

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

T-Mobile US, Inc., T-Mobile USA, Inc., TeleCommunication Systems, Inc.,
Ericsson Inc., and Telefonaktiebolaget LM Ericsson,
Petitioners

v.

TracBeam, LLC,
Patent Owner.

Case IPR2015-01687
U.S. Patent No. 7,764,231

**PETITIONERS' REPLY
TO PATENT OWNER'S RESPONSE TO PETITION**

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EXHIBIT LIST¹

Number	Description
1001	U.S. Patent No. 7,764,231 (the “231 Patent”)
1002	U.S. Patent No. 7,525,484 (the “484 Patent”)
1003	U.S. Patent No. 8,032,153 (the “153 Patent”)
1004	U.S. Patent No. 7,298,327 (the “327 Patent”)
1005	<i>Curriculum Vitae</i> of Dr. William Michalson
1006	Expert Declaration of Dr. William Michalson
1007	U.S. Patent No. 5,724,660 to Kauser (“ <i>Kauser</i> ”)
1008	U.S. Patent No. 5,936,572 to Loomis (“ <i>Loomis</i> ”)
1009	U.S. Patent No. 6,748,226 to Wortham (“ <i>Wortham</i> ”)
1010	International PCT Application No. PCT/US93/12179 to Schuchman (“ <i>Schuchman</i> ”)
1011	U.S. Patent No. 5,327,144 to Stilp (“ <i>Stilp</i> ”)
1012	FAA Advisory Circular 20-101C, <i>Airworthiness Approval of Omega/VLF Navigation Systems For Use in the U.S. National Airspace System (NAS) and Alaska</i> (Sep. 12, 1988)

¹ Petitioners' Reply uses the same exhibits provided in the Petition. No new exhibits have been added. Petitioners include this Exhibit List for the Board's convenience.

1013	FAA Advisory Circular 20-130A, <i>Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors</i> (Jun. 14, 1995)
1014	<i>FCC Notice of Proposed Rulemaking for Locating Wireless 911 Callers</i> (Released Oct. 19, 1994)
1015	TR45 Joint Experts Meeting (JEM) for Emergency Services (Aug. 18, 1994)
1016	C.J. Driscoll & Associates, <i>Survey of Location Technologies to Support Mobile 9-1-1</i> , July 1994 (“ <i>Driscoll Survey</i> ”)
1017	Claim Construction Order (MetroPCS and TCS lawsuits)
1018	Supplemental Claim Construction Order
1019	Complaint against MetroPCS
1020	Complaint filed by TCS
1021	Dismissal Request (MetroPCS and TCS lawsuits)
1022	Dismissal Order (MetroPCS and TCS lawsuits)
1023	MetroPCS Corporate Disclosure Statement (MetroPCS lawsuit)
1024	American Heritage Dictionary, Houghton Mifflin Company (4th ed. 2000) (definition of “locus”)

I. INTRODUCTION

Petitioners submit this Reply to Patent Owner's Response addressing Claims 20 and 25 of U.S. Patent No. 7,764,231 ("the '231 Patent"). (*See* Ex. 1001.)

Patent Owner's Response reiterates the same deficient arguments that the Board rejected when it instituted an IPR of Claims 20 and 25. (*See* Decision to Institute *Inter Partes* Review, Paper No. 10 (hereinafter "Decision") at 21-26.) Patent Owner provides no new evidence to support its recycled arguments, either in the form of an expert declaration or cross-examination testimony of Petitioners' expert, Dr. Michalson. Besides the District Court's claim construction (Ex. 2005 from Patent Owner's Response), the record that the Board relied on when instituting this *inter partes* review is the same record now before the Board. (*See* Decision at 23 ("**On this record**, we are persuaded that Petitioner has established a reasonable likelihood that it would prevail in showing that such disclosures teach or suggest those elements of claim 20.") (emphasis added).) As described below, the District Court's claim constructions have no effect on Petitioner's invalidity arguments for Claims 20 and 25.

Nevertheless, this Reply addresses each of the following arguments from the Response: (1) that Petitioners cannot satisfy their burden of showing that an element in one independent claim is found in the prior art merely by pointing back to its analysis of another claim element; and (2) the Board should reconsider its

analysis regarding the “receiving” steps of claim 20 and the “obtaining” steps of claim 25. (*See* Response at 4-23.) As explained in the Petition and again below, these arguments are without merit. Therefore, Claims 20 and 25 of the ‘231 Patent are rendered obvious under 35 U.S.C. § 103 in view of U.S. Patent No. U.S. Patent 5,936,572 to Loomis (“*Loomis*”) in view of U.S. Patent No. 6,748,226 to Wortham (“*Wortham*”). All other arguments not raised in the Response are waived by the Patent Owner. (Scheduling Order, Paper 11 at 4 (Feb. 12, 2016).)

II. CLAIM CONSTRUCTION

As part of the Decision, the Board determined that no claim term required express construction. (Decision at 7-8.) The District Court has since construed several terms that are recited by Claims 20 and/or 25. (Response at 1-4; *see also* Ex. 2005.) The Response makes the conclusory statement that the Court’s claim constructions are “correct under both the *Phillips* standard and the broadest reasonable interpretation standard” and asks the Board to adopt the District Court’s construction. (Response at 4.)

