

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 July 2001 (05.07.2001)

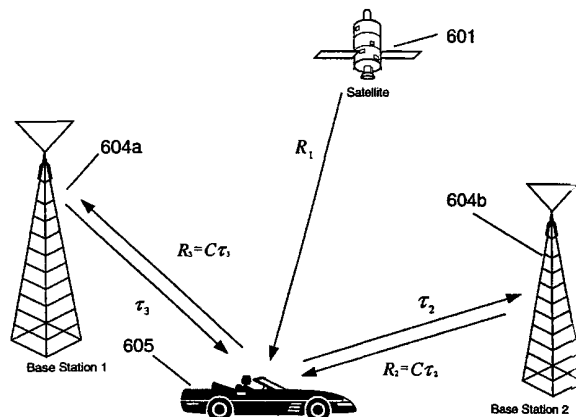
PCT

(10) International Publication Number
WO 01/48506 A3

- (51) International Patent Classification⁷: G01S 5/14, 5/12
 - (21) International Application Number: PCT/US00/33375
 - (22) International Filing Date: 7 December 2000 (07.12.2000)
 - (25) Filing Language: English
 - (26) Publication Language: English
 - (30) Priority Data:
09/460,180 10 December 1999 (10.12.1999) US
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 - (81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
 - (84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
- (88) Date of publication of the international search report:
21 March 2002

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR DETERMINING AN ALGEBRAIC SOLUTION TO GPS TERRESTRIAL HYBRID LOCATION SYSTEM EQUATIONS



(57) Abstract: A method and apparatus for use in a hybrid position location system. The method and apparatus combines measurements from Global Positioning System (GPS) and terrestrial transceiver stations to compute the location of a device. An algebraic solution to hybrid position location system equations is output from the method and apparatus. The method and apparatus determines the position of a device using a non-iterative method, as against the use of a conventional iterative least mean square method. The method of the present invention can be used to solve the location system equations in scenarios where a non-iterative solution is desirable. In certain scenarios, the location system equations may have two possible solutions. An iterative method would converge on one of the solutions, without any indication of the existence of the other ambiguous solution. Moreover, the iterative method may converge on the incorrect of the two ambiguous solutions. Use of the presently disclosed method and apparatus yields both the ambiguous solutions. The disclosed method may be followed up with iterative methods, using the solutions from the algebraic method as initial estimates of the device location for the iterative method. A different process can then select the correct solution. Thus, the algebraic method can be used to detect the existence of ambiguous solutions, and to find both solutions.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/33375

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 G01S5/14 G01S5/12

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)

IPC 7 G01S

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

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

EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 54752 A (SNAPTRACK INC) 28 October 1999 (1999-10-28) abstract page 2, paragraph 3 -page 3, paragraph 1 page 4, paragraph 3 -page 6, paragraph 1 page 19, paragraph 3 -page 21, paragraph 2 ---	1
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

12 November 2001

Date of mailing of the international search report

20/11/2001

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/33375

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 914 686 A (SCHIPPER JOHN F) 22 June 1999 (1999-06-22) cited in the application abstract column 1, line 11 -column 12, line 58 ----	1
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/33375

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