

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen

D E C I S I O N
of 10 November 1995

Case Number: T 0049/94 - 3.5.1

Application Number: 85108996.1

Publication Number: 0168834

IPC: H04N 5/92

Language of the proceedings: EN

Title of invention:

Video signal recording and reproducing method and apparatus

Patentee:

HITACHI, LTD.

Opponent:

Interessengemeinschaft für Rundfunkschutzrechte E.V.

Headword:

-

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-

Summary of Facts and Submissions

I. European patent No. 0 168 834 was granted on 16 October 1991 on the basis of European patent application No. 85 108 996.1 filed on 18 July 1985 and claiming priority from JP applications 149483/84 dated 20 July 1984 and 5685/85 dated 18 January 1985.

II. Opposition to the patent in its full extent was submitted by the appellant on 15 July 1992, citing Article 100(a) EPC as grounds therefor, the independent claims being considered to lack novelty with respect in particular to, the following document submitted with the opposition:

D6: DE-A-3 114 273.

It was further asserted that the dependent claims only specified trivial implementation details illustrated by other new documents submitted with the opposition.

III. At oral proceedings held on 13 October 1993 the proprietor requested maintenance of the patent as granted, but also filed three auxiliary requests. The opponent argued that the subject-matter of the independent claims of the auxiliary requests lacked the required inventive step in the light of the combination of documents D6 and

D1: EP-A-0 112 534,

a document cited in the European Search Report and already part of the proceedings. At the end of the oral proceedings, the Opposition Division announced its decision to maintain the patent in amended form in accordance with the proprietor's first auxiliary

request, the independent claims of the main request being held to lack novelty with respect to D6. The written reasons for the decision were dispatched on 18 November 1993.

IV. Independent claim 1 of the patent as maintained by the Opposition Division reads as follows:

"A method for recording video signals in a rotary head helical scan type magnetic recording system having overlap regions (Q, Q1, Q2) in which plural rotary heads simultaneously face a recording medium (17, 41), comprising the steps of:

a) dividing (4, 5, 6, 102) a video signal for one vertical scanning period into n blocks:

b) transforming (4, 5, 6, 7, 102, 111, 121) the time base of said divided blocks by inserting an additional redundant period (τ) between said divided blocks whereby the vertical blanking period is shortened; and subsequently

c) recording (15a, 15b, 16a, 16b, 53a, 44a, 44b) said transformed divided blocks consecutively onto said recording medium with each of said transformed divided blocks being recorded on different oblique tracks of said medium and at least a part of said redundant period being included in one of said overlap regions."

Independent claims 5 and 8 related to apparatus for respectively recording and reproducing a video signal according to this method.

V. Notice of appeal, with the appropriate fee, was submitted by the opponent on 12 January 1994. A statement of grounds was received on 10 March 1994. It

was argued that the independent claims maintained lacked inventive step in the light of D6 taken alone or in combination with D1.

As evidence of the prior art already acknowledged in the patent without any citation, the following further document was submitted:

D11: "BCN: Universal one-inch video tape recording system for broadcast application", Brochure B 010 from Bosch, allegedly published in 1976.

VI. In response to a communication from the rapporteur accompanying an invitation to oral proceedings, the respondent (proprietor) submitted on 9 October 1995 an auxiliary request in which independent claims 1 and 5 were amended by the insertion, after the phrase "whereby the vertical blanking period is shortened", of

"by an amount which is substantially equal to the sum of said additional redundant periods for said one vertical scanning period".

VII. The appellant requests that the decision under appeal be set aside and the patent revoked.

The main request of the respondent is that the patent be maintained as amended according to the decision of the Opposition Division, that is on the basis of the following documents:

claims 1, 5 and 8 as amended in the oral proceedings before the Opposition Division of 13 October 1993 (first auxiliary request); claims 2 to 4, 6, 7 and 9 to 11 as granted; description and drawing sheets as granted.

Alternatively the respondent requests that the patent be maintained on the basis of the auxiliary request.

