Petitioner's Oral Hearing Demonstratives

Apple Inc. (Petitioner)

v.

Geoscope Technologies Pte. Ltd. (Patent Owner)

IPR2024-00031 (U.S. Patent No. 8,400,358)
IPR2024-00032 (U.S. Patent No. 8,786,494)
IPR2024-00255 (U.S. Patent No. 7,561,104)
IPR2024-00259 (U.S. Patent No. 8,406,753)

Before Hon. Patrick R. Scanlon, Sheila F. McShane, and Brian D. Range

FISH.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

APPLE 1057
Apple v. Geoscope
IPR2024-00031

IPR2024-00031 ('358 Patent)*
IPR2024-00032 ('494 Patent)
IPR2024-00255 ('104 Patent)

* For simplicity, Petitioner's slides cite to the IPR2024-00031 record in addressing common topics relating to IPR2024-00031, IPR2024-00032, and IPR2024-00255

Topics of Discussion

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Topic 1: Overview

1A. IPR Grounds

Overview of IPR Grounds

Claims Challenged	Prior Art
16, 19, 20, 24, 27 (IPR2024-00031) 1, 2, 5, 9, 12, 14, 16, 18-22 (IPR2024-00032)	Bhattacharya
16-20, 24, 26, 27 (IPR2024-00031) 2-5, 9, 11, 12, 14-16, 18-22 (IPR2024-00032)	Bhattacharya, Spain
27, 29, 31, 32 (IPR2024-00032)	Bhattacharya, Meunier
27, 29, 31, 32 (IPR2024-00032)	Bhattacharya, Spain, Meunier
4, 6-10 (IPR2024-00255)	Bhattacharya, Zeng
2, 4, 6-10 (IPR2024-00255)	Bhattacharya, Zeng, Spain

(1B) Patent Owner's Narrowing of Issues

Patent Owner's Narrowing of Issues

Patent	Challenged Claims	Disclaimed By Patent Owner
'358 Patent	15-20, 24, 26, 27	15
'494 Patent	1-5, 9, 11, 12, 14-16, 18-22, 25, 27, 29, 31, 32, 35	1, 25, 35
'104 Patent	1-4, 6-11	1, 3, 11

Patent	Claims Remaining
'358 Patent	16-20, 24, 26, 27
'494 Patent	2-5, 9, 11, 12, 14-16, 18-22, 27, 29, 31, 32
'104 Patent	2, 4, 6-10

Patent Owner's Narrowing of Issues

Patent	Claims Remaining
'358 Patent	16-20, 24, 26, 27
'494 Patent	2-5, 9, 11, 12, 14-16, 18-22, 27, 29, 31, 32
'104 Patent	2, 4, 6-10

Patent	Claims Addressed in Patent Owner Papers
'358 Patent	18
'494 Patent	3, 4, 15
'104 Patent	2

Patent Owner's Narrowing of Issues

Patent	Claims Addressed By Patent Owner
'358 Patent	18
'494 Patent	3, 4, 15
'104 Patent	2

→ "NUG" Claims

'358 Patent, Claim 18
…previously-gathered calibration data for **one or more non-uniform grid points** within said region.

'494 Patent, Claim 3
…previously-gathered calibration data for **one or more non-uniform grid points** within said region.

'104 Patent, Claim 2
…previously-gathered calibration data for **one or more non-uniform grid points** within said region.

Patent Owner's Narrowing of Issues

'358 Patent, Claim 15
A system for determining a location of a mobile station, comprising:
a database of previously-gathered calibration data for a predetermined region in a wireless network;
circuitry for collecting observed network measurement data;
circuitry for modifying said observed network measurement data; and
circuitry for comparing said modified network measurement data with said database of calibration data to thereby determine the location of the mobile station.

Pet., 20-37

'358 Patent, Claim 18
The system of claim 15 wherein said database comprises previously-gathered calibration data for **one or more non-uniform grid points** within said region.

Pet., 65-66

Topic 2:
Claim Interpretation – "NUG" Claims

2A. “Grid Point” and “Non-Uniform Grid Point” Interpretation

Key Terminology

Petition

Claim Term	Court's Construction
"calibration data"	"modified or unmodified network measurement data associated with a geographic location"
"observed network measurement data"	"measurement data from a network measurement report (i.e., a report used in cellular networks which provides the results of a measurement from a mobile device on one or more cells)"
"grid point"	"a point associated with representative calibration data for an area"

Pet., 2-3

“Grid Point” and “Non-Uniform Grid Point”

“grid point” → “a point associated with representative calibration data for an area”

Pet., 2-3

“non-uniform grid points” → *Institution Decision*: “grid points that are non-uniformly spaced throughout a geographic region”

Dec., 33; *see* Reply, 3

“Grid Point” and “Non-Uniform Grid Point”

“grid point”

“non-uniform grid point”

Specification

In general, a **non-uniform grid point (NUG)** may represent the signal characteristics and/or calibration data over a given region. As illustrated in FIG. 1, a set of NUGs (NUG1, NUG2 and NUG3) are shown as being a part of a larger geographical region (R), which includes various wireless networking components (e.g., (MS 11 and BS 20—NUG1), (MSs 12-15—NUG2) and (MSs 16-18 and BS 30—NUG3)). The NUGs represent an area of collected calibration data, which may be stored in a database for easy retrieval during a calibration data comparison operation between the NUG and a received network measurement report (NMR).

APPLE-1001, 3:57-67 (cited in Pet., 67, and Reply, 6)

2B. Patent Owner Unjustifiably Narrows Constructions Based on Provisional Application Disclosure

Patent Owner's Position

POR

PO proposes the following constructions for "grid point" or, alternately, "non-uniform grid point":

Term	Proposed Construction
"Grid Point" or (alternately) "Non-Uniform Grid Point" (claim 18)	"a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data."

POR, 25

Patent Owner's Position

Specification
FIG. 7 illustrates an embodiment of the present subject matter. The method includes providing a database of previously-gathered calibration data for a predetermined region in a wireless network (operation 701). The database may be a collection of data from **uniform or non-uniform grids** that contain network measurements with associated location estimates.

APPLE-1001, 10:63-11:2 (cited in Pet., 5)

Patent Owner's Position

"grid point"

District Court's Construction

"a point associated with representative calibration data for an area"

Pet., 3

Patent Owner's Construction

"a point associated with representative calibration data for an area **whose boundaries are determined from evaluation of the calibration data**"

POR, 25

Patent Owner's Position

Exhibit 2012

Plaintiff argues that its proposed construction is "near-definitional" language taken from the Abstract of the '753 Patent, which states, in relevant part:

> The location of a wireless mobile device may be estimated using, at least in part, one or more pre-existing Network Measurement Reports ("NMRs") which include calibration data for a number of locations within a geographic region. *The calibration data for these locations is gathered and analyzed so that particular grid points within the geographic region can be determined and associated with a particular set or sets of calibration data from, for example, one or more NMRs.*

Ex. E at Abstract (emphasis added). But the italicized language from which Plaintiff's construction is drawn is directed more toward what *must be done* to arrive at a grid point or set of grid points rather than what a grid point *is*.

Ex-2012, 19 (cited in Institution Decision at 34)

"Non-Uniform Grid Points" – Specification

Reply

…the specification teaches two examples of factors in "deciding the boundaries of a NUG," neither of which necessarily requires evaluation of calibration data.

Reply, 7

Specification

…The different NUGs **1-3** may be separately defined by a variety of parameters. For example, **geographical areas (e.g., mountains, buildings, roads)** may be a factor in deciding the boundaries of a NUG. Additionally, varying concentrations of MSs may be another factor that separates one NUG from another.

Ex-1001, 4:1-14 (cited in Pet., 28, and Reply, 5)

Supplemental Declaration

A set of NUGs with boundaries defined by a factor representing "**geographical areas (e.g., mountains, buildings, roads)**" is an example of grid points that are non-uniformly spaced throughout a geographic region. APPLE1001, 4:1-14. This is because geographic areas have irregular boundaries, as opposed to a regular grid system where grid points are uniformly spaced throughout a region.

Ex-1055, ¶39 (cited in Reply, 5)

"Non-Uniform Grid Points" – Specification

Reply

…the specification teaches two examples of factors in "deciding the boundaries of a NUG," neither of which necessarily requires evaluation of calibration data.

Reply, 7

Specification

…The different NUGs **1-3** may be separately defined by a variety of parameters. For example, geographical areas (e.g., mountains, buildings, roads) may be a factor in deciding the boundaries of a NUG. Additionally, **varying concentrations of MSs** may be another factor that separates one NUG from another.

Ex-1001, 4:1-14 (cited in Pet., 28, and Reply, 5)

Supplemental Declaration

Additionally, a set of NUGs with boundaries defined by a factor representing "**varying concentrations of [mobile stations (MSs)]**" is also an example of grid points that are non-uniformly spaced throughout a geographic region. APPLE-1001, 4:1-14. This is because concentrations of mobile stations often vary within a region depending on the types of areas included (or encompassed) within the region.

Ex-1055, ¶40 (cited in Reply, 6)

"Non-Uniform Grid Points" – Specification

Reply

…the specification teaches two examples of factors in "deciding the boundaries of a NUG," neither of which necessarily requires evaluation of calibration data.

Reply, 7

Specification

…The different NUGs **1-3** may be separately defined by a variety of parameters. For example, geographical areas (e.g., mountains, buildings, roads) may be a factor in deciding the boundaries of a NUG. Additionally, **varying concentrations of MSs** may be another factor that separates one NUG from another.

Ex-1001, 4:1-14 (cited in Pet., 28, and Reply, 5)

Supplemental Declaration

For example, in high-density areas (e.g., urban centers), mobile stations may be closer together, so it makes sense to have a greater number of base stations to capture more precise location data. In contrast, in low density areas (e.g., suburban areas), fewer mobile stations may be present (and further spaced out from each other). In low-density areas, it makes sense to have grid points that are spaced farther apart because fewer devices are present.

Ex-1055, ¶40 (cited in Reply, 6)

“Non-Uniform Grid Points” – Patent Owner’s Position

POR
The intrinsic evidence confirms that how the claimed grid points are generated is an essential characteristic of what they are. *See infra* §III.B.2. For example, the ’379 Provisional extensively describes the generation of grid points, explaining that “[t]he evaluation of data vectors is of great importance since it is **fundamental** to the method.” EX2030 [’379 Provisional], 6; EX2019 [Sturza Decl], ¶89.

POR, 30-31

"Non-Uniform Grid Points" – '379 Provisional

In any of these cases, the NUG generator evaluates the data vectors at a particular calibration point, or at the fixed grid point it is assigned. This calibration point or grid point serves as the root of the first NUG. The root of the NUG is the calibration data vector that initiates the creation of that NUG. The evaluation of the data vectors is of great importance since it is fundamental to the method. The vectors are examined using increasingly stringent tests of statistical sufficiency. In particular, we search for whether the data vectors exhibit clustering. If the data exhibits tight clustering, the data for the next candidate calibration point is aggregated to the former and the clustering property is re-evaluated. If the second also has a cluster but this cluster is sufficiently different, we deem that the data for the two considered calibration points should be allocated to the roots of separate NUGs. If the aggregate cluster is statistically very similar to either of the first clusters, the data for the two calibration points are allocated to the same NUG. All adjacent calibration data points are similarly evaluated with respect to the first considered calibration grid point. Thus the adjacent calibration points either wind up having all their data accumulated into a single NUG or at the other extreme, each such calibration point becomes the root of a separate NUG.

Ex-2030, 6 (cited in POR, 31)

"Non-Uniform Grid Points" – '379 Provisional

Invention 1: A method for generating Non-Uniform Grid Points (NUGs) from calibration data

This method applies to the case where calibration data is available (obtained using one of many possible methods) over discrete points in a 2-dimensional region R (3-D is also possible as within large multi-level structures) R. This data, obtained at each discrete point (calibration point) could contain, but is not limited to, the following:

(a) Signal strengths observed for the signals transmitted by a set of transmitters of known location within or in proximity to the region R.
(b) Signal strength of a transmitter located at the calibration point as measured by a set of receivers of known location within or in proximity to the region R.
(c) Round trip time for a signal between the calibration point and an external known point.
(d) Time difference of arrival at the calibration point with respect pairs of external points located within or in proximity to R as measured by either a receiver at the calibration point or the external points.
(e) The serving cell or sector for a mobile wireless device operating at that calibration point.
(f) The network state at the time of collection – a finite number of such states may be required to distinguish between network conditions that vary diurnally, weekly or in some other manner.

