

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 April 2008 (17.04.2008)

PCT

(10) International Publication Number
WO 2008/045448 A3

(51) International Patent Classification:
H04L 3/06 (2006.01)

Sue; 9461 Willows Road NE, Suite 100, Redmond, WA 98052 (US).

(21) International Application Number:
PCT/US2007/021591

(74) Agent: JAMES, William, J.; Van Pelt, Yi & James LLP, 10050 N. Foothill Blvd., Suite 200, Cupertino, CA 95014 (US).

(22) International Filing Date: 9 October 2007 (09.10.2007)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, 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, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/850,872 10 October 2006 (10.10.2006) US
11/645,118 21 December 2006 (21.12.2006) US

(71) Applicant (for all designated States except US): RADIOFRAME NETWORKS, INC. [US/US]; 9461 Willows Road NE, Suite 100, Redmond, WA 98052 (US).

(72) Inventors: HIRANO, Mike; 9461 Willows Road NE, Suite 100, Redmond, WA 98052 (US). MCMEEKIN, M.,

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,

[Continued on next page]

(54) Title: SENSING RF ENVIRONMENT TO SYNCHRONIZE NETWORK ELEMENTS

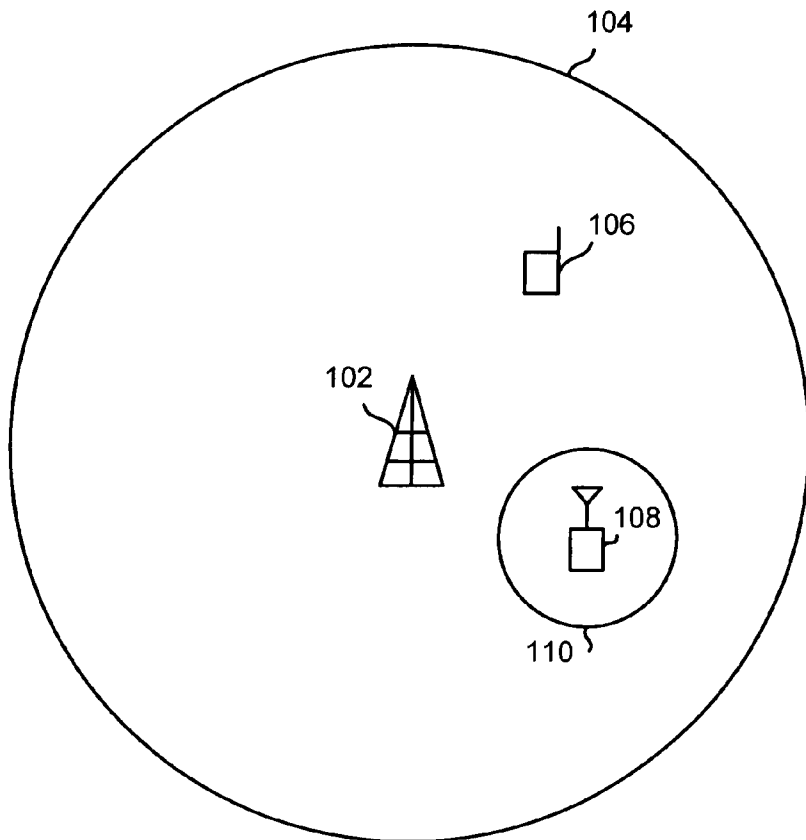


FIG. 1

(57) Abstract: Providing a frequency reference to a mobile telecommunications base station is disclosed. A radio frequency signal that includes a periodic component having a known frequency is received. A frequency reference is derived from the received radio signal, based at least in part on the periodic component. The frequency reference is used to transmit from the base station at an assigned frequency.

WO 2008/045448 A3



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, HU, IE, **IS**, **IT**, LT, LU, LV, MC, MT, NL, PL,
PT, **RO**, SE, **SI**, SK, TR), OAPI (BF, **BJ**, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

(88) Date of publication of the international search report:
14 August 2008

INTERNATIONAL SEARCH REPORT

International application No.

