

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 February 2008 (21.02.2008)

PCT

(10) International Publication Number
WO 2008/020879 A3

(51) International Patent Classification:
G01S 13/56 (2006.01) G01S 13/87 (2006.01)

(74) Agent: WOOLDRIDGE, John, P.; P.O. Box 808, L-703, Livermore, CA 94550 (US).

(21) International Application Number:
PCT/US2007/002686

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, 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, LV, 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.

(22) International Filing Date: 30 January 2007 (30.01.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/763,815 30 January 2006 (30.01.2006) US
60/763,814 30 January 2006 (30.01.2006) US
60/763,785 30 January 2006 (30.01.2006) US
11/699,638 29 January 2007 (29.01.2007) US

(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, 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, 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).

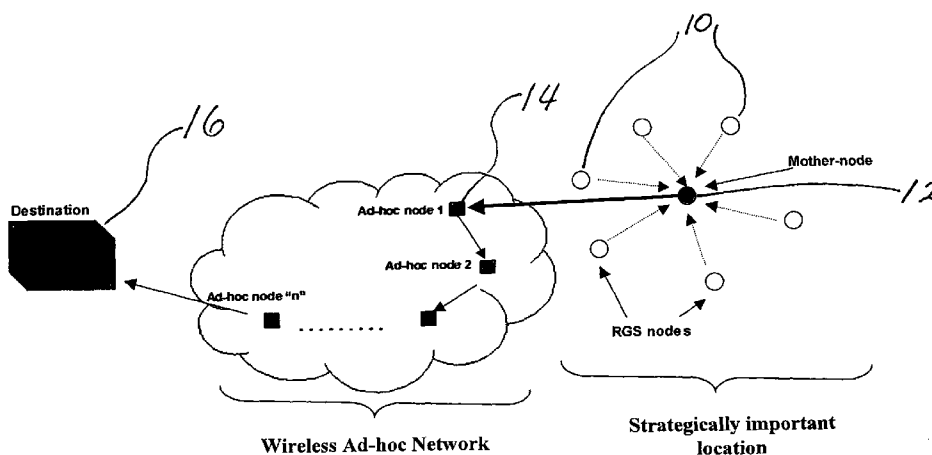
(71) Applicant (for all designated States except US): THE REGENTS OF THE UNIVERSITY OF CALIFORNIA [US/US]; 1111 Franklin Street, Oakland, CA 94607-5200 (US).

Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(72) Inventors; and
(75) Inventors/Applicants (for US only): LEACH, Richard, R., Jr. [US/US]; 4526 Newhaven Way, Castro Valley, CA 94546 (US). NEKOOGAR, Faranak [US/US]; 67 Foster Drive, San Ramon, CA 94583 (US). HAUGEN, Peter, C. [US/US]; 4823 Charlotte Way, Livermore, CA 94550 (US).

(88) Date of publication of the international search report:
10 April 2008

(54) Title: ULTRA-WIDEBAND RADAR SENSORS AND NETWORKS



(57) Abstract: Ultra wideband radar motion sensors strategically placed in an area of interest communicate with a wireless ad hoc network to provide remote area surveillance. Swept range impulse radar and a heart and respiration monitor combined with the motion sensor further improves discrimination.

WO 2008/020879 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/002686

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01S13/87 G01S13/56

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 G08B H04L

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, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2005/043930 A (INNOVATIVE WIRELESS TECHNOLOGI [US]) 12 May 2005 (2005-05-12) abstract; figures 1,2 page 2, lines 8-26 page 6, line 5 - page 13, line 21 -----	1-33
Y	US 5 361 070 A (MCEWAN THOMAS E [US]) 1 November 1994 (1994-11-01) abstract; figures 2,9 page 2, lines 8-26 page 6, line 5 - page 13, line 21 column 1, line 58 - column 2, line 41 column 8, line 4 - column 9, line 33 ----- -/--	1-33

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 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 13 February 2008	Date of mailing of the international search report 22/02/2008
---	--

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Grübl, Alexander
---	--

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/002686

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 103 49 838 A1 (RHEINMETALL WAFFE MUNITION GMB [DE]) 25 May 2005 (2005-05-25) abstract; figure 1 paragraph [0019]	2, 19
A	US 2002/130809 A1 (KIM JONNATHAN H [US]) 19 September 2002 (2002-09-19) abstract paragraphs [0007], [0041], [0169] - [0171], [0176], [0178], [0181], [0182], [0192], [0196], [0203], [0204], [0208]	1-33
A	ARORA A ET AL: "A line in the sand: a wireless sensor network for target detection, classification, and tracking" COMPUTER NETWORKS, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, NL, vol. 46, no. 5, 5 December 2004 (2004-12-05), pages 605-634, XP004610793 ISSN: 1389-1286 abstract chapters 3.3, 6.2, 7,8,10	1-33
A	NEKOOGAR F ET AL: "Self organization of wireless sensor networks using ultra-wideband radios" RADIO AND WIRELESS CONFERENCE, 2004 IEEE ATLANTA, GA, USA 19-22 SEPT. 2004, PISCATAWAY, NJ, USA, IEEE, 19 September 2004 (2004-09-19), pages 451-454, XP010764651 ISBN: 0-7803-8451-2 the whole document	1, 18
A	CHEE-YEE CHONG ET AL: "Sensor networks: Evolution, opportunities, and challenges" PROCEEDINGS OF THE IEEE, IEEE. NEW YORK, US, vol. 91, no. 8, August 2003 (2003-08), pages 1247-1256, XP011099472 ISSN: 0018-9219 abstract chapter I.	
A	MORGAN P F: "Unattended ground sensor systems for special operations forces" PROCEEDINGS OF THE SPIE - THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING SPIE-INT. SOC. OPT. ENG USA, vol. 5417, no. 1, 2004, pages 444-449, XP002468689 ISSN: 0277-786X the whole document	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2007/002686