Several terms construed by the Court do not form the basis of an argument by either party in this IPR. Accordingly, it is not necessary for the Board to construe: “mobile station,” “wireless mobile station,” “location information” terms, “computational machinery,” or “computational equipment.” (*See* Decision at 7; *see also Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir.

1999) (“Only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy.”).)

For the remaining terms, Patent Owner has failed to explain why the Court’s construction should be adopted by the Board using the broadest reasonable interpretation standard. In fact, when construing terms in IPR proceedings, the Court’s construction is simply “informative.” (*Samsung Elecs. Co., Ltd v. Va. Innovation Scis., Inc.*, IPR2013-000569, Paper 9, Order at 2 (Oct. 30, 2013).)

III. CLAIMS 20 AND 25 ARE OBVIOUS IN VIEW OF THE *LOOMIS-WORTHAM* COMBINATION.

The Response reargues many of the same positions argued in the Preliminary Response that the Board has already reviewed and rejected.

For example, in the Preliminary Response, Patent Owner argued that it was improper for Petitioner’s analysis of Claims 20 and 25 to cite back to the analogous elements of Claim 17. (Prelim. Resp. at 16, 23.) Patent Owner also argued that citing back to Claim 17 was improper because the elements of Claim 20 and 25 were different than the elements in Claim 17. (Prelim. Resp. at 16, 23.)

The Board disagreed. The institution Decision explained that relying on the analysis from Claim 17 was appropriate. Furthermore, the Board rejected Patent Owner’s argument that the disputed elements of Claims 17, 20, and 25 had “significant differences” and therefore could not be compared. (Decision at 19-

20.) The Board then explained how the Petition's analysis provided a reasonable likelihood that the *Loomis-Wortham* combination disclosed each of the disputed elements of Claims 20 and 25. (Decision at 21-26.)

Importantly, Patent Owner does not argue that *Loomis* and *Wortham* do not disclose the limitations at issue, but only argues that Petitioner did not meet its burden due to its reliance on the analysis of Claim 17 for a disclosure of the limitations of Claims 20 and 25. Consistent with the Board's rejection of Patent Owner's arguments in the institution decision, sections III.A and III.B below address how each of the disputed elements of Claims 20 and 25, respectively, are shown in the analysis provided for Claim 17.

Patent Owner also alleges that *Loomis* fails to disclose that the first and second receiving/obtaining steps of Claims 20 and 25 are performed in order. As explained below in section III.C, Petitioners proactively addressed this argument in the Petition, showing that the argument is without merit.

Section III.D addresses the section of the Response entitled "Response to the Decision" in which Patent Owner "request[s] that the Board reconsider its analysis" related to the institution decision of Claim 25. (*See* Response at 21-23.) As shown below, Patent Owner's arguments for reconsideration are conclusory and without merit.

Finally, section III.E addresses Patent Owner's arguments that were in the

Preliminary Response and improperly incorporated by reference into the Response.

A. The Board correctly determined that *Loomis* discloses the “receiving” and “determining” steps of Claim 20.

The Board correctly determined that *Loomis* discloses the first receiving, second receiving, and determining limitations of Claim 20 by citing back to the relevant portions of Claim 17. (See Decision at 21-23.) Petitioners have provided a mapping of these elements to the *Loomis-Wortham* combination based on the portions of Claim 17 that these elements referenced in the Petition. As seen below, the *Loomis-Wortham* combination discloses each element of the disputed limitations.

20.4 (a) first receiving, from a first of said location techniques, first location information for the mobile station, wherein said corresponding input information for said first location technique includes timing data from wireless signals transmitted from one or more global positioning satellites, and received by the mobile station,

The following analysis from the Petition's discussion of claim element 17.3 establishes how the *Loomis-Wortham* combination discloses claim element 20.4.

Section IX.D.3 (GPS Techniques) of the Petition, which is referenced in the discussion of claim element 17.3, explains how *Loomis*' outdoor LD module performing a GPS location technique (*i.e., a first of said location techniques*) satisfies this claim element. For example, in *Loomis*, the mobile station includes a GPS receiver/processor that obtains GPS location information of the mobile station

(i.e., “*first receiving . . . first location information for the mobile station*”) when provided with GPS satellite signal measurements (i.e., “*said corresponding input information for said first location technique*”). (Ex. 1008 (Loomis) at 11:49-12:15, 19:32-47; *see also* (Petition section IX.D.3 (GPS Technique).) The GPS location information (i.e., “*first location information for the mobile station*”) includes the present GPS location coordinates $(x_u, y_u, z_u)_{out}$ of the mobile station and associated GPS signal indicium I_{out} . (Ex. 1008 (Loomis) at FIG. 9, Abs., 12:21-27, 19:42-47, 20:14-16, 21:48-57.)

