. The '399 Patent

The following claim elements, at least under Speir's apparent interpretations as to their meaning and/or scope, lack written description support in the specification, are not enabled by the specification, and/or are indefinite. Accordingly, the claims in which they appear are invalid:

- "a secure human/machine interface configured for enabling bi-directional communication of classified information exclusively between a user and said secure user processor;" (claim 1)

- "a non-secure human/machine interface distinct from said secure human/machine interface and configured for enabling bi-directional communication of unclassified information exclusively between said user and said non-secure user processor;" (claim 1)

- "The mobile PDA computer system according to claim 1, further comprising a first file system exclusively accessible to said secure user processor for storing classified data and a second file system for storing unclassified data, said second file system distinct from said first file system so as to provide physical separation of said classified data from said unclassified data within said portable mobile computing device." (claim 7)

- "a secure human/machine interface communicatively coupled to said secure user processor and configured to enable bi-directional communication of classified information exclusively between a user and said secure user processor, at least a portion of said secure human/machine interface located in a physically secure enclosure;" (claim 9)

- "a non-secure human/machine interface communicatively coupled to said non-secure user processor and configured to enable bi-directional communication of unclassified information exclusively between said user and said non-secure user processor, said non-secure human/machine interface distinct from said secure human/machine interface." (claim 9)

VI. LACK OF PATENTABLE SUBJECT MATTER UNDER 35 U.S.C. § 101

The Asserted Claims of the '777 Patent and '779 Patent are invalid under 35 U.S.C. § 101 because the claims are not directed to patentable subject matter. A claim is patent-eligible if it recites a "new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. In *Alice*, the Supreme Court reaffirmed the two-step framework used to "distinguish[] patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice Corp. Pty., Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014). This framework requires determining (1) if the claim is directed to ineligible subject matter such as an abstract idea, and, if so, (2) whether the remainder of the claim recites sufficient inventive elements that amount to "significantly more" than the abstract idea identified in Step 1. *Id.*

The Asserted Claims of the '777 Patent and '779 Patent are invalid under 35 U.S.C. § 101 because the claims are directed to nothing more than an abstract idea, and the remainder of the claim does not recite any inventive concept. At Step 1, the asserted claims of the '777 Patent and the '779 Patent are directed to the abstract idea of e.g., locating and/or tracking an object using wireless technology. Similar abstract ideas have been found unpatentable by the Federal Circuit, including, *e.g.*, claims "directed to systems 'for locating, identifying and/or tracking of' an object using RFID [i.e., wireless communication] components." *See Automated Tracking Solutions, LLC v. Coca-Cola Co.*, 723 F. App'x. 989 (Fed. Cir. Feb. 16, 2018). In *Automated Tracking*, the Federal Circuit recognized that the claims achieve the desired result merely by "collecting data…, analyzing that data, and determining results based on the analysis of data." *Id.* at 993. Here too, the Asserted Claims merely recite collecting data about transmission times and analyzing that data to determine a distance to the tracked object.

The approach of locating and/or tracking an object claimed in the '777 Patent and the '779 Patent was conventional and commonly used. Specifically, the '777 patent relates to the so-called "two-way ranging" that dates back to World War II and the development of distance measuring equipment (DME). *See, e.g.*, FD Messina, "Overview of Secondary Surveillance Radar (SSR) and Identification Friend/Foe (IFF) Systems" at 17-26 (available at https://www.ieee.li/pdf/viewgraphs/overview-of-ssr-and-iff-systems.pdf); U.S. Pat. No. 3,302,199 ("Kelly," filed May 27, 1964); U.S. Pat. No. 3,728,728 ("Vogel," filed June 7, 1969); U.S. Pat. No. 4,126,859 ("Bohm," filed Oct. 28, 1977); U.S. Pat. No. 4,677,441 ("Hofgen"). DME mounted to an aircraft would transmit interrogation signals and fixed-based ground transponders would, after a processing delay, transmit a reply signal. Hofgen, 2:31-4:63. The DME would estimate the range between aircraft and transponder using the round-trip time by

determining the one-way propagation time of the signal (accounting for the processing delay and then dividing by two) and multiplying by the speed of the radio signal (*i.e.*, the speed of light). Hofgen, 2:31-4:63; Kelly, 2:17-23. Moreover, measuring the time between emitting a signal and receiving a responsive signal is a conventional and commonly used method for determining the distance to an object found in nature. For example, bats use sonar by emitting a sonic signal and waiting for the signal reflected back by an object to locate food.

At Step Two, as demonstrated in the Claim Charts in Exhibits B-101 and Exhibits B-01 through B-O, the remainder of each of the Asserted Claims of the '777 Patent recite only conventional, well understood components and functionalities and do not recite anything other than the routine usage of those components. And, regarding the asserted claims of the '779 Patent, as demonstrated in the Claim Charts in Exhibits C-101 and Exhibits C-01 through C-O, the remainder of each of the Asserted Claims of the '779 Patent recite only conventional components and functionalities and do not recite anything other than routine usage of those components. Indeed, the only substantive difference to the asserted claims of the '777 patent is the recitation of a unique identifier (UID) in the independent claim 18 (the only independent claim asserted). However, reliance on a UID to identify a device—also recited in '779 dependent claim 20—is well-understood, routine, and conventional and fails to transform the claim into patent-eligible subject matter even when combined with the other elements of claim 18 and/or claim 20. Moreover, all the remaining elements and limitations are well-understood, routine, and conventional, as set forth in the accompanying claim charts and do not, separately, or in combination with the other elements of the claims, constitute patentable subject matter. *See* Exhibits C-01 through C-O, and C-101.

VII. IMPROPER INVENTORSHIP

As Defendant has not had the opportunity to take any depositions of the named inventor(s) of the Patents-in-Suit or other persons having relevant information, Defendant reserves the right to revise, amend, or supplement these Amended Preliminary Invalidity Contentions pursuant to Federal Rule of Civil Procedure 26(e) to the extent appropriate in light of further investigation and discovery regarding this defense.

VIII. DOCUMENT PRODUCTION ACCOMPANYING INVALIDITY CONTENTIONS

Defendant will produce or make available for inspection each item of prior art identified herein and in the accompanying exhibits and appendices that does not appear in the file history of the Patents-in-Suit. To the extent that such item is not in English, translation of documents is ongoing and an English translation is being or will be produced.

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