UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC.; SAMSUNG ELECTRONICS CO., LTD.; AND SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner

v.

NARISTE NETWORKS PTY. LTD.
Patent Owner.

Case No. IPR2023-01374
U.S. Patent No. RE48,206

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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[1] Four-digit pin citations that begin with 0 are to the page stamps added by Google and Samsung in the bottom right corner of the exhibits. All other pin citations are to original page, column, paragraph, and/or line numbers.

Ex-1030	Xinrong Li, Kaveh Pahlavan, and Jacques Beneat, Performance of TOA estimation Techniques in Indoor Multipath Channels 911–915 (2002).
Ex-1031	Flowchart, https://en.wikipedia.org/w/index.php?title=Flowchart&oldid=1169392868 (last visited Aug. 30, 2023).
Ex-1032	Central processing unit, https://en.wikipedia.org/w/index.php?title=Central_processing_unit&oldid=1172444772 (last visited Aug. 30, 2023).
Ex-1033	Samir S. Soliman and Charles E. Wheatley, Geolocation technologies and applications for third generation wireless 229–251 (2002).
Ex-1034	Samir Soliman, Parag Agashe, Ivan Fernandez, Alkinoos Vayanos, Peter Gaal, and Milan Oljaca, gpsOne™: A hybrid position location system 330–335 (2000).
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I. INTRODUCTION

Nariste's Patent Owner Response ("POR") fails to distinguish the challenged claims from the prior art and ignores the prior art's teachings. Instead, Patent Owner ("PO") narrowly and improperly interprets both the '206 Patent and the prior art. PO also makes arguments about what its expert believes the prior art *could* do, rather than what the prior art actually teaches. PO's arguments fail, and the challenged claims should be cancelled.

II. PO'S PROPOSED CLAIM CONSTRUCTIONS ARE INCORRECT

A. Claims 37, 40, and 43: "at least one of a current radio position and a position error of said mobile device"

As explained in the Petition, the Board does not need to resolve any disputes regarding the alternative "disjunctive" and "conjunctive" constructions because the prior art grounds in the petition render obvious the claims under either interpretation. Pet., 11-12. Additionally, PO's expert provided no opinion regarding the "disjunctive" or "conjunctive" constructions and testified that he does not "have an opinion as to which is correct, or which is more appropriate." Ex-1043, 92:9-22. Regardless, Patent Owner takes (and Patent Owner's expert applies) the broader "disjunctive" view of these terms. Under this view, the prior art need teach only one of using a "current radio position" or a "position error" to meet the claims. POR, 15; Ex-1043, 91:13-92:8. Watters plainly discloses using "a current radio position" and Nohara plainly discloses using a "position error." Ex-1042 ¶10. Because Watters and

Nohara teach using one of these two approaches, each individually satisfies the "disjunctive" view of the claims applied by Patent Owner. Additionally, as explained in connection with Ground 4, the Watters-Nohara combination teaches the claims under the "conjunctive" view.

B. Claims 37, 40, and 43: "a position error of said mobile device determined from the wireless communications network"

PO alleges that the plain and ordinary meaning of "position error" is limited to "a measurement of error measured in units of distance." POR, 15. PO is wrong.

PO argues that "[t]he '206 Patent defines 'position error' as 'the error between the predicted position of the mobile device and that of the actual position…' Ex. 1001 6:35-37." POR, 15. But the language PO cites in the specification is exemplary and is not express lexicography or definitional, as PO claims. Nevertheless, Petitioner generally agrees that a "position error" is *at least broad enough* to include "error between the predicted position of the mobile device and that of the actual position." Ex-1042 ¶12. This does not, however, support PO's position that a "position error" *must* include "a measurement" or that it be "measured in units of distance." Indeed, there is no basis to read the claims so narrowly. The phrase "measurement of error measured in units of distance" appears nowhere in the intrinsic record. Moreover, the word "distance" is not found in the specification at all, and the word "unit" is used only to describe hardware, such as a "processing unit" or a "storage unit." *See* Ex-1001.

Furthermore, the word "measurement" is only used to describe GPS-based "actual position measurements," not anything related to errors "determined from the wireless communications network." *Id*.

Other claims (which are now cancelled by reissue), make clear that the term "position error" is broader than specifically requiring measurements in units of distance. For example, Claim 36 states "the position error is the Cramer-Rao Bound on the radio position of the mobile device." Ex-1001, 16:1-3. A POSITA would have understood that the "Cramer-Rao Bound" is an abstract mathematical parameter that represents the lower bound for the variance of an unbiased estimator, not a measurement or estimate of actual error distances. Ex-1042 ¶14; Ex-1043, 18:6-23 ("it doesn't give you an estimate of the actual error. It just says -- it just gives information on the random -- the variation of the error, given that you know the sample mean."). So it would be incorrect to limit the term "position error" to specific "measurements of error measured in units of distance" as Patent Owner suggests, because doing so would contradict other claims in the patent.

Instead, the '206 Patent states "[t]he embodiments of the invention involve the determination of the error between the predicted position of the mobile device and that of the actual position reported by its GPS [Global Positioning System]." Ex-1001, 6:34-37. For example, "[t]he difference between [the] predicted position and the actual position measured at time t can be used to formulate the position

error." *Id*., 6:43-46. Furthermore, the '206 Patent explains that when "the predicted position of the GPS-enabled mobile device is compared with the actual position of the mobile device, [] the position error e_p is determined." *Id*., 7:8-11. Indeed, the '206 Patent does not discuss any units associated with position error. The term "position error" would thus have been understood by a POSITA as broad enough to include all of these examples. Ex-1042 ¶15.

PO's position is drawn almost entirely from extrinsic evidence and alleged general POSITA understandings. There is simply no basis to limit the claims based on such extrinsic evidence and unsupported expert testimony. Furthermore, "[e]xtrinsic evidence may not be used 'to contradict claim meaning that is unambiguous in light of the intrinsic evidence.'" *Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1287 (Fed. Cir. 2021) (quoting *Profectus Tech. LLC v. Huawei Techs. Co.*, 823 F.3d 1375, 1380 (Fed. Cir. 2016)). Moreover, PO's example from the intrinsic record only further proves the point. It is certainly true that a position error *could be*, e.g., "100 meters." But there is nothing in the file history or the inventor's arguments that states that a position error *must always be* a distance like "100 meters." *See* Ex-1004. There is simply no "clear and unambiguous disclaimer" of the otherwise unambiguous term "position error." *Cont'l Cirs. LLC v. Intel Corp*., 915 F.3d 788, 798 (Fed. Cir. 2019).