As explained in Section IX.D.3 (GPS Techniques) of the Petition, GPS signal measurements relate to “*wireless signals transmitted from one or more global positioning satellites and received by the mobile station.*” (See Petition section IX.D.3 (GPS Techniques); Ex. 1008 (Loomis) at 22:57-23:13; Ex. 1009 (Wortham) at 3:21-25, 5:18-23; Expert Decl. § X.C.2.)

The analysis of claim element 17.3 also explains that *Loomis*' GPS technique determines the present GPS location coordinates of the mobile station using the signal travel time of GPS satellite signals (i.e., “*timing data from wireless signals transmitted from one or more global positioning satellites*”) to determine pseudorange measurements corresponding to the range of the GPS receiver in the mobile station from each satellite. (Ex. 1008 (Loomis) at 12:8-12:15, 22:57-23:13; *see also* Petition Section IX.D.3 (GPS Techniques).)

Petition Section IX.D.6 (Order of Techniques), also referenced with respect to claim element 17.3, explains that *Loomis* discloses the required order and also renders it obvious.

20.6 (b) second receiving, from a second of said location techniques, second location information for the mobile station, wherein said corresponding input information for said second location technique includes data that is a function of a signal time delay of wireless signals transmitted between the wireless mobile station and one of said plurality of fixed location terrestrial stations during a plurality of transmissions between the mobile station and the one terrestrial station

The following analysis from the Petition's discussion of claim element 17.5 establishes how the *Loomis-Wortham* combination discloses claim element 20.6.

Section IX.D.4 (Radio Technique, under the discussion of signal time delay measurements) of the Petition, which is referenced in the discussion of claim element 17.5, explains how *Loomis*' indoor LD module performing a radio technique (*i.e.*, *a second of said location techniques*), satisfies this claim element. For example, in *Loomis*, the mobile station includes a radio receiver/processor that obtains location information of the mobile station (*i.e.*, "*second receiving . . . second location information for the mobile station*") when supplied with the radio phase measurements (*i.e.*, "*said corresponding input information for said second location technique*"). (See Petition section IX.D.4 (Radio Technique); Ex. 1008 (*Loomis*) at 6:25-29, 6:41-55, 11:55-65.) The radio location information (*i.e.*,

“*second location information for the mobile station*”) includes the present radio location coordinates $(x_u, y_u, z_u)_{rad}$ and associated radio signal indicium I_{rad} . (Ex. 1008 (Loomis) at 11:55-65, 12:21-27.)

As explained with respect to claim element 17.5 in Petition section IX.D.4 (Radio Technique), each radio source in *Loomis* (which includes a transmitting antenna) is a fixed radio transmission structure with a known location on the Earth (*i.e.*, “*plurality of fixed location terrestrial stations*”). (Section IX.D.4 (Radio Technique); Ex. 1008 (Loomis) at 4:44-56, 6:25-29, 6:35-37, 8:53-64, 21:36-38.)

The Petition’s analysis of claim element 17.5 also explains that *Loomis* discloses that location techniques based on signal timing measurements (*i.e.*, “*data that is a function of a signal time delay of wireless signals*”) were known in the prior art. For example, in the Background of the Invention, *Loomis* discloses various known prior art location techniques that determine locations using “differences in time of arrival...of the pulse transmitted by the roving station,” “differences in arrival times of the range tones received from the radio station,” or by “comparing times of arrival of the transmitted signal.” (Ex. 1008 (Loomis) at 2:18-21, 2:51-53, 3:28-33 (emphasis added).)

Claim element 17.5 also explains that the radio location technique in *Loomis*’ main embodiment uses signal timing measurements (*i.e.*, “*data that is a function of a signal time delay of wireless signals*”). (Petition section IX.D.4

(Radio Technique) (under the discussion of signal time delay measurements); Expert Decl. § X.D.4; *see also* Ex. 1008 (Loomis) at 6:46-55.) For example, *Loomis*' radio technique generates location estimates using signal phase measurements to determine "the intersections of three or more hyperboloids that are defined by the relative times of arrival of the three radio LD signals." (Ex. 1008 (Loomis) at 6:46-55, 11:61-65 (emphasis added).) Those of ordinary skill in the art would understand that the "relative times of arrival" of the three radio signals refers to the differences in their respective arrival times (*i.e.*, the claimed "*data that is a function of a signal time delay of wireless signals transmitted between the wireless mobile station and one of said plurality of fixed location terrestrial stations during a plurality of transmissions between the mobile station and the one terrestrial station*"). (Expert Decl. § X.D.4.)

Petition Section IX.D.6 (Order of Techniques), also referenced with respect to claim element 17.5, explains that *Loomis* discloses the required order and also renders it obvious.

20.8 determining, a plurality of resulting location estimates for the mobile station, wherein said step of determining includes steps (c) and (d) following: (c) obtaining at least one of said resulting location estimates using an instance (I₁) of said first location information for locating the mobile station; and (d) obtaining at least one of said resulting location estimates using an instance (I₂) of said second location information for locating the mobile station.

The following analysis from the Petition's discussion of claim element 17.10 establishes how the *Loomis-Wortham* combination discloses claim element 20.8.

