



(51) International Patent Classification:

G01S 1/68 (2006.01) H04W 64/00 (2009.01)
G01S 5/00 (2006.01) G01S 11/06 (2006.01)
H04W 4/02 (2009.01)

(21) International Application Number:

PCT/US2010/039695

(22) International Filing Date:

23 June 2010 (23.06.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/219,504 23 June 2009 (23.06.2009) US
12/761,224 15 April 2010 (15.04.2010) US

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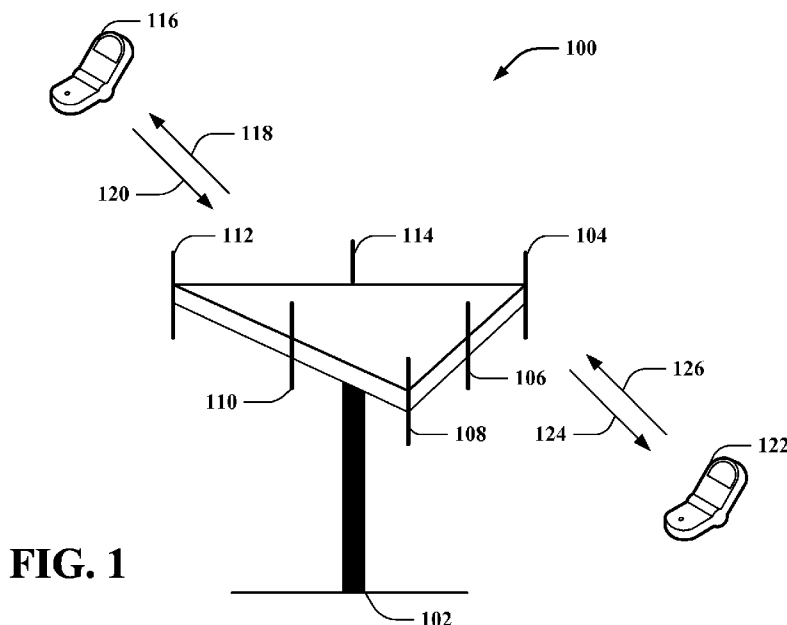
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR FACILITATING PROXIMITY DETECTION IN A WIRELESS NETWORK

**FIG. 1**

(57) Abstract: Methods, apparatuses, and computer program products are disclosed for facilitating proximity detection in wireless networks. a location enhancement device is activated and a unique identifier associated with the location enhancement device is ascertained. A positioning signal that emulates a base station reference signal is then generated, which includes the unique identifier. The positioning signal is transmitted from the location enhancement device, wherein the positioning signal is detectable by wireless terminals proximate to the location enhancement device. Proximity detection is then facilitated by processing the positioning signal.

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
- *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:

17 November 2011

Published:

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

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/039695

A. CLASSIFICATION OF SUBJECT MATTER INV. G01S1/68 G01S5/00 H04W4/02 H04W64/00 G01S11/06 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) G01S H04W				
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				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2003/066345 A1 (CHEN KUO-WEI H [US] ET AL CHEN KUO-WEI HERMAN [US] ET AL) 10 April 2003 (2003-04-10) paragraphs [0002] - [0004] paragraphs [0016], [0017], [0019] paragraphs [0021] - [0023] -----	1-5, 7-11, 13-15, 33-44		
X	US 6 771 625 B1 (BEAL ROBERT E [US]) 3 August 2004 (2004-08-03) paragraphs [0015], [0019], [0040], [0054], [0055] ----- -/--	1-5, 7-11, 13-15, 33-44		
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.				
* Special categories of cited documents : <table border="0"> <tr> <td style="vertical-align: top;"> "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document 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 another 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 </td> <td style="vertical-align: top;"> "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. "&" document member of the same patent family </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document 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 another 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. "&" document member of the same patent family
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document 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 another 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. "&" document member of the same patent family			
Date of the actual completion of the international search 19 September 2011		Date of mailing of the international search report 28/09/2011		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Naddeo, Giovanni		

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2010/039695

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/001818 A1 (COHEN CLARK E [US] ET AL) 3 January 2008 (2008-01-03) paragraphs [0002] - [0006], [0009] - [0012], [0051] -----	1-5, 7-11, 13-15, 33-44
X	US 2008/284646 A1 (WALLEY JOHN [US] ET AL) 20 November 2008 (2008-11-20) paragraph [0007] paragraphs [0022], [0026] - [0029] paragraphs [0030] - [0035], [0038] paragraphs [0043], [0044], [0046], [0047] paragraphs [0054], [0055] -----	17-32, 45-61, 69
X	US 2007/077941 A1 (GONIA PATRICK S [US] ET AL) 5 April 2007 (2007-04-05) paragraphs [0002], [0003] paragraphs [0010], [0015], [0018] - [0020] paragraphs [0022], [0024], [0025], [0028] paragraph [0037] paragraphs [0040], [0043], [0044], [0046], [0049] paragraphs [0050] - [0055] -----	17, 23, 29, 31, 45, 51, 57, 60
Y	US 2006/232470 A1 (MALLICK BRIAN [US]) 19 October 2006 (2006-10-19) the whole document -----	17, 23, 29, 31, 45, 51, 57, 60
Y	WO 2007/018409 A1 (LG ELECTRONICS INC [KR]; SHIM DONG-HEE [KR]) 15 February 2007 (2007-02-15) the whole document -----	17, 23, 29, 31, 45, 51, 57, 60
X	US 2006/215618 A1 (SOLIMAN SAMIR S [US] ET AL) 28 September 2006 (2006-09-28) paragraphs [0002], [0006], [0007], [0010], [0012] paragraphs [0024] - [0028], [0032], [0033] paragraphs [0057], [0058], [0063] ----- -/--	1-5, 7-11, 13-15, 33-44

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2010/039695

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/076927 A2 (NIELSEN MEDIA RES INC [US]) 26 June 2008 (2008-06-26) paragraphs [0027], [0029], [3133], [0035] paragraphs [0040], [0041], [0049], [0055] paragraphs [0060], [0061], [0064], [0065], [0067] -----	1-5, 7-11, 13-15, 33-44

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/039695

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.:
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. ☒ 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 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.
- ☒ 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: 1-16, 33-44

definition of a signal detectable by a cellular user
equipment for proximity detection

2. claims: 17-32, 45-62

optimization of the size of an antenna for a positioning
system

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2010/039695

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003066345	A1	10-04-2003	NONE
US 6771625	B1	03-08-2004	US 6101178 A 08-08-2000
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