Further casting doubt on PO's position, PO's expert testified that he is

actually applying an even narrower understanding of the term "position error" that is even further afield from the intrinsic record. Specifically, Dr. Pullen testified that the term "position error" requires an "estimate" calculated using units of distance, Ex-1043, 94:9-16, 95:14-96:2, 106:5-20, and specifically "goes beyond" what he calls a "characterization" of position error. *Id*., 99:1-5 ("is it your opinion that Claim 37 of the '206 patent requires an estimate of position error? A. In short, yes. An estimate that goes beyond the characterizations we've been discussing."). For example, PO's expert testified that Watters and Nohara provide a characterization of position error, and that a characterization of position error in the prior art would not satisfy the claim language. *Id*., 59:1-13-60:7, 70:17-24, 74:12-14, 79:16-22, 96:11-15, 103:20-22. When asked, Dr. Pullen could not point to any support in the claims or the specification for this construction that requires an "estimate of," and excludes a "characterization of," position error to satisfy the claims. *Id*., 100:8-20. Instead of basing his construction on the claims or intrinsic record, he relied on his own unsupported say-so of what a POSITA would allegedly understand. *Id*.

Accordingly, PO's and Dr. Pullen's narrow interpretation of "position error" is unsupported and inconsistent with the record. Even so, the construction of this claim term does not impact the unpatentability conclusion because both Watters and Nohara teach this limitation even under PO's narrow construction as discussed below in Section III.A.2 and Section IV.A.

C. Means term of Claim 40

Patent owner does not present any dispute regarding the construction of the means terms, or its application to the prior art. POR, 15.

III. PO'S ARGUMENTS AGAINST GROUND 1 FAILS

A. Claims 37, 40, and 43 Are Obvious Over Watters

As previously discussed in the Petition, Watters teaches[2] using a "current radio position" and/or a "position error" to determine when to switch from cellular based positioning and power on GPS based positioning. Pet. 11-12, 27-33. Under PO's "disjunctive" view of the claims, either Watters's use of "position" alone, or "position error" alone, is sufficient to teach the claims.

1. Watters teaches determining when to power on the GPS module dependent on a current radio position of the mobile device

PO's arguments against the "current radio position" term ignores the Petition and misstates Watters's teachings. To be clear, the Petition explained how Watters teaches to: 1) measure a "first fix" position with GPS; next, 2) turn off GPS; next, 3) measure a current "position using cellular" infrastructure; and last, 4) turn on GPS if the difference between the first fix position and current position are greater

[2] Petitioner uses the term "teaches" to include both express teachings and those fairly suggested to a person of ordinary skill in the art. *In re Baird*, 16 F.3d 380, 383 (Fed. Cir. 1994); *In re Keller*, 642 F.2d 413, 425 (CCPA, 1981) ("The test for obviousness is...what the combined teachings of the references would have suggested to those of ordinary skill in the art." (citations omitted))

than a "predetermined distance, such as 100 meters." Pet., 26-32. There is no credible argument that this does not satisfy the "current radio position" claim requirements. So PO presents arguments that are disconnected from both the Petition and from Watters itself. PO's arguments fail.

As an initial matter, the Petition explained how Watters depends on a "current radio position … determined from the wireless communications network" to enable its GPS. For example, as shown in Figure 12, Watters teaches obtaining a "first fix" from GPS, then its "GPS receiver [is] turned off." Watters teaches next at step 1220 "calculat[ing] position using cellular." Ex-1005, 22:47-50, Fig. 12 (below, red). PO's expert does not dispute any of this. Ex-1043, 46:6-14. Watters explains that algorithms based on "time of arrival" or "TOA" of cellular base station signals (shown in Figure 3, below right) can be used to obtain an "accurate location fix." Ex-1005, 5:14-25; *see also id*., 5:26-34 (explaining the time difference of arrival (TDOA) method).

FIG. 12

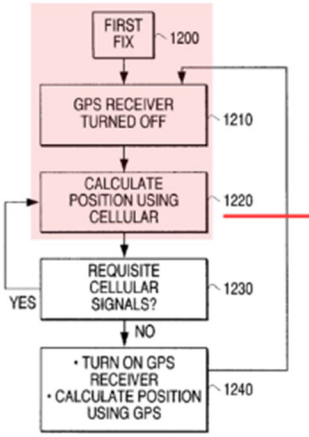
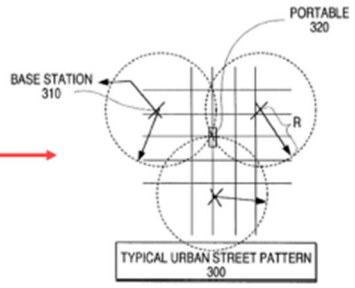


FIG. 3



PO alleges that "Watters suggests that as long as its system can determine a position from the cellular network, it should, and that it should only turn the GPS on when it cannot establish a position using the cellular network at step 1230." POR, 21. But this ignores Watters's teachings. While not shown in Figure 12, the specification specifically teaches to determine whether the device has traveled a "predetermined distance" and use that information to decide whether GPS should be turned back on. Specifically, Watters teaches determining "how far (in space) the mobile terminal has moved since the last GPS update" as an alternative inquiry at step 1230 in Figure 12. Ex-1005, 22:59-60. Watters explains that GPS is used if "the mobile terminal has moved a predetermined distance, such as 100 meters." *Id*., 22:61-63. A POSITA would have understood that an obvious way to determine this distance in space would have been to use the starting position determined by the GPS "first fix" (step 1200), and the difference from the current position

determined by the cellular network at step 1220. Ex-1042 ¶23.

Indeed, PO's expert admitted, as he must, that a POSITA could calculate the distance between two positions using a position calculated at step 1220 by cellular infrastructure and a first fix calculated at step 1200 by GPS. Ex-1043, 55:14-18 ("Subtracting the cellular position at 1220 from the cellular -- from the GPS -- in this case, the assumed GPS position at 1210 -- would give you an estimate of the distance between the two fixes, the two positions."). Watters thus teaches to compare the current radio position determined from cellular sources using TOA or other non-GPS technique to the previous GPS fix and, if that distance exceeds a threshold (e.g., 100 meters), the GPS is turned back on to obtain a new fix. Ex-1005, 22:63-64 (referring to Figure 12 (1240)). Accordingly, a POSITA would have determined "how far" the device has traveled based, at least in part, on the current radio position of the device determined by the cellular network. Ex-1042 ¶24.