Petition section IX.D.5 (Resulting Location Determination), referenced with respect to element 17.10, explains how *Loomis*' location system determines the “*plurality of resulting location estimates for the mobile station*” For example, *Loomis*' resulting location determination first determines which of the GPS and radio techniques likely provided the most accurate location estimate, by comparing the signal indicia of the estimates from each technique with threshold indicia and/or comparing the estimates themselves. (See Petition section IX.D.5 (Resulting Location Determination); Ex. 1008 (*Loomis*) at 12:21-27, 12:47-13:1, 19:48-63.) Next, based on a comparison of the respective signal indicia and/or location estimates, *Loomis*' resulting location determination selects either the radio location estimate or GPS location estimate as the resulting location information (collectively, “*determining includes steps (c) and (d) following: (c) obtaining at least one of said resulting location estimates using an instance (I_1) of said first location information for locating the mobile station; and (d) obtaining at least one of said resulting location estimates using an instance (I_2) of said second location information for locating the mobile station*”). (Ex. 1008 (*Loomis*) at FIG. 9, 12:47-13:1, 19:48-63.)

The Petition analysis explains that *Loomis* discloses determining “the

present location of the user [] at selected times (e.g., second-by-second, or more or less often, if desired)” (*i.e.*, “*determining, a plurality of resulting location estimates*”). (Ex. 1008 (Loomis) at 8:26-35.)

B. The Board correctly ruled that the *Loomis-Wortham* combination discloses the “obtaining” and “outputting” steps of Claim 25.

The Board also correctly determined that *Loomis* discloses the first obtaining, second receiving, and outputting limitations of Claim 25. (*See* Decision at 23-26.) Petitioners have provided a mapping of these elements to the *Loomis-Wortham* combination based on the portions of Claim 17 referenced in the Petition. Furthermore, the below arguments explain why Patent Owner’s Response directed to “outputting” step of element 25.9 is incorrect.

25.7 first obtaining the first location information of said mobile station, the first location information determined by computational machinery when said corresponding location technique for using the first collection is supplied with an instance of said first collection;

The following analysis from the Petition’s discussion of claim element 17.3 (and 17.1 for “computational machinery”) establishes how the *Loomis-Wortham* combination discloses claim element 25.7.

Loomis’ location system uses various hardware components, including a controller, GPS signal receiver/processor, radio signal receiver/processor, and/or a central station (*i.e.*, “*computational machinery*”). (Ex. 1008 (Loomis) at FIGS. 1,

6, 4:51-56, 4:66-5:22, 8:29-34, 11:50-12:29, 12:47-13:4.)

Petition section IX.D.3 (GPS Techniques), which is referenced in the analysis of element 17.3, explains how *Loomis*' GPS technique (*i.e.*, outdoor LD module) satisfies these claim elements (*i.e.*, "*said corresponding location technique for using the first collection*"). For example, in *Loomis*, the mobile station includes a GPS receiver/processor that obtains GPS location information of the mobile station (*i.e.*, "*first obtaining the first location information of said mobile station*") when provided with GPS satellite signal measurements (*i.e.*, "*when said corresponding location technique for using the first collection is supplied with an instance of said first collection*"). (Ex. 1008 (*Loomis*) at 11:49-12:15, 19:32-47; *see also* (Petition section IX.D.3 (GPS Techniques).) The GPS location information (*i.e.*, "*the first location information of said mobile station*") includes the present GPS location coordinates $(x_u, y_u, z_u)_{out}$ of the mobile station and associated GPS signal indicium I_{out} . (Ex. 1008 (*Loomis*) at FIG. 9, Abs., 12:21-27, 19:42-47, 20:14-16, 21:48-57.)

Petition Section IX.D.6 (Order of Techniques), also referenced with respect to claim element 17.3, explains that *Loomis* discloses the required order and also renders it obvious.

25.8 second obtaining the second location information of said mobile station, the second location information determined by computational machinery when said corresponding

location technique for receiving the second collection is supplied with an instance of said second collection

The following analysis from the Petition's discussion of claim element 17.5 (and 17.1 for "computational machinery") establishes how the *Loomis-Wortham* combination discloses claim element 25.8.

Loomis' location system uses various hardware components, including a controller, GPS signal receiver/processor, radio signal receiver/processor, and/or a central station (*i.e.*, "*computational machinery*"). (Ex. 1008 (*Loomis*) at FIGS. 1, 6, 4:51-56, 4:66-5:22, 8:29-34, 11:50-12:29, 12:47-13:4.)

The analysis of claim element 17.5 explains that Section IX.D.4 (Radio Technique) of the Petition (under the discussion of signal time delay measurements) describes how *Loomis'* radio technique (*i.e.*, the indoor LD module) satisfies these claim elements (*i.e.*, "*said corresponding location technique for receiving the second collection*"). For example, in *Loomis*, the mobile station includes a radio receiver/processor that obtains location information of the mobile station (*i.e.*, "*second obtaining the second location information of said mobile station*") when supplied with the radio phase measurements (*i.e.*, "*when said corresponding location technique for receiving the second collection is supplied with an instance of said second collection*"). (See Petition section IX.D.4 (Radio Technique); Ex. 1008 (*Loomis*) at 6:25-29, 6:41-55, 11:55-65.) The radio

location information (*i.e.*, “*the second location information of said mobile station*”) includes the present radio location coordinates $(x_u, y_u, z_u)_{rad}$ and associated radio signal indicium I_{rad} . (Ex. 1008 (Loomis) at 11:55-65, 12:21-27.)

