(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 July 2011 (21.07.2011)

PCT

(10) International Publication Number
WO 2011/086067 A1

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

(21) International Application Number:
PCT/EP2011/050275

(22) International Filing Date:
11 January 2011 (11.01.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/294,357 12 January 2010 (12.01.2010) US

(71) Applicant *(for all designated States except US)*: **FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.** [DE/DE]; Hansastraße 27c, 80686 München (DE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **FUCHS, Guillaume** [FR/DE]; Fuerther Straße 17, 91058 Erlangen (DE). **MULTRUS, Markus** [DE/DE]; Etzlaubweg 7, 90469 Nürnberg (DE). **RETTELBACH, Nikolaus** [DE/DE]; Spessartstraße 38, 90427 Nürnberg (DE). **SUBBARAMAN, Vignesh** [IN/DE]; Bayreutherstraße 35a, 91054 Erlangen (DE). **WEISS, Oliver** [DE/DE]; Peter-Henlein-Straße 45, 90459 Nürnberg (DE). **GAYER, Marc** [DE/DE]; Falkenauer Straße 3, 91058 Erlangen (DE). **WARMBOLD, Patrick** [DE/DE]; Mausdorf 50, 91448 Emskirchen (DE). **GRIEBEL, Christian** [DE/DE]; Ostendstr. 44, 90402 Nürnberg (DE).

(74) Agents: **BURGER, Markus** et al.; Postfach 246, 82043 Pullach (DE).

(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.

[Continued on next page]

(54) Title: AUDIO ENCODER, AUDIO DECODER, METHOD FOR ENCODING AND DECODING AN AUDIO INFORMATION, AND COMPUTER PROGRAM OBTAINING A CONTEXT SUB-REGION VALUE ON THE BASIS OF A NORM OF PREVIOUSLY DECODED SPECTRAL VALUES

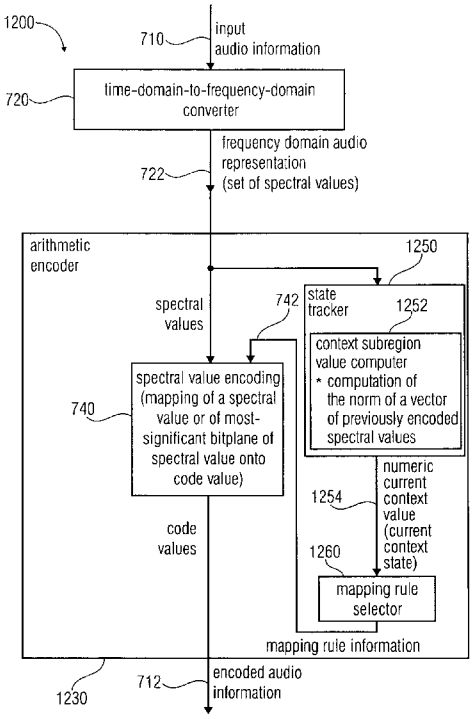

FIG 12

(57) Abstract: An audio decoder for providing a decoded audio information on the basis of an encoded audio information comprises an arithmetic decoder for providing a plurality of decoded spectral values on the basis of an arithmetically-encoded representation of the spectral values and a frequency-domain-to-time-domain converter for providing a time-domain audio representation using the decoded spectral values, in order to obtain the decoded audio information. The arithmetic decoder is configured to select a mapping rule describing a mapping of a code value onto a symbol code in dependence on a context state described by a numeric current context value. The arithmetic decoder is configured to determine the numeric current context value in dependence on a plurality of previously decoded spectral values. The arithmetic decoder is configured to obtain a plurality of context subregion values on the basis of previously decoded spectral values and to store said context subregion values. The arithmetic decoder is configured to derive a numeric current context value associated with one or more spectral values to be decoded in dependence on the stored context subregion values. The arithmetic decoder is configured to compute the norm of a vector formed by a plurality of previously decoded spectral values in order to obtain a common context subregion value associated with the plurality of previously decoded spectral values. An audio encoder uses a similar concept.

WO 2011/086067 A1

(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, 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))*