In response, PO introduces a red herring by focusing its argument on *other* ways that distance might be determined, rather than addressing what Watters actually teaches.[3] For example, PO argues that "determination of how far something has travelled *can be* calculated simply by multiplying its velocity by the

[3] Unless otherwise noted, all emphasis has been added.

time it has travelled." POR, 20. PO also argues that "[d]oppler shift of a radio signal *can be* used to determine velocity without determining a mobile device's current radio position." *Id.*, 20-21. None of these arguments are connected to Watters's actual teachings. Watters simply does not teach anything about using "velocity" or "speed" of an object to calculate a distance traveled. Ex-1042 ¶25. Watters only mentions these terms to explain that radio signals have a certain "speed" (e.g., the speed of light) when propagating through the air (Ex-1005, 5:19-22, 5:42-44, 20:19-23, 24:50-53) and that GPS systems are capable of reporting "velocity" (Ex-1005, 1:19-22). And Watters does not mention "doppler shifts" at all. *See* Ex-1005. PO's attempts to point to things other than what the prior art actually teaches miss the mark.

PO centers its arguments on its expert's view of what "Watters *likely* suggests," rather than what the Petition identified as its actual teachings. As previously explained, Watters plainly uses a difference in "position" determined by the cellular network (at step 1220) to turn on GPS. PO cannot avoid Watters's teachings on this point, so it attempts a disconnected misdirection to something else that is not even mentioned in Watters. It is of no moment that PO's expert can come up with *other* ways to do a "distance" calculation; Watters teaches what the claim requires. Ex-1042 ¶26.

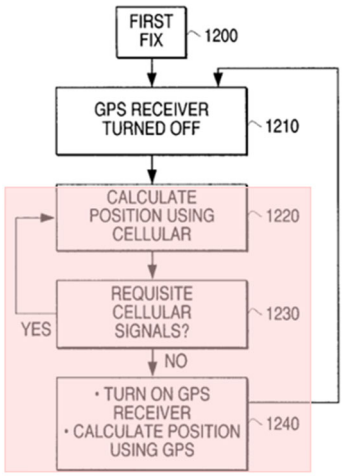
2. Watters teaches determining when to power on the GPS module dependent on a position error of the mobile device

Regarding Watters teachings of "position error," PO's argument rests entirely on its narrow proposed construction discussed above in Section II.B. PO alleges that Watters's method is "not [a] determination of a position error at least because position error is measured in unites [sic] of distance." POR, 18 (citing Ex-2001 ¶25). PO's claim construction position is incorrect, and PO does not, and cannot, distinguish Watters under the correct plain meaning of this term. Ex-1042 ¶27. Regardless, even under PO's unreasonably narrow construction, Watters teaches powering on a GPS module dependent on a position error of the mobile device. *Id*.

First, as explained in the Petition, Watters teaches powering on GPS based on "position error" under the plain meaning of this term when properly understood as being broad enough to include, e.g., "the error between the predicted position of the mobile device and that of the actual position." For example, the Petition explained that there are errors inherent in cellular based approaches, such as TOA (time of arrival) and TDOA (time difference of arrival). Pet., 30-31 (citing Ex-1005, 5:54-6:12, 23:41-44.). These errors affect the accuracy of cellular based positioning approaches. Ex-1042 ¶28. Because of this potential imprecision, the "rate at which GPS updates are needed [in step 1240] will depend on the conditions under which the mobile is operating." Ex-1005, 22:64-66. After

determining cellular position at step 1220, step 1230 determines whether to continue using cellular-based positioning. Ex-1002 ¶107.

FIG. 12



As shown in Figure 12, the GPS module is powered on (step 1240) when the cellular network infrastructure does not provide the "requisite" signals to determine position (step 1230). Ex-1005, 22:50-54, Fig. 12. Watters teaches "the rate at which GPS updates are needed will depend on the conditions under which the mobile is operating, with less frequent updates needed if … cellular network infrastructure signals are known to be of good accuracy." *Id.*, 22:66-23:2. By contrast, more frequent updates would be needed if the signal accuracy is low, such as when multi-path propagation is present. *Id.*, 23:41-44 (GPS updates reduce errors from multi-path problems). A POSITA would have understood that a signal with "good accuracy" leads to low positioning errors, while a signal of "poor accuracy" leads to relatively larger positioning errors. Ex-1042 ¶29; Ex-1043,

61:20-22 ("Everything else being equal, if you knew the multipath errors were higher, then, yes, the position errors would be higher"); Ex-1002 ¶111 (citing Ex-1030 and explaining that a weak signal may indicate a multipath propagation, which would result in higher positioning errors in a TOA calculation).

Additionally, Watters teaches that these multipath propagation issues may cause an "error between the predicted position of the mobile device and that of the actual position." Ex-1042 ¶30. For example, Watters explains:

> For example, when the user of the mobile terminal goes around a corner, the mobile terminal may receive a new signal from the base station that has followed a completely different transmission path compared to the old signal that the mobile terminal was previously receiving before the user turned the corner. Therefore, the distance traveled by the signal will likely differ. ***This causes a change*** in time measurement by the mobile terminal ***that does not accurately represent the actual distance change of the mobile terminal*** from the base station, thereby rendering an inaccurate location determination by the mobile terminal.

Ex-1005, 6:1-12. The multipath positioning error will thus cause the system to predict a position (e.g., resulting from a user moving in a straight line) that is different than actual position (e.g., resulting from a user having turned a corner around a building). Ex-1042 ¶30. Thus, Watters's teaches to account for multipath position errors by requiring more or less frequent updates depending on whether the signals have "good accuracy." *Id*.

Second, in support of its narrow construction, PO argues that "the inventor characterized position error as follows '[i]magine the mobile application requires

only a 100-meter location accuracy . . . If the reported error was less than 100 meters, the GPS power would not be turned on.'" POR, 16 (citing Ex-2002, 303-04). PO explains that this "real-world example" characterizes position error as having units of distance. POR, 16. As explained above, even if PO's characterization of these inventor statements were accurate, the "example" does not narrow the claims. Ex-1042 ¶31. Regardless, Watters teaches even this narrow view of "position error."

For example, Watters specifically teaches positioning errors, cause by, e.g., multipath propagation, being estimated in specific units of distance such as meters. Watters explains "***errors are present in the above position estimate, largely due to*** the terminal's internal delays and ***multi-path propagation***. While the uncertainty is generally less than 1 microsecond, this translates into ***an uncertainty in distance of about 150 meters***. To compensate for this error, GPS can be used." Ex-1005, 25:3-8.

Accordingly, even if Patent Owner's narrow understanding of the claimed "position error" were accepted, Watters teaches it.

B. Claims 39, 42, and 45 Are Obvious Over Watters

1. Watters teaches "determining when said embedded GPS module should be powered" is dependent on at least one of "a last satellite position; a last position determined by the GPS; and a last time determined by the GPS"

PO's arguments against these dependent claims again ignores Watters's teachings and are wrong.

