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

(19) World Intellectual Property Organization

International Bureau



# 

(10) International Publication Number WO 2011/088239 A3

## (43) International Publication Date 21 July 2011 (21.07.2011)

- (51) International Patent Classification: H04W 64/00 (2009.01)
- (21) International Application Number:

PCT/US2011/021182 (74)

(22) International Filing Date:

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/687,993 15 January 2010 (15.01.2010) US

- (71) Applicant (for all designated States except US): APPLE INC. [US/US]; 1 Infinite Loop, Cupertino, California 95014-2094 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HUANG, Ronald, K. [US/US]; 950 Nevada Ave., San Jose, California 95125 (US). PIEMONTE, Patrick [US/US]; 1 Infinite Loop, MS 95014 302-1NS. Cupertino, California GRAINGER, Morgan [CA/US]; 1 Infinite Loop, MS

302-1NS, Cupertino, California 95014 (US). MOORE, Christopher [US/US]; 1 Infinite Loop, MS 302-1NS, Cupertino, California 95014-2094 (US).

- Agent: MA, Xin; Fish & Richardson P.C., P.O. Box 1022, Minneapolis, MN 55440-1022 (US).
- 13 January 2011 (13.01.2011) (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, CL, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,

[Continued on next page]

#### (54) Title: LOCATION FILTERING USING MOBILE COUNTRY CODE

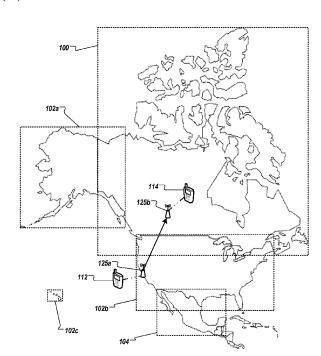


FIG. 1

(57) Abstract: Methods, program products, and systems for location filtering using mobile country code (MCC) is described. A mobile device can determine its geographic location using locations of access points of a wireless communications network to which the mobile device is connected. The mobile device can wirelessly receive identifiers of one or more access points of the wireless communications network and a current MCC through a cellular network. The mobile device can identify a polygon that is a bounding box of a geographic area that corresponds to the current MCC. The mobile device can select a set of access point locations from a location database using the received identifiers, where the access point locations are inside the identified polygon. The mobile device can determine a current location of the mobile device based on an average location of the selected set of access point locations.





MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

### Published:

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

#### INTERNATIONAL SEARCH REPORT

International application No PCT/US2011/021182

A. CLASSIFICATION OF SUBJECT MATTER INV. H04W64/00 ADD. 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 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 C. DOCUMENTS CONSIDERED TO BE RELEVANT Category\* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. US 2005/239478 A1 (SPIRITO MAURIZIO [IT]) Χ 1 - 3027 October 2005 (2005-10-27) figure 1 paragraphs [0004], [0 22] - [0087], [0114] - [0190]US 2006/217130 A1 (ROWITCH DOUGLAS N [US] Α 1 - 30ET AL) 28 September 2006 (2006-09-28) paragraphs [0079] - [0081], [0094] WO 2008/126959 A1 (SK TELECOM CO LTD [KR]; Α 1-30 HAN GYUYOUNG [KR]; CHO CHAEHWAN [KR]) 23 October 2008 (2008-10-23) paragraphs [0072] - [0076] X,P WO .2010/129094 A1 (ANDREW LLC [US]; HARPER 1,11,21 NEIL [AU]) 11 November 2010 (2010-11-11) paragraphs [0011] - [0013], [0028] -[0033], [0037] - [0040] Further documents are listed in the continuation of Box C. See patent family annex. Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but cited 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 filing date "L" document which may throw doubts on priority claim(s) or involve an inventive step when the document is taken alone which is cited to establish the publication date of another "Y" document of particular relevance; the claimed invention citation or other special reason (as specified) cannot be considered to involve an inventive step when the document is combined with one or more other such docu-"O" document referring to an oral disclosure, use, exhibition or other means ments, such combination being obvious to a person skilled "P" 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 13 April 2011 09/06/2011 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, Pasini, Enrico Fax: (+31-70) 340-3016

# **INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No
PCT/US2011/021182

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005239478 A1	27-10-2005	NONE	
US 2006217130 A1	28-09-2006	AU 2006226901 A1 BR PI0614011 A2 CA 2602591 A1 EP 1864151 A1 JP 2008538170 T KR 20070121794 A US 2010279705 A1 WO 2006102508 A1	28-09-2006 01-03-2011 28-09-2006 12-12-2007 09-10-2008 27-12-2007 04-11-2010 28-09-2006
WO 2008126959 A1	23-10-2008	CN 101675607 A EP 2137838 A1 KR 20080092781 A US 2010113063 A1	17-03-2010 30-12-2009 16-10-2008 06-05-2010
WO 2010129094 A1	11-11-2010	US 2010285813 A1	11-11-2010