Petition Section IX.D.6 (Order of Techniques), also referenced with respect to claim element 17.5, explains that *Loomis* discloses the required order and also renders it obvious.

25.9 outputting, to a source for accessing location data for said mobile station . . .

The Petition explains that *Loomis*' location system transmits (*i.e.*, “*outputting*”) the selected location estimate (*i.e.*, “*resulting location information*”) to an interested person or facility (*i.e.*, “*a source for accessing location data for said mobile station*”). (Ex. 1008 (Loomis) at 5:14-22, 12:30-40; *see also id.* at 12:62-13:1.) Patent Owner's argument that a “person or facility” does not satisfy the element “source for accessing location data,” is without merit. (*See Response* at 18-21.) As the Board correctly noted, “[a] facility that receives the information can further provide that information to users of the facility, thus acting as a source for accessing location data.” (Decision at 26.)

Patent Owner does not challenge Dr. Michalson's testimony or the Board's explanation in its Response (*see Response* at 21-23) nor does Patent Owner dispute that a facility receiving resulting location information would be understood by a

person of ordinary skill in the art to be a source for accessing location data. Accordingly, *Loomis*' disclosure that location system transmits (*i.e.*, "outputting") the selected location estimate (*i.e.*, "*resulting location information*") to an interested person or facility (*i.e.*, "*a source for accessing location data for said mobile station*") satisfies this element of Claim 25. (See Petition at 59-60; *see also* Ex. 1008 (*Loomis*) at 5:14-22, 12:30-40; *id.* at 12:62-13:1.)

C. The *Loomis-Wortham* combination discloses that the first and second receiving/obtaining steps may be performed in order.

The Response alleges that *Loomis* fails to disclose that both the "first receiving . . . second receiving" steps of Claim 20 and the "first obtaining . . . second obtaining" steps of Claim 25 are performed in order. (Response at 13-15, 22.) Because Patent Owner did not advance this argument in its Preliminary Response (Prelim. Resp. at 8-9) the Board did not address this issue in its Decision. (Decision at 7-8.) However, as explained below, the Petition explained how *Loomis* discloses that the first and second receiving/obtaining steps may be performed in order should the Board adopt the District Court's construction.

1. The Petition explains how *Loomis* discloses receiving/obtaining location information in an order

As explained in Section IX.D.6 (Order of Techniques) of the Petition, *Loomis* discloses multiple embodiments wherein the GPS technique can be performed *either* before the FM radio technique *or* after the FM radio technique.

(Ex. 1008 (Loomis) at Abs., 12:21-27, 12:47-13:1, and 19:52-60.)

For example, in one embodiment, *Loomis*' resulting location determination algorithm obtains estimates from both location techniques and compares their associated signal indicia to determine which location estimate to return as the resulting estimate:

The controller 93 receives the present location coordinates $(X_u, Y_u, Z_u)_{rad}$ of the user 12 from the radio LD signal receiver/processor 75, receives the present location coordinates $(X_u, Y_u, Z_u)_{out}$ of the user 12 from the outdoor LD signal receiver/processor 85, and receives the indicia I_{rad} and I_{out} , for comparison with the respective indicia thresholds $I_{rad,thr}$ and $I_{out,thr}$.

(*Id.* at 12:21-27 (emphasis added); *see also* Petition at 28.) Dr. Michalson's declaration explained that a person of ordinary skill in the art would understand that since the order in which the GPS and radio location techniques is performed is immaterial, it would be trivial to perform the GPS technique before (i.e. first) the radio technique:

Specifically, *Loomis* discloses an embodiment where the resulting location determination algorithm simply obtains estimates from both location techniques and compares their associated signal indicia to determine which to return as the resulting estimate. Thus, while the GPS and radio location techniques must both be performed (or at least attempted) before the resulting location determination can be performed, it does not matter what order those techniques are

performed. Given that the order is immaterial, those of ordinary skill in the art would understand that **it would be trivial to request and obtain location information using *Loomis*' GPS technique before the radio technique**.

(Expert Decl. § X.G at ¶ 223 (emphasis added).)

Thus, contrary to the Response (*see* Response at 13, 22-23), the Petition and associated expert declaration do indeed explain that *Loomis* discloses embodiments where both receiving/obtaining steps are performed and that it would have been obvious to perform the GPS technique before the radio technique. Notably, the Response fails to address this disclosure and does not rebut the testimony of Dr. Michalson.

