

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

SKYHOOK WIRELESS, INC.,

Plaintiff and
Counterclaim-Defendant,

v.

GOOGLE INC.,

Defendant and
Counterclaimant.

Case No. 1:10-cv-11571-RWZ

**SKYHOOK WIRELESS, INC.'S
STATEMENT OF GENUINE ISSUES OF DISPUTED MATERIAL FACTS
IN OPPOSITION TO GOOGLE INC.'S
MOTION FOR SUMMARY JUDGMENT OF INDEFINITENESS**

I. INTRODUCTION

Pursuant to Local rule 56.1, plaintiff Skyhook Wireless, Inc. ("Skyhook") submits the following responses in opposition to Google Inc.'s ("Defendant's") Motion for Summary Judgment of Indefiniteness: (1) Skyhook's rebuttal to Defendant's statement of allegedly undisputed material facts; and (2) Skyhook's statement of additional material facts that are disputed and preclude summary judgment.

II. Skyhook's Rebuttal To Defendant's Statement Of Allegedly Undisputed Material Facts

Set out below is Skyhook's rebuttal to Defendant's statement of allegedly undisputed material facts. The rebuttal tracks the paragraph order of Defendant's statement.

Defendant's Statement of Allegedly Undisputed Material Facts	Skyhook's Response
1. Plaintiff Skyhook Wireless Inc. ("Skyhook") is a Delaware corporation, with its principal place of business in Boston, Massachusetts. Compl. ¶4.	Undisputed.
2. Defendant and Counterclaim-Plaintiff Google Inc. ("Google") is a Delaware Corporation, with its principal place of business in Mountain View, California. Compl. ¶5.	Undisputed.
3. Skyhook states that it is the owner of four patents: U.S. Patent Nos. 7,414,988 ("the '988 patent"), 7,433,694 ("the '694 patent"), 7,305,245 ("the '245 patent"), and 7,474,897 ("the '897 patent") (collectively, "the patents-in-	Undisputed.

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suit"). Compl. ¶¶ 7, 14, 21, 27.	
4. On September 15, 2010, Skyhook filed suit against Google in the United States District Court District of Massachusetts. Compl.	Undisputed.
5. Skyhook accuses "Google's Location Services" of infringing claims 1-3 in the '988 patent, claims 1 and 2 in the '694 patent, claims 1, 2, 4-6 and 8 in the '245 patent, and claims 1-4 in the '897 patent. <i>See</i> Plaintiff Skyhook Wireless, Inc.'s Preliminary Infringement Disclosures (Feb. 14, 2011).	Undisputed.
6. On October 29, 2010, Google answered Skyhook's Complaint, asserting an affirmative defense of invalidity. Ans. ¶ 33.	Undisputed.
7. The patents-in-suit are related. The patents-in-suit each identify the same four individual inventors (Russel Kipp Jones, Farshid Alizadeh-Shabdiz, Edward James Morgan, and Michael George Shean). <i>See</i>	Undisputed.

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Exs. C-F.	
8. The '988, '694, and '245 patents each claims priority to U.S. Provisional Application No. 60/623,108, which was filed with the U.S. Patent and Trademark Office on October 29, 2004. Exs. C-E.	Undisputed.
9. The applications that later issued as the '988, '694 and '245 patents were filed on October 28, 2005. <i>Id.</i>	Undisputed.
10. The '988, '694 and '245 patents each state that they are related to the others, as well as to the unasserted '762 patent. <i>See</i> Ex. C at 1:12-22; Ex. D at 1: 11-32; Ex. E at 1:14-19. The '897 patent issued from a February 22, 2006 application that claims priority as a continuation-in-part of the application that issued as the '245 patent. Ex. F.	Undisputed.
11. The '897 patent states that it is related to: U.S. Provisional Application No. 60/654,811 (filed on February 22, 2005);	Undisputed.

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<p>U.S. Provisional Application No. 60/658,481 (filed on Mar. 4, 2005); the application that issued as the '988 patent (asserted); the application that issued as the '694 patent (asserted); the application that issued as the '245 patent (asserted); the application that issued as United States Patent No. 7,403,762 (unasserted); the application that issued on February 19, 2009 as the U.S. Patent No. 7,493,127 (unasserted); and pending U.S. Patent App. No. 11/359,154 (filed Feb. 22, 2006). Ex. F at 1:7-41.</p>	
<p>12. The specification of the '988 patent is similar to that of the '694 patent. Exs. C, D. The two patents share the same eleven figures. <i>Id.</i> The two detailed descriptions of the inventions are identical, using exactly the same language to describe collection of Wi-Fi access point data using the "Chinese Postman" routing methodology to obtain reference symmetry while avoiding arterial</p>	<p>Undisputed.</p>

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<p>bias. Ex. C at 5:24-14:12 ; Ex. D at 4:44-13:20.</p>	
<p>13. The specification of the '245 patent is similar to that of the '988 and '694 patents. See Exs. C-E. However, the summaries of the inventions and discussions of related art differ. <i>Id.</i> In other respects they are the same, sharing the same figures and detailed descriptions, including details regarding collection of Wi-Fi access point data using the "Chinese Postman" routing methodology to try to differentiate collection methods acknowledged in the prior art. See Ex. C at 8:28-59; Ex. D at 7:47 - 8: 12; Ex. E at 8:24-54.</p>	<p>Disputed. The evidence cited by Defendant does not show that the descriptions of the "Chinese Postman" routing methodology in the '988, '694, and '245 patents were included to try to differentiate collection methods acknowledged in the prior art. All three patents clearly state that the "Chinese Postman" routing algorithm is a "preferred embodiment." (<i>See</i> Def. Ex. E¹ ('245) 8:36-39; Def. Ex. D ('694) 60-63; Def. Ex. C ('988) 8:41-44.)</p> <p>Undisputed that the specification of the '245 patent is similar to that of the '988 and '694 patents. Undisputed that the summaries of the inventions and discussions of related art differ.</p> <p>Undisputed that in other respect they are the same, sharing figures and descriptions, including</p>

¹ All citations in the form "Def. Ex. ___" are to the exhibits attached to the declaration of Susan Baker Manning in support of Defendant's motion for summary judgment and, in the alternative, opening claim construction brief.

