Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 19 March 2013

Case Number: T 0430/09 - 3.5.04

Application Number: 05002538.6

Publication Number: 1580747

IPC: G11B20/10, G11B27/034

Language of the proceedings: EN

Title of invention:
Audio information processing method, audio information processing apparatus, and method of recording audio information on recording medium

Applicant:
JVC KENWOOD Corporation

Headword:

Relevant legal provisions:
EPC 1973 Art. 83, 84, 111(1)
EPC 1973 R. 27(1)(e)
RPBA Art. 13(1)

Keyword:
Sufficiency of disclosure

Decisions cited:
G 0010/93

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0430/09 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 19 March 2013

Appellant: (Applicant)	JVC KENWOOD Corporation 12, Moriya-cho 3-chome Kanagawa-ku Yokohama-shi Kanagawa 221-0022 (JP)
Representative:	Wagner & Geyer Partnerschaft Patent- und Rechtsanwälte Gewürzmühlstraße 5 80538 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 12 August 2008 refusing European patent application No. 05002538.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: F. Edlinger
Members: C. Kunzelmann
B. Müller

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse European patent application No. 05 002 538.6 under Article 97(2) of the European Patent Convention (EPC).

II. The application was refused on the ground that Article 83 EPC was not satisfied.

III. The applicant appealed and filed claims according to main and auxiliary requests with the statement of grounds of appeal.

IV. The board issued a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA), annexed to a summons to oral proceedings. In this communication the board indicated that it tended to agree with the appellant that the examining division appeared to have misinterpreted the essential features of the invention. Nevertheless, the board expressed doubts that claim 1 of the main request comprised the essential features highlighted by the appellant.

V. With a letter dated 25 February 2013 the appellant filed claims according to a main and an auxiliary request as well as an amended description and drawings.

VI. Oral proceedings before the board were held on 19 March 2013. During the oral proceedings the appellant's representative filed sets of amended claims and declared that he was prepared to adapt the description filed with the letter dated 25 February 2013 concerning the embodiments where trapezoidal waveform data were generated. The appellant's final request was that the

decision under appeal be set aside and that the case be remitted to the first instance on the basis of the claims of the "Sole Request" submitted in the oral proceedings and the description as filed with the letter dated 25 February 2013.

VII. Claim 1 of the "Sole Request" reads as follows:

"An audio information processing method comprising the steps of:
comparing audio information supplied from the outside every predetermined sample;
detecting maximal values and minimal values of waveforms of the audio information;
detecting the number of samples between two adjacent peaks of each maximal value and minimal value, the two peaks being a top-peak having a maximal value and an under-peak having a minimal value;
forming a high-hand component based at least in part on the number of samples detected in the above step,
wherein forming the high-band component comprises forming:
a first addition data corresponding to a portion of the difference of levels between the maximal value and a before sample value adjacent to the top-peak,
a second addition data corresponding to a portion of the difference of levels between the maximal value and an after sample value adjacent to the top-peak,
a first subtraction data corresponding to a portion of the difference of levels between the minimal value and a before sample value adjacent to the under-peak, and
a second subtraction data corresponding to a portion of the difference of levels between the minimal value and an after sample value adjacent to the under-peak;
adding the first addition data to the before sample value adjacent to the top-peak, and

adding the second addition data to the after sample value adjacent to the top-peak; and
subtracting the first subtraction data from the before sample value adjacent to the under-peak, and
subtracting the second subtraction data from the after sample value adjacent to the under-peak."

Claim 11 of the "Sole Request" reads as follows:

"An audio information processing apparatus comprising:
comparison means for comparing audio information supplied from the outside every predetermined sample;
maximal/minimal value detection means for detecting maximal values and minimal values of waveforms of the audio information;
sample number detection means for detecting number of samples between adjacent two peaks of each maximal value and minimal value, the two peaks being a top-peak having a maximal value and an under-peak having a minimal value;
band component forming means for forming a high-band component based at least in part on the number of samples detected by the sample number detection means,
wherein forming the high-band component comprises forming a first addition data corresponding to a portion of the difference of levels between the maximal value and a before sample value adjacent to the top-peak, a second addition data corresponding to a portion of the difference of levels between the maximal value and an after sample value adjacent to the top-peak, a first subtraction data corresponding to a portion of the difference of levels between the minimal value and a before sample value adjacent to the under-peak, and a second subtraction data corresponding to a portion of the difference of levels between the minimal value and an after sample value adjacent to the under-peak;

band component addition means for adding the first addition data to the before sample value adjacent to the top-peak, and adding the second addition data to the after sample value adjacent to the top-peak; and band component subtraction means for subtracting the first subtraction data from the before sample value adjacent to the under-peak, and subtracting the second subtraction data from the after sample value adjacent to the under-peak."

Claims 2 to 10 and 12 to 19 are dependent on claims 1 and 11, respectively.

