

(43) International Publication Date  
23 June 2011 (23.06.2011)(10) International Publication Number  
**WO 2011/075632 A3**(51) International Patent Classification:  
**H04W 88/18** (2009.01)(21) International Application Number:  
PCT/US2010/060983(22) International Filing Date:  
17 December 2010 (17.12.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
12/642,516 18 December 2009 (18.12.2009) US(71) Applicant (for all designated States except US): **PALM, INC.** [US/US]; 950 W. Maude Avenue, Sunnyvale, California 94085 (US).

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(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.

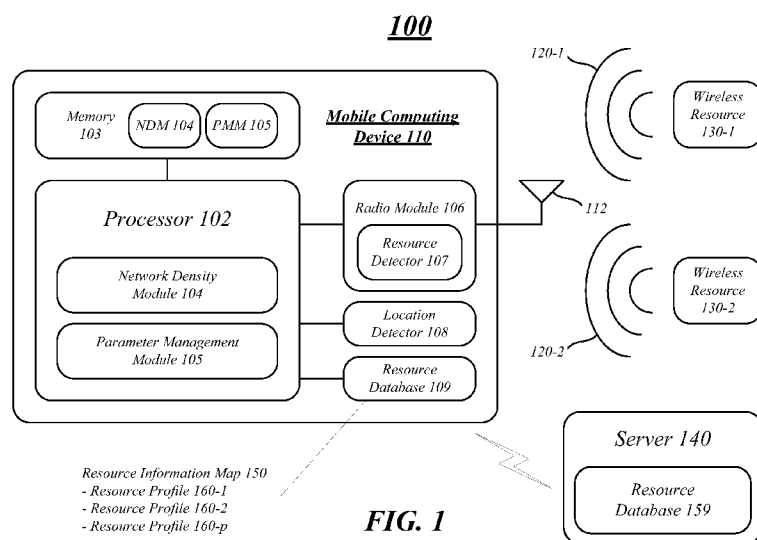
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, 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))

[Continued on next page]

(54) Title: TECHNIQUES TO MANAGE A MOBILE DEVICE BASED ON NETWORK DENSITY



(57) **Abstract:** Techniques to manage a mobile device based on network density are described. An apparatus may comprise a mobile computing device having a radio module operative to receive radio signals, a resource detector operative to collect a sample for one or more wireless resources based on the received radio signals, a network density module operative to estimate a network density for an operating environment of the mobile computing device based on the sample and a probability density function, and a parameter management module operative to manage one or more operational parameters of the mobile computing device based on the estimated network density. Other embodiments are described and claimed.



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— *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))*

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

10 November 2011

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2010/060983****A. CLASSIFICATION OF SUBJECT MATTER****H04W 88/18(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 88/18; H04B 7/00; H04W 24/02; H04B 17/00; H04W 24/10

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: detector, operating environment, network density, operational parameter

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0139125 A1 (SON, JI-YEON et al.) 12 June 2008 See abstract; paragraphs [0011],[0012],[0022]-[0024],[0031],[0035]; claims 1,3 and figure 3.	1-3,10-12
A	US 2007-0178930 A1 (XIAO, WEIMIN et al.) 02 August 2007 See abstract; paragraphs [0014]-[0020],[0027]-[0031],[0035]-[0038]; claims 1,9 and figures 3,4.	1-3,10-12
A	WO 2005-015917 A2 (IBIS TELECOM, INC.) 17 February 2005 See abstract; paragraphs [10],[21],[23],[37],[41],[42]; claims 1,5,7-9 and figure 3.	1-3,10-12
A	KR 10-2005-0034822 A (SK TELECOM CO., LTD.) 15 April 2005 See abstract; page 2 line 40 - page 3 line 18, page 4 line 15 - page 5 line 54; claims 1,10,17 and figures 4-6.	1-3,10-12

☐ 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

15 SEPTEMBER 2011 (15.09.2011)

Date of mailing of the international search report

**16 SEPTEMBER 2011 (16.09.2011)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office  
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Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

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**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2010/060983****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:
2. ☐ 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.: 4-9, 13-15  
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:

1. ☐ As 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 fee, this Authority did not invite payment of any additional fee.
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.
- ☐ No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/060983**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0139125 A1	12.06.2008	KR 10-0848139 B1 KR 10-2008-0053124 A US 7941169 B2	23.07.2008 12.06.2008 10.05.2011
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