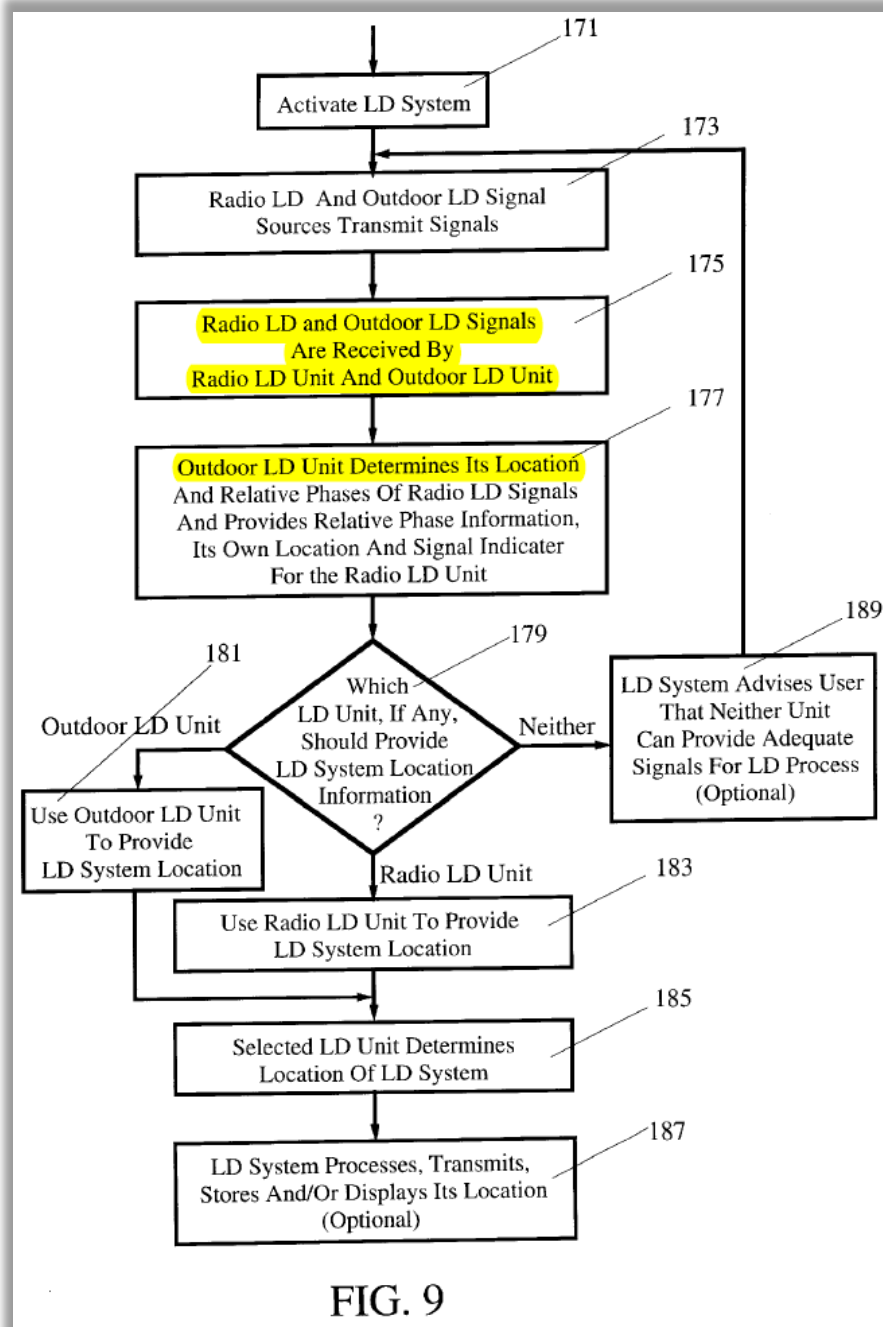
Accordingly, *Loomis* discloses that both a GPS location estimate and a radio/terrestrial location estimate may be received/obtained and that the GPS technique is performed before the radio technique.

2. The Response omits relevant portions of Figure 9 and ignores the portions of the Petition that discuss where *Loomis* discloses performing both location techniques in order.

As explained above, the Petition discloses several embodiments from *Loomis* that teach or render obvious the requirement of performing the location techniques in order, including columns 12:21-27 and 12:47-13:1. The Response ignores these portions of the Petition. Moreover, the Response does not challenge

the expert opinions of Dr. Michalson, which explained that it would have been obvious to perform *Loomis*' GPS technique first and the radio/terrestrial technique second.

Instead, the Response focuses on another embodiment from *Loomis*, shown in Figure 9, which illustrates how the controller of the hybrid LD unit may select a location technique based on the received signals. (Response at 12-15, 21-23.) However, Figure 9 also shows that the location techniques are performed in the order as claimed. Notably, the Response omits the portions of Figure 9 that show how the outdoor LD unit determines its own location using the received GPS signals *before* the radio LD unit may be selected to determine the location of hybrid LD device using the received radio signals. The entirety of Figure 9 shows:



The description of figure 9 explains that at step 175 the radio LD unit receives radio signals from the radio signal sources and the outdoor LD unit receives outdoor signals (i.e., GPS signals) from outdoor signal sources (e.g., satellites).

