(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 January 2001 (04.01.2001)

PCT

(10) International Publication Number
WO 01/01168 A3

(51) International Patent Classification[7]: G08B 13/181, G01S 13/02, 13/04

(21) International Application Number: PCT/US00/16201

(22) International Filing Date: 14 June 2000 (14.06.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/332,502 14 June 1999 (14.06.1999) US

(71) Applicant: TIME DOMAIN CORPORATION [US/US]; Cummings Research Park, 7057 Old Madison Pike, Huntsville, AL 35806 (US).

(72) Inventors: FULLERTON, Larry, W.; 120 Wimbledon Road, Brownsboro, AL 35741 (US). RICHARDS, James, L.; 58 Boning Road, Fayetteville, TN 37334 (US).

(74) Agents: SOKOHL, Robert, E. et al.; Sterne, Kessler, Goldstein & Fox P.L.L.C., 1100 New York Avenue, N.W., Suite 600, Washington, DC 20005-3934 (US).

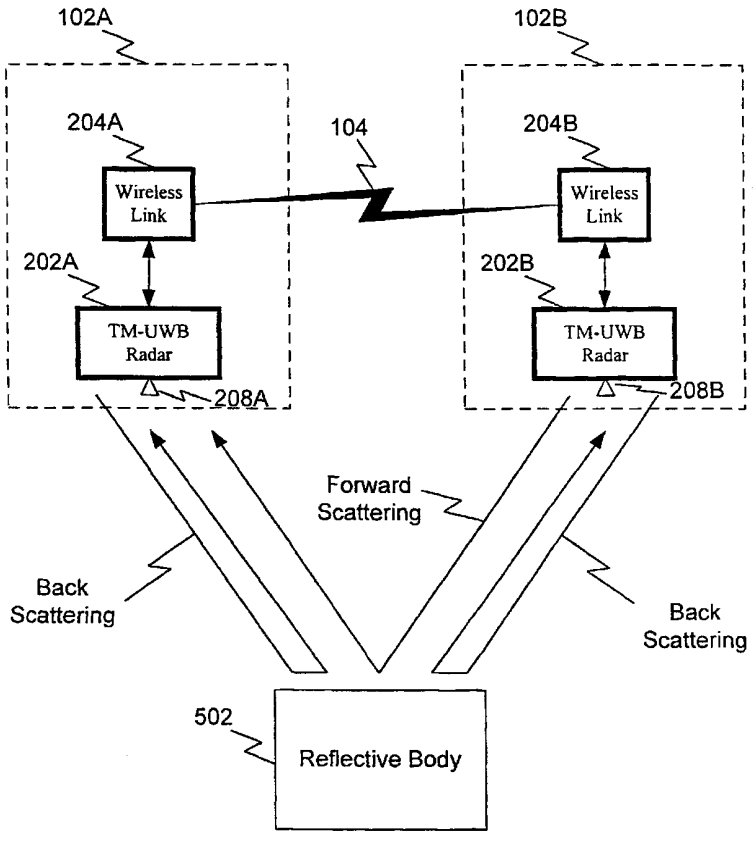
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR INTRUSION DETECTION USING A TIME DOMAIN RADAR ARRAY



(57) Abstract: A system and method for highly selective intrusion detection using a sparse array of time modulated ultra wideband (TM-UWB) radars. Two or more TM-UWB radars are arranged in a sparse array around the perimeter of a building. Each TM-UWB radar transmits ultra wideband pulses that illuminate the building and the surrounding area. Signal return data is processed to determine, among other things, whether an alarm condition has been triggered. High resolution radar images are formed that give an accurate picture of the inside of the building and the surrounding area. This image is used to detect motion in a highly selective manner and to track moving objects within the building and the surrounding area. Motion can be distinguished based on criteria appropriate to the environment in which the intrusion detection system operates.

WO 01/01168 A3

(88) Date of publication of the international search report:
9 August 2001

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

inter. nal Application No
PCT/US 00/16201

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G08B13/181 G01S13/02 G01S13/04

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)
IPC 7 G08B G01S

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, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 04285 A (BURNETT WILLIAM R ;HEINZMANN FRED JUDSON (US); KOHLER CO (US); PAE) 28 January 1999 (1999-01-28) abstract; figures 3,9F page 5, line 15 - line 16 page 9, line 11 -page 10, line 6	1,2,5,6, 8,28,36, 37
A	page 26, line 20 -page 27, line 9	24
A	FRAZIER L M: "SURVEILLANCE THROUGH WALLS AND OTHER OPAQUE MATERIALS. IEEE 1996 NATIONAL RADAR CONFERENCE" PROCEEDINGS OF THE 1996 NATIONAL RADAR CONFERENCE,US,NEW YORK, IEEE, 13 May 1996 (1996-05-13), pages 27-31, XP000634913 ISBN: 0-7803-3147-8 figures	1,24,28

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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	Date of mailing of the international search report
29 January 2001	05/02/2001

Name and mailing address of the ISA	Authorized officer
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	Niemeijer, R

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/US 00/16201

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 744 629 A (HUGHES MISSILE SYSTEMS) 27 November 1996 (1996-11-27) abstract; figure 1 page 3, line 37 -page 4, line 18 page 5, line 25 - line 28	1,24,28
A	DE 196 12 579 A (HONEYWELL AG) 2 October 1997 (1997-10-02) abstract; figure 1 column 1, line 56 - line 62	1,24,28
A	US 5 668 555 A (STARR JON E) 16 September 1997 (1997-09-16) abstract; figure 4	1,24,28

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. nal Application No
PCT/US 00/16201

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9904285 A	28-01-1999	AU 8404398 A	10-02-1999
		AU 8411698 A	10-02-1999
		AU 8500298 A	10-02-1999
		AU 8572298 A	10-02-1999
		CN 1269016 T	04-10-2000
		EP 0995127 A	26-04-2000
		WO 9904283 A	28-01-1999
		WO 9904284 A	28-01-1999
		WO 9904286 A	28-01-1999
EP 0744629 A	27-11-1996	US 5446461 A	29-08-1995
DE 19612579 A	02-10-1997	DE 29623877 U	29-06-2000
US 5668555 A	16-09-1997	NONE	