

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 December 2007 (21.12.2007)

PCT

(10) International Publication Number
WO 2007/145487 A3

- (51) International Patent Classification:
H03M 13/11 (2006.01)
- (21) International Application Number:
PCT/KR2007/002921
- (22) International Filing Date: 15 June 2007 (15.06.2007)
- (25) Filing Language: Korean
- (26) Publication Language: English
- (30) Priority Data:
10-2006-0054468 16 June 2006 (16.06.2006) KR
- (71) Applicant (for all designated States except US): **LG ELECTRONICS INC.** [KR/KR]; 20, Yeouido-dong, Yeongdeungpo-gu, Seoul 150-721 (KR).

[KR/KR]; LG Institute, Hogue 1(il)-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **LEE, Young Seob** [KR/KR]; LG Institute, Hogue 1(il)-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **KIM, So Yeon** [KR/KR]; LG Institute, Hogue 1(il)-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR).

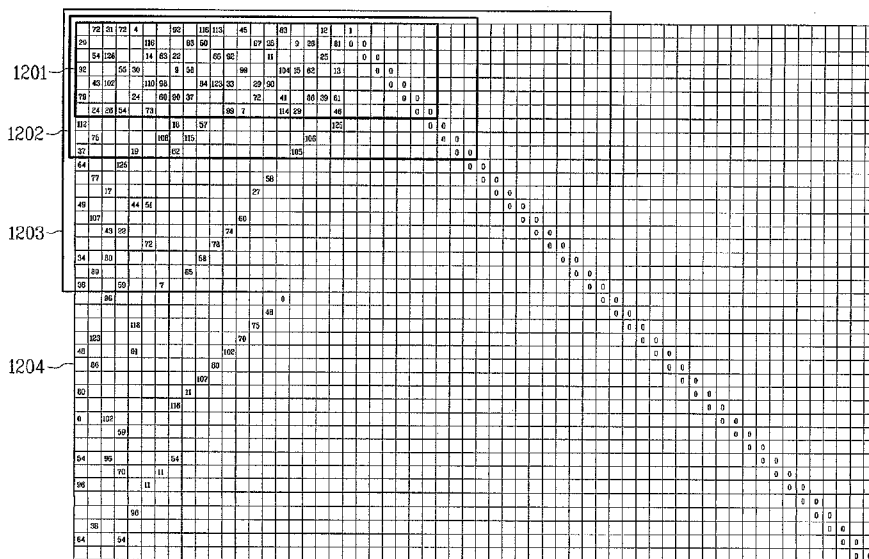
- (74) Agents: **KIM, Yong In** et al.; KBK& Associates, 15th Floor, YoSam-Building, 648-23 Yeoksam-dong, Kangnam-gu, Seoul 138-748 (KR).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, 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, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, 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), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **CHUNG, Ji Wook** [KR/KR]; LG Institute, Hogue 1(il)-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **OH, Min Seok** [KR/KR]; LG Institute, Hogue 1(il)-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **CHO, Ki Hyoung** [KR/KR]; LG Institute, Hogue 1(il)-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **SEOK, Ji Ae**

[Continued on next page]

(54) Title: METHOD OF ENCODING/DECODING USING LOW DENSITY CHECK MATRIX

FIG. 11B



(57) Abstract: A method of encoding data using a parity check matrix, a method of decoding encoded data, and a data retransmission method using the same. A data retransmission method in a communication system includes transmitting a codeword encoded by a first parity check matrix (1201) corresponding to a first coding rate, among at least two parity check matrixes (1202, 1203) corresponding to different coding rates, receiving NACK from the receiver in response to the codeword, and transmitting parity bits encoded by some of the second parity check matrix (1202) corresponding to a second coding rate, among the at least two parity check matrixes (1202, 1203) to the receiver.

WO 2007/145487 A3



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:

11 June 2009

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 2007/002921

A. CLASSIFICATION OF SUBJECT MATTER IPC ⁸ : H03M 13/11 (2006.01) 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 ⁸ : H03M		
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) EPODOC, WPI, NPL, ESPACENET		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006/011744 A2 (LG ELECTRONICS INC.) 2 February 2006 (02.02.2006) <i>Abstract, page 4, line 4 - page 7, line 3</i>	1-28
	--	
A	EP 1 524 771 A1 (SONY CORP.) 20 April 2005 (20.04.2005) <i>Abstract, columns 0056 - 0090</i>	1-28
	--	
A	US 2004/0098659 A1 (Bjerke et al.) 20 May 2004 (20.05.2004) <i>Whole document</i>	1-28

<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
<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>		
Date of the actual completion of the international search 16 February 2009 (16.02.2009)		Date of mailing of the international search report 07 April 2009 (07.04.2009)
Name and mailing address of the ISA/AT Austrian Patent Office Dresdner Straße 87, A-1200 Vienna Facsimile No. +43 / 1 / 534 24 / 535		Authorized officer ERDÖS György Telephone No. +36 / 1 / 474-5918

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR 2007/002921

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO A 2006011744		CN A 101305521	2008-11-12
		US A1 2008270877	2008-10-30
		JP T 2008508776T	2008-03-21
		EP A2 1782540	2007-05-09
		KR A 20060013197	2006-02-09
		KR A 20060012110	2006-02-07
EP A 1524771		KR A 20060014020	2006-02-14
		US A1 2006015791	2006-01-19
		CN A 1698272	2005-11-16
		WO A1 2004107585	2004-12-09
		EP A1 1524771	2005-04-20
US A 2004098659		AT T 411647T	2008-10-15
		KR A 20050074621	2005-07-18
		MX A PA05005308	2005-08-16
		JP T 2006506905T	2006-02-23
		CN A 1714512	2005-12-28
		WO A1 2004047307	2004-06-03