

(43) International Publication Date
23 July 2009 (23.07.2009)(10) International Publication Number
WO 2009/091423 A3

(51) International Patent Classification:

H04B 1/04 (2006.01) *H01Q* 21/06 (2006.01)
H04B 7/10 (2006.01) *H01Q* 11/02 (2006.01)

(74) Agent: GUNTHER, John; Socal IP Law Group LLP,
310 N. Westlake Blvd. Suite 120, Westlake Village, CA
91362 (US).

(21) International Application Number:

PCT/US2008/080151

(22) International Filing Date:

16 October 2008 (16.10.2008)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

11/875,131 19 October 2007 (19.10.2007) US

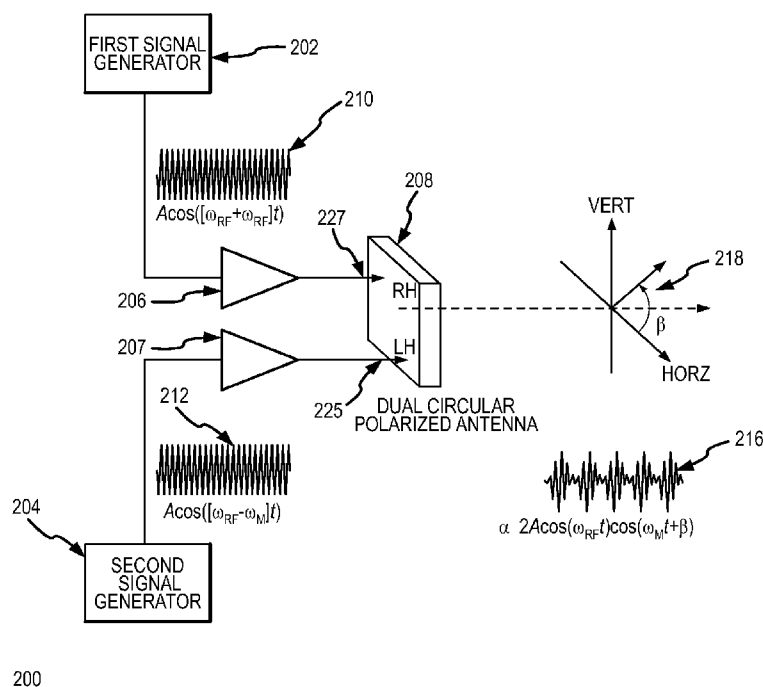
(71) Applicant (for all designated States except US):
RAYTHEON COMPANY [US/US]; 870 Winter Street,
Waltham, MA 02451-1449 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BROWN, Kenneth, W.** [US/US]; 12425 15th Street, Yocapa, CA
92399-1785 (US).(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, 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, ST, SV, SY, 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, 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, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI

[Continued on next page]

(54) Title: RF WAVEFORM MODULATION APPARATUS AND METHOD



(57) Abstract: The disclosed system, device and method for a signal modulation apparatus generally includes a first signal generator suitably configured to generate a first continuous wave radio frequency (RF) signal, and a second signal generator suitably configured to generate a second continuous wave RF signal. A dual-circular polarized antenna may be adapted to receive the first continuous wave RF signal into a right-hand port and the second continuous wave RF signal into a left-hand port, where the signals are combined into a modulated RF signal in the dual-circular polarized antenna.

FIG.2



(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

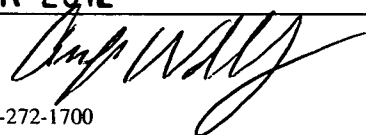
— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))*

Published:

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

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

3 May 2012

INTERNATIONAL SEARCH REPORT		International application No. PCT/US08/80151		
A. CLASSIFICATION OF SUBJECT MATTER IPC: H04B 1/04 (2006.01), 7/10 (2006.01); H01Q 21/06 (2006.01), 11/02 (2006.01) USPC: 455/91,110,129;375/302;342/365;343/732 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) U.S. : 455/91, 110, 129; 375/302; 342/365; 343/732 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 practicable, search terms used) Please See Continuation Sheet				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 6,262,690 B1 (MALONE et al.) 17 July 2001 (17.07.2001), see abstract; figs 1-3; col. 1, lines 6-10; col. 2, lines 20-43.	1, 8, 15		
X	US 4,408,206 A (FITCH et al.) 04 October 1983 (04.10.1983), see figs. 1A, 2, 4; abstract; col. 3, lines 17 to col. 4, line 37; col. 5, lines 6, 64; col. 4, lines 1-30; col. 3, lines 8-26.	1-5, 7-12, 14-18, 20		
---		-----		
Y		6, 13, 19		
Y	US 2008/0018525 A1 (SVY et al.) 24 January 2008 (24.01.2008), see abstract; paras. 87, 98.	6, 13, 19		
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> * 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 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="width: 50%; 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>			* 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 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
* 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 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 04 March 2012 (04.03.2012)		Date of mailing of the international search report 07 MAR 2012		
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer William Krynski  Telephone No. 571-272-1700		

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US08/80151

Continuation of B. FIELDS SEARCHED Item 3:

US-PGPUB; USPAT: radiat, microwave, left, right, micro-wave, amplif, circular, polarization, polariz, antenna, warfare, combin, first, second, disrupt, interfer, jam, target