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	<p>details regarding collection of Wi-Fi access point data using the "Chinese Postman" routing methodology.</p>
<p>14. The '897 patent contains additional disclosures beyond the '245 patent from which it claims priority, and both the '897 patent and the '245 patent relate to a method of calculating the position of a Wi-Fi enabled user device using a reference database. Exs. E, F, N (comparing the '897 and '245 patents). The '245 and '897 patents claim slightly different aspects of the process of determining the location of a Wi-Fi enabled device; the '897 patent claims pre-defined rules for including and excluding observed access points from a set used to determine location, Ex. F at 12:21-25, while the '245 patent claims a method of choosing amongst algorithms for location determination, Ex. E at 14:20-24. The specification of the '245 discloses the use of</p>	<p>Disputed. The word "slightly" is vague and ambiguous and unsupported by the evidence cited by Defendant. Furthermore, Defendant's descriptions of the claims of the '897 and '245 patents are incomplete. The '897 patent claims:</p>

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<p>the same "Chinese Postman" routing methodology for collection of access point data disclosed in the '694 and '988 patents, Ex. E at 8:24-54, while the '897 lists arterial bias and lack of reference symmetry among reference points as drawbacks in the related art, Ex. F at 2:64-3:5, 3:27-33.</p>	<p>1. In a location-based services system for WiFi-enabled devices, a method of calculating the position of WiFi-enabled devices comprising the acts of:</p> <ul style="list-style-type: none"> a) a WiFi-enabled device communicating with WiFi access points within range of the WiFi-enabled device so that observed WiFi access points identify themselves; b) accessing a reference database to obtain information specifying a recorded location for each observed WiFi access point; c) using the recorded location information for each of the observed WiFi access points in conjunction with pre-defined rules to determine whether an observed WiFi access point should be included or excluded from a set of WiFi access points; d) using the recorded location information of only the WiFi access points included in the set and omitting the recorded location information of the excluded WiFi access points to calculate the geographical position of the WiFi-enabled device. <p>2. The method of claim 1 further including recording signal strength information for WiFi access points included in the set and using the signal strength information when calculating the geographical position of the WiFi-enabled device.</p> <p>3. The method of claim 1 wherein the predefined rules include rules to determine a reference point and to compare the recorded location information for each of the observed WiFi access points to the reference point, and wherein WiFi access points having a recorded location within a predefined threshold distance of the reference point are included in the set and wherein WiFi access points having a recorded location in excess of the predefined threshold distance of the reference point are excluded from the set.</p> <p>4. The method of claim 3 wherein the reference point is determined by identifying a cluster of WiFi access points and determining an average position of the WiFi access points in the cluster.</p> <p>(Def. Ex. F ('897) 12:12-47.)</p> <p>The '245 patent claims:</p>

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	<p>1. A method of locating a user-device having a Wi-Fi radio, comprising: providing a reference database of calculated locations of Wi-Fi access points in a target area; in response to a user application request to determine a location of a user-device having a Wi-Fi radio, triggering the Wi-Fi device to transmit a request to all Wi-Fi access points within range of the Wi-Fi device; receiving messages from the Wi-Fi access points within range of the Wi-Fi device, each message identifying the Wi-Fi access point sending the message; calculating the signal strength of the messages received by the Wi-Fi access points; accessing the reference database to obtain the calculated locations for the identified Wi-Fi access points; based on the number of Wi-Fi access points identified via received messages, choosing a corresponding location-determination algorithm from a plurality of location-determination algorithms, said chosen algorithm being suited for the number of identified Wi-Fi access points; using the calculated locations for the identified Wi-Fi access points and the signal strengths of said received messages and the chosen location-determination algorithm to determine the location of the user-device.</p> <p>2. The method of claim 1 wherein the calculated locations for the identified Wi-Fi access points are filtered to determine if the corresponding Wi-Fi access points have moved since the time the information about the Wi-Fi access points was included in the reference database.</p> <p>3. The method of claim 1 wherein the reference database is located locally relative to the user-device.</p> <p>4. The method of claim 1 wherein the reference database is located remotely relative to the user-device.</p> <p>5. The method of claim 1 wherein the location of the user device is provided with latitude and longitude coordinates.</p> <p>6. The method of claim 1 wherein the plurality of location-determination algorithms includes a simple signal strength weighted average model.</p> <p>7. The method of claim 1 wherein the plurality of location-determination algorithms includes a nearest neighbor model.</p> <p>8. The method of claim 1 wherein the plurality of location-determination algorithms includes a triangulation technique.</p> <p>9. The method of claim 1 wherein the plurality of location-determination algorithms includes an adaptive smoothing technique based on the device velocity.</p> <p>10. The method of claim 1 wherein the choice of location-determination algorithm is further based on the user application making the location request.</p> <p>(Def. Ex. E ('245) 14:4-53.)</p>

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	<p>Undisputed that the '897 patent contains additional disclosures beyond the '245 patent from which it claims priority, and both the '897 patent and the '245 patent relate to a method of calculating the position of a Wi-Fi enabled user device using a reference database. Undisputed that the specification of the '245 discloses the use of the same "Chinese Postman" routing methodology for collection of access point data disclosed in the '694 and '988 patents, while the '897 lists arterial bias and lack of reference symmetry among reference points as drawbacks in the related art.</p>
<p>15. On November 30, 2007, the Examiner rejected pending claim 1 in the application for the '988 patent as obvious in light of U.S. Patent App. Pub. No. 2005/0164710 (Beuck) in view of U.S. Patent App. Pub. No. 2005/0037775 (Moeglein). Ex. G at GSHFED200-12. The Examiner also objected to claim 1 because</p>	<p>Undisputed.</p>

