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**D E C I S I O N**  
of 27 July 1994

**Case Number:** T 0111/92 - 3.5.1

**Application Number:** 86305485.4

**Publication Number:** 0209380

**IPC:** H04N 9/82

**Language of the proceedings:** EN

**Title of invention:**

Recording and/or reproducing apparatus

**Applicant:**

Sony Corporation

**Opponent:**

-

**Headword:**

**Relevant legal norms:**

EPC Art. 56

**Keyword:**

"Inventive step (main request - no; auxiliary request - yes)"  
"Prejudice against application of features known per se (no  
for general application - yes for specific application)"

**Decisions cited:**

**Headnote/Catchword:**

**Case Number:** T 0111/92 - 3.5.1

**D E C I S I O N**  
**of the Technical Board of Appeal**  
**of 27 July 1994**

**Appellant:** Sony Corporation  
7-35 Kitashinagawa 6-chome  
Shinagawa-ku  
Tokyo 141 (JP)

**Representative:** Pilch, Adam John Michael  
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**Decision under appeal:** Decision of the Examining Division of the European Patent Office dated 18 September 1991 refusing European patent application No. 86 305 485.4 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** P. K. J. van den Berg  
**Members:** W. B. Oettinger  
G. Davies

## Summary of Facts and Submissions

I. The appeal contests the Examining Division's decision to refuse the European patent application No. 86 305 485.4 filed on 16 July 1986 (publication number 0 209 380).

II. The reason given for the refusal was that the subject-matter of the independent claims filed on 1 July 1991 lacked an inventive step.

More particularly, the Examining Division held that, given the problem that the apparatus known from the cited prior publication

D1: EP-A-0 103 287

has to produce an echo effect, a person skilled in the art would know that by definition such an effect is produced by adding a first (the AFM) signal to a second (the PCM) signal delayed in time. The Applicant's argument that no suggestion was derivable from any of the other documents cited in the Search Report (A3) to generate an echo effect, was dealt with but discarded. These other citations are:

D2: Patent Abstracts of Japan, vol. 4 no. 52 (E7)[534] (18 April 1980), page 127 (abstract of JP-A-55-23687),

D3: EP-A-0 036 337,

D4: WO-A-81/02957,

D5: US-A-4 237 343.

III. Following a request for re-establishment of rights in respect of the filing of the Statement of Grounds of Appeal, the Board by an Interlocutory Decision of 3 August 1992 (issued under the same file number) has already decided that the appeal is admissible.

IV. In the Statement of Grounds, the Appellant contested the Examining Division's reasoning, referring to this end to the Board's case law [T 99/85 (OJ EPO 1987, 413), T 229/85 (OJ EPO 1987, 237)].

The Appellant admitted that a solution to the problem of providing an echo effect was effectively known but the claimed invention addressed a different, novel, problem and, moreover, the solution was different from the known solution to the problem of providing an echo effect.

V. The Appellant requested that the decision under appeal be cancelled and, by implication, a patent be granted on the basis of the 18 claims filed on 1 July 1991 (main request).

As auxiliary requests, the Appellant offered to replace the independent claims by claims filed on 1 February 1992 within the body of the Statement of Grounds.

VI. In a Communication pursuant to Article 110(2) EPC, the Board expressed its provisional view that, taking D1 as the starting point, the subject-matter of the independent claims would appear to be rendered obvious

by any one of the other citations, in particular D3, D4 and, especially, D5.

A similar conclusion was drawn for the auxiliary request claims.

VII. In response, the Appellant filed, on 23 February 1994, new independent claims for its main request.

VIII. The independent claims are worded as follows:

**Main Request:**

Claim 1 has the following preamble:

"Apparatus for reproducing audio signals recorded on a recording medium (3) by a rotary head assembly (2a, 2b), said audio signals comprising a first audio signal (AFM) of a first type and a second audio signal (PCM) of a second type recorded on first (A, B) and second (a, b) tracks, respectively, of the recording medium, said first (AFM) and second (PCM) audio signals being recorded from the same source, said apparatus comprising:

playback means (22 to 30) for reproducing said first (AFM) and said second (PCM) audio signals from said first (A, B) and second (a, b) tracks such that one is reproduced with a delay with respect to the other,"