Ex-2030, 5 (cited in Reply at 8 and POR, 10)

"Non-Uniform Grid Points" – '379 Provisional

Additionally, we also consider the method of generating NUGs based not on statistical consistency but on other conditions such as

(a) minimum number of unique neighbors observed in data accumulated from allocated calibration grid points
(b) minimum number of data vectors (NMRs)
(c) maximum and minimum NUG radius
(d) specific set of NCs
(e) specific set of NCs with power ordering

and further the method of using statistical consistency or similarity or data clustering combined with any of these other conditions.

Ex-2030, 8 (cited in Reply at 8-9)

The location ascribed to the NUG can be any internal point within the NUG. If the NUG contains only a single calibration point, the location of the NUG could be set as the location of the calibration point. If the NUG encompasses several calibration points, the location of any one of them or the centroid of such points or some other similar measure can be used to define the NUG location. Also, in the case of multiple co-located NUGs, all such NUGs could have their assigned location set to the same value.

Ex-2030, 8 (cited in Reply at 8-9)

"Non-Uniform Grid Points" – '379 Provisional

For each so obtained NUG, a variety of parameters and functions are generated and stored to describe that NUG. These are termed the NUG characteristics and may include but are not limited to the following:

(a) ordered list of NCs
(b) functions defined on the absolute NC power levels, e.g. mean, median, k-th moment, cluster-mean etc.
(c) functions defined on the relative NC power differences, e.g. mean, median, k-th moment, cluster-mean etc.
(d) serving cell/sector
(e) TA parameter (or equivalent) if applicable
(f) individual pdf of each NC power level
(g) joint pdf of NC power levels
(h) mean and variance of NC power levels
(i) mobile orientation (indoors, outdoors, facing North or South, tilted upwards, azimuth and elevation etc…)
(j) a compact and efficient representation that enables retrieval of the calibration data NMR vectors assigned to this NUG
(k) the network state as indicated in the calibration data
(l) a confidence measure indicative of the reliability of the calibration data feeding this NUG

Ex-2030, 8 (cited in Reply at 8-9)

“Non-Uniform Grid Points” – Patent Owner’s Position

POR

Patent Owner’s Proposed Construction:

“a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data”

Sur-Reply,9-10

Sur-Reply

Petitioner’s interpretation requires a narrow interpretation of “geographical areas” and “varying concentration of MSs” as forming NUGs by themselves to exclude evaluating calibration data. But nothing in this paragraph contradicts the intrinsic record’s teaching that NUGs are formed through evaluation of calibration data.

Sur-Reply,9-10

In order to determine whether calibration data is “representative” of the area, the system must evaluate adjacent calibration data to form the NUG.

Sur-Reply, 19

"Non-Uniform Grid Points" – Patent Owner's Position

Sur-Reply

Moreover, Petitioner misleadingly groups pages 5-7 of the '379 Provisional together as describing evaluation based on "statistical similarity." Reply, 8-9. The concept of evaluating calibration data to create NUGs is introduced at the second paragraph of page 6 ("A NUG generator could begin…"). EX2030 ['379 Provisional], 6. The next paragraph ("In any of these cases…") introduces evaluation of calibration data and explains that "the evaluation of [calibration] data vectors is of great importance since it is fundamental to the method." *Id.*

Sur-Reply,13

'379 Provisional

A NUG generator could begin the NUG generation operation using

(a) a fixed uniform grid defined (UG) over the region R, with the calibration point data being assigned to the fixed grid points by some rule (e.g. allocated by closest fixed grid point)
(b) random grid points to define the start of each NUG
(c) combinations of (a) and (b) depending on the characteristics of the data

In any of these cases, the NUG generator evaluates the data vectors at a particular calibration point, or at the fixed grid point it is assigned. This calibration point or grid point serves as the root of the first NUG. The root of the NUG is the calibration data vector that initiates the creation of that NUG. The evaluation of the data vectors is of great importance since it is fundamental to the method. The vectors are examined using increasingly stringent tests of statistical sufficiency. In particular, we search for whether the data vectors exhibit clustering. If the data exhibits tight clustering, the data for the next candidate calibration point is aggregated to the former and the clustering property is re-evaluated. If the second also has a cluster but this cluster is sufficiently different, we deem that the data for the two considered calibration points should be allocated to the roots of separate NUGs. If the aggregate cluster is statistically very similar to either of the first clusters, the data for the two calibration points are allocated to the same NUG. All adjacent calibration data points are similarly evaluated with respect to the first considered calibration grid point. Thus the adjacent calibration points either wind up having all their data accumulated into a single NUG or at the other extreme, each such calibration point becomes the root of a separate NUG.

Ex. 2030 (cited in Sur-Reply, 13)

“Non-Uniform Grid Points” – Patent Owner’s Position

Sur-Reply

The ’379 Provisional at 8 is pointing out that NUGs do not need to be generated through statistical analysis such as the “clustering tests” described at page 7. But the system still evaluates whether adjacent calibration points share similar calibration data in order to generate the NUG.

For example, when the ’379 Provisional refers to a “specific set of NCs” it means that the NUG is evaluating calibration data at adjacent calibration points
and if the two pieces of calibration data record the same set of NCs (neighbor cells), the points are aggregated together into a NUG. If the set of NCs is different, the two points form the root of their own NUG. There is still an evaluation to determine whether the two sets are the same, but there is not necessarily any statistical analysis.

Sur-Reply,13

2C. Provisional Application Disclosure Should Not Be Given Weight

Trustees of Columbia Univ. in City of New York v. Symantec Corp., 811 F.3d 1359, 1365 (Fed. Cir. 2016)

POR

…*see Trustees of Columbia Univ. in City of New York v. Symantec Corp.*, 811 F.3d 1359, 1365 (Fed. Cir. 2016) (relying on provisional application incorporated by reference in a patent specification to construe a term in the patent)

POR,23

Reply

Columbia is inapplicable for at least two reasons.

Reply,10

First, in Columbia, the provisional application found relevant for claim construction was deemed definitional.

Reply,10

Columbia is also inapplicable because the relevance of provisional application disclosure was premised on its presence in the specification.

Reply,12

Trustees of Columbia Univ. in City of New York v. Symantec Corp., 811 F.3d 1359, 1365 (Fed. Cir. 2016)

Reply

Columbia is also inapplicable because the relevance of provisional application disclosure was premised on its presence in the specification.

Reply,11

Columbia

Columbia takes issue with the district court's limiting the construction…
…
In this case, the district court's construction is well supported by the specification. **Twice in the specification**, the patentee states that the "byte sequence feature" is useful and informative "because it represents the machine code in an executable." '544 patent, col. 6 ll. 12–14; '907 patent, col. 6 ll. 18–20; '544 patent col. 13 ll. 25–26; '907 patent, col. 13 ll. 32–33. These are not simply descriptions of the preferred embodiment but are statements defining "byte sequence feature." Further, the provisional application similarly defined byte sequence feature…

See Reply,10-11

MPHJ Tech. Invs. v. Ricoh Ams. Corp., 847 F.3d 1363 (Fed. Cir. 2017)

Reply

Subsequent Federal Circuit decisions also undermine Geoscope's reliance on *Columbia*.

Reply,12

MPHJ

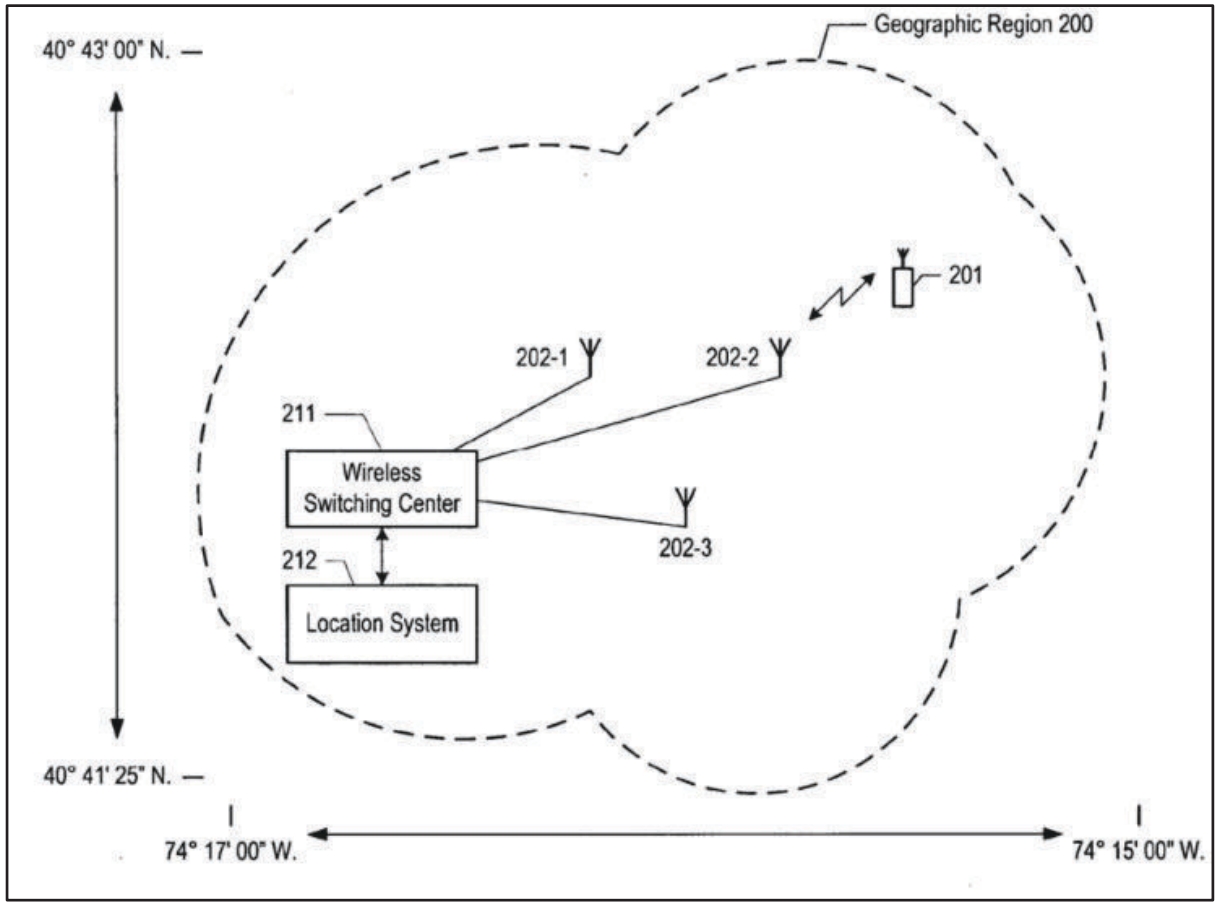
We agree that a provisional application can contribute to understanding the claims. *See Trs. of Columbia Univ. in New York v. Symantec Corp.,* 811 F.3d 1359, 1365 (Fed. Cir. 2016) (looking to the provisional application for guidance as to claim construction); *Vederi, LLC v. Google, Inc.,* 744 F.3d 1376, 1383 (Fed. Cir. 2014) (same). In this case, it is the **deletion** from the '798 Provisional application that contributes understanding of the intended scope of the final application.

We conclude that a person of skill in this field would deem the removal of these limiting clauses to be significant. The '173 Patent in its final form contains no statement or suggestion of an intent to limit the claims to the deleted one-step operation. Neither the specification nor the claims state that this limited scope is the only intended scope.

