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**Datasheet for the decision  
of 22 July 2011**

**Case Number:** T 1584/08 - 3.5.02

**Application Number:** 00108532.3

**Publication Number:** 1047198

**IPC:** H03M 7/40

**Language of the proceedings:** EN

**Title of invention:**

Encoder with optimally selected codebook

**Applicant:**

Panasonic Corporation

**Opponent:**

-

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 56

EPC R. 103(1)(a)

**Relevant legal provisions (EPC 1973):**

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**Keyword:**

"Inventive step - no"

"Substantial procedural violation - no"

**Decisions cited:**

T 0578/06

**Catchword:**

-



Case Number: T 1584/08 - 3.5.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.02  
of 22 July 2011

**Appellant:** Panasonic Corporation  
1006, Oaza Kadoma  
Kadoma-shi  
Osaka 571-8501 (JP)

**Representative:** Kügele, Bernhard  
Novagraaf International SA  
Chemin de l'Echo 3  
CH-1213 Onex (CH)

**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 7 April 2008  
refusing European patent application  
No. 00108532.3 pursuant to Article 97(2) EPC.

**Composition of the Board:**

**Chairman:** M. Ruggiu  
**Members:** R. Lord  
E. Lachacinski

## Summary of Facts and Submissions

I. This is an appeal of the applicant against the decision of the examining division to refuse European patent application No. 00 108 532.3. The reason given for the refusal was that the subject-matter of claim 1 filed with letter dated 27 July 2006 did not involve an inventive step according to Article 56 EPC.

II. The following documents cited during the procedure before the first instance are relevant for this decision:

D1: EP 0 542 474 A;

D2: M Bosi et al, "ISO/IEC MPEG-2 Advanced Audio Coding", Journal of the Audio Engineering Society, vol. 45, no. 10, pages 789 to 812, October 1997;

D4: International Standard ISO/IEC 13818-7, First Edition, 1 December 1997; and

R1: International Standard ISO/IEC 13818-7, Second Edition, 2003, pages 20, 65, 66, 171, 174 and 175.

Additionally, with a reply to the board's summons to oral proceedings, dated 20 June 2011, the appellant filed a copy of the standard document number 3GPP TS 26.411 V6.0.0 (2005-03), together with three pages of explanatory figures.

III. Oral proceedings before the board took place on 22 July 2011. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 35 filed with letter dated 27 July 2006. Furthermore, the appellant requested that the appeal fee be refunded.

IV. Claim 1 reads as follows:

"An audio encoder (10), comprising:

a number G of storage sections (100, 101, 102, 103), G being an integer equal to or greater than 1, storing a number G of groups of data, each group of data representing a scale factor band;

a Huffman codebook selection section (108) for selecting one of a number H of Huffman codebooks (104, 105, 106, 107), H being an integer greater than 1, for each of the groups of data stored in the respective storage sections, each of the Huffman codebooks having a codebook number;

a number G of Huffman encoding sections (109, 110, 111, 112), each of the Huffman encoding sections Huffman-encoding a corresponding one of the G groups of data by using one of the Huffman codebooks which is selected by the Huffman codebook selection section (108) for the one group of data; and

a codebook number encoding section (113) for encoding the codebook number of each Huffman codebook selected by the Huffman codebook selection section (108),

characterized in that:

the Huffman codebook selection section (108) includes a code length calculation section (114, 115) for calculating a code length which would result from a Huffman encoding operation of each of the G groups of data using each Huffman codebook, and a control section (116) for selecting one of the Huffman codebooks which is suitable for the group of data based on the code length calculated by the code length calculation section (114, 115);

the code length calculation section (114, 115) is capable of simultaneously obtaining code lengths for a plurality of Huffman codebooks; and

when the Huffman codebook selected is an unsigned codebook, a number of bits required for sign information has previously been added to the code length calculated by the code length calculation section."

V. The appellant essentially argued as follows:

As described in the introductory part of the application, the ISO/IEC 13818-7 standard (AAC standard) required that the codebook giving the smallest code length be selected, and that, when using unsigned codebooks, the number of sign bits be calculated each time such a book is selected, so that the skilled person was not faced with the problem of how to implement the codebook selection section, and would therefore have had no reason to consult D1.

As was described in the originally filed application (from page 7, line 29 to page 8, line 6), starting from the acknowledged prior art, the skilled person had been faced with the problem of how to reduce the computational overhead associated with the selection of which codebook to use for encoding the data, in particular for unsigned codebooks, and the invention solved that problem by pre-calculating the number of sign bits and integrating this into the code length table. Since D1 made no mention of sign bits, or indeed of unsigned data books, it was of no relevance to that problem.

The examining division interpreted D2 incorrectly in arguing that it disclosed calculating the sign bits in advance.

The examining division committed a substantial procedural violation, because they did not present evidence to support their argument that the standard did not require calculation of the number of sign bits each time the code length was calculated for an unsigned codebook, beyond stating that D2 does not disclose this feature. Since document D2 was merely a summary of the standard, it was not valid to draw any conclusion from the absence of any relevant teaching in that document. In this respect, the appellant referred to the case law of the boards of appeal relating to burden of proof, in particular to paragraph 21 of the decision T 0578/06 of 29 June 2011.

