

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
23 December 2004 (23.12.2004)

PCT

(10) International Publication Number
WO 2004/112252 A3

(51) International Patent Classification⁷: **H03M 13/11**,
13/15

Yeongtong-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do
443-815 (KR).

(21) International Application Number:
PCT/KR2004/001433

(74) Agent: **JEONG, Hong-sik**; 8Fl., Daelim Bldg., 1600-3,
Seocho-dong,, Seocho-gu, Seoul 137-877 (KR).

(22) International Filing Date: 16 June 2004 (16.06.2004)

(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, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,
MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/478,342 16 June 2003 (16.06.2003) US
60/495,873 19 August 2003 (19.08.2003) US
10-2003-0067522
29 September 2003 (29.09.2003) KR

(71) Applicant (for all designated States except US): **SAM-
SUNG ELECTRONICS CO., LTD.** [KR/KR]; 416, Mae-
tan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 442-742
(KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CHANG,
Yong-deok** [KR/KR]; 105-705, Dongsuwon LG Vil-
lage, Mangpo-dong, Paldal-gu, Suwon-si, Gyeonggi-do
443-706 (KR). **PARK, Sung-woo** [KR/KR]; 206, 1051-9,

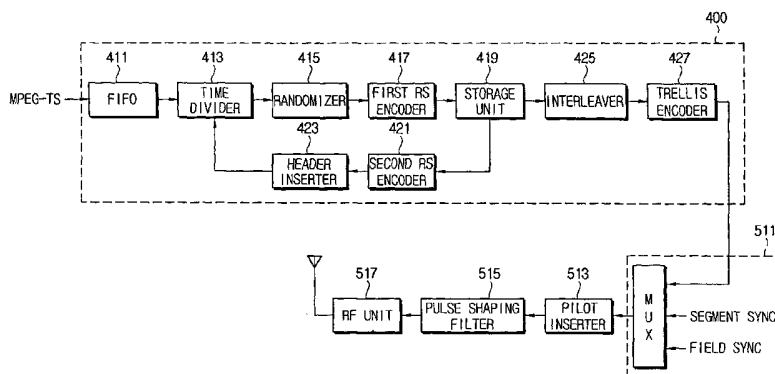
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IT, LU, MC, 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).

Published:

— with international search report

[Continued on next page]

(54) Title: DIGITAL TRANSMITTER/RECEIVER SYSTEM HAVING A ROBUST ERROR CORRECTION CODING/DECOD-
ING DEVICE AND ERROR CORRECTION CODING/DECODING METHOD THEREOF



(57) Abstract: A digital transmitter/receiver system having a strong error correction coding/decoding device and an error correction coding/decoding method thereof can guarantee a receiving performance even in an inferior channel environment. The error correction coding device for the digital transmitter system includes a time divider for dividing field data composed of L packets into N data packets and (L-N) parity packets, a first RS (Reed-Solomon) encoder for adding parities of a predetermined number of bytes to the data packets, respectively, a storage unit for storing the data packets having the parities of the predetermined number of bytes added thereto, and a second RS encoder for generating the parity packets corresponding to the stored data packets. Also, the error correction decoding device for the digital receiver system includes a first RS decoder for correcting errors in a horizontal direction of the field data using the parities of the predetermined number of bytes included in the L packets, a storage unit for storing the error-corrected data packets, and a second RS decoder for correcting errors in a vertical direction of the field data using the parity packets. Thus, the error correction can be strongly performed using the parities existing in the horizontal and vertical directions with respect to the field data.



WO 2004/112252 A3



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

17 February 2005

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

International application No.
PCT/KR2004/001433**A. CLASSIFICATION OF SUBJECT MATTER****IPC7 H03M 13/11, H03M 13/15**

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)

IPC7 H03M 13/11 H04N 7/167 G11B 7/085 H04N 7/50 B07R 31/08 H03M 13/35 H04N 7/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
KOREAN PATENTS AND APPLICATIONS FOR INVENTIONS SINCE 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ "TRANSMIT*" "RECEIV*" "ROBUST*" "ERROR*" "CORRECT*" "REED*" "SOLOMON*" "STREAM"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,430,159 B1 (CISCO SYSTEMS CANADA CO.) 06 AUGUST 2002 see the whole document	1, 8, 15, 20, 25
A	US 6,404,817 B1 (LSI LOGIC CO.) 11 JUNE 2002 see the whole document	1, 8, 15, 20, 25
A	EP 0 996 292 A1 (LUCENT INC) 26 APRIL 2000 see the whole document	1, 8
A	US 6,317,462 B1 (LUCENT INC.) 13 NOVEMBER 2001 see the whole document	1, 8
A	US 2001/0053225 A1 (SOFER & HAROUN, L.L.P.) 20 DECEMBER 2001 see the whole document	1, 8

☐ 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 application or patent 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 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

29 NOVEMBER 2004 (29.11.2004)

Date of mailing of the international search report

29 NOVEMBER 2004 (29.11.2004)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

SEO, Hawthorne

Telephone No. 82-42-481-5670