MPHJ Tech. Invs. v. Ricoh Ams. Corp., 847 F.3d 1363 (Fed. Cir. 2017) ("*MPHJ*")

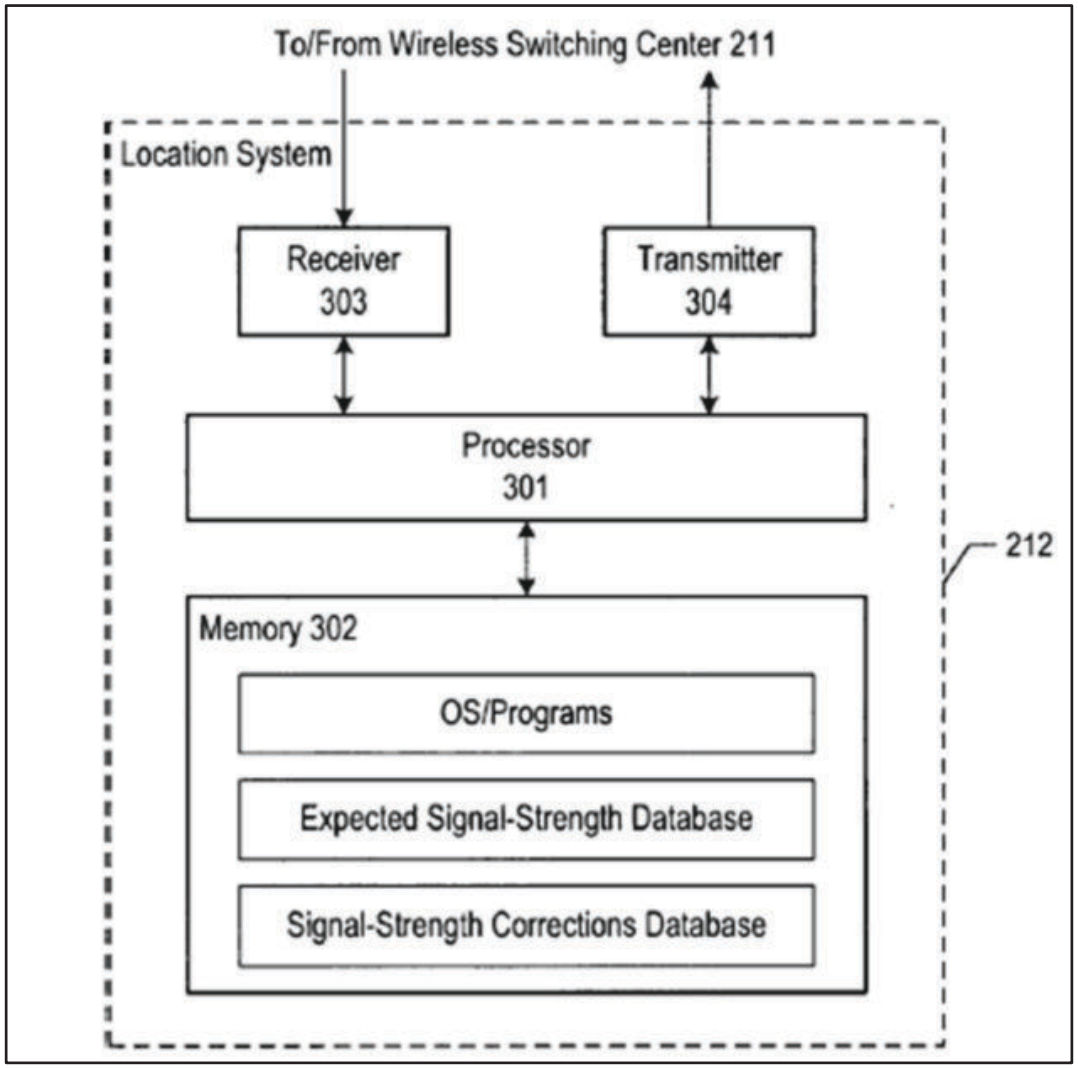
Topic 3:
Bhattacharya-Spain Renders The "NUG" Claims Obvious

Overview of Bhattacharya



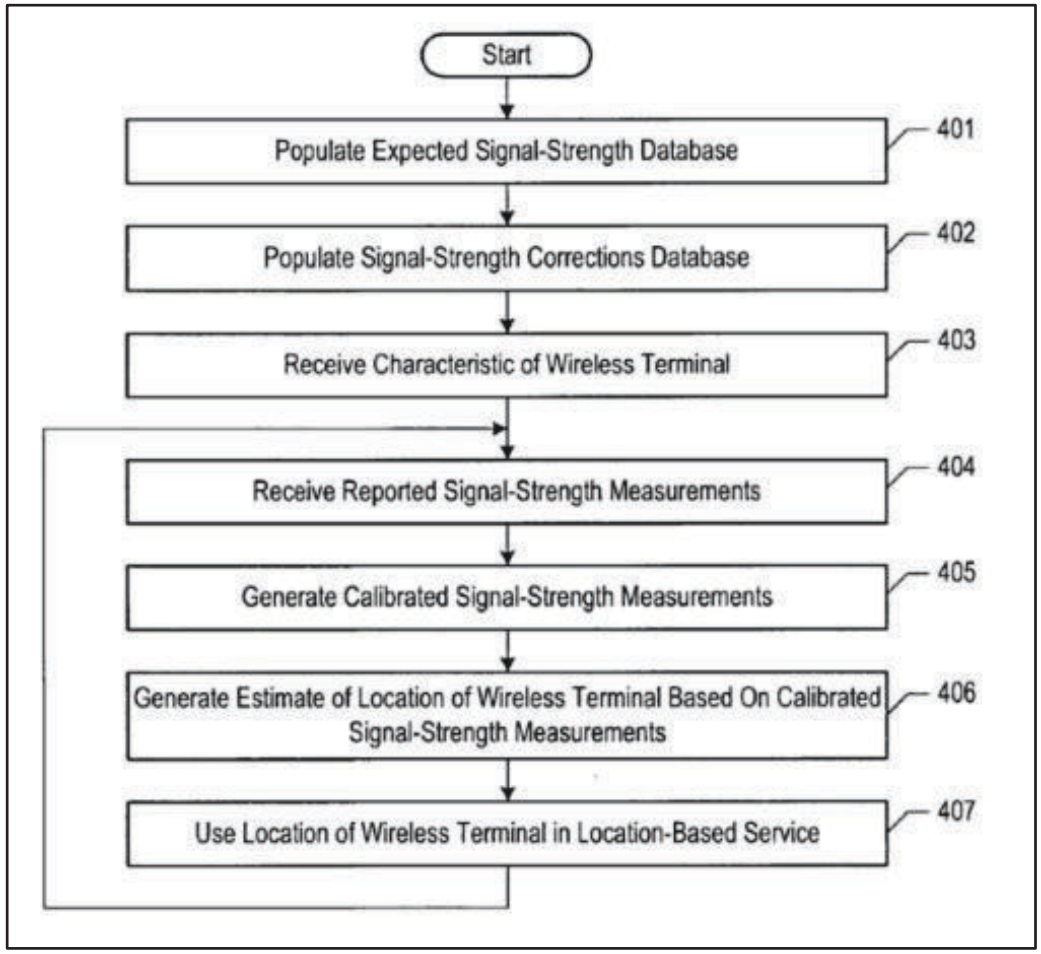
APPLE-1005, FIG.2 (cited in Pet., 6)

Overview of Bhattacharya



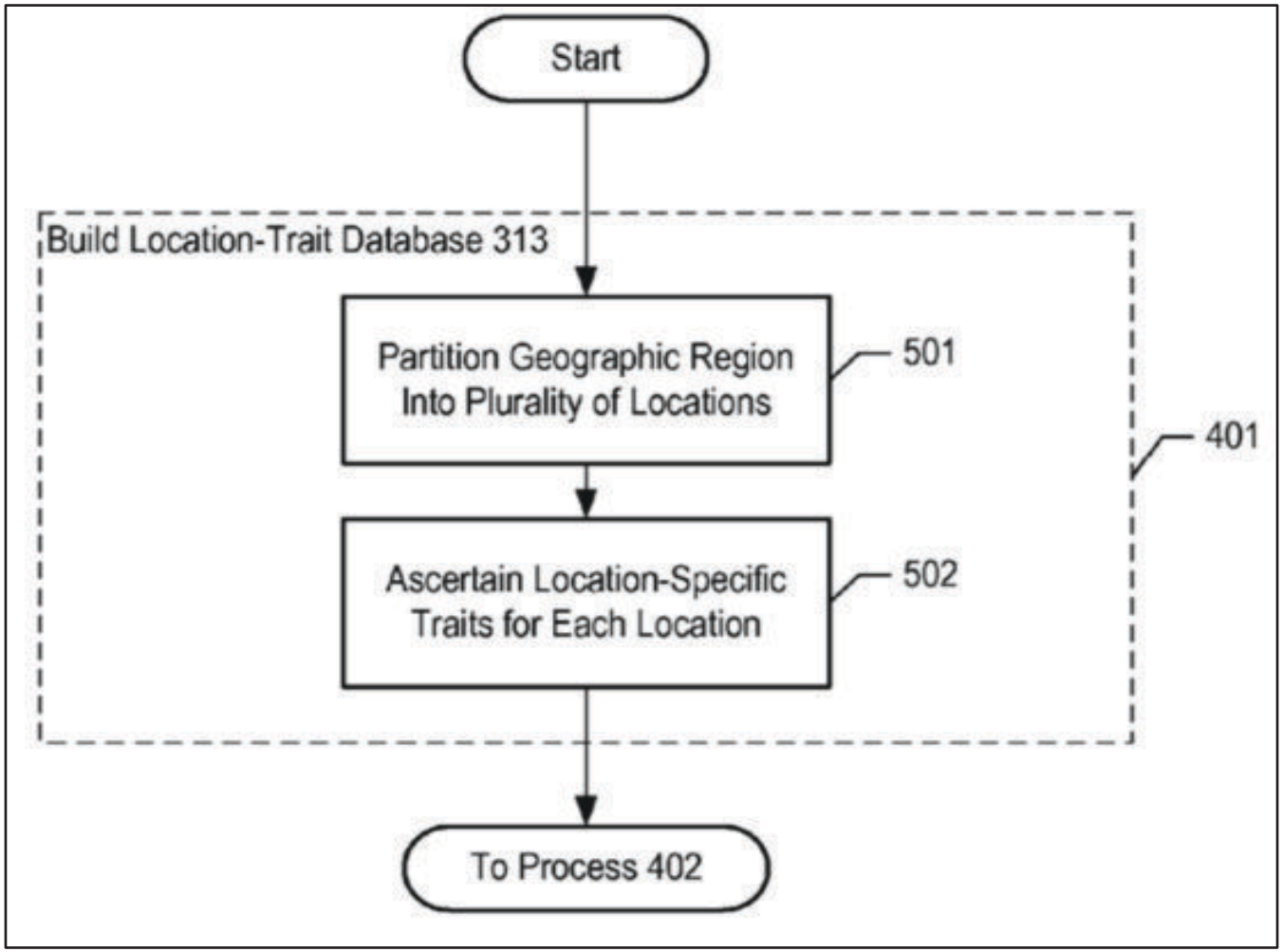
APPLE-1005, FIG.3 (cited in Pet., 8)