The document R1 and the documents filed with his letter dated 20 June 2011 concerning the related 3GPP TS 26.411 V6.0.0 (2005-03) standard supported the above argumentation relating to the content of the AAC standard.

## **Reasons for the Decision**

1. The appeal is admissible.
2. *Novelty*
  - 2.1 The document D2 describes the Advanced Audio Coding (AAC) method of the ISO/IEC 13818-7 standard, and thus implies the use of an audio encoder according to the

pre-characterising portion of the present claim 1, as the appellant has acknowledged.

2.2 In particular, the document D2 describes in the first paragraph of the section "6.4 Huffman Coding" on page 802 that when selecting the codebook to be used "*The best fit is always chosen*", thus implying that the codebook with the smallest code length is selected. Document D2 does not however describe what circuitry should be used for the codebook selection, so that the definition of that circuitry in the characterising portion of the present claim 1 results in the subject-matter of that claim being new within the meaning of Article 54 EPC.

3. *Inventive step*

3.1 Given this disclosure of D2, the board sees no reason to deviate from the technical problem identified in the decision under appeal, namely that of how to implement the AAC so as to provide a detailed Huffman encoding circuitry capable of selecting the codebook providing the variable length code having the smallest code length.

3.2 Since the person skilled in the art is aware that variable length coding, of which Huffman coding is the most common example, is used for coding different types of data (e.g. text, audio and video), he would consult the technical fields of those other types of data in order to find a solution to this problem. He would thus become aware of D1, which describes circuitry for a variable length encoder specifically designed for minimising the code length by selecting a codebook from

a set of codebooks (see in particular Figs. 1A and 10 and page 7, lines 30 to 37). He would moreover recognise immediately that the variable length codes described in that document are in fact Huffman codes. The teaching of this document is therefore relevant for the solution of the technical problem stated above.

3.3 The skilled person would learn from D1 that the codebook selection section can be implemented by a circuit comprising a code length calculation section which calculates the code length which would result from encoding each of the groups of data (elements 354, 356, 358, 360, 372, 374, 376 and 378 in Fig. 10 of D1) and a control section which selects the codebook for which the calculated code length is smallest (element 380, and see also page 7, line 36). The skilled person would moreover note that the parallel structure of the code length calculation sections depicted in Fig. 10 of D1 strongly suggests that the code length calculations for the different codebooks should be carried out simultaneously. Given this teaching, the board concludes that it would be obvious to implement the encoder of D2 in a manner such that it would also include the technical features of the first two paragraphs of the characterising portion of the present claim 1.

3.4 The board acknowledges that, as the appellant has argued, document D1 does not mention the specific case of unsigned codebooks. However, the document D2 already describes that the majority of the codebooks used in the AAC encoding method are unsigned (see section 6.4, as referred to above). Thus, when deciding how to implement the encoder of D2, the skilled person would



automatically be faced with the question of how to carry out the code length calculation for these codebooks. Taking into account firstly that D2 describes that when the encoding procedure uses an unsigned codebook, the sign bit for each non-zero coefficient is appended to the codeword (section 6.4, last sentence of first paragraph), and that the skilled person is aware both from his general knowledge relating to Huffman coding and from the specific teaching of D1, page 7, line 36, that the purpose of the codebook selection is to minimise the number of bits to be transmitted, the skilled person would consider it to be obvious that the number of these sign bits should be added to the calculated code length before the resultant code length is used to select the codebook having the smallest code length. Not to do so would be clearly contrary to the principle of Huffman coding and the explicit teaching of D1. The board therefore concludes that when implementing the encoder of D2, the person skilled in the art would consider it obvious to handle unsigned codebooks in the manner defined in the final paragraph of the present claim 1.

3.5 Hence, the board concludes that the subject-matter of the present independent claim 1 does not involve an inventive step according to Article 56 EPC in the light of the teaching of document D2 combined with the common general knowledge of the skilled person and the document D1.

3.6 The appellant's main counter-argument is that the above argumentation disregards the teaching of the introductory part of the present application that the ISO/IEC 13818-7 standard required that the codebook

giving the smallest code length be selected, and that, when using unsigned codebooks, the number of sign bits be calculated each time such a codebook is selected, so that the skilled person is not faced with the problem of how to implement the codebook selection section, and would therefore have no reason to consult D1. The board does not find this argument convincing, for the following reasons:

- The standard does not require such a calculation of the number of sign bits, because it does not specify how the selection from among the appropriate codebooks should be carried out. The appellant has argued that such a conclusion could not be drawn from D2, because that document is only a description of the standard in summary form, so that the absence of any description of the codebook selection procedure in that document did not prove that the description of the present application was wrong in this respect. However, the board observes that the conclusion reached on the basis of D2 is confirmed by inspection of D4 (i.e. the actual standard document). Thus, at least in this respect, the document D2 accurately reflects the content of the standard which it describes.
- The appellant has argued that the examining division interpreted D2 incorrectly when arguing that it disclosed calculating the sign bits in advance. The board's understanding of the division's arguments is that they did not argue that this was the case, but instead only argued that D2 disclosed that during the encoding process the sign bits are appended to the codeword, which the board considers is consistent not only with the teaching of the passage of D2 cited by the division,

but also with D4. The appellant's argument appears to confuse the encoding process (which is described in D2 and D4) with the calculation of the number of sign bits during the codebook selection procedure, which the division specifically argued was not disclosed in D2.