(See Ex. 1008 (Loomis) at 19:39-42.) At step 177, which is omitted from the Response, the “outdoor LD unit estimates *its own present location*. . . .” (Ex. 1008 (Loomis) at 19:42-47.)

At decision block 179 of Figure 9, *Loomis* explains that both radio and GPS signals received by the hybrid device may be adequate to determine the location of the hybrid device and therefore either set of signals can be used: “In step 179, the controller determines whether the outdoor LD signals, or the radio LD signals, **or both**, or neither, is adequate to allow determination of the location of the associated LD unit antenna. . . .” (Ex. 1008 (Loomis) at 19:48-51 (emphasis added).) *Loomis* then explains, “[i]f the radio LD signals are adequate and the radio LD unit is selected, in step 183, to determine the location, the system (or controller) uses the radio LD unit information to determine the present location of the user.” (Ex. 1008 (Loomis) at 19:56-60.)

Finally, Petitioners note that should the Board adopt the District Court’s construction of “first obtaining . . . second obtaining,” the step of “second obtaining the second location information of said mobile station . . . may but need not be performed in those circumstances in which the first collection of measurements is available.” (Ex. 2005 at 27.) Under this construction, once the outdoor LD unit determines its location after receiving GPS signals (*i.e.*, the first collection of measurements is available) the radio LD unit does not even need to

obtain a location using the terrestrial technique. Thus, the embodiment shown in Figure 9 of the outdoor technique bypassing the radio technique when the outdoor LD unit receives the GPS signals would be consistent with the Court's construction.

In any event, when considered in its entirety, Figure 9 shows that the hybrid LD device may first use the outdoor LD unit to obtain a "present location" of the outdoor LD unit and, in some situations, then use the radio LD unit to obtain a location estimate using the radio signals.²

D. Patent Owner's arguments made in support of its request for reconsideration are conclusory and without merit.

In the section of the Response entitled "Response to the Decision," Patent Owner requests that the Board reconsider its institution of Claim 25. (Response at 21.) The Patent Owner supports this request by singling out column 19:52-60 of *Loomis* and argues that this specific section of *Loomis* fails to disclose elements of Claim 25. (See Response at 21-23.) Specifically, the Response argues:

Moreover, it [column 19:52-60 of *Loomis*] also does not teach or

² Petitioners note that this embodiment of *Loomis*, which discloses first obtaining a location of the LD unit using the GPS technique to determine the relative phase information for use by the radio LD unit, is the embodiment pointed to by the Board when denying institution of Claim 17. (Decision at 17-18.)

suggest that location information is obtained from the radio/terrestrial LD unit (which is alleged to perform the “second predetermined technique”) **“at least when said first collection is not available”** (col. 180:36-37). To the contrary, the relied-upon passage of Loomis presumes that the outdoor/GPS LD unit’s signals (which are alleged to be the “first collection of measurements”) are indeed available and it is only a matter of whether they are “adequate” such that the outdoor LD unit will be selected as the one to determine the location.

(Response at 23.) Patent Owner’s argument appears to be an abridged version of the argument presented in the related IPR proceeding, IPR2015-01681. In that proceeding, the Board stated that “at least when said first collection is not available,” requires “that this second location technique *could* be used when the GPS signal measurements are not available, not that [Loomis] must demonstrate this specific behavior.” (IPR2015-01681, Paper 12, Decision at 18.) However, here Patent Owner’s argument is unclear and undeveloped. Moreover, any attempt by Patent Owner to incorporate the arguments from IPR2015-01681 into the Response would be improper. (*See* 37 C.F.R. § 42.6(a)(3).)

To the extent that Patent Owner is arguing that *Loomis* fails to disclose the element “at least when said first collection is not available,” the Petition squarely addresses this limitation in the discussion of element 25.2 of the Petition. This section of the Petition also establishes that *Loomis*’ second location technique

could be used regardless of whether the GPS signal measurements are available under the Board's interpretation of Claim 25 in the related IPR proceeding. The Petition explains:

Those of ordinary skill in the art would understand that, in *Loomis'* location system, the radio technique and associated signal measurements are used to generate a location estimate even when the GPS satellite signal measurements are unavailable, for example, due to an obstruction (i.e., "at least when said first collection is not available"). (Ex. 1008 (*Loomis*) at 18:27-32, 20:21-28; Expert Decl. § X.H.4.) . . . *Loomis* teaches that it addresses this problem by using the GPS coordinates provided by the GPS technique when the mobile station is outside of buildings and the radio coordinates provided by the radio technique when the mobile station is inside of buildings. (*Id.* at 18:27-32, 20:21-28.) In addition, *Loomis* teaches selecting either the GPS or radio technique based on the adequacy of their respective signals, and therefore if the GPS signals are inadequate, the radio signals would be used. (*Id.* at 19:48-60.)