First, PO argues that "distance moved is 'relative' and *can be* determined without using any position measurements at all, either from the GPS or from the non-GPS" means. POR, 22. As noted above, even if this were true, it is immaterial because Watters specifically teaches to use a "first fix" position from GPS, then then use a "current radio position" from cellular to turn on GPS, as discussed above. Ex-1042 ¶36.This positioning approach is thus dependent on (among other things) at least "a last position determined by the GPS." *Id*.

Second, PO argues that "Watters' provides no teaching or motivation to use the alternative inquiries for step 1230 in addition to the primary inquiry illustrated in Fig. 12 of Watters." POR, 23. This too is incorrect. PO's position seems to be that some of Watters's approaches are mutually exclusive. But there is no such mutual exclusivity teaching in Watters. Ex-1042 ¶37. Watters generally teaches that "it can be preferable to make use of the GPS for determining position, and ***to make use of a combination of the GPS and the cellular infrastructure*** when the GPS is unavailable, or partly unavailable." Ex-1005, 22:28-32. Moreover, Watters

specifically notes, e.g., in Column 26:5-52, that all aspects of its teachings can be combined together. *See, e.g.,* Ex-1005, 26:34-39 ("Finally, all four aspects may be combined into a single position system as well. Therefore, the present invention is not limited to using only one aspect of the invention in a single position location system. Rather, two or more aspects of the invention can be used in the same position location system.") A POSITA implementing Watters would apply all of its teachings together because it is "preferable to make use of as many signals from both systems as are available to develop a more accurate result than could be obtained by working with either system exclusively." *Id*., 22:32-35; Ex-1042 ¶37.

Third, PO argues that "Watters does not discuss measuring or recording GPS satellite position at all." POR 23. This ignores the portions of Watters that teach just that. There can be no reasonable dispute that Watters teaches to determine position with GPS. Ex-1042 ¶38. And regarding GPS, the background discussion for the patent, e.g., in columns 1 and 2, describes how GPS coordinates are calculated based on the positions of, and ranging information from, at least 4 satellites. *See generally*, Ex-1005, 1:13-2:67. For example, Watters explains that GPS satellites include navigation messages, in which "[t]he navigation data messages enable the receiver to ***calculate the position of each satellite*** at the time the signals were transmitted." *Id*., 2:25-28. PO is simply wrong when it argues that Watters does not include these teachings. A POSITA would have understood that

the last position determined by the GPS is dependent on the position of at least four GPS satellites and is thus based on "a last satellite position." Ex-1042 ¶38. Petitioner's expert Mr. Andrews explained that four satellite signals allow "the determination of position in three dimensions, and the current GPS time." Ex-1002 ¶43. Furthermore, Mr. Andrews explained the last "orbital positions of the satellites" are necessary to calculate position in three dimensions. *Id*. ¶47.

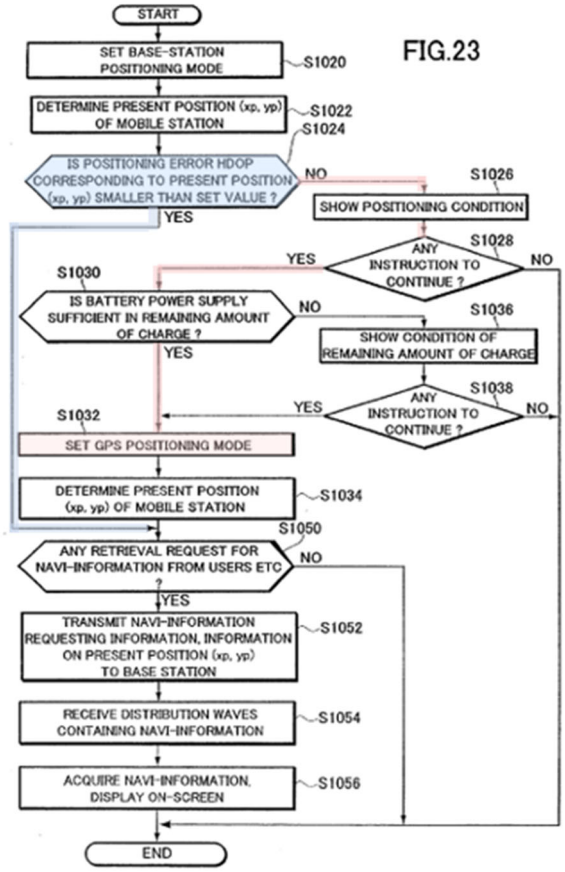
IV. PO'S ARGUMENTS AGAINST GROUND 2 FAILS

A. Claims 37, 40, and 43 Are Obvious Over Nohara

PO states that the Petition concedes that Nohara does not teach using a "current radio position" to determine when the embedded GPS module should be powered on. POR, 24. It is correct that the Petition did not rely on Nohara for disclosing the "current radio position" claim elements; that disclosure comes from Watters. But this is only relevant to the "conjunctive" view of the claims discussed Ground 4 (and not meaningfully addressed by PO in its POR). The Petition applied both Watters's and Nohara's teachings together in Ground 4 because the combination teaches to use both a "current radio position" and a "position error" to turn back on GPS-based positioning. But, in Ground 2, which applies the "disjunctive" view adopted by PO, Nohara's teaching to use "position error" alone is sufficient to teach these claims.

There can be no reasonable dispute that Nohara teaches to calculate position

errors and turn on GPS in view of such errors. For example, as shown in Figure 23 and discussed in the Petition, Nohara teaches powering on the GPS module when the positioning error HDOP threshold is exceeded. Pet., 48-51; Ex-1006, Fig. 23.



Nohara teaches that "[a]t step S1024 above, if the positioning error HDOP corresponding to the present position (xp,yp) determined in the base-station positioning mode is greater than the predetermined set value (if 'NO'), go to step S1026. Here, . . . favorable positioning precision has not been obtained . . ." *Id.* ¶310. In this step, Nohara further teaches that "an instruction to continue the positioning operations is given, . . . go to step S1030" at step 1028 (*id.* ¶311), and

then a battery check for the remaining amount of charge is determined at step 1030 (*id*. ¶312). Once these steps are completed, "[i]f the remaining amount of charge is sufficient (if 'YES'), [it] enter[s] step S1032 [GPS positioning mode,] to set a positioning mode of using the GPS for positioning." *Id*. While in the GPS positioning mode, "control unit 18 supplies the battery power supply . . . to the GPS receiving unit 36." *Id*. ¶315. Thus, Nohara teaches that if the current position error is too high, then the GPS module is powered on (at step 1032). Ex-1042 ¶40.