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<p>the term "radius on the order of tens of miles" "leaves the claim open ended." <i>Id.</i> at GSHFED202. The Examiner also rejected pending claims 2 and 3 as unpatentable in light of the Beuck reference in view of Moeglein and U.S. Patent No. 5,940,825 (Castelli). <i>Id.</i> at GSHFED207-10.</p>	
<p>16. In response, the applicants amended the last two limitations of claim 1:</p> <p style="padding-left: 40px;">A Wi-Fi location server, comprising:</p> <p style="padding-left: 40px;">A database of Wi-Fi access points for at least one target area having a radius on the order of tens of miles, said database being recorded in a computer-readable medium and including database records for substantially all Wi-Fi access points in the target area, each record including identification information for a corresponding Wi-Fi access point and calculated position information for the corresponding Wi-Fi access point, wherein said calculated position information is obtained from recording multiple readings of the Wi-Fi access point <u>at different locations around the Wi-Fi access point so that the multiple readings have to provide</u> reference symmetry <u>relative to other Wi-Fi access points in the target area when calculating</u> and so that the calculation <u>of the position of the Wi-Fi access</u></p>	<p>Undisputed.</p>

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<p>point and to avoids arterial bias in the calculated position information; <u>and</u></p> <p>computer-implemented logic to add records to the database for newly-discovered Wi-Fi access points said computer logic including logic to recalculate position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered <u>readings of previously stored</u> Wi-Fi access points.</p> <p><i>Id.</i> at GSHFED183.</p>	
<p>17. The applicants also provided detailed remarks in which they argued the amended claims were patentable over the prior art. <i>Id.</i> at GSHFED185-91. The applicants stated, inter alia:</p> <p>In contrast to the cited references, applicants' claim 1 is directed to a Wi-Fi location server that includes position information for Wi-Fi access points without arterial bias. Specifically, the calculated position information for the Wi-Fi access points is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point. These multiple readings have reference symmetry relative to other Wi-Fi access points in the target area. Thus, the calculation of the position of the Wi-Fi access point avoids arterial bias in</p>	<p>Undisputed.</p>

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<p>the calculated position information. This technique of gathering readings from Wi-Fi access points results in higher quality estimates of access point locations and more complete information about the access points in the area. Consequently, devices using the calculated access point locations to determine their position have more accurate estimations of their locations. See Application at ¶¶ 41-44.</p> <p>As set forth above, none of the cited reference teach or suggest conducting an audit of an area to build a reference database of the locations of Wi-Fi access points in a target area so as to provide reference symmetry and avoid arterial bias. As stated in the application, amateur scanners ("wardrivers") have attempted to collect access point location data for use in location estimation systems. However, the methods employed by wardrivers suffer from several drawbacks. Namely, as described in the application, the location data collected by the wardrivers is often inaccurate, incomplete, and grows organically rather than being collected in a systematic fashion to purposefully avoid arterial bias. See Application at ¶¶ 15-17.</p> <p>As explained in greater detail in the application, significant errors in position calculation can result when the reference points used for the calculation lack symmetry around the physical location of the device performing the calculation. Unsymmetrical location data (or</p>	

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<p>"arterial bias") occurs when individuals (e.g., wardrivers) collect location data for Wi-Fi access points without following designated scanning routes. Such data tends to aggregate around heavily traffic areas (or "arteries"). Attempting to use arterially biased data to estimate the location of a mobile device causes a "location pull" towards the main arteries regardless of where the user is currently located. This causes substantial accuracy errors in the location estimation. Figures 5 and 6 of the application illustrate this effect. See Application at ¶¶ 15 and 44.</p> <p>Collecting multiple readings of Wi-Fi access points in a systematic fashion, as described in the application, provides reference symmetry within the target area. Thus, the distribution of reference points (i.e., Wi-Fi access point locations) is symmetric. By using a collection of location data that is symmetric, a mobile device attempting to calculate its location typically encounters physical locations in which there are numerous access point locations on all sides of the device within range of the device's Wi-Fi radio. Therefore, a position calculation performed by the mobile device will have reduced location bias and will be more accurate as a result. See Application at ¶ 44.</p> <p>Unlike the cited references and known methods described in the background of the application,</p>	

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<p>applicants' claim 1 clearly recites the calculated position information is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings have reference symmetry relative to other Wi-Fi access points in the target area and so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information. The application describes the discovery of the arterial bias problem and the advantages of the solutions devised by applicants. Namely, by performing a planned audit, and avoiding arterial bias, applicants at least achieve more complete information about access points in the target area, higher quality estimates of access point locations, and reference symmetry. See Application at ¶¶ 47-51.</p> <p>None of this is taught or suggested by the cited references. Thus, applicants submit that claim 1 is patentable over the cited references.</p> <p><i>Id.</i> at GSHFED0000187-89.</p>	
<p>18. As to the Examiner's objection to the "radius on the order of tens of miles" limitation as "leav[ing] the claim open ended," the Applicants argued that the limitation "clearly communicates that the</p>	<p>Undisputed.</p>

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<p>claimed target area is larger than, for example, a single floor of a building, such as might be found in an indoor positioning system. See Application at ¶16. Applicants describe throughout the application an embodiment that includes position information for Wi-Fi access points within a large metropolitan area." <i>Id.</i> at GSHFED190.</p>	
<p>19. The Examiner allowed the claims of the '988 patent on May 5, 2008. In doing so, he did not give any detailed reasoning, merely stating that amended claim 1, which he quoted verbatim, was patentable over two prior art references. He did not comment on his earlier rejection of claim 1 as "open ended." <i>Id.</i> at GSHFED168-72. The '988 patent issued on August 19, 2008. Ex. C.</p>	<p>Disputed. The examiner allowed claims 1-3 and provided the following statement of reasons for allowance:</p> <p>"Beuck teaches, the location finder 102 may receive digital radio signals transmitted by GPS satellites 104-1 through 104-3. The signals may include the satellites' location and the exact time. The location finder 102 calculates the distance and reports information indicative of a location of the location finding device to a server via the wireless access point. Also, the wireless access</p>

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	<p>point 106 may communicate with the location finder 102 using one of a number of wireless communication protocols, such as Wi-Fi, or Bluetooth. Beuck, US PGPub: US 2005/0164710 A1 Jul. 28, 2005.</p> <p>Moeglein teaches, when an access point has not been observed for a certain period of time, the access point is removed from the database, similarly, when a new access point is observed, it is added to the database. Thus, the server may update the information about the access point in an ongoing basis. Moeglein, US PGPub: US 2005/0037775 A1 Feb. 17,2005.</p> <p>None of the reference individually or combined teaches, the claimed feature:</p> <p>Claim 1:</p> <p>a Wi-Fi location server, comprising:</p> <p>a database of Wi-Fi access points for at least one</p>