Overview of Bhattacharya



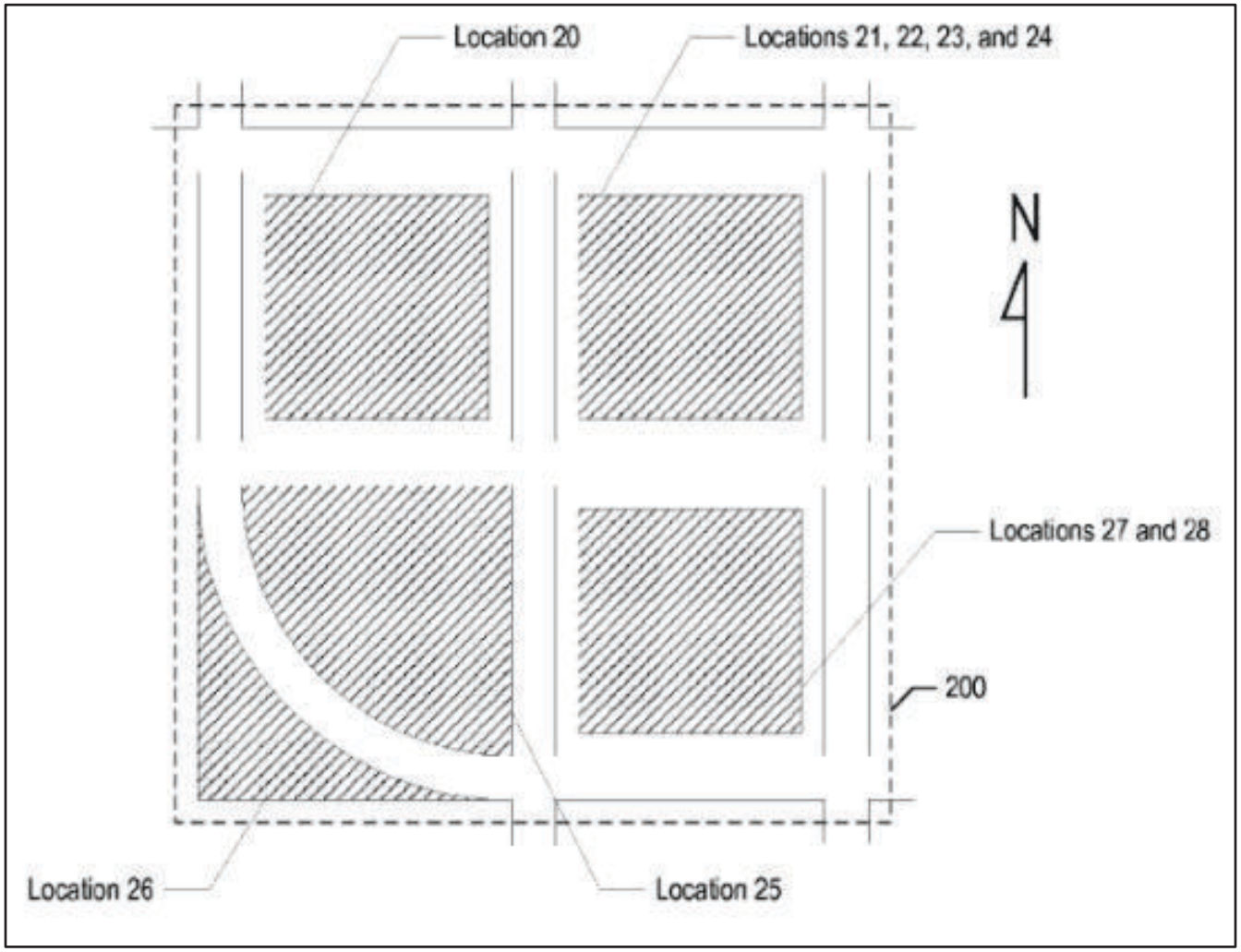
APPLE-1005, FIG.4 (cited in Pet., 9)

Overview of Spain



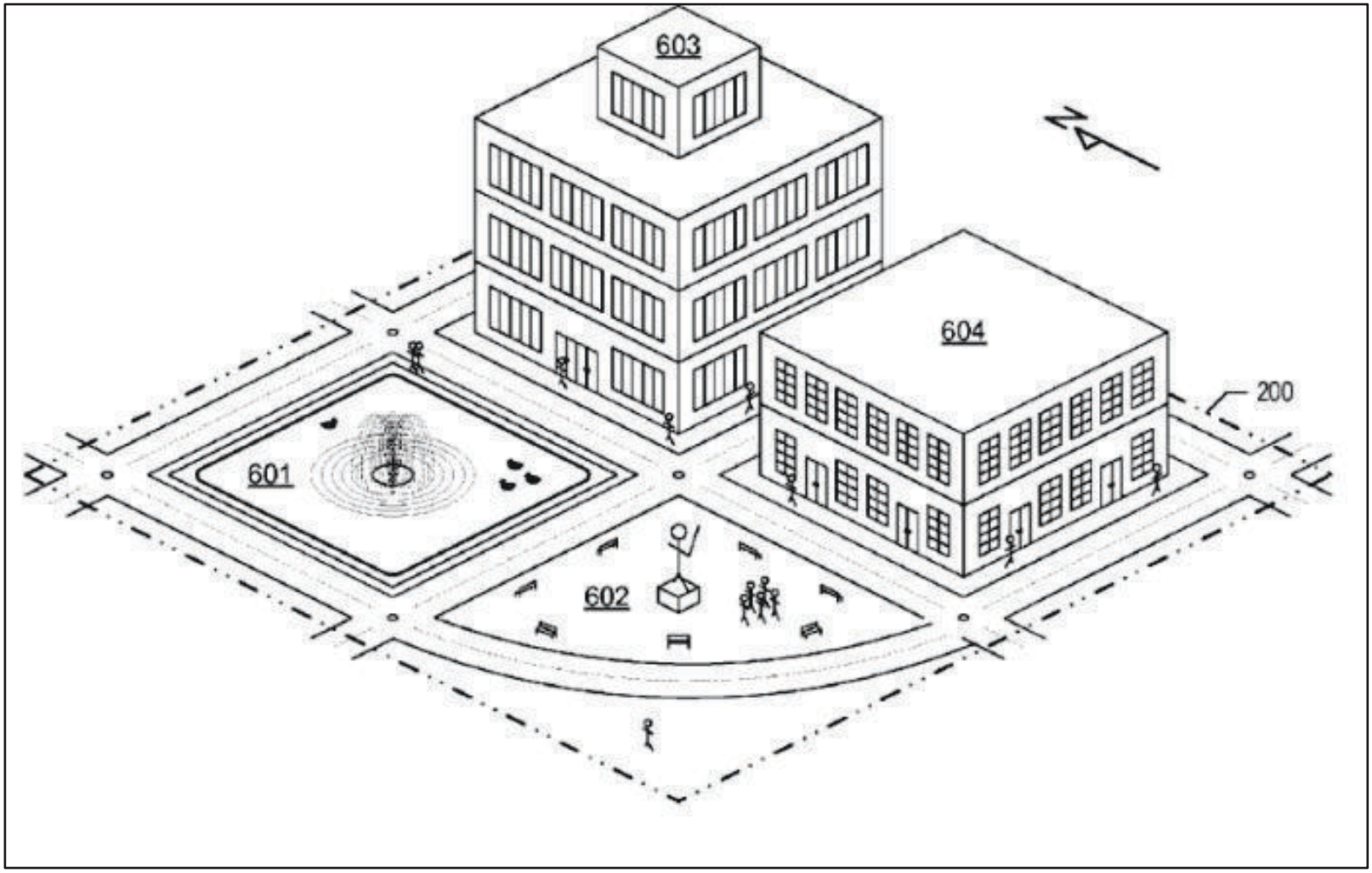
APPLE-1006, FIG.5 (cited in Pet., 43)

Overview of Spain



APPLE-1006, FIG.6E (cited in Pet., 64)

Overview of Spain



APPLE-1006, FIG.6A (cited in Pet., 63)

Bhattacharya-Spain Renders The "NUG" Claims Obvious

	"NUG Claims"
'358 Patent	18
'494 Patent	3, 4, 18
'104 Patent	2

'358 Patent, Claim 18
The system of claim 15 wherein said database comprises previously-gathered calibration data for **one or more non-uniform grid points** within said region.

Pet., 65-66

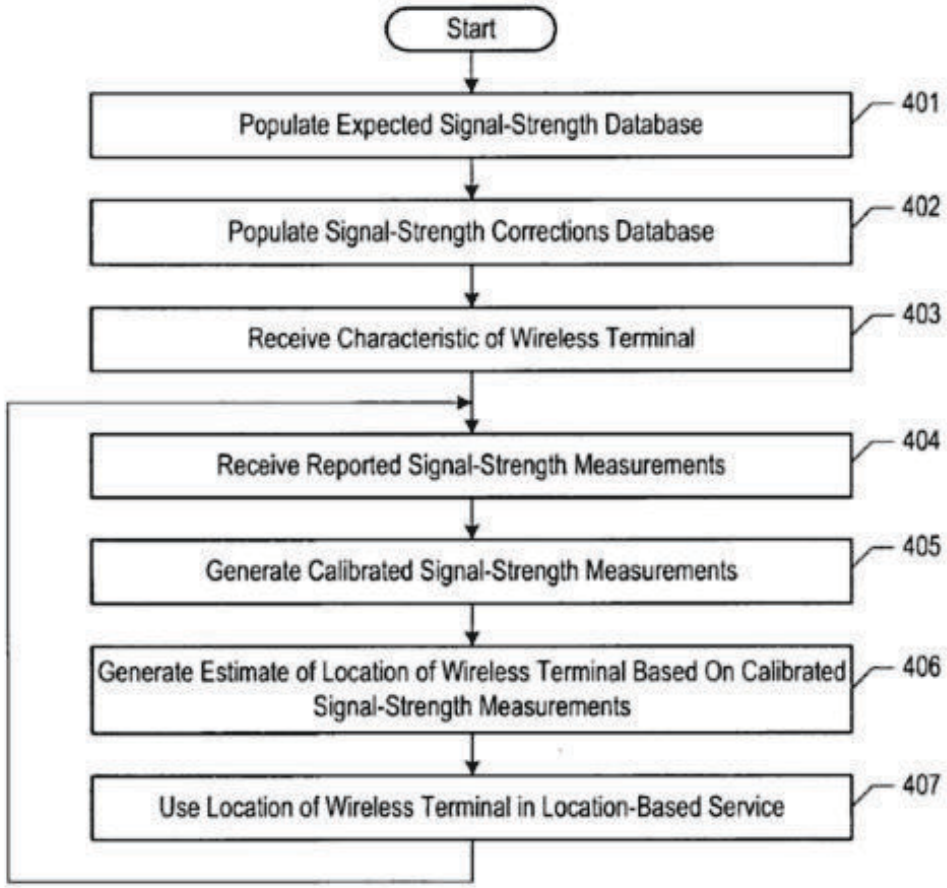
Bhattacharya-Spain Renders The "NUG" Claims Obvious

Petition

…At task 401, the expected signal-strength database ("***database***"), an example of which is shown below in Bhattacharya's FIG. 3, is populated to store various types of data representing expected values later used for location estimation within geographic region 200 ("***calibration data***").

Pet., 23-24; *see* APPLE-1003, ¶64

Bhattacharya



APPLE-1005, FIG. 4 (cited in Pet., 25)

Bhattacharya-Spain Renders The "NUG" Claims Obvious

Petition

…At task 401, the expected signal-strength database ("***database***"), an example of which is shown below in Bhattacharya's FIG. 3, is populated to store various types of data representing expected values later used for location estimation within geographic region 200 ("***calibration data***").

Pet., 23-24; *see* APPLE-1003, ¶64

Bhattacharya

At task **401**, the Expected Signal-Strength Database is populated with the expected signal strengths of three signals at each location in geographic region **200**. The three signals are Signal **1**, Signal **2**, and Signal **3**.

APPLE-1005, [0085] (cited in Pet., 22-24)

Signal **1** is the control channel broadcast by base station **202-1** and its expected signal strength at location x,y at time t is represented by the function E(**1**,x,y,t). Signal **2** is the overhead control channel broadcast by base station **202-2** and its expected signal strength at location x,y at time t is represented by the function E(**2**,x,y,t). Signal **3** is the overhead control channel broadcast by base station **202-2** and its expected signal strength at location x,y at time t is represented by the function E(**3**,x,y,t). For a given x,y location and time, these three functions together yield a 3-tuple of expected signal strengths designated as {E(**1**), E(**2**), E(**3**)}.

APPLE-1005, [0086] (cited in Pet., 22-24)

Bhattacharya-Spain Renders The "NUG" Claims Obvious

Petition
…At task 401, the expected signal-strength database ("***database***"), an example of which is shown below in Bhattacharya's FIG. 3, is populated to store various types of data representing expected values later used for location estimation within geographic region 200 ("***calibration data***").

