



(51) International Patent Classification:
G10L 19/00 (2006.01)

(21) International Application Number:
PCT/KR2012/002738

(22) International Filing Date:
11 April 2012 (11.04.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/474,140 11 April 2011 (11.04.2011) US
13/443,204 10 April 2012 (10.04.2012) US
10-2012-0037625 11 April 2012 (11.04.2012) KR

(71) Applicant (for all designated States except US): **SAM-SUNG ELECTRONICS CO., LTD.** [KR/KR]; 416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-742 (KR).

(72) Inventors: **SUNG, Ho Sang**; No. 521-1104, Samsung 5-cha Apt., Pungdeokcheon 2-dong, Suji-gu, Yongin-si, Gyeonggi-do 448-785 (KR). **GREER, Steven Craig**; 3201 Toler Road, Rowlett, TX 75089 (US).

(74) Agent: **MUHANN PATENT & LAW FIRM**; 2, 5, 6th Floor, Myeonglim Building, 51-8 Nonhyeon-dong, Gangnam-gu, Seoul 135-814 (KR).

(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, CL, 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, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

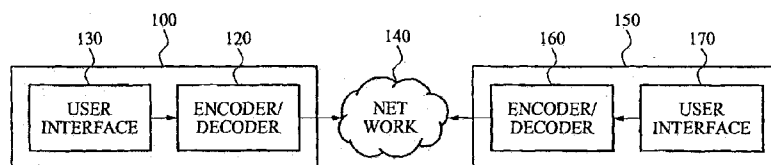
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

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

(88) Date of publication of the international search report:
14 March 2013

(54) Title: FRAME ERASURE CONCEALMENT FOR A MULTI-RATE SPEECH AND AUDIO CODEC



(57) Abstract: An audio coding terminal and method is provided. The terminal includes a coding mode setting unit to set a mode of operation, from plural modes of operation, for coding by a codec of input audio data, and the codec configured to code the input audio data based on the set mode of operation such that when the set mode of operation is a high frame erasure rate (FER) mode of operation the codec codes a current frame of the input audio data according to one frame erasure concealment (FEC) mode of one or more FEC modes. Upon the coding mode setting unit setting the mode of operation to be the High FER mode of operation, the coding mode setting unit selects the one FEC mode, from the one or more FEC modes predetermined for the High FER mode of operation, to control the codec based on an incorporating of redundancy within a coding of the input audio data or as separate redundancy information separate from the coded input audio according to the selected one FEC mode.



A. CLASSIFICATION OF SUBJECT MATTER**G10L 19/00(2006.01)i**

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: G10L 19/00; H03M 13/05; G06F 11/10; G10L 19/04; G10L 13/06; G10L 13/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: codec, FEC, FER, and EVS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2011-0022924 A1 (MALENOVSKY, V. et al.) 27 January 2011 See Abstract; Paragraphs [0001]-[0120]; Claims 1-41; Figures 1-7.	1-71
A	US 2005-0154584 A1 (JELINEK, M. et al.) 14 July 2005 See Abstract; Paragraphs [0001]-[0235]; Claims 1-177; Figures 1-7.	1-71
A	US 2006-0173687 A1 (SPINDOLA, S.) 03 August 2006 See Abstract; Paragraphs [0002]-[0039]; Claims 1-38; Figures 1-4.	1-71
A	US 2007-0271101 A1 (SATO, K. et al.) 22 November 2007 See Abstract; Paragraphs [0001]-[0208]; Claims 1-16; Figures 1-14.	1-71



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

27 NOVEMBER 2012 (27.11.2012)

Date of mailing of the international search report

28 NOVEMBER 2012 (28.11.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, JU SIK

Telephone No. 82-42-481-8265



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2012/002738

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011-0022924 A1	27.01.2011	CN 101765879 A	30.06.2010
		EP 2160733 A1	10.03.2010
		EP 2160733 A4	21.12.2011
		JP 2009-541815 A	26.11.2009
		JP 2009-541815 T	26.11.2009
		JP 2010-530078 A	02.09.2010
		JP 2010-530078 T	02.09.2010
		US 2011-0173004 A1	14.07.2011
		WO 2008-151408 A1	18.12.2008
		WO 2008-151408 A8	18.12.2008
		WO 2008-151408 A8	05.03.2009
		WO 2008-151410 A1	18.12.2008
US 2005-0154584 A1	14.07.2005	AU 2003-233724 A1	19.12.2003
		AU 2003-233724 B2	16.07.2009
		BR 0311523 A	08.03.2005
		CA 2388439 A1	30.11.2003
		CA 2483791 A1	11.12.2003
		CN 100338648 C	19.09.2007
		CN 100338648 C0	19.09.2007
		CN 1659625 A	24.08.2005
		EP 1509903 A1	02.03.2005
		JP 04-658596 B2	07.01.2011
		JP 2005-534950 A	17.11.2005
		JP 2005-534950 T	17.11.2005
		JP 4658596 B2	23.03.2011
		KR 10-1032119 B1	09.05.2011
		MX PA04011751 A	08.06.2005
		NO 20045578 A	22.02.2005
		NZ 536238 A	30.06.2006
		RU 2004138286 A	10.06.2005
		RU 2325707 C2	27.05.2008
		US 7693710 B2	06.04.2010
		WO 03-102921 A1	11.12.2003
		ZA 200409643 A	28.06.2006
US 2006-0173687 A1	03.08.2006	CN 101147190 A0	19.03.2008
		CN 101147190 B	29.02.2012
		EP 1859440 A1	28.11.2007
		JP 2008-529423 A	31.07.2008
		JP 2008-529423 T	31.07.2008
		JP 2012-098740 A	24.05.2012
		KR 10-0956522 B1	07.05.2010
		KR 10-2007-0099055 A	08.10.2007
		MY 144724 A	31.10.2011
		TW 200703234 A	16.01.2007
		US 7519535 B2	14.04.2009
		WO 2006-083826 A1	10.08.2006

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2012/002738

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0271101 A1	22.11.2007	CA 2567788 A1	01.12.2005
		CN 1957399 A	02.05.2007
		CN 1957399 B	15.06.2011
		CN 1957399 C0	02.05.2007
		DE 602005026802 D1	21.04.2011
		EP 1750254 A1	07.02.2007
		EP 1750254 A4	03.10.2007
		EP 1750254 B1	09.03.2011
		JP 04-445328 B2	22.01.2010
		JP 2005-338200 A	08.12.2005
		JP 4445328 B2	07.04.2010
		KR 10-2007-0028373 A	12.03.2007
		US 8255210 B2	28.08.2012
		WO 2005-114655 A1	01.12.2005