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	<p>target area having a radius on the order of tens of miles, said database being recorded in a computer-readable medium and including database records for substantially all Wi-Fi access points in the target area, each record including identification information for a corresponding Wi-Fi access point and calculated position information for the corresponding Wi-Fi access point, wherein said calculated position information is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings have reference symmetry relative to other Wi- Fi access points in the target area when and so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information; and</p> <p>computer-implemented logic to add records to the database for newly-discovered Wi-Fi access points said computer logic including logic to</p>

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	<p>recalculate position information for Wi-Fi access points previously stored in the database to utilize the position information for the newly-discovered readings of previously stored Wi-Fi access points."</p> <p>(Def. Ex. G ('988 patent prosecution history) Notice of Allowability, p. 2-3.)</p>
<p>20. During the prosecution of the '694 patent, the Examiner rejected claims 1 and 2 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0039520 (Khavakh) in view of U.S. Patent Application Publication No. 2004/0058640 (Root). Ex. H at GSHFED311. The examiner stated that Khavakh teaches a database of Wi-Fi access points recorded on a computer-readable medium, each record containing calculated position information for each Wi-Fi access point, and calculated position information obtained from multiple readings of Wi-Fi</p>	<p>Disputed. The examiner stated that "Khavakh teaches a database of Wi-Fi access points for at least one target area (figure 3 and paragraphs 35, 36), said database being recorded in a computer-readable medium and including database records for substantially all Wi-Fi access points in the target area, each record including identification information for a corresponding Wi-Fi access point and calculated position information for the corresponding Wi-Fi access point, wherein said calculated position information is obtained from recording multiple readings of the Wi-Fi access point to provide reference symmetry when calculating the position of the Wi-Fi access point</p>

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<p>access point to provide reference symmetry and to avoid arterial bias. <i>Id.</i></p>	<p>and to avoid arterial bias in the calculated position information." (Def. Ex. H ('694 patent prosecution history) January 28, 2008 Office Action, p. 2.) Undisputed that during the prosecution of the '694 patent, the Examiner rejected claims 1 and 2 under 35 U.S.C. § 103(a) as being unpatentable over Khavakh (US 2004/0039520) in view of Root (US 2004/0058640).</p>
<p>21. The examiner stated that Root teaches having a radius on the order of tens of miles. <i>Id.</i></p>	<p>Undisputed.</p>
<p>22. The examiner determined that it would have been obvious to provide the teaching of Root into the system of Khavakh to predict events within a particular special range of a particular dynamic special location; therefore claim 1 was rejected. Ex. H at GSHFED312.</p>	<p>Undisputed with the clarification that "special range" and "dynamic special location" should be "spatial range" and "dynamic spatial location."</p>
<p>23. Claim 2 was rejected because the</p>	<p>Undisputed.</p>

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<p>combination of Khavakh and Root teaches the database of claim 1 having records for a plurality of target areas, organized by target areas. <i>Id.</i></p>	
<p>24. On April 7, 2008, the Applicants held a telephonic interview with the Examiner. <i>Id.</i> at GSHFED298.</p>	<p>Undisputed.</p>
<p>25. One day later, on April 8, 2008, the Applicants amended claim 1 to "more particularly recite characteristics of the calculated position information," and submitted that the amendments overcome the rejection. Ex. H at GSHFED295-99. Specifically, the Applicants amended the fourth limitation of claim 1 of the '694 patent (regarding the avoidance of arterial bias) and added the fifth limitation (regarding the provision of reference symmetry):</p> <p style="padding-left: 40px;">A database of Wi-Fi access points for at least one target area having a radius on the order of tens of miles,</p> <p style="padding-left: 40px;">said database being recorded in a computer-readable medium and including database records for</p>	<p>Undisputed.</p>

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<p>substantially all Wi-Fi access points in the target area,</p> <p>each record including identification information for a corresponding Wi-Fi access point and calculated position information for the corresponding Wi-Fi access point,</p> <p>wherein said calculated position information is obtained from recording multiple readings of the Wi-Fi access point <u>at different locations around the Wi-Fi access point so that the multiple readings to provide reference symmetry when calculating the position of the Wi-Fi access point and to avoid arterial bias in the calculated position information of the Wi-Fi access point, and</u></p> <p><u>wherein the database records for substantially all Wi-Fi access points in the target area provide reference symmetry within the target area.</u></p> <p><i>Id.</i> at GSHFED297.</p>	
<p>26. According to the Applicants' Remarks accompanying the Amendment, "During the telephone call, applicants submitted that the cited references do not teach or suggest these features [i.e., the claims as amended]. Examiner Danh stated that the amendments overcome the cited</p>	<p>Undisputed.</p>

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references." <i>Id.</i> at GSHFED298.	
27. The Examiner issued a Notice of Allowability on June 16, 2008. <i>Id.</i> at GSHFED285-88. The '694 patent issued on October 7, 2008. Ex. D.	Undisputed.
28. The Examiner allowed both the '245 and '897 patents to issue with the original claims as-filed. Ex. I at GSHFED87-90 (September 12, 2007 Notice of Allowabilty [sic] re '245 patent); Ex. J at GSHFED392-95 (August 14, 2008 Notice of Allowabilty [sic] re '897 patent).	Undisputed.
29. In allowing the '245 patent, Examiner Le identified the limitation "based on the number of Wi-Fi access points identified via received messages, choosing a corresponding location-determination algorithm from a plurality of location-determination algorithms, said chosen algorithm being suited for the number of identified Wi-Fi access points" as the point	Undisputed with the clarification that "Masouka" should be "Masuoka."