Pet., 23-24; *see* APPLE-1003, ¶64

Bhattacharya
It will be clear to those skilled in the art, after reading this disclosure, how to generate the expected signal-strength functions for each location in the geographic region whether through: i. one or more theoretical radio-frequency propagation models, or ii. one or more empirical signal-strength measurements, or iii. any combination of i and ii.

APPLE-1005, [0120]-[0123] (cited in Pet., 31, 39)

Bhattacharya-Spain Renders The "NUG" Claims Obvious

Petition

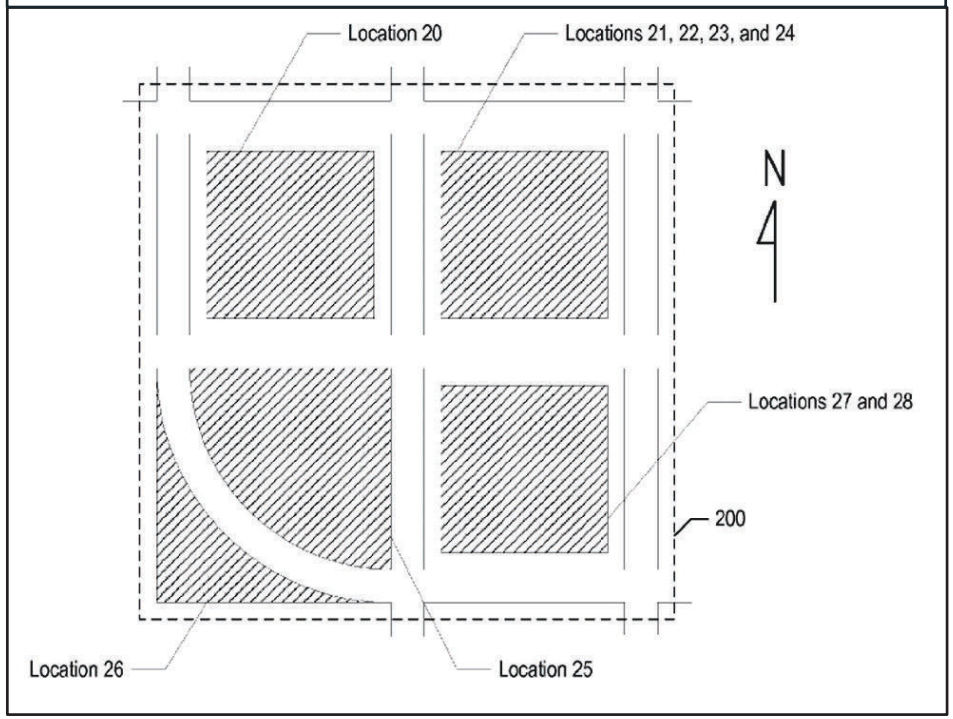
…in Spain, each location is described by various information, e.g., "unique identifier," and "coordinates" that "define its scope (e.g., position, area, volume, etc." APPLE-1006, [0076]-[0082]. Further, in the Figure 6E example, locations 20, 25, and 26 have **different shapes and sizes**, and represent different areas of region 220. Thus, in this example, region 220 is partitioned such that the locations represent "one or more non-uniform grid points within said region." APPLE-1003, ¶[124].

Pet., 64; *see* APPLE-1003, ¶124

… the region is partitioned such that the locations represent "***one or more non-uniform grid points within said region***."

Pet., 66; *see* APPLE-1003, ¶128

Spain



APPLE-1006, FIG. 6E (cited in Pet., 64)

Bhattacharya-Spain Renders The "NUG" Claims Obvious

Petition
…Bhattacharya's expected signal-strength measurements may be "generated by taking empirical measurements at various locations," specific examples of which were well-known by the Critical Date.

Pet., 28; *see* APPLE-1003, ¶¶69-70

Bhattacharya
In accordance with another well-known model, the expected signal strength at each location is generated by taking empirical measurements at various locations and by interpolating for the locations in between the sampled locations. This method is advantageous in that it does not require many empirical measurements to be made, but it is less accurate than taking measurements at every location and causes the square of the uncertainty in the modeling error, $\delta_E{}^2$, to rise. The implications of this are discussed in detail below and with respect to FIG. 18.

APPLE-1005, [0119] (cited in Pet., 28)

"Non-Uniform Grid Points"

Sundaresan Declaration
A POSITA would have also known that one method of generating expected signal strength for a grid point would have been to collect multiple empirical measurements within the grid square surrounding the grid point and **average** the multiple empirical measurements. *Id.*, APPLE-1011, 7:28-44. …In this regard, a POSITA would have understood or at least found it obvious that the expected signal-strength functions {E(1,x,y,t), E(2,x,y,t), and E(3,x,y,t)} for a given grid point within the geographic region 200 may represent an **average** of calibration data from multiple locations within the grid square, and not simply represent the storage of the calibration data itself. *See id.*

APPLE-1003, ¶70 (cited in Pet., 28)

Exhibit 1011 (Yost)
…the calibration data containing the measured and recorded signal strength measurements are **averaged** within each of a plurality of small areas (step **82**) and a standard set of signal strength measurements is determined (step **84**), which would apply across the coverage area of interest.

APPLE-1011, 7:28-44 (cited in Pet., 28)

Topic 4:
The Combination of Bhattacharya and Zeng

Overview of Zeng

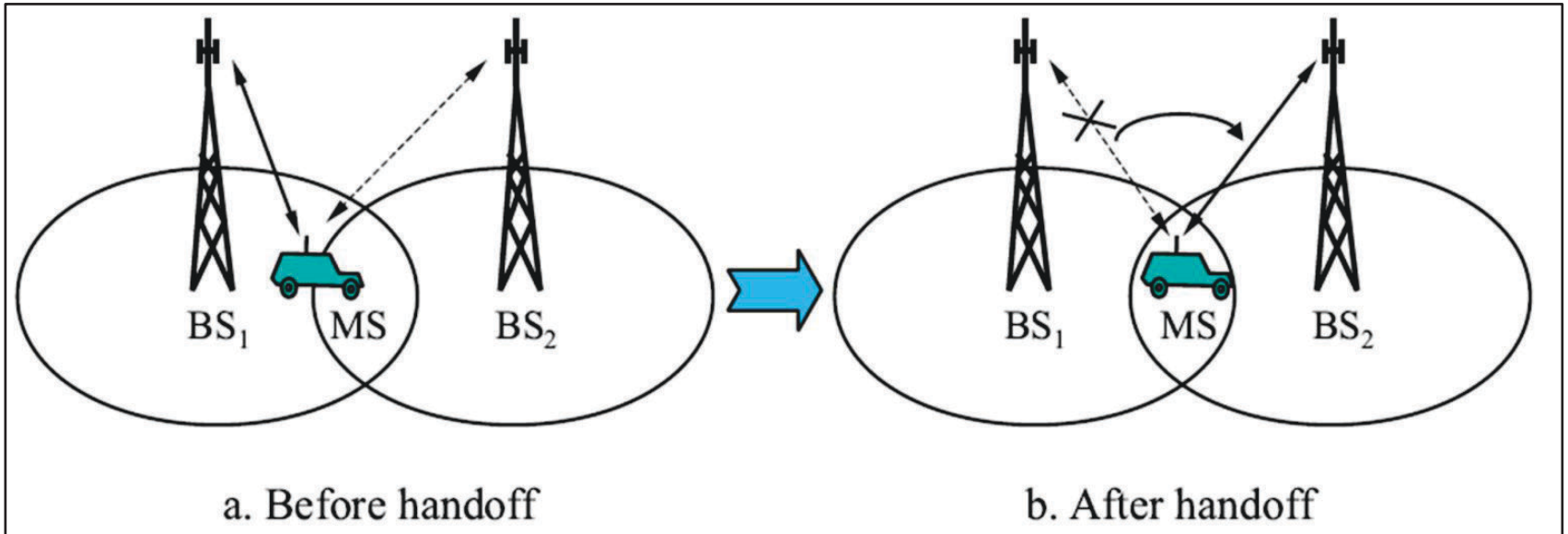


Figure 1.1 Hard handoff between the MS and BSs.

APPLE-1006 (IPR2024-00255), Fig. 1.1 (cited in Pet., 21)

Overview of Zeng

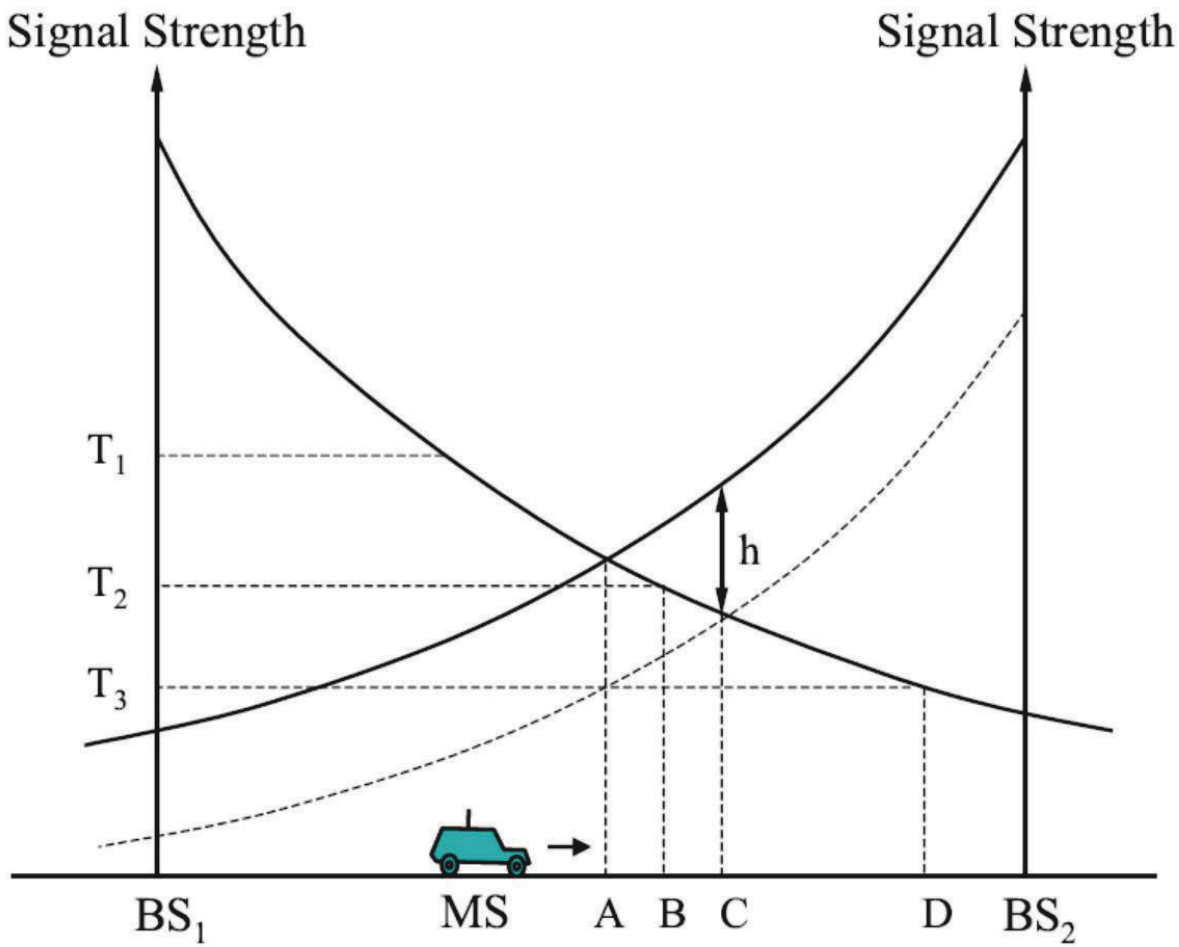
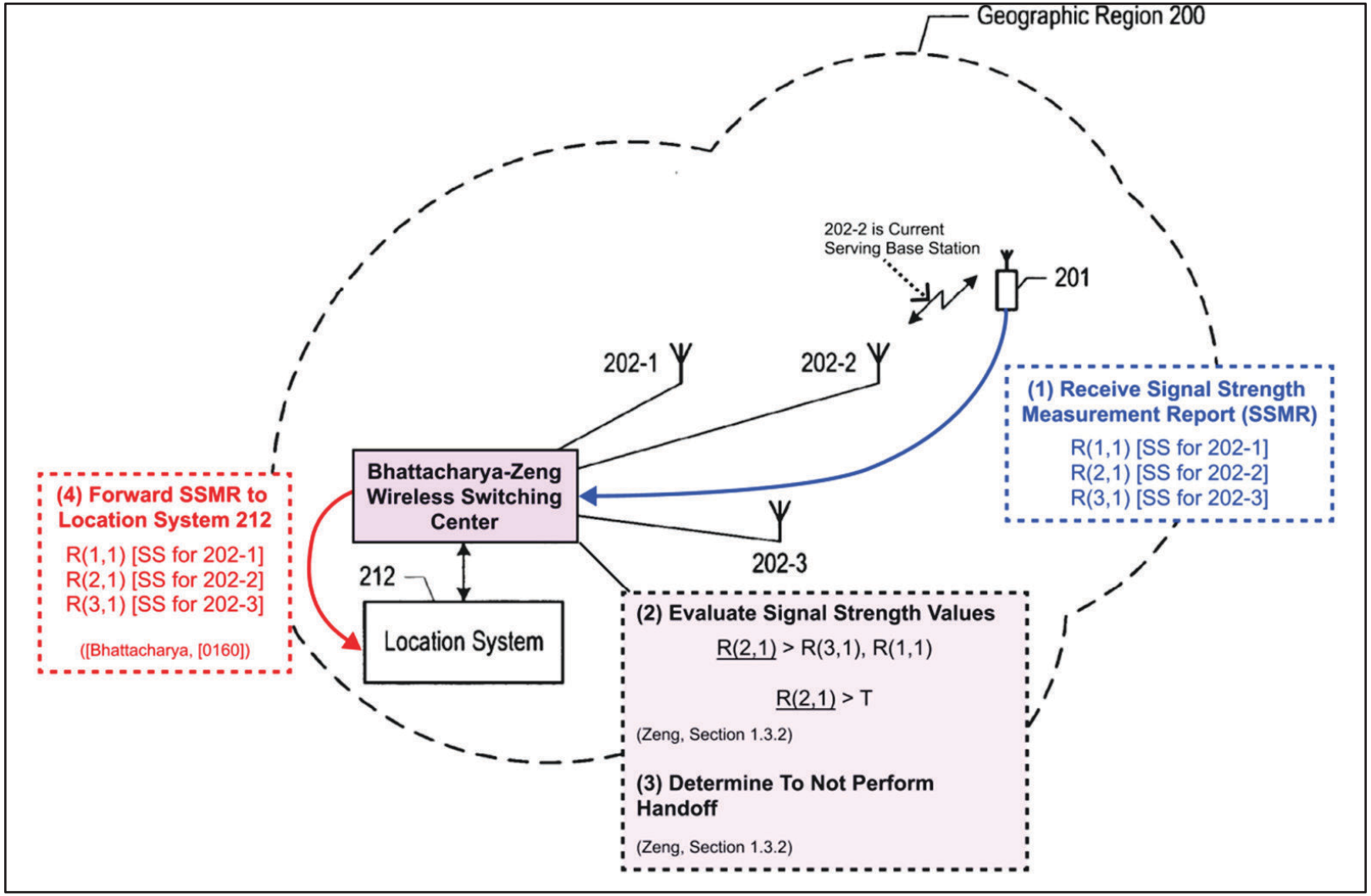