Thus, when the GPS coordinates are either unavailable or unreliable, *Loomis'* resulting location determination is simply performed using the radio technique. (*Id.*) Those of ordinary skill in the art would understand that, in any GPS-based system such as *Loomis'*, GPS signals will not always be available, either because they are completely obstructed or at least sufficiently obstructed that they do not produce a reliable estimate. In either situation, the collection of GPS signal measurements would be considered unavailable (*i.e.*,

“at least when said first collection is not available”). Thus, those of ordinary skill in the art would find it both inherent and obvious that *Loomis*' radio technique would still be used even when there is a blockage or outage of GPS signals. (Expert Decl. § X.H.4.)

(See Petition at 54-55.)

Patent Owner's narrow interpretation of *Loomis*, which appears to be that GPS signals are always available “and it is only a matter of whether they are “adequate” such that the outdoor LD unit will be selected as the one to determine the location,” is also refuted by Dr. Michalson's expert declaration.

Dr. Michalson explains that a person of ordinary skill in the art would understand that *Loomis* discloses that a GPS or radio technique may be used “based on the adequacy of their respective signals, and therefore if the GPS signals are inadequate, the radio signals would be used.” (Expert Decl. § X.H.4 (emphasis in the original).) Dr. Michalson further explains, “when the GPS coordinates are either unavailable or unreliable, *Loomis*' resulting location determination is simply performed using the radio technique.” (Expert Decl. § X.H.4.) Thus, an inadequate GPS signal may be a GPS signal that is not available. Patent Owner does not challenge these opinions from Dr. Michalson.

Accordingly, the Petition explains how *Loomis* discloses, “at least when said first collection is not available,” as recited by Claim 25.

E. Patent Owner's arguments that are incorporated by reference

from the Preliminary Response are deficient and improper.

The Response incorporates by reference arguments from its Preliminary Response. (Response at 4 (“Patent Owner **maintains each of the arguments asserted in its Preliminary Response.**”) (emphasis added).) However, not all of the arguments from the Preliminary Response were developed and presented in the Response. Insofar as Patent Owner maintains these unaddressed arguments, incorporating arguments by reference from a preliminary response into a response is prohibited. (*See Apple, Inc. v. Ameranth*, CBM2015-00080, Paper 44 (“Arguments that are not developed and presented in the Patent Owner Response, itself, are not entitled to consideration.”).) While these incorporated-by-reference arguments have been waived, Petitioners nevertheless explain how the unaddressed arguments from the Preliminary Response are deficient.

Patent Owner previously argued that the “act of ‘obtaining’ something (in this case the instances of ‘location information’) requires acquiring or gaining possession of that thing.” (Prelim. Resp. at 9.) Patent Owner argued that the Petition failed to “acknowledge or support its implied premise that the act of determining the ‘location information’ (which the Petition identifies as the calculated GPS estimate and the calculated radio location technique estimate) is the same thing as ‘obtaining’ that location information, or that it necessarily results in the recited acts of obtaining.” (Prelim. Resp. at 10.) This argument is without

merit.

The Board has rejected this argument in a related IPR proceeding involving this same claim. (*See* IPR2015-01681, Decision, Paper 12 at 19.) In that proceeding, the Board rejected Patent Owner's argument that obtaining location information is not the same as performing a location technique to acquire the location information. (*See* IPR2015-01681, Paper 12 at 19.) The Board stated, "calculating GPS and radio coordinates is one way of acquiring or gaining possession of those coordinates," which meets the requirement of "first obtaining" and "second obtaining." (IPR2015-01681, Paper 12 at 19.)

Patent Owner's argument is further undermined by the '231 Patent's own use of the word "obtain" as a synonym for determining or calculating. For example, the '231 Patent states: "A relatively straightforward application of this technique is to . . . (b) **obtain new location estimates by subtracting from each of the areas of intersection** any of the reliable RF coverage area representations for base stations 122 that can not be detected by the target MS." (Ex. 1001 ('231 Patent) at 64:33-48 (emphasis added).) Thus, the '231 Patent uses the term "obtain" to describe a calculation (i.e., subtracting data) that is used to determine a location estimate.

Accordingly, *Loomis* discloses "first obtaining a first instance of the location information," and "second obtaining a second instance of the location information"

by performing the GPS and radiolocation techniques. (*See* Petition at 58.)

IV. CONCLUSION

For the reasons set forth above, Petitioners respectfully request that Claims 20 and 25 of the '231 Patent be cancelled as unpatentable under 35 U.S.C. §318(b).

DATED: September 16, 2016

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that on September 16, 2016, pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b), a copy of Petitioners' Reply to Patent Owner's Response to Petition was served on Patent Owner's counsel via email at the following correspondence addresses:

- sean@dovellaw.com
- ssereboff@socalip.com

Respectfully Submitted,

DATED: September 16, 2016

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CERTIFICATE OF COMPLIANCE

The undersigned certifies pursuant to 37 C.F.R. § 42.24 that this paper complies with the type-volume limit of 37 C.F.R. § 42.24(c)(1) because it contains 5,593 words according to the word-processing program used to prepare this document (Microsoft Word), excluding the parts exempted by 37 C.F.R. § 42.24(c).

Respectfully Submitted,

DATED: September 16, 2016

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