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<p>of novelty over seven identified U.S. patents or published applications (Masouka, Krumm, Meunier, Patil, Sheynblat, Vesuna, and Reeves). <i>See</i> Ex. I at GSHFED0000089-90.</p>	
<p>30. In allowing the '897 patent eleven months later, Examiner Le identified steps c) and d) of claim 1 as the point of novelty over the prior art. <i>See</i> Ex. J at GSHFED0000394-95 (noting the Choti, Agrawa, Orwant, Biffar, Nagda, and Zellner references). Those limitations recite:</p> <p style="padding-left: 40px;">c) using the recorded location information for each of the observed WiFi access points in conjunction with predefined rules to determine whether an observed WiFi access point should be included or excluded from a set of WiFi access points</p> <p style="padding-left: 40px;">d) using the recorded location information of only the WiFi access points included in the set and omitting the recorded location information of the excluded WiFi access points to calculate the geographical position of the WiFi-enabled device</p> <p>'897 patent, claim 1. Ex. F at 12:20-30.</p>	<p>Undisputed.</p>

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<p>31. The '988 and '694 claims require "a database of Wi-Fi access points for at least one target area" Ex. C at 14:15; Ex. D at 14:2.</p>	<p>Undisputed.</p>
<p>32. The '988 and '694 claims also require that location information be obtained from "recording multiple recordings of the Wi-Fi access point at different locations around the Wi-Fi access point" using a particular methodology for determining the scanning route. Ex. C at 14:24-31; Ex. D at 14:10-16.</p>	<p>Disputed. The evidence cited by Defendant does not support the allegedly undisputed fact that the '988 and '694 claims require that location information be obtained using a particular methodology for determining the scanning route.</p> <p>The '694 patent claims in part "wherein said calculated position information is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings avoid arterial bias in the calculated position information of the Wi-Fi access point, and wherein the database records for substantially all Wi-Fi access points in the target area provide reference symmetry within the target area." (Def. Ex. D ('694) 14:9-16.)</p>

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	<p>The '988 patent claims in part "wherein said calculated position information is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings have reference symmetry relative to other Wi-Fi access points in the target area and so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information." (Def. Ex. C ('988) 14:22-31.)</p>
<p>33. The '988 and '694 patents also require "reference symmetry." Ex. C at 14:27; Ex. D at 14:15.</p>	<p>Undisputed.</p>
<p>34. The '988 patent includes six different limitations directed to "logic":</p> <p>(1) "computer-implemented logic to add records to the database for newly-discovered Wi-Fi access points" (claim 1);</p> <p>(2) "logic to recalculate position</p>	<p>Undisputed.</p>

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<p>information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points" (claim 1);</p> <p>(3) "computer-implemented clustering logic to identify position information based on error prone GPS information" (claim 2);</p> <p>(4) "logic to determine a weighted centroid position for all position information reported for an access point" (claim 3);</p> <p>(5) "logic to identify position information that exceeds a statistically-based deviation threshold amount away from the centroid position" (claim 3); and</p> <p>(6) "the clustering logic . . . excludes such deviating position information from the database and from influencing the calculated positions of the Wi-Fi access</p>	

Defendant's Statement of Allegedly Undisputed Material Facts	Skyhook's Response
<p>points" (claim 3).</p> <p>Ex. C at 14:15-48.</p>	
<p>35. Claim 1 of the '988 patent requires that "calculated position information is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point . . . so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information." Ex. C at 14:22-30.</p>	<p>Undisputed.</p>
<p>36. Claim 1 of the '694 patent requires that: "said calculated position information is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings avoid arterial bias in the calculated position information of the Wi-Fi access point." Ex. D at 14:9-13.</p>	<p>Undisputed.</p>
<p>37. In claim 1 of the '897 patent, the inventors recite the step of "using the</p>	<p>Undisputed.</p>

Defendant's Statement of Allegedly Undisputed Material Facts	Skyhook's Response
recorded location information for each of the observed WiFi access points in conjunction with predefined rules to determine whether an observed WiFi access point should be included or excluded from a set of WiFi access points." Ex. F at 12:21-25.	
38. Dependent claim 3 further requires "rules to determine a reference point and to compare the recorded location information for each of the observed WiFi access points to the reference point." <i>Id.</i> at 12:36-40.	Undisputed.
39. Claim 1 of the '245 patent includes the term "said chosen algorithm being suited for the number of identified Wi-Fi access points." Ex. E at 14:22-23.	Undisputed.

III. Skyhook's Statement Of Additional Material Facts That Are Disputed And Preclude Summary Judgment

Skyhook hereby sets forth the following additional facts (and supporting evidence), which, in addition to the facts set forth in Skyhook's rebuttal to Defendant's supposedly undisputed facts 1 through 39, inclusive above (which are incorporated here by this reference as though set forth in full), preclude summary judgment in this case:

A. The "Logic" Limitations

1. In the '988 patent, all of the operations performed by the logic limitations occur within the "Central Network Server." (Def. Ex. C ('988) 11:47-13:31.)
2. Each logic limitation in the '988 patent is "computer-implemented." (Def. Ex. C ('988) 14:31-48.)
3. "Logic" denotes structure, specifically, hardware and/or software. (Pl. Ex. J² (*The American Heritage College Dictionary* (3rd ed. 1997)) at 797 (defining "logic" as "[t]he nonarithmetic operations performed by a computer, such as sorting, that involve yes-no decisions"); Pl. Ex. K (*Wiley Electrical and Electronics Engineering Dictionary* (2004)) at 432 (defining logic as "[t]he functions performed by a computer which involve operations such as mathematical computations and true/false comparisons," or "[t]he circuits in a computer which enable the performance of logic functions or operations, such as AND, OR, and NOT"); Pl. Ex. L (*McGraw-Hill Dictionary of Scientific and Technical Terms* (4th ed. 1989)) at 1101 (defining logic as a "[g]eneral term for the various types of gates, flip-flops, and other on/off circuits used to perform problem-solving functions in a digital computer"); Pl. Ex. B (Anthony S. Acampora, *An Introduction to Broadband Networks* (1994)) at 1 ("[e]mitter coupled logic . . . can operate at clock speeds approaching 1 GHz"); Pl. Ex. C (U.S. Patent No. 4,425,639) 7:60-63 ("the technology for building the satellite switch changes from exotic, custom high-speed logic to presently commercially available logic families"); Pl. Ex. D (U.S. Patent Application No. 20080039130) ¶ 76 ("[e]ach agent is most commonly a small radio transceiver plus logic and power supply"); Pl. Ex. E (U.S. Patent No. 7,869,667 B1) 12:48 ("[c]omputer programs [are]

² All citations in the form "Pl. Ex. ___" are to the exhibits attached to the declaration of Samuel K. Lu filed concurrently herewith.

also called computer control logic"); Pl. Ex. F (U.S. Patent No. 7,627,548) 5:61-62 ("Search engine software/logic may provide a mechanism for receiving query information"); Pl. Ex. G (U.S. Patent No. 7,751,592) 12:51-54 ("This logic may include hardware, . . . software, or a combination of hardware and software.") .)