Indeed, multiple figures in Nohara, and supporting descriptions in the specification, provide express teachings of how to calculate position errors. *See, e.g.,* Ex-1006, Figs. 8, 10, 12, 15(b), 16, 23. As just one example, an excerpt from Figure 16 below shows the process of using "actual position information" and "approximate positions" based on "positioning errors":

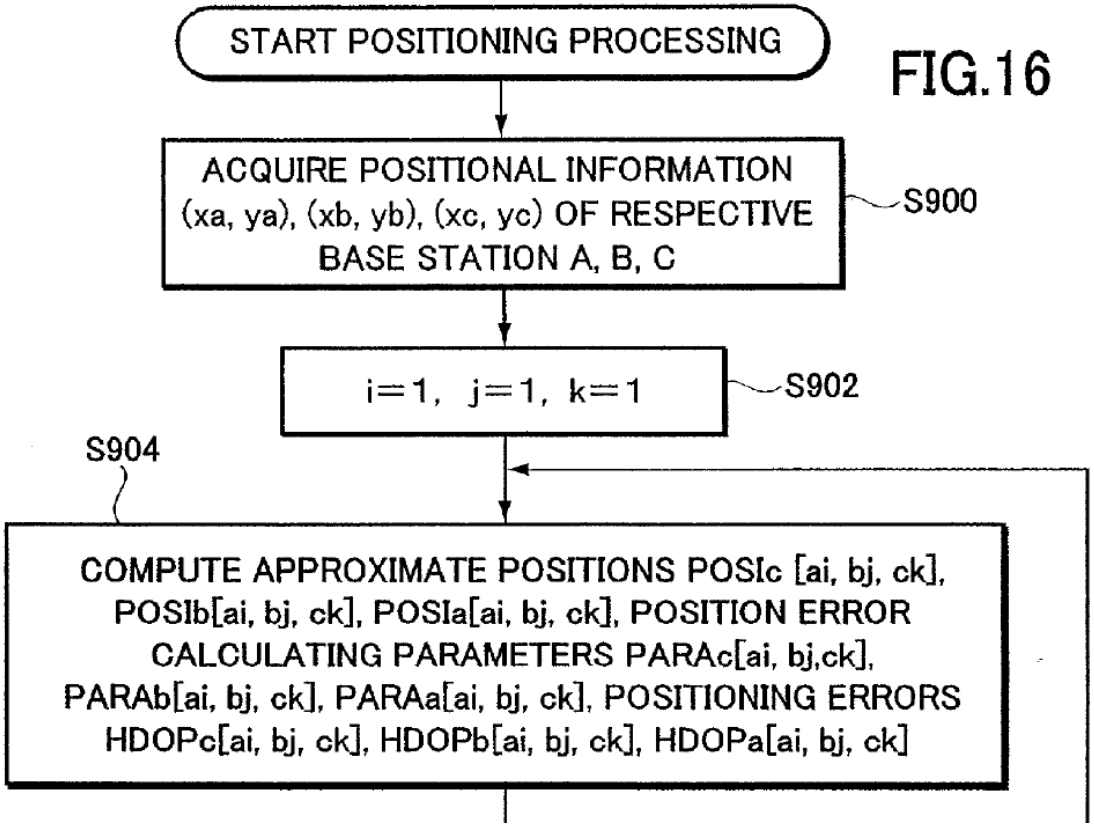
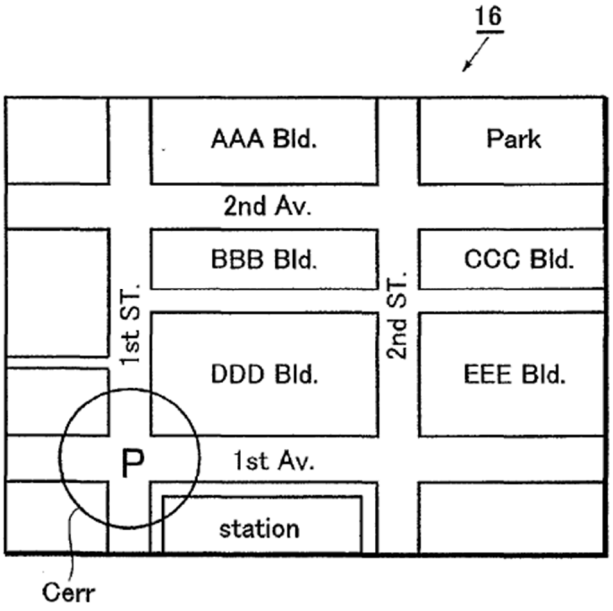


FIG.16

As an additional example, Nohara teaches converting positioning error HDOP into a "range" to be displayed on a map so that a user can "check for the degree of precision" in an estimated position. Specifically, Nohara teaches that "[i]f the positioning error HDOP corresponding to the present position (xp,yp), obtained upon the determination of the present position (xp,yp), has a value greater than a predetermined value, the positioning error HDOP is converted into a range." Ex-1006 ¶160. This is illustrated below in Figure 15(b). *Id*., Fig. 15(b). A "circle Cerr is displayed around the present position (xp,yp) with the range converted from the positioning error HDOP as the radius." *Id*. ¶160.

FIG.15 (b)



All of these teachings of Nohara, which expressly refer to "positioning error" and which create error circles "Cerr" shown on a map, are plainly position error teachings. Ex-1042 ¶43.

In responding to Nohara, PO relies on its expert's view that Nohara does not mean what it says. For example, PO argues that "although Nohara refers to HDOP as 'position error' a POSITA would understand that HDOP and 'position error' as the term is used in the claims are not equivalent." POR, 25. PO's expert's understanding of position error is based on his erroneous construction of the term "position error" as explained in Section II.B. Moreover, the argument strains credulity. Nohara could not be clearer on this point: "[t]he ***value HDOP will be called 'positioning error***.'" Ex-1006 ¶147. Furthermore, as shown below and

discussed in the Petition, a mathematical expression is used to quantify position errors associated with Nohara's cellular positioning technique. *Id*. ¶144.

$$HDOP = \sqrt{\sigma_{xx}^2 + \sigma_{yy}^2} \quad (11)$$

In the mathematical expression, the "root-sum-square value HDOP (Horizontal Dilution of Precision) of the terms σ 2 xx and σ2 yy is determined" and Nohara explains that the "value HDOP shall be regarded as the positioning error quantified on the plane in the horizon system of coordinates." *Id*. Thus, a POSITA would have understood that value HDOP is "position error" as explicitly stated in Nohara. Ex-1042 ¶44.