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005043930	A	12-05-2005	EP 1709605 A2 11-10-2006
			US 7119676 B1 10-10-2006
US 5361070	A	01-11-1994	AT 278969 T 15-10-2004
			AT 214853 T 15-04-2002
			CA 2160352 A1 27-10-1994
			DE 69430195 D1 25-04-2002
			DE 69430195 T2 24-10-2002
			DE 69434064 D1 11-11-2004
			DE 69434064 T2 06-10-2005
			EP 0694171 A1 31-01-1996
			JP 3471803 B2 02-12-2003
			JP 8511341 T 26-11-1996
			JP 3648236 B2 18-05-2005
			JP 2004004100 A 08-01-2004
			WO 9424579 A1 27-10-1994
DE 10349838	A1	25-05-2005	AT 373807 T 15-10-2007
			EP 1526353 A1 27-04-2005
US 2002130809	A1	19-09-2002	US 2004140925 A1 22-07-2004

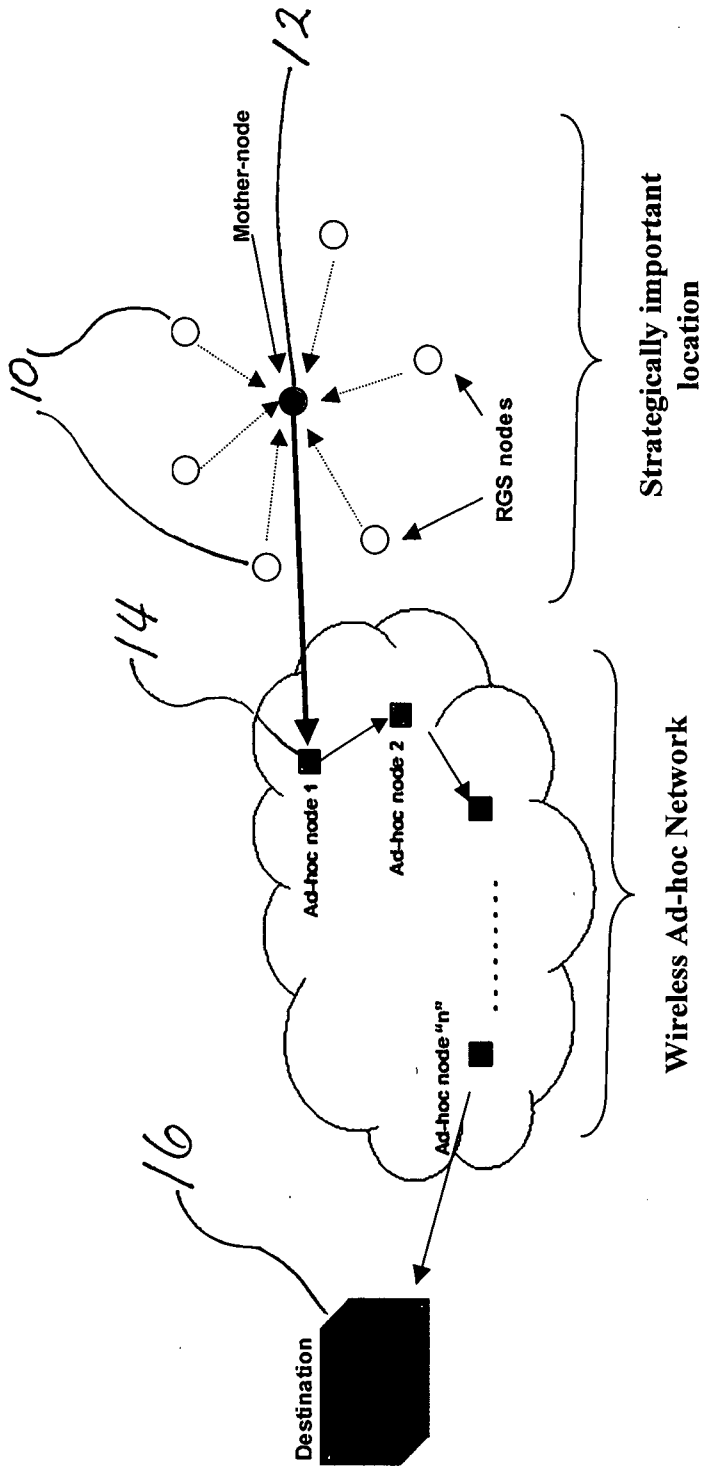


Figure 1