



(43) International Publication Date  
30 August 2012 (30.08.2012)

(51) International Patent Classification:

H04W 68/04 (2009.01) H04W 52/02 (2009.01)  
H04W 48/16 (2009.01)

(21) International Application Number:

PCT/KR2012/001455

(22) International Filing Date:

27 February 2012 (27.02.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

566/CHE/2011 25 February 2011 (25.02.2011) IN

(71) Applicant (for all designated States except US):

**SAM-SUNG ELECTRONICS CO., LTD.** [KR/KR]; 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-742 (KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only):

**JAMADAGNI, Satish Nanjunda Swamy** [IN/IN]; Bagmane Lakeview, Block 'B', No. 66/1, Bagmane Tech Park, C V Raman Nagar, Byrasandra, Bangalore 560093 (IN). **RAJADURAI, Rajavelsamy** [IN/IN]; Bagmane Lakeview, Block 'B', No. 66/1, Bagmane Tech Park, C V Raman Nagar, Byrasandra, Bangalore 560093 (IN).

(74) Agent:

**LEE, Keon-Joo**; Mihwa Bldg. 110-2, Myongryundong 4-ga, Chongro-gu, Seoul 110-524 (KR).

(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, QA, RO, RS, RU, RW, 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, RW, 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, 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).

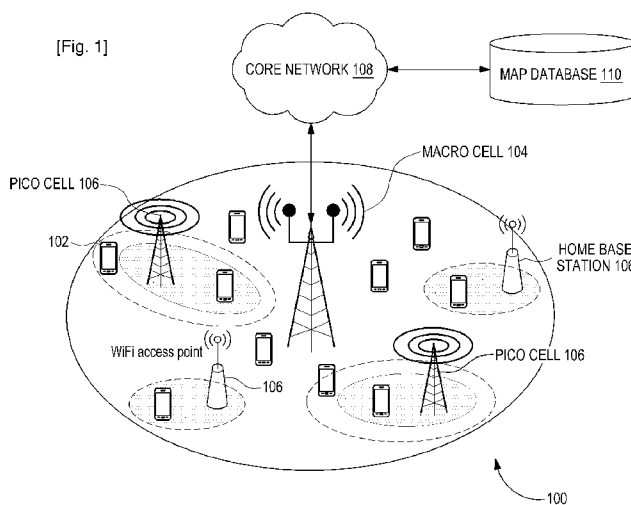
Published:

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

(88) Date of publication of the international search report:

27 December 2012

(54) Title: METHOD AND SYSTEM OF PROVIDING SMALL CELL INFORMATION TO USER EQUIPMENTS IN A HETEROGENEOUS NETWORK ENVIRONMENT



(57) Abstract: The present invention provides a method and system for providing small cell information to a user equipment in a heterogeneous network environment. In one embodiment, a user equipment sends a request to a network entity for providing availability of one or more small cells in its proximity. The network entity obtains location information associated with the user equipment and retrieves a small cell map displaying the one or more small cells from a map database. Then, the network entity determines whether the one or more small cells are in the proximity of the user equipment using the small cell map. Accordingly, the network entity provides a notification indicating availability of the one or more small cells to the user equipment. Moreover, the user equipment initiates a scan for the one or more small cells based on the received notification.



**A. CLASSIFICATION OF SUBJECT MATTER***H04W 68/04(2009.01)i, H04W 48/16(2009.01)i, H04W 52/02(2009.01)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 68/04; G06Q 30/00; H04M 3/42; G09G 5/00

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) &amp; Keywords: location information , proximity , cell , available

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2007-0167174 A1 (MICHAEL HALCROW et al.) 19 July 2007 See abstract, paragraph [49] and claims 1-3,5,8-10.	1-6,9-20,23-29 7-8,21-22
A	US 2011-0016006 A1 (THOMAS C. OPDYCKE) 20 January 2011 See claims 1-51 and figures 1-12.	1-29
A	US 2010-0183134 A1 (VLAD VENDROW et al.) 22 July 2010 See claims 1-20 and figures 1-10B.	1-29

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

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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 invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to 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 documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

28 SEPTEMBER 2012 (28.09.2012)

Date of mailing of the international search report

**28 SEPTEMBER 2012 (28.09.2012)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office  
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan  
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

JUNG, Yun Seok

Telephone No. 82-42-481-8123



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/KR2012/001455**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0167174 A1	19.07.2007	CN 101371515 A	18.02.2009
		JP 2009-524312 A	25.06.2009
		JP 2009-524312 T	25.06.2009
		US 7466986 B2	16.12.2008
		WO 2007-082913 A1	26.07.2007
US 2011-0016006 A1	20.01.2011	US 2005-0039206 A1	17.02.2005
		US 2011-0010732 A1	13.01.2011
		US 2011-0016002 A1	20.01.2011
		US 2011-0016011 A1	20.01.2011
		US 2011-0016480 A1	20.01.2011
		US 2011-0016483 A1	20.01.2011
		WO 2005-015362 A2	17.02.2005
		WO 2005-015362 A3	17.02.2005
US 2010-0183134 A1	22.07.2010	US 2012-021750 A1	26.01.2012
		WO 2010-062981 A2	03.06.2010
		WO 2010-062981 A3	03.06.2010