PO argues that Nohara's position error is unitless, and thus cannot meet its narrow construction. POR, 25-26. Specifically, PO states that "Nohara's definition of HDOP appears consistent with the conventional, unitless definition of HDOP." *Id*., 25. But PO then acknowledges ***that this is not actually what Nohara discloses.*** PO points to no disclosure in Nohara that provides an unitless definition of HDOP. *Id*. Instead, PO acknowledges that Nohara's equation 9 and disclosures in paragraph 141 describe position error in distance terms (e.g., Δx and Δy), which would have associated units. This teaches the position error term even under PO's improperly narrow view. PO has no meaningful response, and instead argues that Nohara's express teaching are "***inconsistent*** with the conventional unitless

definition of HDOP" that its expert proposes to use. *Id*., 25-26. Fundamentally, PO seems to be arguing that Nohara's express disclosures and teachings are wrong, or a POSITA would not understand them to mean what they actually say. Ex-1043, 89:5-13, 90:3-19. But the prior art is presumed to be enabling, and PO points to nothing to suggest otherwise. *Amgen Inc. v. Hoechst Marion Roussel, Inc*., 314 F.3d 1313, 1355 (Fed.Cir.2003).

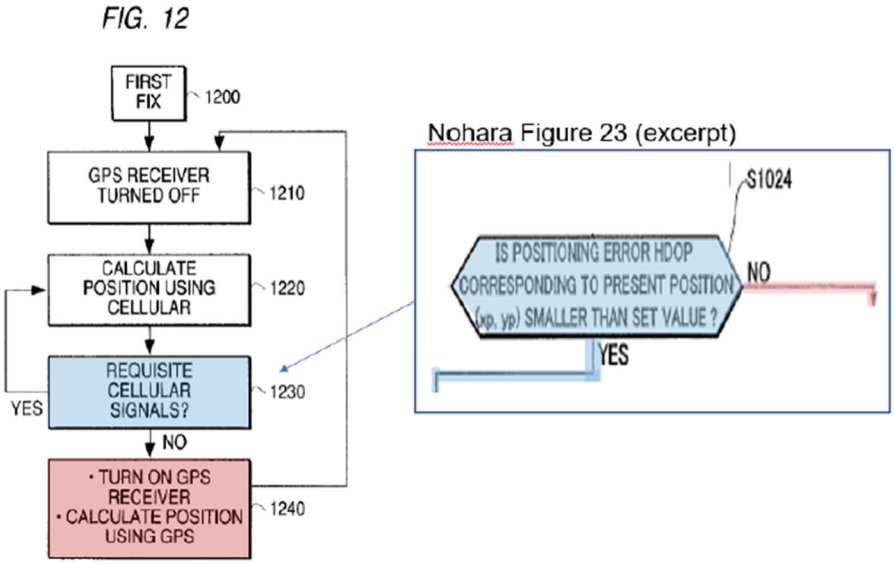
V. PO'S ARGUMENTS AGAINST GROUND 4 FAILS

A. Claims 37-45 Are Obvious Over Watters in View of Nohara

PO states that because "the HDOP of Nohara is not a position error as a POSITA would understand the term, neither Watters nor Nohara, alone or in combination, anticipates or render obvious Claims 37-45." POR, 27-28. But neither PO nor its expert provided any analysis on the combination of Watters in view of Nohara under the "conjunctive" view presented in this ground. Ex-1043, 93:2-20.

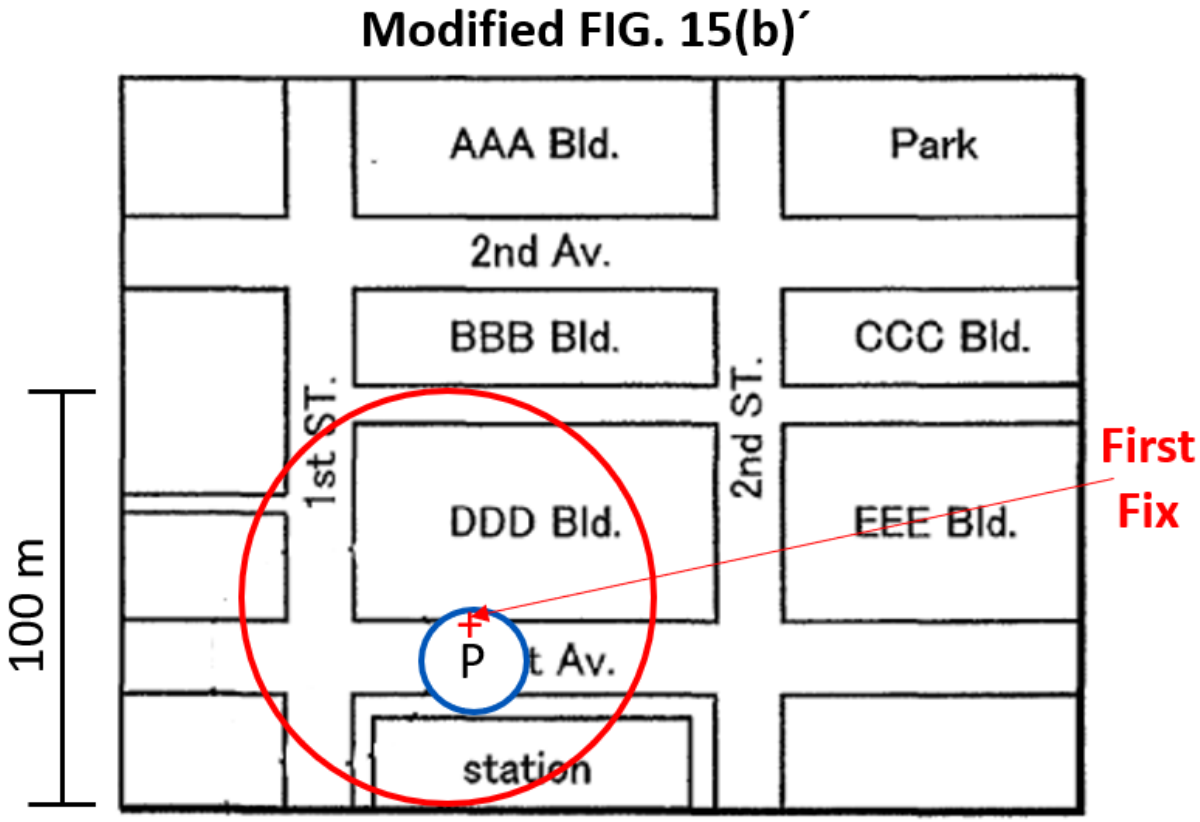
The Petition applied both Watters's and Nohara's teachings together because the combination teaches to use both a "current radio position" and a "position error" to turn back on GPS-based positioning, satisfying the conjunctive view of these claims. Pet., 62-66. A POSITA would have been motivated to implement Nohara's technique of quantifying "position error HDOP" with Watters's use of position and accuracy in determining when to power on the GPS. Pet., 65 (citing

Ex-1002 ¶¶172-173). Specifically, as shown below, a POSITA would have implemented Nohara's position error (HDOP) calculation in Watters's step 1230, which determines whether the "requisite" signal is sufficient for positioning purposes. Ex-1002 ¶172.