Figure 1.2 Signal strength and hysteresis between two adjacent BSs for potential handoff.

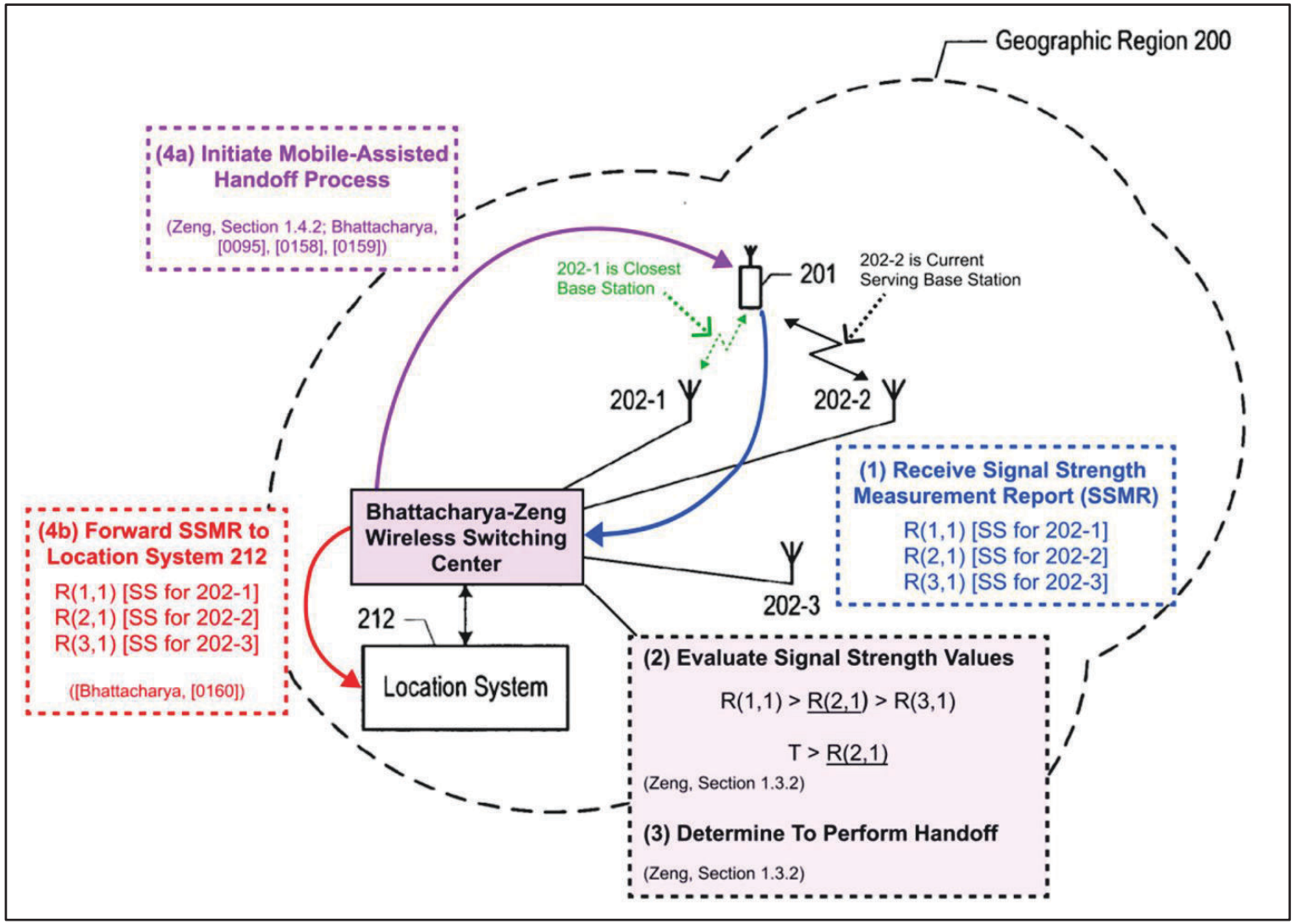
APPLE-1006 (IPR2024-00255), Fig. 1.2 (cited in Pet., 23)

Combination of Bhattacharya and Zeng



Pet. (IPR2024-00255), 27-28; *see also* APPLE-1005, [0160]; APPLE-1006, 4; APPLE-1003, ¶[74]

Combination of Bhattacharya and Zeng



Pet. (IPR2024-00255), 28-29; *see also* APPLE-1005, [0160]; APPLE-1006, 4; APPLE-1003, ¶[75]

Combination of Bhattacharya and Zeng

Sundaresan Declaration

…Bhattacharya itself provides the motivation to a POSITA to seek well-known handoff functionality beyond its disclosure given recognition that such functionality enables location estimation "when a wireless terminal is near the boundary of one or more systems." APPLE-1005, [0054].

APPLE-1003 (IPR2024-00255), ¶[66] (cited in Pet., 24)

Supplemental Declaration

…it would have been predictable to configure Bhattacharya's mobile switching center to perform handoff operations using the known methods described in Zeng.

APPLE-1055 (IPR2024-00255), ¶56 (cited in Reply, 22)

By the Critical Date, cellular standards already provided POSITAs with clear guidelines and specifications that allowed geolocation systems to leverage cellular networks for obtaining necessary data for estimating mobile station locations.

APPLE-1055 (IPR2024-00255), ¶58 (cited in Reply, 22)

Topic 5:
Level of Ordinary Skill

Level of Ordinary Skill

Sundaresan Declaration

…a person of ordinary skill in the art ("POSITA") had at least a Bachelor's degree in electrical engineering, computer science, or a similar discipline, and at least two years of experience in the field working with working with navigation and/or geolocation systems.

APPLE-1003, ¶8

Supplemental Declaration

…I agreed with this POSITA definition when preparing the Declaration, and I continue to hold the opinion that the POSITA definition is both correct and appropriate based on the disclosures of the '358 patent and the prior art analyzed in the Declaration.

APPLE-1055, ¶17

…If I did not agree with the POSITA definition, then it would not have been included in paragraph 8 of the Declaration. Based on my understanding of relevant legal principles, the POSITA definition therefore provides the appropriate perspective of a POSITA regarding the prior art analyses in the Declaration.

APPLE-1055, ¶18

Record Evidence Demonstrates The Level of Ordinary Skill

Reply

…disclosure of well-known cellular protocols demonstrates knowledge of "radio frequency and cellular technologies" was within the skill level of a POSITA definition applied in the Petition.

Reply, 17

Specification

The use of wireless communication devices such as telephones, pagers, personal digital assistants, laptop computers, etc., hereinafter referred to collectively as "mobile appliances" or "mobiles stations" has become prevalent in today's society.

APPLE-1001, 1:19-26 (cited in Reply, 17)

A MS may be configured to transmit data signals at specific timeslot intervals depending on the type of wireless communication protocol employed (e.g., TDMA, GSM, 3GPP etc.).

APPLE-1001, 4:27-40 (cited in Reply, 17)

Record Evidence Demonstrates The Level of Ordinary Skill

Reply

…disclosure of well-known cellular protocols demonstrates knowledge of "radio frequency and cellular technologies" was within the skill level of a POSITA definition applied in the Petition.

Reply, 17

Specification

The use of wireless communication devices such as telephones, pagers, personal digital assistants, laptop computers, etc., hereinafter referred to collectively as "mobile appliances" or "mobiles stations" has become prevalent in today's society.

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APPLE-1001, 4:27-40 (cited in Reply, 17)

Record Evidence Demonstrates The Level of Ordinary Skill

Reply

…disclosure of well-known cellular protocols demonstrates knowledge of "radio frequency and cellular technologies" was within the skill level of a POSITA definition applied in the Petition.

Reply, 17

Sturza Deposition Transcript

Q. And in your opinion, were geolocation systems that used wireless communication devices with cellular capabilities 15 known around the February 2007 time frame?

A. Yes. There were mobile positioning geolocation capabilities in, you know, mobile cellular devices.

Q. And the '358 patent is an example of 20 such a system, correct?

A. Yes.

APPLE-1056, 27:12-28:1 (cited in Reply, 17-18)

Record Evidence Demonstrates The Level of Ordinary Skill

Reply

The asserted prior art also demonstrates that use of cellular technology in geolocation systems was within the skill level of a POSITA (as originally defined).

