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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 April 2011 (28.04.2011)

PCT

(10) International Publication Number
WO 2011/048100 A1

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

(21) International Application Number:
PCT/EP2010/065727

(22) International Filing Date:
19 October 2010 (19.10.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/253,459 20 October 2009 (20.10.2009) 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]; Fürther Straße 17, 91058 Erlangen (DE). **SUBBARAMAN, Vignesh** [IN/DE]; Bayreutherstraße 35a, 91054 Erlangen (DE). **RETTELBACH, Nikolaus** [DE/DE]; Spessartstraße 38, 90427 Nürnberg (DE). **MULTRUS, Markus** [DE/DE]; Etzlaubweg 7, 90469 Nürnberg (DE). **GAYER, Marc** [DE/DE]; Falkenauer Straße 3, 91058 Erlangen (DE). **WARMBOLD, Patrick** [DE/DE]; Mausdorf 50, 91448 Emskirchen (DE). **GRIEBEL, Patrick** [DE/DE]; Ostendstraße 44, 90402 Nürnberg (DE). **WEISS, Oliver** [DE/DE]; Peter-Henlein-Straße 45, 90459 Nürnberg (DE).

(74) Agents: **BURGER, Markus** et al.; Schoppe, Zimmermann, Stöckeler, Zinkler & Partner, 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,

[Continued on next page]

(54) Title: AUDIO ENCODER, AUDIO DECODER, METHOD FOR ENCODING AN AUDIO INFORMATION, METHOD FOR DECODING AN AUDIO INFORMATION AND COMPUTER PROGRAM USING AN ITERATIVE INTERVAL SIZE REDUCTION

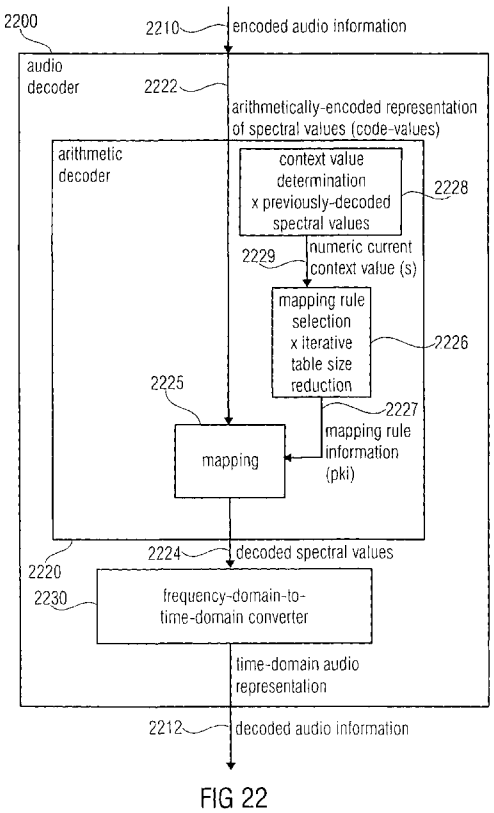

FIG 22

(57) Abstract: An audio decoder (2200) for providing a decoded audio information on the basis of an encoded audio information comprises an arithmetic decoder (2200) for providing a plurality of decoded spectral values (2224) on the basis of an arithmetically-encoded representation (2222) of the spectral coefficients. The audio decoder also comprises a frequency-domain-to-time-domain converter (2230) for providing a time-domain audio representation using the decoded spectral values (2224), in order to obtain the decoded audio information (2212). 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 numeric current context value describing a current context state. 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 evaluate at least one table using an iterative interval size reduction to determine whether the numeric current context value is identical to a table context value described by an entry of the table or lies within an interval described by entries of the table, and to derive a mapping rule index value describing a selected mapping table. An audio encoder also uses an iterative interval table size reduction.

WO 2011/048100 A1

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, 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))*