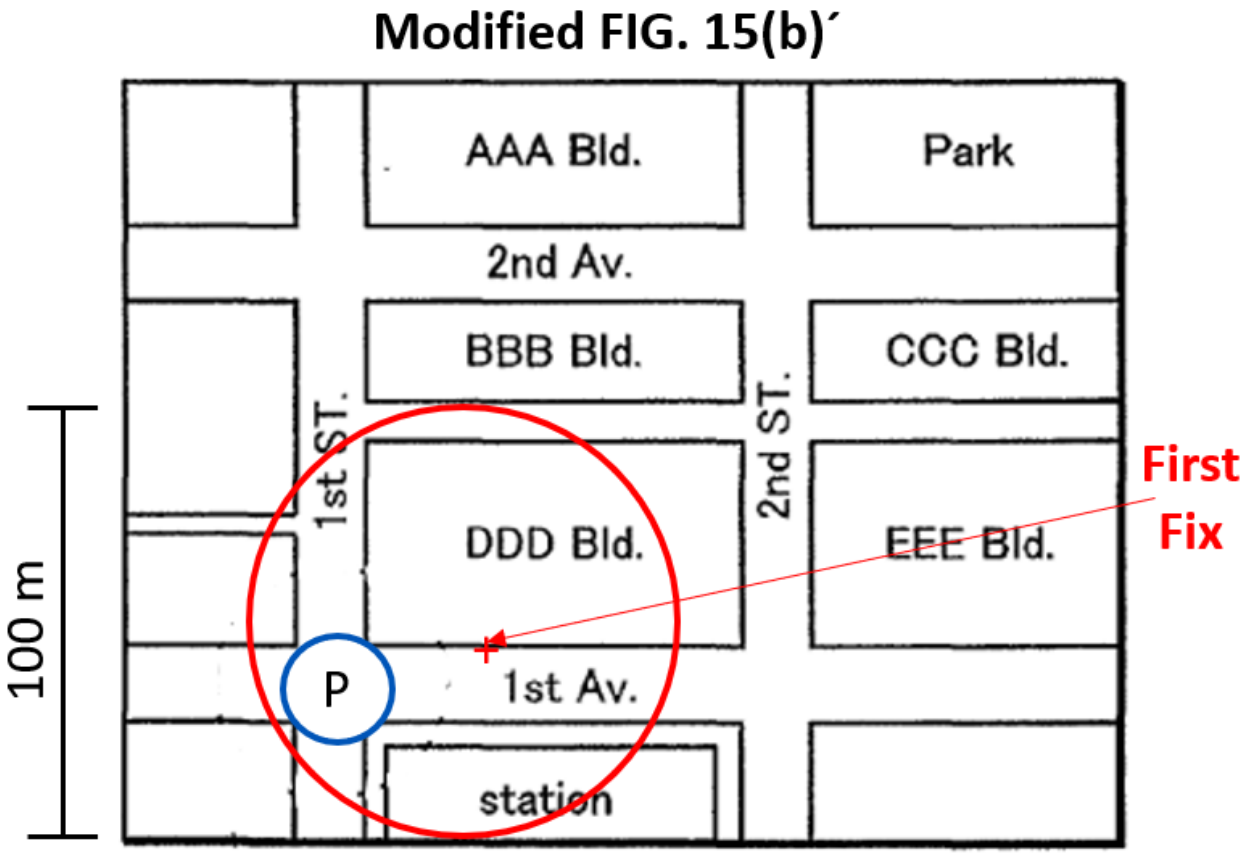


A POSITA would have also implemented Nohara's teaching of converting position error HDOP to the radius of an error circle "Cerr" around the present position. Ex-1042 ¶48; Ex-1006 ¶160. For example, in the combined Watters-Nohara implementation, the evaluation of whether the distance threshold has been reached would depend on the current radio position (Watters's current radio position used to evaluate whether the distance threshold is crossed) and position error (Nohara's HDOP) as discussed in Sections III.A and IV.A. Pet., 65-66. For example, Watters teaches that the starting position is the position determined by GPS at a prior time. Ex-1005, 22:47-48 (referring to Figure 12 (1200)). The

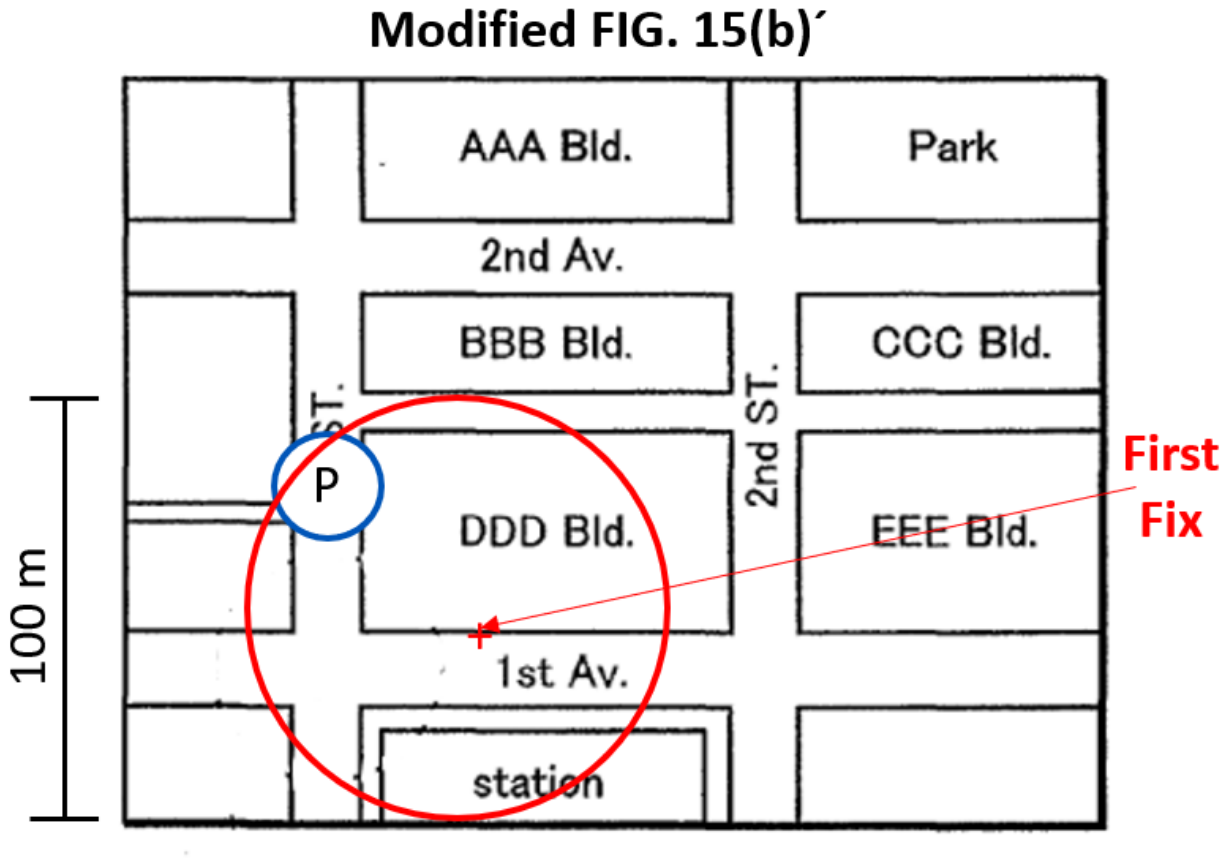
starting position (P with a blue "Cerr" radius around it) is shown below in Nohara's modified Figure 15(b)′ as leaving the DDD building. Ex-1042 ¶48. A "first fix" GPS measurement is taken at that time (the red +). *Id*. As Watters explains, GPS does not need to be turned back on until the traveler is about 100 meters from the GPS first fix (red circle). *Id*.



