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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) **Title:** CORRECTING GPS THROUGH SECONDARY SENSORS AND SIGNAL STRENGTH

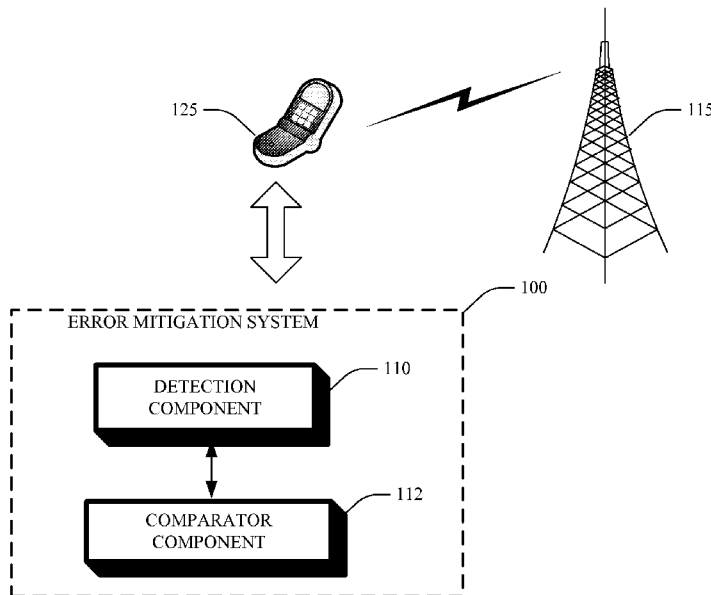


Fig. 1

(57) **Abstract:** Systems and methods that mitigate errors in positioning systems, by employing signal strength(s) of signal sources (e.g., towers adjacent to a mobile unit.) Such mitigation system verifies whether the mobile unit receiving GPS data is in static position (e.g., not moving) or is moving (e.g., dynamic position), and evaluates accuracy of the GPS reporting (e.g., discarding GPS data in static position and trusting GPS data in dynamic position.)

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/067786**A. CLASSIFICATION OF SUBJECT MATTER****H04W 64/00(2009.01)i, G01S 5/14(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04W 64/00; H04B 1/16; H04Q 7/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: GPS, motion, strength

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| Y | US 2005-0181810 A1 (WILLIAM O. CAMP JR. et al.) 18 August 2005 See abstract; paragraphs [0029]-[0047], [0051]; figures 3, 4, 5 and 9. | 1-20 |
| Y | US 2006-0119508 A1 (JOHN DAVID MILLER) 08 June 2006 See abstract; paragraphs [0013]-[0022]; figures 1 and 2. | 1-20 |
| A | EP 1710599 A1 (INFINEON TECHNOLOGIES AG) 11 October 2006 See abstract; paragraphs [0023]-[0028]; figure 2. | 1-20 |
| A | US 2008-0165737 A1 (SUBRAMANYA R. UPPALA) 10 July 2008 See abstract; paragraphs [0031]-[0033]; figure 4. | 1-20 |

 Further documents are listed in the continuation of Box C. See patent family annex.

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Information on patent family members

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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|--|--|
| US 2005-0181810 A1 | 18.08.2005 | CN 1914517 A CN 1914517 C0 EP 1714165 A1 JP 2007-522471 A US 7251493 B2 WO 2005-083461 A1 | 14.02.2007 14.02.2007 25.10.2006 09.08.2007 31.07.2007 09.09.2005 |
| US 2006-0119508 A1 | 08.06.2006 | US 7408506 B2 | 05.08.2008 |
| EP 1710599 A1 | 11.10.2006 | US 2006-0259241 A1 | 16.11.2006 |
| US 2008-0165737 A1 | 10.07.2008 | None | |