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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

[Continued on next page]

(54) Title: REDUCED COMPLEXITY CONVERTER SNR CALCULATION

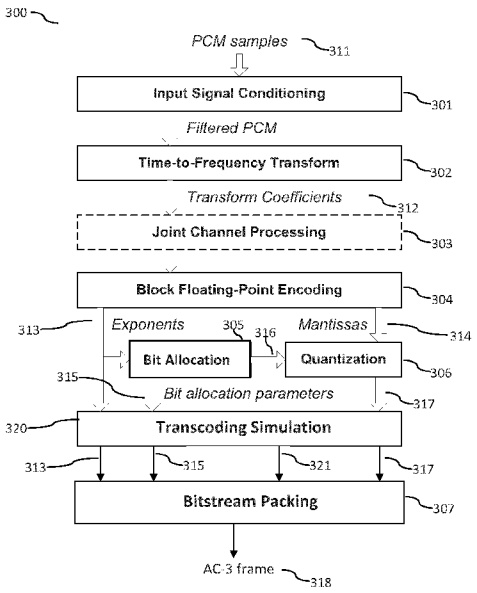

Fig. 3

(57) Abstract: The present document relates to audio encoding / decoding. In particular, the present document relates to a method and system for reducing the complexity of a bit allocation process used in the context of audio encoding / decoding. An audio encoder (300) configured to encode an audio signal according to a first audio codec system is described. The audio encoder (300) comprises a transform unit (302) configured to determine a set of spectral coefficients (312) based on the audio signal. Furthermore, the encoder (300) comprises a floating-point encoding unit (304) configured to determine a set of scale factors and a set of scaled values (314), based on the set of spectral coefficients (312); and to encode the set of scale factors to yield a set of encoded scale factors (313). In addition, the encoder (300) comprises a bit allocation and quantization unit (305, 306) configured to determine a total number of available bits for quantizing the set of scaled values (314), based on a first target data-rate and based on the number of bits used for the set of encoded scale factors (313); to determine a first control parameter (315) indicative of an allocation of the total number of available bits for quantizing the scaled values of the set of scaled values (314); and to quantize the set of scaled values (314) in accordance to the first control parameter (315) to yield a set of quantized scaled values (317). Furthermore, the encoder (300) comprises a transcoding simulation unit (320) configured to determine a second control parameter (321) based on the first control parameter (315); wherein the second control parameter (321) enables a transcoder to convert the first bitstream into a second bitstream at a second target data-rate; wherein the second bitstream accords to a second audio codec system different from the first audio codec system; and wherein the first bitstream comprises the second control parameter.

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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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))*

(88) Date of publication of the international search report:
10 July 2014

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2013/072961

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/072961

A. CLASSIFICATION OF SUBJECT MATTER
INV. G10L19/032 G10L19/16
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 H04N

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 practicable, search terms used)
EPO-Internal, 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 2004/165667 A1 (LENNON BRIAN TIMOTHY [US] ET AL) 26 August 2004 (2004-08-26)	1,4, 17-24, 28,30
A	the whole document	25-27, 29,32

X	ANDERSEN ROBERT L ET AL: "Introduction to Dolby Digital Plus, an Enhancement to the Dolby Digital Coding System", AES CONVENTION 117; OCTOBER 2004, AES, 60 EAST 42ND STREET, ROOM 2520 NEW YORK 10165-2520, USA, 1 October 2004 (2004-10-01), XP040506945, cited in the application	25-27, 29,32
A	abstract sections 1-3, 6	1-24,28, 30,31

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[X] Further documents are listed in the continuation of Box C.

[X] 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 another 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	Date of mailing of the international search report
13 May 2014	21/05/2014

Name and mailing address of the ISA/	Authorized officer
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Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	"Digital Audio Compression (AC-3, Enhanced AC-3) Standard; ETSI TS 102 366", IEEE, LIS, SOPHIA ANTIPOLIS CEDEX, FRANCE, vol. BC, no. V1.1.1, 1 February 2005 (2005-02-01), XP014027340, ISSN: 0000-0001 page 35 page 89 - page 91	1-32
A	US 2006/259168 A1 (GEYERSBERGER STEFAN [DE] ET AL) 16 November 2006 (2006-11-16) abstract paragraph [0014] - paragraph [0015] paragraph [0048] - paragraph [0053] paragraph [0073] - paragraph [0089]	25-27, 29,32
A	MANSOUR M F: "A Transcoding System for Audio Standards", IEEE TRANSACTIONS ON MULTIMEDIA, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 14, no. 5, 1 October 2012 (2012-10-01), pages 1381-1389, XP011485755, ISSN: 1520-9210, DOI: 10.1109/TMM.2012.2197191 abstract sections I, III (sub-section F), V	25-27, 29,32

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2013/072961

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		WO 2005013491 A2	10-02-2005

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-24, 28, 30, 31

   Apparatus and method of encoding an audio signal, wherein a second control parameter is generated and included in the bitstream alongside a first control parameter.

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2. claims: 25-27, 29, 32

   Apparatus and method of transcoding an audio bitstream from one format into another, wherein first and second control parameters are used to steer the transcoding process.