PCTIUS 07/21591

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - H04J 3/06 (2008.01) USPC - 370/350 According to International Patent Classification (IPC) or to both national classification and IPC</p>																							
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) 370/350</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 370/350</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST: (PGPB,USPT,EPAB,JPAB); Google Scholar Search Terms: mobile base, base station, frequency reference, radio signal, period component, periodic component, periodic factor, periodic element, period, periodic, known frequency, assigned frequency, transmit, transmitted, transmitting, transmission, sine wave</p>																							
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">Category*</th> <th style="width:70%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width:20%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td align="center">X --- Y</td> <td>US 2004/0152478 A1 (RUOHONEN et al.) 05 August 2004 (05.08.2004), abstract and para [0004]-[0007], [0030]-[0045], [0049]-[0050], [0054]-[0055], [0060]-[0062].</td> <td align="center">1-6, 9-11 and 15-19 <hr/>7-8, 12-14 and 20</td> </tr> <tr> <td align="center">Y</td> <td>US 2005/0207334 A1 (HADAD) 22 September 2005 (22.09.2005), abstract and para [0009], [0031]-[0035], [0040].</td> <td align="center">7</td> </tr> <tr> <td align="center">Y</td> <td>US 2005/0030935 A1 (SEISENBERGER et al.) 10 February 2005 (10.02.2005), abstract and para [0030], [0039], [0061]-[0065].</td> <td align="center">8</td> </tr> <tr> <td align="center">Y</td> <td>US 2005/0219000 A1 (WU) 06 October 2005 (06.10.2005), abstract and para [0007], [0014], [0040], [0043], [0046], [0048], [0065].</td> <td align="center">12-13</td> </tr> <tr> <td align="center">Y</td> <td>US 6,028,853 A (HAARTSEN) 22 February 2000 (22.02.2000), col. 5, ln 53 - col 7, ln 67.</td> <td align="center">14</td> </tr> <tr> <td align="center">Y</td> <td>US 2002/01 11163 A1 (HAMABE) 15 August 2002 (15.08.2002), abstract and para [0217]-[0225], [0229H0236].</td> <td align="center">20</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X --- Y	US 2004/0152478 A1 (RUOHONEN et al.) 05 August 2004 (05.08.2004), abstract and para [0004]-[0007], [0030]-[0045], [0049]-[0050], [0054]-[0055], [0060]-[0062].	1-6, 9-11 and 15-19 <hr/> 7-8, 12-14 and 20	Y	US 2005/0207334 A1 (HADAD) 22 September 2005 (22.09.2005), abstract and para [0009], [0031]-[0035], [0040].	7	Y	US 2005/0030935 A1 (SEISENBERGER et al.) 10 February 2005 (10.02.2005), abstract and para [0030], [0039], [0061]-[0065].	8	Y	US 2005/0219000 A1 (WU) 06 October 2005 (06.10.2005), abstract and para [0007], [0014], [0040], [0043], [0046], [0048], [0065].	12-13	Y	US 6,028,853 A (HAARTSEN) 22 February 2000 (22.02.2000), col. 5, ln 53 - col 7, ln 67.	14	Y	US 2002/01 11163 A1 (HAMABE) 15 August 2002 (15.08.2002), abstract and para [0217]-[0225], [0229H0236].	20
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																					
X --- Y	US 2004/0152478 A1 (RUOHONEN et al.) 05 August 2004 (05.08.2004), abstract and para [0004]-[0007], [0030]-[0045], [0049]-[0050], [0054]-[0055], [0060]-[0062].	1-6, 9-11 and 15-19 <hr/> 7-8, 12-14 and 20																					
Y	US 2005/0207334 A1 (HADAD) 22 September 2005 (22.09.2005), abstract and para [0009], [0031]-[0035], [0040].	7																					
Y	US 2005/0030935 A1 (SEISENBERGER et al.) 10 February 2005 (10.02.2005), abstract and para [0030], [0039], [0061]-[0065].	8																					
Y	US 2005/0219000 A1 (WU) 06 October 2005 (06.10.2005), abstract and para [0007], [0014], [0040], [0043], [0046], [0048], [0065].	12-13																					
Y	US 6,028,853 A (HAARTSEN) 22 February 2000 (22.02.2000), col. 5, ln 53 - col 7, ln 67.	14																					
Y	US 2002/01 11163 A1 (HAMABE) 15 August 2002 (15.08.2002), abstract and para [0217]-[0225], [0229H0236].	20																					
<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. D</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;"> <p>* Special categories of cited documents'</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width:50%; vertical-align: top;"> <p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>* Special categories of cited documents'</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>																			
<p>* Special categories of cited documents'</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>																						
<p>Date of the actual completion of the international search</p> <p>31 January 2008 (31.01.2008)</p>		<p>Date of mailing of the international search report</p> <p align="center">18 MAR 2008</p>																					
<p>Name and mailing address of the ISA/US</p> <p>Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No 571-273-3201</p>		<p>Authorized officer:</p> <p align="center">Lee W. Young</p> <p>PCT Helpdeslc 571-272-4300 PCTOSP. 571-272-7774</p>																					

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/21591

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004/0233889 A 1 (FUJITA et al.) 25 November 2004 (25.1 1.2004), entire document, especially abstract and para [0004]-[0006], [0044]-[0048], [0053]-[0061], [0075]-[0094], [0102]-[0115].	1-20