4. "Computer-implemented logic" denotes structure, specifically, hardware and/or software. (Pl. Ex. J (*The American Heritage College Dictionary* (3rd ed. 1997)) at 797 (defining "logic" as "[t]he nonarithmetic operations performed by a computer, such as sorting, that involve yes-no decisions"); Pl. Ex. K (*Wiley Electrical and Electronics Engineering Dictionary* (2004)) at 432 (defining logic as "[t]he functions performed by a computer which involve operations such as mathematical computations and true/false comparisons," or "[t]he circuits in a computer which enable the performance of logic functions or operations, such as AND, OR, and NOT"); Pl. Ex. L (*McGraw-Hill Dictionary of Scientific and Technical Terms* (4th ed. 1989)) at 1101 (defining logic as a "[g]eneral term for the various types of gates, flip-flops, and other on/off circuits used to perform problem-solving functions in a digital computer"); Pl. Ex. B (Anthony S. Acampora, *An Introduction to Broadband Networks* (1994)) at 1 ("[e]mitter coupled logic . . . can operate at clock speeds approaching 1 GHz"); Pl. Ex. C (U.S. Patent No. 4,425,639) 7:60-63 ("the technology for building the satellite switch changes from exotic, custom high-speed logic to presently commercially available logic families"); Pl. Ex. D (U.S. Patent Application No. 20080039130) ¶ 76 ("[e]ach agent is most commonly a small radio transceiver plus logic and power supply"); Pl. Ex. E (U.S. Patent No. 7,869,667 B1) 12:48 ("[c]omputer programs [are] also called computer control logic"); Pl. Ex. F (U.S. Patent No. 7,627,548) 5:61-62 ("Search engine software/logic may provide a mechanism for receiving query information"); Pl. Ex. G (U.S. Patent No. 7,751,592) 12:51-54 ("This logic may include hardware, . . . software, or a

combination of hardware and software.") .)

5. One of ordinary skill in the art would recognize that "logic" includes computer instructions designed to carry out a specified task. (Pl. Ex. J (*The American Heritage College Dictionary* (3rd ed. 1997)) at 797 (defining "logic" as "[t]he nonarithmetic operations performed by a computer, such as sorting, that involve yes-no decisions"); Pl. Ex. K (*Wiley Electrical and Electronics Engineering Dictionary* (2004)) at 432 (defining logic as "[t]he functions performed by a computer which involve operations such as mathematical computations and true/false comparisons," or "[t]he circuits in a computer which enable the performance of logic functions or operations, such as AND, OR, and NOT"); Pl. Ex. L (*McGraw-Hill Dictionary of Scientific and Technical Terms* (4th ed. 1989)) at 1101 (defining logic as a "[g]eneral term for the various types of gates, flip-flops, and other on/off circuits used to perform problem-solving functions in a digital computer"); Pl. Ex. D (U.S. Patent Application No. 20080039130) ¶ 76 ("[e]ach agent is most commonly a small radio transceiver plus logic and power supply"); Pl. Ex. E (U.S. Patent No. 7,869,667 B1) 12:48 ("[c]omputer programs [are] also called computer control logic"); Pl. Ex. F (U.S. Patent No. 7,627,548) 5:61-62 ("Search engine software/logic may provide a mechanism for receiving query information"); Pl. Ex. G (U.S. Patent No. 7,751,592) 12:51-54 ("This logic may include hardware, . . . software, or a combination of hardware and software.") .)

6. One of ordinary skill in the art would recognize that "logic" includes circuitry by which computer instructions may be carried out. (Pl. Ex. K (*Wiley Electrical and Electronics Engineering Dictionary* (2004)) at 432 (defining logic as "[t]he circuits in a computer which enable the performance of logic functions or operations, such as AND, OR, and NOT"); Pl. Ex. L (*McGraw-Hill Dictionary of Scientific and Technical Terms* (4th ed. 1989)) at 1101 (defining

logic as a "[g]eneral term for the various types of gates, flip-flops, and other on/off circuits used to perform problem-solving functions in a digital computer"); Pl. Ex. B (Anthony S. Acampora, *An Introduction to Broadband Networks* (1994)) at 1 ("[e]mitter coupled logic . . . can operate at clock speeds approaching 1 GHz"); Pl. Ex. C (U.S. Patent No. 4,425,639) 7:60-63 ("the technology for building the satellite switch changes from exotic, custom high-speed logic to presently commercially available logic families"); Pl. Ex. D (U.S. Patent Application No. 20080039130) ¶ 76 ("[e]ach agent is most commonly a small radio transceiver plus logic and power supply"); Pl. Ex. G (U.S. Patent No. 7,751,592) 12:51-54 ("This logic may include hardware, . . . software, or a combination of hardware and software.") .)

7. "Logic" is not a nonce word. (Pl. Ex. J (*The American Heritage College Dictionary* (3rd ed. 1997)) at 797 (defining "logic" as "[t]he nonarithmetic operations performed by a computer, such as sorting, that involve yes-no decisions"); Pl. Ex. K (*Wiley Electrical and Electronics Engineering Dictionary* (2004)) at 432 (defining logic as "[t]he functions performed by a computer which involve operations such as mathematical computations and true/false comparisons," or "[t]he circuits in a computer which enable the performance of logic functions or operations, such as AND, OR, and NOT"); Pl. Ex. L (*McGraw-Hill Dictionary of Scientific and Technical Terms* (4th ed. 1989)) at 1101 (defining logic as a "[g]eneral term for the various types of gates, flip-flops, and other on/off circuits used to perform problem-solving functions in a digital computer"); Pl. Ex. B (Anthony S. Acampora, *An Introduction to Broadband Networks* (1994)) at 1 ("[e]mitter coupled logic . . . can operate at clock speeds approaching 1 GHz"); Pl. Ex. C (U.S. Patent No. 4,425,639) 7:60-63 ("the technology for building the satellite switch changes from exotic, custom high-speed logic to presently commercially available logic families"); Pl. Ex. D (U.S. Patent Application No. 20080039130) ¶ 76 ("[e]ach agent is most

commonly a small radio transceiver plus logic and power supply"); Pl. Ex. E (U.S. Patent No. 7,869,667 B1) 12:48 ("[c]omputer programs [are] also called computer control logic"); Pl. Ex. F (U.S. Patent No. 7,627,548) 5:61-62 ("Search engine software/logic may provide a mechanism for receiving query information"); Pl. Ex. G (U.S. Patent No. 7,751,592) 12:51-54 ("This logic may include hardware, . . . software, or a combination of hardware and software.") .)