Claim 4 has the following preamble:

"Apparatus for recording and reproducing signals on a recording medium (3), the apparatus comprising:

a rotary head assembly (2a, 2b) capable of recording and reproducing signals on first (A, B) and on second (a, b) tracks of the recording medium (3); recording means (10 to 19) for recording a first audio signal (AFM) of a first type and a second audio signal (PCM) of a second type on said first (A, B) and second (a, b) tracks, respectively, said first and second audio signals being recorded from the same source; and playback means (22 to 30) for reproducing said first (AFM) and second (PCM) audio signals from said first (A, B) and second (a, b) tracks such that one is reproduced with a delay with respect to the other,"

The characterising portions of Claim 1 and Claim 4 both read as follows:

"characterised in that said playback means (22 to 30) comprises means (30) for mixing said first (AFM) and second (PCM) reproduced audio signals to produce a mixed audio signal having an echo effect."

**Auxiliary Request:**

Claim A1 has the following preamble:

"Apparatus for reproducing audio signals recorded on a recording medium (3) by a rotary head assembly (2a, 2b), said audio signals comprising a frequency-modulated audio signal (AFM) recorded on main tracks (A, B) and a pulse-code-modulated audio signal (PCM) recorded on adjacent auxiliary tracks (a, b) of the recording medium, said frequency-modulated (AFM) and pulse-code-modulated (PCM) audio signals being recorded from the same source, said apparatus comprising:

playback means (22 to 30) for reproducing said frequency-modulated (AFM) and said pulse-code-modulated (PCM) audio signals from said main (A, B) and auxiliary (a, b) tracks,"

Claim A4 has the following preamble:

"Apparatus for recording and reproducing signals on a recording medium (3), the apparatus comprising: a rotary head assembly (2a, 2b) capable of recording and reproducing signals on video tracks (A, B) and on adjacent auxiliary tracks (a, b) of the recording medium (3); recording means (10 to 19) for recording a video signal and a frequency-modulated audio signal (AFM) on the video tracks (A, B) and a pulse-code-modulated audio signal (PCM) on the auxiliary tracks, said frequency-modulated and pulse-code-modulated audio signals being recorded from the same source; and playback means (22 to 30) for reproducing the frequency-modulated (AFM) and pulse-code-modulated (PCM) audio signals from said video (A, B) and auxiliary (a, b) tracks,"

The characterising portions of Claims A1 and A4 both read as follows:

"characterised in that said playback means (22 to 30) comprises means for processing and mixing said frequency-modulated (AFM) and pulse-code-modulated (PCM) audio signals such that one is reproduced with a delay with respect to the other to obtain an echo effect."

IX. In the oral proceedings, held on 27 July 1994, the Appellant, withdrawing a previous second auxiliary request, maintained its request for grant of a patent on the basis of its main request or, alternatively, of the claims of its auxiliary request.

The arguments submitted by the Appellant in support of these requests may be summarized as follows:

Although the skilled reader of D1 could deduce from it, in particular from the description of embodiments (as shown e.g. in Figs. 12 and 16 and explained with reference to Figs. 13 and 15), that in the known audio-reproducing apparatus there is a delay between the processed PCM and FM audio signals, he would not be aware that this delay could serve any useful purpose. In D1, these signals are never seen together, even though they might be present for technological reasons; when it comes to making use of them, they are only regarded as alternatives. In a video application, the delay would be too small to be noticed as a lack of synchronisation with the picture. In other cases it would even be regarded as a disadvantage rather than as a possible advantage. No incentive to make use of it could therefore be derived from D1.

According to the other prior art documents cited, D2 to D5, an echo effect is produced by mixing the audio signal with a replica of the same signal delayed by delay means provided for this purpose.

The claimed invention is based on the new recognition that it is possible to do away with such delay means and nevertheless create an echo effect in an audio



reproducing apparatus like that of D1 by making use of the natural delay present in the processed PCM and FM audio signals.

## **Reasons for the Decision**

1. The decision to be taken is whether the admissible appeal (cf. point III) is allowable (Article 110(1) EPC).

For this purpose, it is to be decided whether the Appellant's main request or, otherwise, his auxiliary request is allowable.