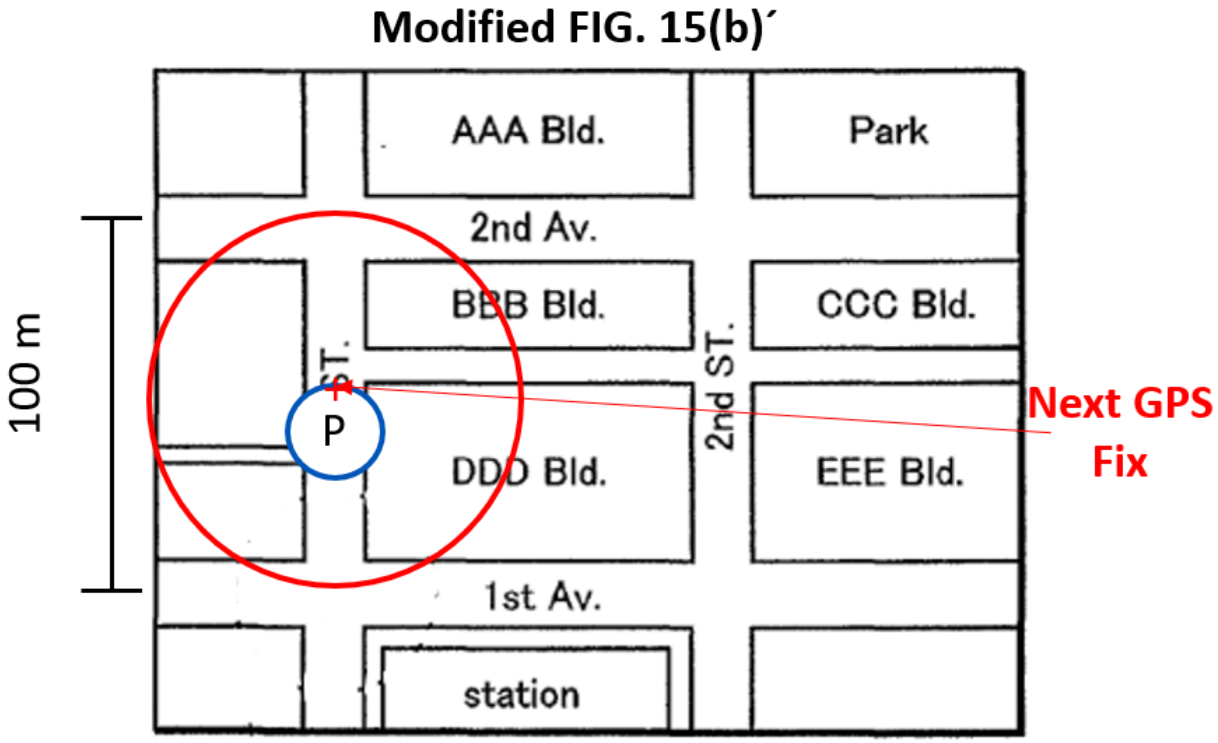
At a later time, the traveler has proceeded west to the intersection of 1st and 1st. Ex-1042 ¶49. Both P and the blue error circle around P remain within 100m of the GPS first fix, so the GPS need not yet turn on. *Id*.



At a still later time, the traveler has turned north, the blue error circle around P has exceeded the 100m threshold from the GPS first fix. Ex-1042 ¶50. In the combined Watters-Nohara teaching, the GPS receiver would turn on to get a new position fix, because the position, with the position error estimate around it, may be outside the desired distance from the last GPS fix. *Id*.



Watters explains that if "the mobile terminal has moved a predetermined distance, such as 100 meters" as shown below, the GPS is turned on and used to obtain the current radio position of the device. Ex-1005, 22:61-64 (referring to Figure 12 (1240)). Thus, using this combined Watters-Nohara technique, both a "current radio position" (from Watters) and a "position error" (from Nohara) would be determined and used to turn back on GPS and get a new fix. Ex-1042 ¶51.



Thus, Watters in view of Nohara teaches the requirements of the claims.

VI. PO'S ARGUMENTS AGAINST GROUNDS 3 AND 5 FAIL

A. Claims 38, 41, and 44 Are Obvious Over Watters in View of Lau

PO does not independently dispute the prior art grounds raised against Claims 38, 41, and 44. Those remaining claims and grounds thus stand undisputed. Ex-1042 ¶53.

B. Claims 38, 41, and 44 Are Obvious Over Watters and Nohara in Further View of Lau

PO does not independently dispute the prior art grounds raised against Claims 38, 41, and 44. Those remaining claims and grounds thus stand undisputed. Ex-1042 ¶54.

VII. CONCLUSION

For the reasons given in the Petition and this Reply, Petitioner requests cancellation of Claims 37-45 of the '206 Patent.

Dated: October 7, 2024

Respectfully submitted,

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Ben Haber (Reg. No. 67,129)

CERTIFICATE OF WORD COUNT

Under 37 C.F.R. §42.24(d), Petitioner certifies that Petitioner's Reply to Patent Owner's Response includes 5,247 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under §42.8, certificates of service, word count, and exhibits.

CERTIFICATE OF SERVICE

I hereby certify that on October 7, 2024, I caused a true and correct copy of the foregoing PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE to be served electronically on counsel for Patent Owner at the following addresses:

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