- The appellant has referred to certain passages of the document R1 (selected pages of a later version of the same standard) as providing evidence of the calculation of the number of sign bits as described in the introductory part of the application. However, as was argued in detail in section II.4 of the decision under appeal, the cited sections of R1 relate to the encoding process itself, not to the selection of the codebook to be used in that process. The board observes that this conclusion is confirmed by comparison with the corresponding passages in D4. That the sign bits are calculated and appended to the codeword as part of the encoding process is of no relevance to the point at issue, since this process is already described in D2 (see paragraph 3.4 above).
- Although the board explicitly referred to the standard document D4 in the communication accompanying the summons to oral proceedings, and during the oral proceedings invited the appellant to indicate the passages of that document supporting his line of argumentation, he has not done so, but has instead cited the document 3GPP TS 26.411 V6.0.0 (2005-03). The board observes that this document was published almost six years after the priority date of the present application, so that merely for this reason it seems not be relevant to the question of inventive step.

Moreover, the point at issue is that of whether the ISO/IEC 13818-7 standard defines the calculation of the number of sign bits when selecting the codebook to be used. It is not apparent to the board how an indication that those working on a different standard might have used such a calculation can be of any relevance to this point.

- The question as to whether the calculated number of sign bits is integrated into the code length table is not relevant for the assessment of inventive step in the subject-matter of the present claim 1, since the claim does not define this feature, and indeed makes no mention at all of code length tables.

The board therefore concludes that the examining division was correct in concluding that the ISO/IEC 13818-7 standard does not specify how the codebook selection should be implemented, and was thus also correct in indicating that the skilled person wishing to implement that standard would have taken into consideration the teaching of document D1.

#### 4. *Other matters*

- 4.1 The appellant has argued that in reaching its conclusion that, contrary to what is stated in the summary of the prior art in the present application, the ISO/IEC 13818-7 standard does not require that the number of sign bits be calculated and added to the code length individually in each operation of the code length calculation section, the examining division made a substantial procedural violation. This argument is based on the appellant's contention that, since the document D2 represents only a summary of the standard,

this summary giving no details of the codebook selection procedure, and since the application clearly taught that the standard did contain such a requirement, the burden of proof lay on the division to establish that such a requirement was not present in the full standard. In this context he referred to the decision T 0578/06, paragraph 21 of which indicates that the burden of proof for an allegation lies with the person raising that allegation.

- 4.1.1 The board observes in this context that the prior art described in the application which is at issue is specified in the application as being the MPEG2-AAC standard defined in ISO/IEC 13818-7. The board notes moreover that the document D2 is a description of the main features of that standard (as stated for instance in the abstract of that document), which appears to have been written by a group of authors who were involved in the preparation of the standard. Furthermore, document D2 appears to constitute provisions of the standard itself (i.e. of document D4, which is the first edition of ISO/IEC 13818-7, see in particular page 3, section 2 "Normative references", which refers to D2). As such, the board considers that the document D2 represented a reasonable basis to use for a *prima facie* assessment of whether the prior art acknowledgement in the application was correct, and that the objection raised by the examining division in this respect cannot therefore be considered as being "*mere opinion*", without proof, as argued by the appellant. As a consequence, the board considers that when the division raised this objection, they did so in a manner which met the established criteria for burden

of proof (i.e. those referred to in the decision cited by the appellant).

4.1.2 Moreover, the board considers that, given the nature of the document D2 as described above, arguments based on that document should be assumed to be correct unless it could be demonstrated that the teaching of D2 was inconsistent with the standard (i.e. document D4) itself. By raising this objection in the annex to the summons to oral proceedings, the examining division gave the appellant (then applicant) the opportunity to demonstrate such an inconsistency. This he attempted to do by presenting arguments based on the document R1, which is understood to comprise excerpts from a later version of the standard. From the minutes of the oral proceedings before the examining division, it is apparent that those arguments were discussed in detail at those oral proceedings. In section II. 4 of the decision under appeal the examining division presented detailed reasons, based on that discussion, as to why they were not convinced by those arguments.

4.1.3 For the reasons indicated in the previous two paragraphs, the board concludes that the manner in which the examining division addressed the contradiction between D2 and the summary of the prior art in the present application did not involve any procedural violation.

4.2 According to Rule 103(1)(a) EPC the appeal fee can be reimbursed only if the board deems the appeal to be allowable. For the reasons indicated above, that condition does not apply in the present case. The appeal fee cannot therefore be reimbursed.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed

The Registrar:

The Chairman:

C. Moser

M. Ruggiu