8. Dr. Acampora's patents and publications use the word "logic" in a manner that denotes structure, specifically, hardware in the form of digital circuitry. (*E.g.*, Anthony S. Acampora, *An Introduction to Broadband Networks* 1 (1994) ("[e]mitter coupled logic . . . can operate at clock speeds approaching 1 GHz") (Pl. Ex. B); U.S. Patent No. 4,425,639 7:60-63 ("the technology for building the satellite switch changes from exotic, custom high-speed logic to presently commercially available logic families") (Pl. Ex. C); U.S. Patent Application No. 20080039130 ¶ 76 ("Each agent is most commonly a small radio transceiver plus logic and power supply") (Pl. Ex. D).)

9. Google's patents use the word "logic" synonymously with both computer software and/or hardware. (*E.g.*, U.S. Patent No. 7,869,667 B1 12:48 ("[c]omputer programs [are] also called computer control logic") (Pl. Ex. E); U.S. Patent No. 7,627,548 5:61-62 ("Search engine software/logic may provide a mechanism for receiving query information") (Pl. Ex. F); U.S. Patent No. 7,751,592 12:51-54 ("This logic may include hardware, . . . software, or a combination of hardware and software.") (Pl. Ex. G).)

10. "Logic" in the '988 patent claims is limited to the context of computers. (Pl. Ex. A (Acampora Dep. Tr.) 204:16-19 (Claim 1 of the '988 patent relates to a "Wi-Fi location server," which Dr. Acampora admits is a computer); Kotz Decl. ¶ 59.)

11. A definition of logic in the context of computers and computer electronics could

include hardware or a combination of software and hardware. (Pl. Ex. A (Acampora Dep. Tr.) 208:2-17.)

12. For the '988 patent, a person of ordinary skill in the art would have a bachelor's degree in electrical engineering or computer science, 3-5 years of experience working in wireless communications software design, and would be able to read and write computer source code. (Kotz Decl. ¶ 32.)

13. The limitation "logic to add records to the database for newly-discovered Wi-Fi access points" has a corresponding structure in the '988 patent specification. (Kotz Decl. ¶¶ 62-65.)

14. Adding records to a database is equivalent to "storing" records. (Kotz Decl. ¶ 63.)

15. Adding records to a database can be achieved by any general purpose computer without specific programming. (Kotz Decl. ¶ 64.)

16. One of ordinary skill in the art would know how to use any commercially available database program to accomplish the function of adding records to a database. (Kotz Decl. ¶ 65.)

17. The limitation "logic to recalculate position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points" has a corresponding structure in the '988 patent specification. (Kotz Decl. ¶¶ 66-68.)

18. The corresponding structure is disclosed in the following passages: "[E]xisting access points are repositioned based on any new data recorded by the scanners. The . . . algorithm factors in the number of records and their associated signal strengths to weight stronger signal readings more than weaker signals" and "[T]he algorithm would include a

weighting value based on the age of the records" (Def. Ex. C ('988) 12:33-37, 12:25-26; Kotz Decl. ¶ 67.)

19. Based on this disclosure, a person of ordinary skill would understand this disclosure to convey an algorithm for performing this function, and would be able to implement software to perform the recited function of "recalculat[ing] position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points." (Kotz Decl. ¶ 68.)

20. The limitation "computer-implemented clustering logic to identify position information based on error prone GPS information" has a corresponding structure in the '988 patent specification. (Kotz Decl. ¶¶ 69-72.)

21. "Clustering techniques" refers to a well-known type of statistical analysis. (Kotz Decl. ¶ 70.)

22. The specification further provides a specific example of the results of the clustering technique. (Def. Ex. C ('988) 12:6-11; *see also* Kotz Decl. ¶ 71.)

23. Based on this disclosure, a person of ordinary skill would understand this disclosure to convey an algorithm for performing this function, and would be able to implement software to perform the recited of "clustering . . .to identify position information based on error prone GPS information." (Kotz Decl. ¶ 72.)

24. The limitation "logic to determine a weighted centroid position for all position information reported for an access point" has a corresponding structure in the '988 patent specification. (Kotz Decl. ¶¶ 73-76.)

25. The determination of a weighted centroid position is a well-known algorithm. (Kotz Decl. ¶ 74.)

26. The corresponding structure is disclosed in the following passage: the weighted centroid calculation "factors in the number of records and their associated signal strengths to weight stronger readings more than weaker signals." (Def. Ex. C ('988) 12:35-37; Kotz Decl. ¶ 75.)

27. Based on this disclosure, a person of ordinary skill would understand this disclosure to convey an algorithm for performing this function, and would be able to implement software to perform the recited of "determin[ing] a weighted centroid position for all position information reported for an access point." (Kotz Decl. ¶ 76.)

28. The limitation "logic to identify position information that exceeds a statistically-based deviation threshold amount away from the centroid position" has a corresponding structure in the '988 patent specification. (Kotz Decl. ¶¶ 77-80.)

29. The corresponding structure is disclosed in the following passages: the algorithm "determines the standard deviation based on the distribution of the reported locations" and then "uses a definable threshold based on the sigma of this distribution to filter out access points that are in error." (Def. Ex. C ('988) 12:13-17; Kotz Decl. ¶ 79.)

30. Based on this disclosure, a person of ordinary skill would understand this disclosure to convey an algorithm for performing this function, and would be able to implement software to perform the recited of "identify[ing] position information that exceeds a statistically-based deviation threshold amount away from the centroid position." (Kotz Decl. ¶ 80.)

31. The limitation "the clustering logic . . . excludes such deviating position information from the database" has a corresponding structure in the '988 patent specification. (Kotz Decl. ¶¶ 81-85.)

