

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
2 February 2012 (02.02.2012)

PCT

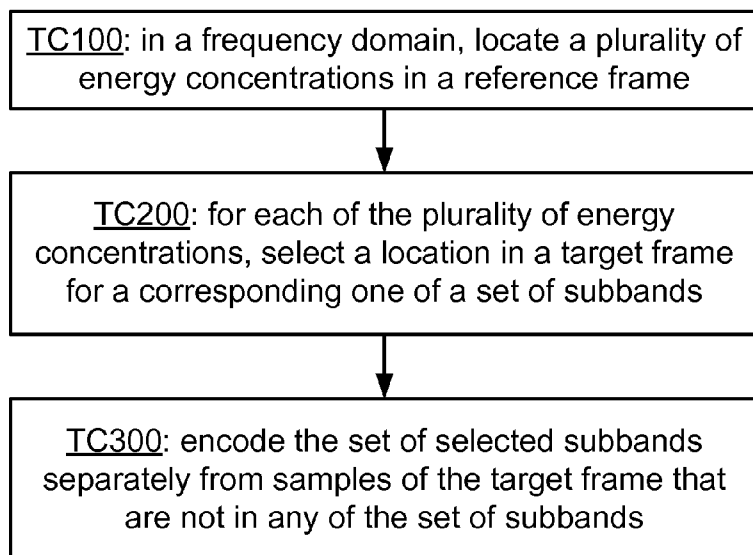
(10) International Publication Number  
WO 2012/016128 A3

- (51) International Patent Classification: *G10L 11/04* (2006.01) *G10L 19/08* (2006.01)
- (21) International Application Number: PCT/US2011/045865
- (22) International Filing Date: 29 July 2011 (29.07.2011)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
 

61/369,662	30 July 2010 (30.07.2010)	US
61/369,705	31 July 2010 (31.07.2010)	US
61/369,751	1 August 2010 (01.08.2010)	US
61/374,565	17 August 2010 (17.08.2010)	US
61/384,237	17 September 2010 (17.09.2010)	US
61/470,438	31 March 2011 (31.03.2011)	US
13/193,542	28 July 2011 (28.07.2011)	US
- (71) Applicant (for all designated States except US): **QUALCOMM Incorporated** [US/US]; Attn: International IP Administration, 5775 Morehouse Drive, San Diego, California 92121 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **KRISHNAN, Venkatesh** [IN/US]; 5775 Morehouse Drive, San Diego, California 92121 (US). **RAJENDRAN, Vivek** [IN/US]; 5775 Morehouse Drive, San Diego, California 92121 (US). **DUNI, Ethan R.** [US/US]; 5775 Morehouse Drive, San Diego, California 92121 (US).
- (74) Agent: **AUSTIN, Wesley L.**; Austin Rapp & Hardman, 170 South Main Street, Suite 735, Salt Lake City, Utah 84101 (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, 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, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG,

[Continued on next page]

(54) Title: SYSTEMS, METHODS, APPARATUS, AND COMPUTER-READABLE MEDIA FOR DEPENDENT-MODE CODING OF AUDIO SIGNALS



(57) Abstract: A scheme for coding a set of transform coefficients that represent an audio-frequency range of a signal uses information from a reference frame that describes a previous frame of the signal to determine frequency-domain locations of regions of significant energy in a target frame of the signal.

FIG. 1A      ↑ method MC100

WO 2012/016128 A3



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))*
- *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))*

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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

5 April 2012

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2011/045865

**A. CLASSIFICATION OF SUBJECT MATTER**  
 INV. G10L11/04 G10L19/08  
 ADD.  
 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)  
 G10L  
 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, INSPEC, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/312758 A1 (KOISHIDA KAZUHITO [US] ET AL) 18 December 2008 (2008-12-18)	1-4, 8-10,13, 14, 16-19, 23-25, 28-31, 35-37,40
Y	paragraphs [0013] - [0019], [0046], [0092], [0095], [0100] - [0110] abstract  -----  -/--	5-7,11, 12,15, 20-22, 26,27, 32-34, 38,39

Further documents are listed in the continuation of Box C.  See patent family annex.

\* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document 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>"&amp;" document member of the same patent family</p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Date of the actual completion of the international search  7 February 2012	Date of mailing of the international search report  13/02/2012
----------------------------------------------------------------------------------	----------------------------------------------------------------------

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Bensa, Julien
----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2011/045865

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	BARTKOWIAK ET AL: "A Unifying Approach to Transform and Sinusoidal Coding of Audio", AES CONVENTION 124; MAY 2008, AES, 60 EAST 42ND STREET, ROOM 2520 NEW YORK 10165-2520, USA,	5,11,12, 15,20, 26,27, 32,38,39
A	1 May 2008 (2008-05-01), XP040508700, *Sections 2.2-4* figure 3	1,14,16, 28,40
Y	----- US 2009/234644 A1 (REZNIK YURIY [US] ET AL) 17 September 2009 (2009-09-17) paragraphs [0016], [0056] - [0060], [0067] -----	6,7,21, 22,33,34

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/045865

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008312758	A1	18-12-2008	NONE
US 2009234644	A1	17-09-2009	AU 2008316860 A1 30-04-2009
		CA 2701281 A1	30-04-2009
		CN 101836251 A	15-09-2010
		EP 2255358 A1	01-12-2010
		JP 2011501828 A	13-01-2011
		KR 20100085994 A	29-07-2010
		RU 2010120678 A	27-11-2011
		TW 200935402 A	16-08-2009
		US 2009234644 A1	17-09-2009
		WO 2009055493 A1	30-04-2009