Reply, 18

Bhattacharya

The illustrative embodiment operates in accordance with the Global System for Mobile Communications (formerly known as the Groupe Speciale Mobile)…After reading this disclosure, however, it will be clear to those skilled in the art how to make and use alternative embodiments of the present invention that operate in accordance with other protocols, such as, for example, the Universal Mobile Telephone System ("UMTS"), CDMA-2000, IS-136 TDMA, Short Message Service, Circuit Switched Data, etc.

APPLE-1005, [0052] (cited in Reply, 18)

Sturza Deposition Transcript

…Bhattacharya is talking about various cellular protocols or standards that were, you know, well known at that filing date in 2005.

APPLE-1056, 63:13-16 (cited in Reply, 18)

Record Evidence Demonstrates The Level of Ordinary Skill

Reply

The asserted prior art also demonstrates that use of cellular technology in geolocation systems was within the skill level of a POSITA (as originally defined).

Reply, 18

Bhattacharya

The illustrative embodiment operates in accordance with the Global System for Mobile Communications (formerly known as the Groupe Speciale Mobile)…After reading this disclosure, however, it will be clear to those skilled in the art how to make and use alternative embodiments of the present invention that operate in accordance with other protocols, such as, for example, the Universal Mobile Telephone System ("UMTS"), CDMA-2000, IS-136 TDMA, Short Message Service, Circuit Switched Data, etc.

APPLE-1005, [0052] (cited in Reply, 18)

Sturza Deposition Transcript

Q. And when GSM and UMTS are used for positioning and geolocation, is this an example of a geolocation system using cellular technology?

…

A. Well -- so, yes. What I am saying is that GSM and UMTS are mobile standards. And those standards incorporate capability for doing geolocation using the cellular infrastructure.

APPLE-1056, 23:19-24:6 (cited in Reply, 17-18)

IPR2024-00259 (’753 Patent)

Topics of Discussion

1. Overview	**66**
2. Construction of Claimed "Grid Point"	**71**
2A. Patent Owner's Ever-Shifting Construction	72
2B. Specification Encompasses Two Different Types of Grid Points	76
3. Bhattacharya-Yost Renders "Grid Point" Obvious	**91**

Overview

Overview of IPR Grounds

Claims Challenged	Prior Art
1, 7, 9, **32**, 38, and 40	§103: Bhattacharya and Yost

Overview of Issues for ’753 Patent

- **Primary Issues Raised by Geoscope in POR**
  - Construction of claimed “grid points”
  - Whether the combination of Bhattacharya and Yost Render Obvious Limitation [1b] and [32d] under the proper construction of “grid points”
- **Issues NOT Raised by Geoscope**
  - A construction of unrecited terms (“non-uniform grid points”)
  - The obviousness of any other claim limitations
  - The combinability of Bhattacharya and Yost
  - Secondary considerations

Representative Claim 1

A method of determining the location of a mobile device in a geographic region comprising the steps of:

(a) providing calibration data for each of one or more calibration points in a geographic region, said calibration data having one or more characterizing parameters;

(b) generating one or more sets of grid points for said calibration data;

(c) receiving at least one network measurement report from a mobile device at an unknown location in said geographic region;

(d) evaluating said at least one network measurement report with each of said sets of grid points as a function of select ones of said characterizing parameters;

(e) selecting a set of grid points as a function of a predetermined criteria; and

(f) determining the location of a mobile device in said geographic region as a function of said selected set of grid points.

Representative Claim 1

A method of determining the location of a mobile device in a geographic region comprising the steps of:

(a) providing calibration data for each of one or more calibration points in a geographic region, said calibration data having one or more characterizing parameters;

(b) generating one or more sets of grid points for said calibration data;

(c) receiving at least one network measurement report from a mobile device at an unknown location in said geographic region;

(d) evaluating said at least one network measurement report with each of said sets of grid points as a function of select ones of said characterizing parameters;

(e) selecting a set of grid points as a function of a predetermined criteria; and

(f) determining the location of a mobile device in said geographic region as a function of said selected set of grid points.

Construction of Claimed “Grid Points”

2A. Patent Owner's Ever-Shifting Construction

District Court's Claim Construction of "Grid Point"

Claim term	D.Ct. Construction
"**grid point**"	"a point associated with representative calibration data for an area"

EX1020 at 20
(cited in Petition at 8 and Reply at 4-5)

Patent Owner's Shifting Constructions

PO Construction (D.Ct.)

Plaintiff's Construction
"locations or areas that are determined and associated with a particular set or sets of calibration data"

EX1020 at 19
(cited in Petition at 8 and Reply at 4-5)

PO Construction (POPR)

As further explained above in Section III, the district court concluded that "grid point," as used in the '753 Patent, specifically refers to "a point associated with representative calibration data for an area" that is ***generated based on analysis of calibration data***. Ex. 1020 at 20; *see also id.* at 19 (district court explaining that gathering and analyzing calibration data is "what *must be done* to arrive at a grid point or set of grid points" (emphasis in original)). The district court recognized that

POPR at 27

PO Construction (POR)

Term	Proposed Construction
"Grid Point"	"a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data."

POR at 26

PO's Changing Interpretations of its Own Construction

POR Interpretation

Although the '753 Patent claims recite the generation of "grid points," not only "non-uniform grid points" or "NUGs," they make clear that the claimed grid points are generated "for said calibration data," referring to the calibration data recited in the preceding limitation. EX1001, cls. 1, 32. Thus, regardless of whether the claimed grid points are ultimately uniform or non-uniform, they must be generated based on previously-gathered calibration data. EX1001, 2:31-35; EX2018 [Sturza Decl], ¶64. In practice, this will typically result in non-uniform

POR at 15

Sur-Reply Interpretation

Accordingly, at least as used in the claims, grid points and NUGs are the same.

Sur-Reply at 13

2B. ’753 Specification Encompasses Two Different Types of Grid Points

Geoscope's Construction is Based Entirely on NUGs

(b) generating one or more sets of grid points for said calibration data;

PO Construction (POR)

Term	Proposed Construction
"Grid Point"	"a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data."

POR at 26

Geoscope's Construction is Based Entirely on NUGs

However, the teachings of the '753 Patent specification to which Geoscope cites for these arguments exclusively relate to non-uniform grid points ("NUGs").

Reply at 6-7

multiple co-located NUGs may exist. The NUGs may fully cover the region R and each NUG may have statistically similar data accumulated into itself. The geometrical shape (i.e., the shape defined by the union of locations of calibration points assigned to the NUG) and the amount of data accumulated into such NUGs is seen to be variable since these are determined by the statistical similarity of the data allocated to a NUG.

EX1001, 12:7-14 (cited in POR at 28)

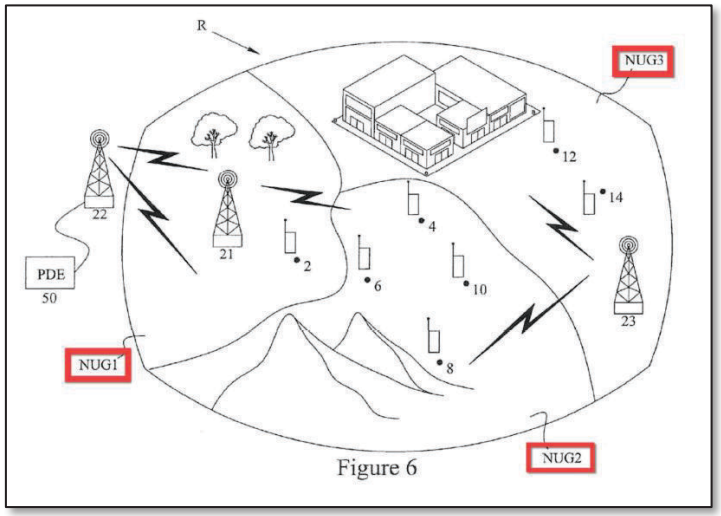


Figure 6

POR at 44

A NUG generator or a method to produce NUGs may begin the NUG generation operation using, for example, one of more of the following: (a) a fixed uniform grid ("UG") defined over the region R with the calibration point data being assigned to the fixed grid points by some rule (e.g., allocated by closest fixed grid point, a centroid of a set of fixed grid points, etc.); (b) random grid points to define the start of each NUG; (c) combinations of (a) and (b) depending on the characteristics of the calibration data; or (d) some other useful method.

In any of these cases, the NUG generator may evaluate the data vectors at a particular (candidate) calibration point, or at a fixed grid point to which the data vector(s) is/are assigned. This calibration point or grid point may serve as the root of a first NUG. The root of the NUG may be the calibration data

EX1001, 10:29-43 (cited in POR at 30-31)

Claims Recite "Grid Points" Not "Non-Uniform Grid Points"

'753 Patent Claim 1

(b) generating one or more sets of grid points for said calibration data;

'753 Patent Claim 4

4. The method of claim **1** wherein one of said grid points is located on a predetermined fixed uniform grid defined over said geographic region.

EX1001, cl. 1, cl. 4;
(cited in Reply at 7-8, 11)

PO Knew How to Claim More Specific Embodiments

'753 Patent Claim 1

(b) generating one or more sets of grid points for said calibration data;

'753 Patent Claim 4

4. The method of claim **1** wherein one of said grid points is located on a predetermined fixed uniform grid defined over said geographic region.

VS.

'104 Patent Claim 2

2. The method of claim **1** wherein said database comprises previously-gathered calibration data for one or more non-uniform grid points within said region.

'784 Patent Claim 4

4. The method of claim **1** further comprising determining at said controller unit if said location data is statistically sufficient and if so entering said location data into a non-uniform grid generator.

EX1001, cl. 1, cl. 4;
EX2016, cl. 2;
EX2017, cl. 4
(cited in Reply at 7-8, 11)

Claims Recite "Grid Points" Not "Non-Uniform Grid Points"

"A patentee may claim an invention broadly and expect enforcement of the full scope of that language absent a clear disavowal or contrary definition in the specification. *Id.* at 1325. The history of the '162 patent illustrates that this applicant took this course. The '162 patent is part of a family of patents that includes U.S. Patent Nos. 5,049,487 (the '487 patent) and 5,843,692 (the '692 patent). These patents stem from the same initial application and contain the same or essentially the same specifications. In place of a 'suitably stable endpoint,' the '487 patent claims recite a 'predetermined time period.' '487 patent, col. 22, l. 36. Similarly, the '692 patent claims recite a "predetermined incubation period" rather than a 'suitably stable endpoint.' '692 patent, col. 23, l. 22. This progression, from 'predetermined time period' to 'predetermined incubation period' to 'suitably stable endpoint,' shows that LifeScan purposefully sought in the '162 patent claim scope broader than the predetermined timing method. Absent a clear disavowal or contrary definition in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language."

Home Diagnostics, Inc. v. LifeScan, Inc., 381 F. 3d 1352, 1357-58 (Fed. Cir. 2004)
(cited in Reply at 8)

753 Patent Describes Location Based on NUGs or UGs

We claim:

1. A method of determining the location of a mobile device in a geographic region comprising the steps of:

(b) generating one or more sets of grid points for said calibration data;

In a further aspect of embodiments of the present subject matter, an estimated location may be generated for a mobile device given a received NMR and a region "R" over which a set "S" of grid points (NUGs or UGs) have been established.

In a further embodiment of the present subject matter, the individual pdf of each NC power level or other parameter in the NMR over the set of available grid points (NUGs or UGs) may be evaluated. A joint probability may then be determined

EX1001, 25:31-34, 26:32-35
(cited in Reply at 8-9)

753 Patent Describes Location Based on NUGs <u>or UGs</u>

’379 Provisional Cited By PO

Acronyms: NUG – Non-Uniform Grid Point, UG – Uniform Grid Point, NMR- Network Measurement Report, NC – Neighbor Cell, pdf – probability density function, TA – Timing Advance, RTT – Round Trip Time, TDOA – Time Difference Of Arrival

EX2029, 5
(cited in POR at 11, n. 1)

UGs Are a Type of "Grid Point" Defined On "Fixed Grid"

A NUG generator or a method to produce NUGs may begin the NUG generation operation using, for example, one of more of the following: (a) a fixed uniform grid ("UG") defined over the region R with the calibration point data being assigned to the fixed grid points by some rule (e.g., allocated by closest fixed grid point, a centroid of a set of fixed grid points, etc.); (b) random grid points to define the start of each NUG; (c) combinations of (a) and (b) depending on the characteristics of the calibration data; or (d) some other useful method.