32. Excluding records from a database can be achieved by any general purpose

computer without specific programming. (Kotz Decl. ¶ 82.)

33. One of ordinary skill in the art would know how to use any commercially available database program to accomplish the function of excluding records from a database. (Kotz Decl. ¶ 83.)

34. The limitation "the clustering logic . . . excludes such deviating position information . . . from influencing the calculated positions of the Wi-Fi access points" has a corresponding structure in the '988 patent specification. (Kotz Decl. ¶¶ 81-85.)

35. The corresponding structure is disclosed in the following passage: "[o]nce these error records are marked, the centroid is recalculated with the remaining location records to determine the final centroid" (Def. Ex. C ('988) 12:17-19 ; Kotz Decl. ¶ 84.)

36. Based on this disclosure, a person of ordinary skill would understand this disclosure to convey an algorithm for performing this function, and would be able to implement software to perform the recited function of "exclud[ing] such deviating position information from the database and from influencing the calculated positions of the Wi-Fi access points." (Kotz Decl. ¶ 85.)

B. "Said Chosen Algorithm Being Suited For The Number Of Identified Wi-Fi Access Points"

37. Whether a given algorithm is suited for a given number of access points would be readily apparent to one of skill in the art. (Kotz Decl. ¶¶ 87-88.)

38. It would be readily apparent to an ordinary artisan how the number of access points impacts which algorithm is appropriate, the possible algorithms that could be used, and how to determine whether any algorithm is suited or not suited. (Kotz Decl. ¶ 88.)

C. Predefined Rules

39. The plain and ordinary meaning of predefined is "something that was defined before this process was begun, as an example." (Pl. Ex. A (Acampora Dep. Tr.) 222:11-223:5.)

40. The plain and ordinary meaning of "rule" is "an instruction to be followed." (Pl. Ex. A (Acampora Dep. Tr.) 221:14-19.)

41. Calculating geographic position of the Wi-Fi enabled device based on "whether it is Tuesday" would not practice claim 1 of the '897 patent. (Kotz Decl. ¶ 92.)

42. Calculating geographic position of the Wi-Fi enabled device always using every observed access point would not practice claim 1 of the '897 patent. (Kotz Decl. ¶ 92.)

D. The "Reference Symmetry" Limitations

43. The purpose of the database claimed in the '988 patent is to calculate the location of mobile devices. (Def. Ex. C ('988) 4:4-9, 5:35-37.)

44. Symmetry can relate to the distribution of Wi-Fi access points around the device performing the calculation. (Kotz Decl. ¶ 109.)

45. Symmetry can relate to the distribution of Wi-Fi access points throughout a target area, as shown in Figure 3 of the patents. (Kotz Decl. ¶ 109.)

46. The distribution of Wi-Fi access points is unpredictable because Skyhook's system takes advantage of Wi-Fi access points that are installed by third parties rather than "intentionally seeding" Wi-Fi access points. (Pl. Ex. A (Acampora Dep. Tr.) 168:11-18, 167:14-21 ("they have no way of knowing if this is going to be produced or not because they have no way of knowing in advance where the access points are . . . [t]he access point locations may not be conducive to production of reference symmetry".).)

47. Some areas may have Wi-Fi access points more evenly distributed than others (though, given the density of Wi-Fi access points in most cities this may not be a wide variation).

(Kotz Decl. ¶ 111.)

48. Figure 5 from the '988 patent shows a lack of reference symmetry. (Def. Ex. C ('988) Fig. 5; Kotz Decl. ¶ 113.)

49. Figure 6 from the '988 patent shows reference symmetry. (Def. Ex. C ('988) Fig. 6; Kotz Decl. ¶ 114.)

50. Reference symmetry refers to the distribution of calculated locations of access points. (Def. Ex. C ('988) 9:51-10:4; Kotz Decl. ¶ 115.)

51. Reference symmetry with reference to a user requires the calculated locations of access points to be distributed around a user whose location is being calculated. (Def. Ex. C ('988) 9:51-10:4; Kotz Decl. ¶ 116.)

52. A person having ordinary skill in the art would understand that reference symmetry can relate to both to the distribution of Wi-Fi access points around the device performing the calculation and the distribution of Wi-Fi access points throughout a target area, as shown in Figure 3 of the patents. ((Def. Ex. G ('988 patent prosecution history) Reply to Non-Final Office Action of Nov. 30, 2007, p. 8.) Kotz Decl. ¶ 109.)

53. Reference symmetry does not require the distribution of calculated locations of access points to be exactly symmetrical or balanced. (Def. Ex. C ('988) Fig. 6, 9:51-10:4; Kotz Decl. ¶ 117.)

54. Figures 5 and 6 provide accused infringers with an objective standard by which to measure reference symmetry. (Kotz Decl. ¶¶ 112.)

55. An accused infringer could map the locations of the Wi-Fi access points collected in its database and determine whether there is reference symmetry. (Kotz Decl. ¶ 118.)

56. Skyhook's claim construction for "reference symmetry" is as precise as the subject

matter of the '988 and '694 patents permits. (Kotz Decl. ¶ 111.)

E. "Avoid(s) Arterial Bias"

57. The degree by which arterial bias will be avoided will depend on numerous factors, including the number of roads in the target area, the location of each of the Wi-Fi access points in the target area, and the capabilities of the scanning device used to collect Wi-Fi access point information. (Kotz Decl. ¶ 125.)

58. Skyhook's claim construction for "avoid(s) arterial bias" is as precise as the subject matter of the '988 and '694 patents permits. (Kotz Decl. ¶ 126.)

59. Figure 4 of the '988 patent shows a reduction in arterial bias from Figure 3 of the '988 patent. (Def. Ex. C ('988) Figs. 3, 4; Kotz Decl. ¶ 128.)

60. An accused infringer could map the locations of the Wi-Fi access points collected in its database and determine whether there is arterial bias. (Kotz Decl. ¶ 129.)

Respectfully submitted,

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By their attorneys

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Certificate of Service

I, Samuel K. Lu, hereby certify that this document filed through the ECF system will be sent electronically to the registered participants as identified on the Notice of Electronic Filing (NEF) on September 28, 2011.

/s/ Samuel K. Lu

Samuel K. Lu