(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau

(43) International Publication Date 11 September 2009 (11.09.2009)





(10) International Publication Number WO 2009/111127 A3

(51) International Patent Classification:

G01S 5/02 (2006.01) **H04L 29/08** (2006.01) **G01S 5/14** (2006.01) **H04W 64/00** (2009.01)

G01S 1/00 (2006.01)

H04W 64/00 (2009.01)

G013 1/00 (2006.01)

(21) International Application Number:

PCT/US2009/033110

(22) International Filing Date:

4 February 2009 (04.02.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/040,283 29 February 2008 (29.02,2008) US

(71) Applicant (for all designated States except US): APPLE INC. [US/US]; 1 Infinite Loop, Cupertino, California 95014-2084 (US).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BUSH, Jeffrey Alan [US/US]; 3283 Lindenoaks Drive, San Jose, Cali-

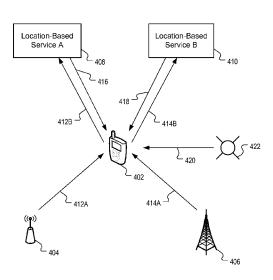
fornia 95117 (US). **HUANG, Ronald Keryuan** [US/US]; 433 Sandhurst Drive, Milpitas, California 95035 (US). **LOW, Daryl Mun-kid** [CA/US]; 20435 Via Paviso, Apt. F34, Cupertino, California 95014 (US).

- (74) **Agent: WHITE, Elspeth Simpson**; Fish & Richardson P.C., P.O. Box 1022, Minneapolis, Minnesota 55440-1022 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: LOCATION DETERMINATION

4007



(57) Abstract: Among other disclosed subject matter, a method includes detecting that a location is to be determined. The method includes selecting at least one among multiple location determination techniques based on a selection criterion. The method includes causing the location to be determined using the selected location determination technique.



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), (88) Date of publication of the international search report: OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- 28 January 2010

Published:

with international search report (Art. 21(3))

INTERNATIONAL SEARCH REPORT

International application No PCT/US2009/033110

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01S5/02 G01S5 G0185/14 G01S1/00 H04L29/08 H04W64/00 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) GO1S HO4W HO4L 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, INSPEC C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X WO 02/03093 A (NOKIA CORP [FI]) 1-9 10 January 2002 (2002-01-10) 11-16 Υ 6,17-21 abstract page 3 page 9 - page 15 claims 1,23,73 page 7, line 25 - line 31 figure 1 page 6, line 33 - line 40 Υ WO 2006/096923 A (SEEKER WIRELESS PTY LTD 6 [AU]; MCNAUGHTON MALCOLM [AU]; DRANE CHRISTOPH) 21 September 2006 (2006-09-21) page 19 - page 20 -/--Further documents are listed in the continuation of Box C. See patent family annex Special categories of cited documents : later document published after the international filing date or priority date and not in conflict with the application but died to understand the principle or theory underlying the "A" document defining the general state of the art which is not considered to be of particular relevance invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-ments, such combination being obvious to a person skilled in the art. "O" document referring to an oral disclosure, use, exhibition or document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 30 November 2009 09/12/2009 Name and mailing address of the ISA/ Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040

Ó Donnabháin, C

Fax: (+31-70) 340-3016

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/033110

	on). DOCUMENTS CONSIDERED TO BE RELEVANT	
atazanıt İ	Chaties of degree out with indication at a	1
ategory*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	EP 1 768 280 A (VODAFONE KK [JP]) 28 March 2007 (2007-03-28) figure 5	1 2-9, 11-16
	US 2006/268795 A1 (TAMAKI TSUYOSHI [US]) 30 November 2006 (2006-11-30) abstract figure 21 paragraph [0323] - paragraph [0360] paragraph [0003] paragraph [0012] figures 11B,12B,13B,15B,24,26	1,10
	US 6 978 206 B1 (PU KENT QING [US] ET AL) 20 December 2005 (2005-12-20) figures 1,6 column 6, line 33 - line 40 column 10, line 50 - column 12, line 56	17-21
	EP 0 917 385 A (NOKIA MOBILE PHONES LTD [FI]) 19 May 1999 (1999-05-19) abstract paragraph [0047] - paragraph [0050] claim 11	22,26-29
	WO 03/005750 A (NOKIA CORP [FI]; MAANOJA MARKUS [FI]) 16 January 2003 (2003-01-16) abstract * Description of the Preferred Embodiment *	22,27,28
	WO 2008/025013 A (QUALCOMM INC [US]; LAMBA GAURAV [US]; HASKINS BOBBI [US]; DELOACH JIM) 28 February 2008 (2008-02-28) figure 7	22

International application No. PCT/US2009/033110

INTERNATIONAL SEARCH REPORT

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
see additional sheet
1. X all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Remark on Protest The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
X No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9,11-16

Positioning techniques

2. claims: 1,10

Selection of Location Determination Technique

3. claims: 17-21

Improving computational efficiency/flexibility

4. claims: 22-29

Simplifying the receiver

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2009/033110

Patent document cited in search report		Publication date		Patent family member(s)	Publication date	
WO 0203093	A	10-01-2002	AU	8215701	Α	14-01-2002
0200030	• • • • • • • • • • • • • • • • • • • •	10 01 2002	AU	2001282157		17-08-2006
			BR	0112016		13-05-2003
			CA	2414604		10-01-2002
	_		CN	1449500		15-10-2002
			DE	01960758		15-04-2004
			EP	1297352		02-04-2004
			ES	2192157		01-10-2003
						15-01-2002
			FI	108372		
			JP	2004502942		29-01-2004
			US 	2002019698		14-02-2002
WO 2006096923	Α	21-09-2006	CA	2601161		21-09-2006
•			CN	101171529		30-04-2008
			EP	1866662		19-12-2007
			US	2009047973		19-02-2009
			ZA	200708797	Α	28-01-2009
EP 1768280	Α	28-03-2007	WO	2006006530	A1	19-01-2006
			JΡ	4312233		12-08-2009
			ÜS	2007109186		17-05-2007
US 2006268795	A1	30-11-2006	JP	2006329854	Α	07-12-2006
US 6978206	B1	20-12-2005	US	7043357	B1	09-05-2006
EP 0917385	Α	19-05-1999	AU	754839	B2	28-11-2002
			AU	1036399		31-05-1999
			BR	9814119		03-10-2000
			CA	2308409		20-05-1999
			CN	1286007		28-02-2001
			FI	974196		12-05-1999
			WŌ	9925144		20-05-1999
			JP	4286450		01-07-2009
			JP	2001523077		20-11-2001
			US	6327474		04-12-2001
WO 03005750		16-01-2003	 DE	60121633	 Т2	28-06-2007
HO 00000/00	П	10 01-2003	EP	1405539		07-04-2004
			US	2004185865		23-09-2004
				~004103003		23-U3-20U4
WO 2008025013	Α	28-02-2008	CA	2659962		28-02-2008
			EP	2064911		03-06-2009
			KR	20090055590		02-06-2009
			US	2008096527	۸1	24-04-2008