The only issue to be dealt with for this decision is, in the present case, whether the subject-matter of the independent claims of these requests involve an inventive step.

2. *Main Request*

- 2.1 Claim 1 is, according to its wording (cf. point VIII), understood as defining an audio-reproducing apparatus for signals recorded by a rotary head assembly, in which means are incorporated for producing an echo effect by reproducing one of two signals, recorded on two tracks, with a delay with respect to the other.

Since the reference signs placed between parentheses do not limit the claim (Rule 29(7) EPC), this claim does not in any way define the "types" of signals recorded except that they stem from the same source. Nor does the claim in any way specify the two tracks mentioned.

This means that any envisageable possibility is left open. As examples only, the wording of the claim would neither exclude the general possibility that both signals are, although of a "first" and "second" type, nevertheless similar, nor the more specific possibility of their being left-hand and right-hand stereo signals (such as L and R INPUT in D5, Figs. 1 and 10). Although the Board would agree that these exemplary possibilities might appear to be not very probable in the sense that their usefulness would not be immediately apparent, it is considered that in some cases these, or similar, possibilities may nevertheless be realistic.

This view is confirmed by the very fact that the existence of two (the main and auxiliary) requests with and without features restricting the claim (to PCM and FM signals) can only be interpreted as meaning that the Appellant seeks, in the first place, a broader scope of protection in the sense of an application of echo creating means in any two-track audio-reproducing apparatus, whatever the "first" and "second" types of signals and whatever the kinds of recording.

The reference to a rotary head would, in this context, appear to be insignificant because its use is in no way further specified. It can, in the circumstances, be understood as a, possibly unnecessary, restriction to a (for whatever reason, e.g. higher fidelity and/or additional video) more sophisticated kind of recording.

Seen in this general context, it is not even clear that the feature "means for reproducing ... such that one is reproduced with a delay ..." would be intended to mean

anything else than that there are provided, within the said "means for reproducing", specific "means" (such as E in D4, Fig. 1) introducing said delay.

- 2.2 With Claim 1 so interpreted as defining the general application of the idea, known from any of the citations D2 to D5, of creating an echo effect in a two-track audio-reproducing apparatus, incidentally having a rotary head assembly, must be considered as being obvious to the person skilled in the art.

This is the more so, as D5 directly proposes the application of that idea in any tape deck, phono pickup etc. (column 19, lines 25-26), i.e. in audio-reproducing apparatus of any kind including their possible incorporation in video recorders.

- 2.3 As follows from the above, reference to D1 is not necessary to conclude obviousness.

On the contrary, D1 would appear to be too specific as a proper starting point for a claim defining the application of the idea of creating an echo effect in audio-reproducing apparatus in general, viz. including those which do not employ the PCM and FM technologies.

- 2.4 As a further consequence of the general interpretation of Claim 1 allowed by its wording, the Appellant's arguments submitted in favour of an inventive step would appear not to support that claim in its generality.

Those arguments are understood to mean that the skilled person would have had a prejudice against mixing, in

the respective context, the processed PCM and FM audio signals. In an application, where the two types of signals mixed do not have fundamentally different properties (cf. in this respect below, point 3.2), according to the above finding (point 2.2), it cannot be concluded that such a prejudice exists.

2.5 The subject-matter of Claim 1 being, for these reasons, obvious from the prior art as represented by D2 to D5, when read with the common general knowledge of the person skilled in the art of reproducing recorded audio signals, it does not involve an inventive step, and that claim cannot therefore be allowed.

2.6 Even though for this reason the Appellant's main request must fail, the Board has considered, and will deal, also with the independent Claim 4.

2.7 Claim 4 in effect claims nothing but the incorporation of the reproducing apparatus of Claim 1 in a recording and reproducing apparatus, the recording part of that apparatus being specified only by the recording being done by said rotary head assembly mentioned already in Claim 1. Otherwise, that apparatus may be of any kind whatsoever.

2.8 The incorporation of an audio-reproducing apparatus in a recording and reproducing apparatus (such as a "tape deck", D5) is, however, a usual technique in this field which does not need to be documented.

For an audio-reproducing apparatus incorporated in a recording and reproducing apparatus, therefore, the

above line of argument leading to the conclusion of obviousness applies in fully the same way.

