(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 10 January 2008 (10.01.2008)

(10) International Publication Number $WO\ 2008/005507\ A3$

(51) International Patent Classification:

 H04L 5/02 (2006.01)
 H04B 1/69 (2006.01)

 H04B 3/54 (2006.01)
 H04B 1/707 (2006.01)

 H04L 1/00 (2006.01)
 H04J 13/04 (2006.01)

(21) International Application Number:

PCT/US2007/015508

(22) International Filing Date: 6 July 2007 (06.07.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

11/482,373 6 July 2006 (06.07.2006) US

(71) Applicant (for all designated States except US): GIGLE SEMICONDUCTOR INC. [US/US]; c/o WILMER, CUTLER, PICKERING, HALE AND DOOR LLP, 1100 Winter Street, Suite 4650, Waltham, MA 02451 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): MOLINA, Jose Abad [ES/ES]; c/o GIGLE SEMICONDUCTOR INC., WILMER, CUTLER, PICKERING, HALE AND DOOR LLP, 1100 Winter Street, Suite 4650, Waltham, MA 02451 (US). INSUA, Juan Carlos Riveiro [ES/ES]; c/o GIGLE SEMICONDUCTOR INC., c/o Wilmer, Cutler,

Pickering, Hale and Door LLP, 1100 Winter Street, Suite 4650, Waltham, MA 02451 (US). **HURWITZ, Jonathan Ephraim David** [GB/GB]; c/o GIGLE SEMICONDUCTOR INC., c/o Wilmer, Cutler, Pickering, Hale and Door LLP, 1100 Winter Street, Suite 4650, Waltham, MA 02451 (US).

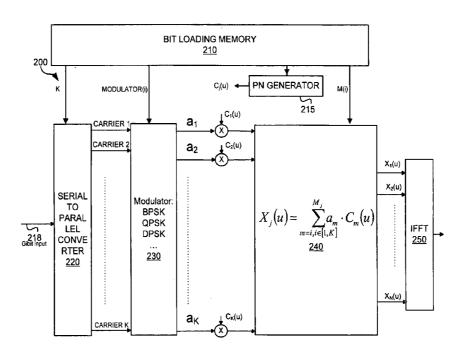
(74) Agents: COLBY, Steven et al.; 2200 Geng Road, Palo Alto, CA 94303 (US).

(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.

(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),

[Continued on next page]

(54) Title: ADAPTATIVE MULTI-CARRIER CODE DIVISION MULTIPLE ACCESS



(57) Abstract: A system for performing adaptative multi-carrier code division multiple access (AMC-CDMA) includes first circuitry and modulator circuitry. The first circuitry determines a channel performance metric for each of a plurality of channels. The first circuitry determines at least one parameter of bit loading for each of the channels based on the channel performance metric. The modulator circuitry modulates AMC-CDMA signals using the parameters for bit loading in each of the channels for transmission over a wired connection.



WO 2008/005507 A3



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).

 before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

Published:

with international search report

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

3 April 2008

INTERNATIONAL SEARCH REPORT

International application No PCT/US2007/015508

A. CLASSIFICATION OF SUBJECT MATTER INV. H04L5/02 H04B3/54 H04J13/04

H04L1/00

H04B1/69

H04B1/707

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\begin{array}{ll} \mbox{Minimum documentation searched (classification system followed by classification symbols)} \\ \mbox{H04L} & \mbox{H04B} & \mbox{H04J} \end{array}$

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, INSPEC

ategory*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
X	WO 03/092212 A (RAYTHEON CO [US]) 6 November 2003 (2003-11-06) page 2, line 8 - line 32 page 5, line 7 - line 32 page 7, line 4 - line 16 page 10, line 1 - page 11, line 28 page 13, line 8 - page 14, line 28	1–39	
X	EP 1 548 974 A (NTT DOCOMO INC [JP]) 29 June 2005 (2005-06-29) abstract paragraph [0002] paragraph [0007] paragraph [0016] - paragraph [0017] paragraph [0027] - paragraph [0031] paragraph [0059] - paragraph [0060] paragraph [0066] - paragraph [0070] -/	1-39	

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	Date of mailing of the international search report	
30 January 2008	06/02/2008	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2	Authorized officer	
NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Palacián Lisa, Marta	

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/015508

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT					
ategory*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.			
K	US 2005/141473 A1 (LIM KWANG-JAE [KR] ET AL) 30 June 2005 (2005-06-30) abstract paragraph [0009] - paragraph [0010] paragraph [0022] - paragraph [0045] paragraph [0066] - paragraph [0074] paragraph [0084] - paragraph [0085] paragraph [0090] paragraph [0096]	1-39			
X	EP 1 531 568 A (MATSUSHITA ELECTRIC IND CO LTD [JP]) 18 May 2005 (2005-05-18) paragraph [0013] - paragraph [0018] paragraph [0019] - paragraph [0029] paragraph [0039] - paragraph [0041] paragraph [0044] - paragraph [0045] paragraph [0050] - paragraph [0051] paragraph [0138] paragraph [0142]	1-39			
χ	EP 1 388 954 A (DISENO DE SIST S EN SILICIO S [ES]) 11 February 2004 (2004-02-11)	1,4,6-8, 11-15, 18, 20-22, 25-35,39			
	abstract paragraph [0001] - paragraph [0003] paragraph [0023] - paragraph [0026] paragraph [0044] paragraph [0058] - paragraph [0069] paragraph [0088]				
Α	SANADA T ET AL: "A MULTIUSER INTERFERENCE CANCELLATION TECHNIQUE UTILIZING CONVOLUTIONAL CODES AND OTHOGONAL MULTICARRIER MODULATION FOR WIRELESS INDOOR COMMUNICATIONS" IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 14, no. 8, October 1996 (1996-10), pages 1500-1509, XP000635677 ISSN: 0733-8716	1-39			

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2007/015508

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 03092212	A 06-11-2003	EP · 1497942	A1 06-11-2003 A 07-09-2005 A1 19-01-2005 T 18-05-2006 A 17-02-2005
EP 1548974	A 29-06-2005	CN 1638324 KR 20050065443 US 2005163193	A 29-06-2005
US 2005141473	30-06-2005	KR 20050066860	A 30-06-2005
EP 1531568	A 18-05-2005	AU 2003254932 CN 1650555 WO 2004019532 US 2005163082	A 03-08-2005 A1 04-03-2004
EP 1388954	A 11-02-2004	BR 0209123 CA 2444397 CN 1518803 EA 5473 WO 02087104 ES 2186531 JP 2004531944 MX PA03009501 US 2004136393	A1 31-10-2002 A 04-08-2004 B1 24-02-2005 A2 31-10-2002 A2 01-05-2003 T 14-10-2004 A 06-12-2004