VIII. The reasons for the decision under appeal may be summarised as follows:

The object of this divisional application and its earlier application No. 98 119 743 was to change an audio spectrum in a way which improved listening experience. The present application disclosed that peaks of an audio signal could be changed by adding and/or subtracting certain amounts to or from the sampled values based on detected inter-peak intervals called "patterns". However, figures 7 and 11 illustrated that for each pattern there were four different amounts which could be added or subtracted. The application did not disclose how the selection of the amount was to be made, or how the decision to add and/or to subtract was made so that a high sound quality was obtained. Moreover, the claims did not provide further details about the "predetermined band component" or the addition/subtraction amounts so that the claims did not imply any particular technical effect. High sound quality was a subjective criterion and the application did not specify its exact meaning or the exact purpose of the widening of the audio

spectrum. The earlier application indicated that several years of listening were needed to determine the addition/subtraction amounts depending on the kind of music, audience, loudspeakers, etc. Thus the application did not provide a sufficiently detailed recipe that might be followed in order to implement the claimed invention such that high sound quality was obtained. Such a detailed recipe should have been disclosed in order to satisfy "Art. 83 EPC; see Rule 27(1)(b) EPC".

IX. The appellant's arguments may be summarised as follows:

The earlier application disclosed that the amount to be added to or subtracted from a certain sample value was based on a shift amount control table, which provided one of a plurality of fractions within a clearly defined range of fractions depending on the inter-peak pattern. In the example of figure 7 there were four possible fractions for each pattern, but one single fraction for each pattern was also a possible example of the invention. Any of the four possible fractions in figure 7 would lead to an increase in the frequency spectrum and thus improve the listening experience, and thereby realise the invention.

In the example of figure 7, the amount was also based on the difference between the value of a sample at a peak and the value of a sample adjacent to the peak, but this was only an example. Thus selecting a particular fraction from the clearly defined range of fractions was only a feature of the example of figure 7.

Years of trial listening had been necessary to find appropriate ranges depending on the inter-peak patterns. But it would not take years to select one from the four fractions illustrated in figure 7. The

decision under appeal had misinterpreted a passage relating to this issue in the earlier application (page 22, lines 2 to 8) and as a consequence there was a misunderstanding of the essential features of the invention.

Reasons for the Decision

1. The appeal is admissible.

2. Sufficiency of disclosure (Article 83 EPC 1973)

2.1 Article 83 EPC 1973 requires that the "European patent application" must sufficiently disclose the invention. In the present case, this is the divisional application currently on file, not the earlier application as filed. It is clear that any amendments made to the application have to comply with Article 76(1) EPC 1973 and Article 123(2) EPC.

2.2 The original texts of the earlier application and of the present divisional application are the same, as far as passages relevant for the present decision are concerned. Thus the fact that the decision under appeal based its finding of lack of disclosure in the present divisional application partly on the text of the earlier application has no substantive impact on the present decision.

2.3 The present application describes on pages 1 to 3 the related state of the art. It describes that in theory the hearing sense of a human being is limited to about 20 kHz. However, it is known that sound having a frequency band of 20 kHz and more brings a rich hearing sensation, though the sound cannot be heard. The

application cites several documents of the state of the art describing techniques for modifying the waveform of original audio information by emphasising harmonics or adding harmonics to the original audio information, so that enriched sound may be recorded or reproduced. These conventional techniques for emphasising or adding harmonics are designed to use a conversion table for a non-linear process, a differential circuit, or a cube circuit. Hence they are expensive and their manufacturing productivity is low because of the large circuit scale and the large chip size.

2.4 Against this backdrop, the present application aims at emphasising or adding harmonics with a compact, simple and low-price arrangement (see, for example, pages 4, 6 and 26, the respective first paragraphs). It is not an object of the application to improve the listening experience over this prior art. Instead the emphasis of the application is on the compact, simple and low-price arrangement. Thus the decision under appeal is incorrectly focused on the improved listening experience (or "high sound quality") because it does not take into account that the improvement of the listening experience by emphasising or adding harmonics is common to both the invention and the prior-art techniques, but is achieved in a different manner.

2.5 In the given context a variety of waveform modifications (for instance modifications corresponding to the techniques known from the state of the art) may result in an improved listening experience. Thus it is sufficient and appropriate that the application comprises a general disclosure of digital waveform modifications having the effect of adding or emphasising harmonics in a compact and simple way, and provides a description of examples as illustrated in

figures 7 and 11. A "detailed recipe" as to how a **specific** addition/subtraction amount should be determined in order to achieve high sound quality is not required in view of the objective set out in the present application.

2.6 It is undisputed that the application discloses how addition (or subtraction) of values to (or from) the sample values of digitised original audio information modify its waveform. It is also undisputed that the disclosed waveform modifications may be considered as improving the listening experience. In particular, the subjective element inherent in the assessment of listening experience is common to both the state of the art and the present invention and is not an issue to be considered under Article 83 EPC 1973, since there is no doubt that subjective assessments of listening experience can be carried out.