- 2.9 The subject-matter of Claim 4 does not, therefore, involve an inventive step, and this claim is not allowable.

3. *Auxiliary Request*

- 3.1 Following the restriction of Claim A1 to the audio signals being a frequency-modulated and a pulse-code-modulated signal, D1 has to be regarded as the prior art coming nearest to the claimed invention so that it represents the best starting point.

Seen from this starting point, the Appellant's arguments (cf. point IX) submitted in favour of an inventive step are, contrary to the case of the main request (cf. point 2.4), fully to be taken into account.

- 3.2 In effect, these arguments mean that the skilled person would never consider combining the PCM and FM audio signals for any reason. In other words: he would have a prejudice against such combining.

The Board agrees with this view for the following reasons:

The PCM audio signal is generally, and for factual reasons, regarded as an "expensive" signal. It is, as a digitally-processed signal, of high quality in that it will, normally, have both hi-fi properties (large audio bandwidth and flat frequency response) and high signal-

to-noise ratio. The FM audio signal being specifically designed for "cheaper" applications, it is (even if it is "better" than an AM signal would be) to be regarded as a signal of low quality as far as both frequency response and noise are concerned. It would appear to go against all the tendencies on which the introduction of pulse-code-modulation in audio technology are based, if such a hi-fi signal is mixed with a low-quality audio signal such as the FM signal of D1.

In addition, the PCM audio signal will normally, in practical applications, be a stereo, i.e. two-channel, signal whereas the FM audio signal will normally be of the simple mono kind. Without a good reason, the skilled person would not combine signals of so fundamentally different properties.

Moreover, as submitted by the Appellant, even if the PCM and FM audio signal may both be available, this would only be for reasons of chip manufacturing; therefore, the skilled "user" would not even be aware that they could be used together.

It is, in addition, not even certain that he would be aware, considering the natural delay between the processed PCM and FM audio signals which are normally (e.g. for synchronisation with the picture in a video application) disregarded, of the fact that said delay would be of the order allowing an echo effect to be produced.

3.3 The Board would maintain the view that an application of the idea of creating an echo effect by applying measures such as those proposed in D2 to D5 to an

audio-reproducing apparatus known from D1 would be obvious.

However, because of the aforementioned prejudice, the skilled person would not implement this idea by mixing the PCM audio signal with the FM audio signal having such fundamentally different properties, e.g. qualities. The more so, as he might not be aware of their being available at the same time and of their relative delay being of the required order.

Instead, he would implement the said idea in the conventional way disclosed in D2 to D5, i.e. by providing delay means specifically designed for this purpose, and by mixing the undelayed audio signal with a thus delayed replica of the **same** audio signal. Particularly in the case of the PCM audio signal, which is "expensive" anyway, he would not be deterred from doing this by the necessity of adding to the electronics a delay means which would not contribute much to the overall costs of the apparatus.

- 3.4 Claim A1 is therefore considered to be allowable.
- 3.5 The same necessarily applies to Claim A4, this claim defining the same audio-reproducing apparatus as incorporated in an audio, and video, recording and reproducing apparatus; cf. also point 2.7.
- 3.6 The independent claims of the auxiliary request are, therefore, considered to be allowable.

#### 4. *Conclusions*

- 4.1 Whereas the Appellant's main request is to be refused (cf. points 2.6 and 2.9), the auxiliary request, as far as the independent claims are concerned, and, consequently, the request that the decision under appeal be set aside, are allowed.
- 4.2 In the circumstances of the present case, where the dependent claims, numerous as they are, have neither been adapted for the purposes of the auxiliary request nor examined under Rule 29(3) ff. EPC, and where the description has been amended but not so as to be in accordance with the claims of the auxiliary request, the Board making use of the discretion given to it by Article 111(1), second sentence, EPC, finds it appropriate to remit the case, for the purposes mentioned, to the department of first instance for further prosecution, reference being made to Article 111(2), first sentence, EPC.



**Order**

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

1. The decision under appeal is set aside.
2. The Main Request is refused.
3. The case is remitted to the first instance for further prosecution on the basis of the Auxiliary Request.

The Registrar:

The Chairman:

M. Kiehl

P. K. J. van den Berg