EX1001, 10:29-38
(cited in Reply at 9)

Geographic Coordinates Alone Are Not a "Grid Point"

With reference now to FIG. **1**, a flow chart is depicted for a method for assigning geographical coordinates according to an embodiment of the present subject matter. At block **101**, calibration data may be provided for each of one or more calibration points in a geographic region. At block **102**, for each of the calibration points calibration data associated with the calibration point is evaluated and a determination is made as to whether a grid point, such as a NUG, should be defined. If it is determined that a grid point is to be defined, geographical coordinates are assigned to the grid point so that the grid point may be useful in estimating the location of a mobile device.

EX1001, 13:1-12
(cited in Reply at 9)

PO's Own Evidence Undermines Its Position on UGs

Sur-Reply Argument

Second, the '753 Patent defines "UG" as "a fixed uniform grid", not a "uniform grid ***point***":

Sur-Reply at 14

'379 Provisional Cited By PO

Acronyms: NUG – Non-Uniform Grid Point, UG – Uniform Grid Point, NMR- Network Measurement Report, NC – Neighbor Cell, pdf – probability density function, TA – Timing Advance, RTT – Round Trip Time, TDOA – Time Difference Of Arrival

EX2029, 5
(cited in POR at 11, n. 1)

UGs Are a Type of "Grid Point" Defined On "Fixed Grid"

the present subject matter. With reference to FIG. **42**, at block **4210**, a plurality of grid points may be provided in a geographic region where each of the grid points may include at least one characterizing parameter or characterizing function, and where each of the grid points is located on a grid defined over the geographic region. At block **4220**, a plurality of NMRs may be provided for a mobile device in the geographic region, and at block **4230**, an estimated location may be determined for the mobile device from one NMR as a function of the at least one parameter. Of course, one or more of the grid points may be randomly located within the geographic region, and one or more of the grid points may be located on a predetermined fixed uniform grid defined over the geographic region.

EX1001, 35:32-45
(cited in Reply at 9-10)

Two or More UGs Is a "Set of Grid Points," as Claimed

'753 Patent

In a further aspect of embodiments of the present subject matter, an estimated location may be generated for a mobile device given a received NMR and a region "R" over which a set "S" of grid points (NUGs or UGs) have been established.

EX1001, 25:31-34
(cited in Reply at 8-9)

Dr. Sundaresan Testimony

41. These teachings of the '753 Patent about the proper breadth of the term "grid point" stand to logical reasoning. If one claimed "grid point" can be a uniform grid point located on a "predetermined fixed uniform grid," then without further limitation by the claims, "one or more sets" of such grid points must at least encompass a set of these uniform grid points. There is simply nothing in the

EX1027, ¶ 41
(cited in Reply at 12)

PO Misinterprets the D.Ct. Claim Construction Order

D.Ct. Claim Construction Order

Plaintiff argues that its proposed construction is "near-definitional" language taken from the Abstract of the '753 Patent, which states, in relevant part:

> The location of a wireless mobile device may be estimated using, at least in part, one or more pre-existing Network Measurement Reports ("NMRs") which include calibration data for a number of locations within a geographic region. *The calibration data for these locations is gathered and analyzed so that particular grid points within the geographic region can be determined and associated with a particular set or sets of calibration data from, for example, one or more NMRs.*

Ex. E at Abstract (emphasis added). But the italicized language from which Plaintiff's construction is drawn is directed more toward what *must be done* to arrive at a grid point or set of grid points rather than what a grid point *is*. The specification of the '104 Patent, sibling to the '753 Patent,

EX1020, 19
(cited in ID at 27)

PO Misinterprets the D.Ct. Claim Construction Order

Institution Decision

the Preliminary Response (Prelim. Resp. 26), Patent Owner's argument relies on an altered claim construction of "grid point." More specifically, Patent Owner mischaracterizes the district court's claim construction order. Instead of concluding that a "grid point" must be generated based on analysis of calibration data, the district court was providing explanation in its discussion of why it declined to adopt Patent Owner's[8] proposed construction. Ex. 1020, 19. That is, after noting that Patent Owner cited language from the '753 patent in support of its proposed claim construction, the district court stated, "[b]ut the [cited] language is drawn . . . more toward what must be done to arrive at a grid point or set of grid points rather than what a grid point is." *Id.* Accordingly, the district court was providing explanation of why the cited language was not pertinent to the meaning of "grid point" and not indicating that grid points must be generated based on the measured calibration data. The district court determined that the claim

ID at 27

Bhattacharya-Yost Renders "Grid Point" Obvious

"Grid Point" Generated By Association of Two Types of Data

44. The district court construed the term "grid point" to mean "a point associated with representative calibration data for an area." APPLE-1025, 20. In other words a "grid point" is an association between two types of data: (1) a point or location, and (2) representative calibration data for an area. And the '753 Patent describes the assignment of both "geographical coordinates" and "calibration data" to a grid point. *See, e.g.*, APPLE-1001, FIG. 3, 13:1-34. Thus, geographical coordinates alone are not a "grid point" as that term is used in the '753 Patent or as properly construed by the district court. A "grid point" only exists when a location and calibration data are combined through association.

EX1027, ¶ 44
(cited in Reply at 14-15)

Combination of Bhattacharya and Yost Generates "Grid Points"

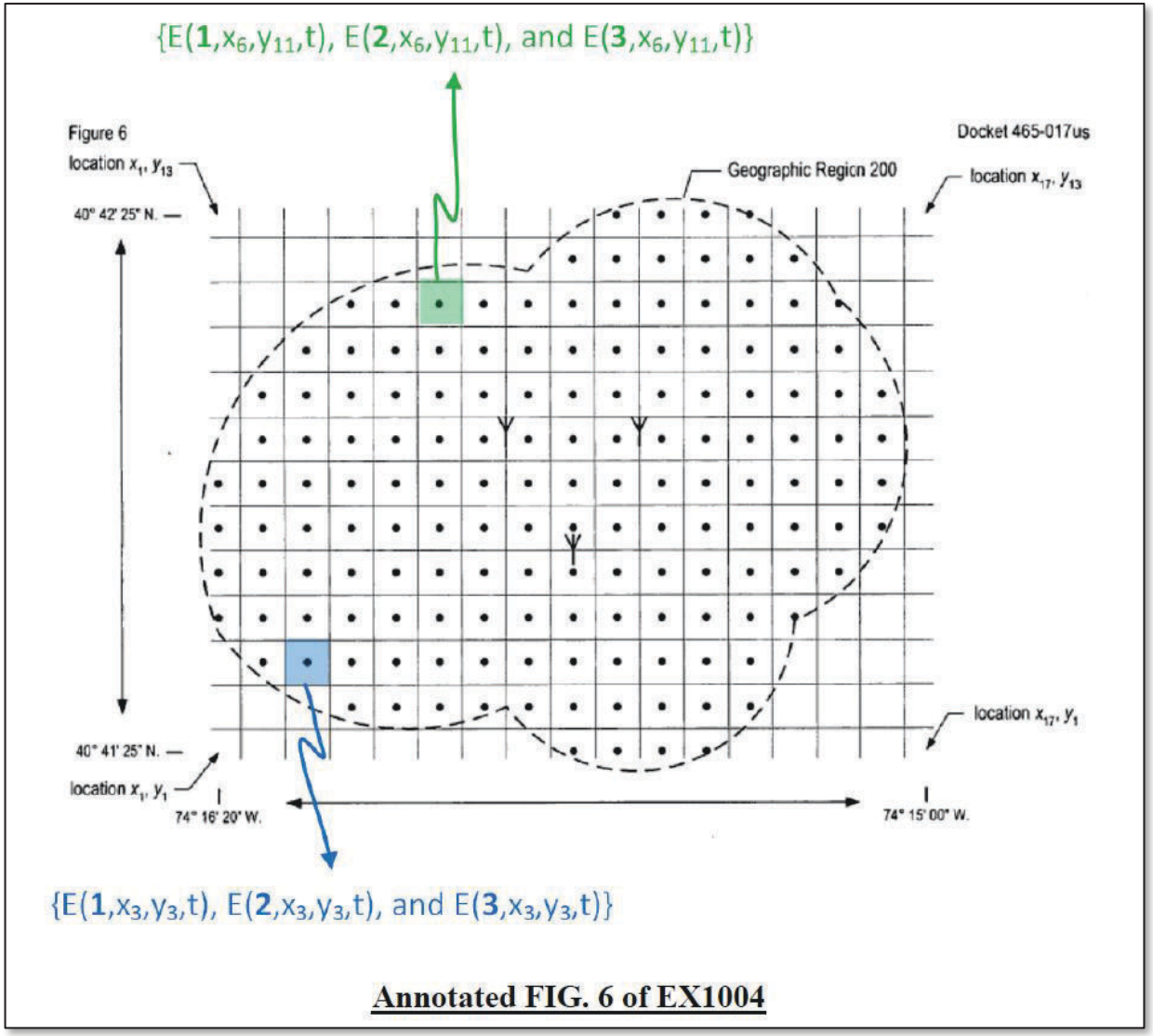
Bhattacharya

[0085] At task **401**, the Expected Signal-Strength Database is populated with the expected signal strengths of three signals at each location in geographic region **200**. The three signals are Signal **1**, Signal **2**, and Signal **3**.

[0119] In accordance with another well-known model, the expected signal strength at each location is generated by taking empirical measurements at various locations and by interpolating for the locations in between the sampled locations. This method is advantageous in that it does not require many empirical measurements to be made, but it is less accurate than taking measurements at every location and causes the square of the uncertainty in the modeling error, δ_E^2, to rise. The implications of this are discussed in detail below and with respect to **FIG. 18**.

EX1004, ¶¶ [0085], [0119]
(cited in Petition at 35-37, Reply at 15)

Combination of Bhattacharya and Yost Generates "Grid Points"



Annotated FIG. 6 of EX1004

Petition at 36

Combination of Bhattacharya and Yost Generates "Grid Points"

Yost

the test sites **40**. If not, then the calibration data containing the measured and recorded signal strength measurements are averaged within each of a plurality of small areas (step **82**) and a standard set of signal strength measurements is determined (step **84**), which would apply across the coverage area of interest.

The calibration signal strengths measure an average over small areas of a pre-determined size. With these averages, a standard set of signal strengths for the coverage area can be determined, with some of the effects of fast fading removed. In addition, the fluctuations observed for each BTS (serving and neighboring) about the average can be recorded and used to determine tolerances in the processing that follows.

EX1008, 7:28-33, 7:50-56
(cited in Petition at 37-38, Reply at 16)

Combination of Bhattacharya and Yost Generates "Grid Points"

Final Construction
"a point associated with representative calibration data for an area"

locations." APPLE-1004, [0119]; APPLE-1003, ¶78. The generation of the "grid point" is only complete once the empirical measurements (*i.e.*, calibration data) have been provided and stored with the location. Accordingly, the "grid points" described by Bhattacharya are "for said calibration data," as recited in [1b] and [32d], because each entry in Bhattacharya's Expected Signal-Strength Database is only complete (and thus a "grid point") once the expected signal strength data has been collected and interpolated. *See* APPLE-1004, [0119].

EX1027, ¶ 45
(cited in Reply at 15-16)

Combination of Bhattacharya and Yost Generates "Grid Points"

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80. By averaging multiple empirical measurements within the grid square surrounding the geographical location of the ultimately generated grid point, a POSITA would have understood and found it obvious that some of the effects of fast fading could be removed. *See, e.g.*, EX1008, 7:50-56. In this regard, a POSITA would have understood or at least found it obvious that the expected signal-strength functions {E(**1**,x,y,t), E(**2**,x,y,t), and E(**3**,x,y,t)} for a given grid point within the geographic region 200 may represent an average of calibration data from multiple locations within the grid square, and not simply represent the storage of the calibration data itself. *See id.*

EX1003, ¶ 80
(cited in Petition at 37-38)