2.7 In the decision under appeal the view was taken (apparently derived from page 22, lines 2 to 8, of the application) that several years of listening were needed to determine the addition/subtraction amount depending on the kind of music, audience, loudspeakers, etc. The appellant has convinced the board that this view was based on a misunderstanding. In the board's view, the amendments made to this passage on present page 22, in view of the overall disclosure of the application as filed, better reflect the intended meaning of this statement. In the given context, the examples given in figures 7 and 11 specify four alternative values for each pattern. The values span a range of fractions for the respective pattern, such as 1/4 to 1/32 for the "4fs pattern" in figure 7 or 1/2 to 1/16 for the "4fs pattern" in figure 11. Thus it would not take years to select one of these fractions.

2.8 The examining division in the decision under appeal made a brief reference "see Rule 27(1)(b) EPC". It appears that the examining division intended to emphasise that a detailed recipe should have been given as to how to implement the claimed invention such that high sound quality was obtained, in order to meet the requirements of this rule. However, Rule 27(1)(e) EPC 1973, which the examining division actually intended to refer to (see the minutes of the oral proceedings dated 12 August 2008), is subordinate to Article 83 EPC 1973 and provides that the description shall "describe in detail at least one way of carrying out the invention claimed using examples where appropriate and referring to the drawings, if any". Thus, Rule 27(1)(e) EPC 1973 defines the way in which the invention shall be described "in detail" but does not require a higher level of detail than Article 83 EPC 1973.

2.9 In view of the above the board judges that the application meets the requirements of Article 83 EPC 1973 and Rule 27(1)(e) EPC 1973.

3. In its communication, the board took up some of the considerations and objections raised in the decision under appeal as objections relating to Article 84 EPC 1973 (instead of Article 83 EPC 1973). In view of the amendments made by the appellant, the board considers that they do not apply to the present claims.

3.1 The selection of the addition/subtraction data

3.1.1 Present claim 1 specifies that the first and second addition data are respectively added to the before and after sample value adjacent to the top-peak. It also

specifies that the first and second subtraction data are subtracted respectively from the before and after sample value adjacent to the under-peak. Thus the relationship of the first and second addition and subtraction data with the sample values is clear.

3.1.2 The specific values of the first and second addition and subtraction data are not defined in claim 1.

However, claim 1 specifies that the first and second addition data correspond to a portion of the difference of levels between the maximal value and adjacent before sample and after sample values of the top-peak, respectively. Similarly, claim 1 specifies that the first and second subtraction data correspond to a portion of the difference of levels between the minimal value and adjacent before sample and after sample values of the under-peak, respectively. This excludes arbitrary modifications of the before and after sample values and indicates a way of forming harmonics to obtain a high-band component (in the frequency domain).

It should be noted in this context that the appellant's representative in the oral proceedings before the board declared that he was prepared to adapt the description (as filed with the letter dated 25 February 2013) concerning the embodiments where trapezoidal waveform data were generated, either by deleting them from the present application or by indicating that these embodiments did not constitute embodiments of the claimed invention. On this basis, there should be no inconsistency between the expression "portion of the difference" and embodiments which are not covered by the present claims, in which the (entire) difference or even more than the difference is added, for instance to the after sample value of the top-peak.

3.1.3 The exact relationship between the different addition/subtraction data and the corresponding different "portions of the difference" in claim 1 is not specified. However, in view of the disclosure of the invention (see section 2 above), there is no need to give numeric values for the first and second addition and subtraction data in the independent claims to clearly define the invention for which protection is sought.

3.2 The effects of the addition and subtraction data

Claim 1 specifies that "a high-band component" is formed. In context, it is clear that this expression relates to a high-frequency component of audio information.

3.3 The subjective element in high sound quality

It is undisputed that different persons may have a different understanding of high sound quality. But in the present case the invention is not claimed in terms of a subjective impression. Instead it is claimed in terms of technical features of the invention, *inter alia* the forming of a high-band component.

3.4 In view of the above the board finds that the considerations and objections raised in the decision under appeal do not apply to present claim 1. Since present claim 11 is an apparatus claim corresponding to method claim 1, the same reasoning applies to claim 11.

4. Remittal (Article 111(1) EPC 1973)

4.1 The board admitted the claims of the "Sole Request" into the appeal proceedings (see Article 13(1) RPBA) as a reaction to objections raised in the oral proceedings before the board. Moreover, the board does not see objections under Article 123(2) EPC or Article 76(1) EPC 1973 which might impede full examination of the application as to patentability requirements.

4.2 In the present case, full examination of the application as to patentability requirements has not yet been carried out. The board sees no reason to go beyond its primary task of examining the contested decision. Full examination as to patentability requirements is the task of the examining division (G 10/93, OJ EPO 1995, 172, point 4 of the Reasons).

4.3 In view of the above the board decided to exercise its discretion in remitting the case to the department of first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar: The Chairman:

K. Boelicke F. Edlinger

Decision electronically authenticated