VIII. In oral proceedings before the Board, held 10 November 1995, the parties argued essentially as follows.

The appellant (opponent):

- The advice in D6 to avoid recording during changeover of heads in a multiple-head device was in fact illustrative of the general knowledge of the person skilled in the art, and the fact that this document did not go into the problem in any detail was indicative of the fact that it was indeed common knowledge. Many problems arise at the ends of recording tracks, i.e. the margins of the tape, associated with head changeover and the areas where the tape leaves the recording cylinder, and the skilled person would have known that it was advisable to provide a period when there was no recording during the overlap time of the two heads. The skilled person in the field would be familiar with both single- and multiple-head recorders, and would be aware that for a single-head device there was a period when no recording could be made.

The problem addressed in the patent was that under the constraints of proposed high-definition broadcasting standards (e.g. MUSE) the desirable gap in recording when switching between heads in the course of a field (so-called "segmented recording") was longer than the only available period during a field which could be omitted without loss of information, viz. the horizontal blanking period. The same problem was faced in D1, where changing to recording one field with more

than one rotation of the single head meant that there was one or more recording gaps longer than a horizontal blanking period during each field.

The teaching of D1 was to reduce the overall length of the field, by compressing elements not containing active video information, in particular the horizontal and vertical blanking periods, and to use the time gained to insert delays between the segments as they were recorded, thereby providing the necessary periods when no recording took place. Applying this teaching to the system of D11, under the constraints of a broadcasting standard in which the horizontal blanking period had already been reduced to a minimum, the skilled person would simply compress the vertical blanking period to provide the necessary delays.

The independent claims all concerned essentially the same subject-matter, so that it was unnecessary to make separate arguments against claims 5 and 8.

The arguments put forward were felt to apply equally to the main and auxiliary requests.

The respondent (proprietor):

- It was agreed that there might be grounds other than the main reason put forward in the patent, the elimination of skew, for providing a pause in the recording during the changeover period of a multiple-head device. For this reason, it was felt inappropriate to introduce features specifically relating to the elimination of skew between heads into the independent claims. However, D1 dealt with an entirely different problem, arising only with single-head devices, and would not have been

considered relevant by the skilled person. Moreover D1 proposed gaining the necessary time by compressing the horizontal blanking periods, distributed evenly throughout the field, rather than taking it from the vertical blanking period, as proposed in the patent.

The independent claims of the auxiliary request were felt to be a clarification, rather than a restriction, of those of the main request. It was implicit in the main claims that the pauses in recording were achieved by "borrowing" from the vertical blanking period, rather than from anywhere else. The auxiliary request had been made, in the light of the rapporteur's communication, only in case the Board should disagree with this assessment.

- IX. At the end of the oral proceedings the decision of the Board to dismiss the appeal was given.

Reasons for the Decision

1. The appeal is admissible.

The main request

2. *Clarity and interpretation of the amended claims as maintained (Article 84 EPC)*

The appellant has not raised any objection to the amended claims on the ground of lack of clarity. However, the Board considers that this issue requires elucidation. The granted claim 1 was amended in

opposition by inserting the words in bold in the following: "... inserting **an additional** redundant period (τ) between said divided blocks **whereby the vertical blanking period is shortened; ...**". The Board considers that "additional" must be read to mean additional to any other redundant period which may exist or may be created, and that the phrase as a whole is to be interpreted as meaning that the shortening of the vertical blanking period is a direct consequence of the provision of the additional redundant period(s). In the opinion of the Board this meaning is sufficiently clear (if necessary with reference to the description and drawings according to Article 69(1) EPC) to define the matter for which protection is sought and therefore to satisfy the requirements of Article 84 EPC.

3. *Added subject-matter and extension of protection resulting from amendments (Articles 123(2) and (3) EPC)*

The appellant (opponent) has not objected that the amendments introduced have added subject-matter or extended the protection conferred by the claims. The Board is also satisfied that there is no reason for objection on either of these grounds.

4. *Novelty*

The appellant has not objected on this ground. The Board also concludes that no prior art available to it shows all the claimed features in combination. In particular D6, which was held by the Opposition Division to anticipate the invention as claimed in the independent claims of the granted patent, does not disclose the feature that the vertical blanking period is shortened. On the contrary, it is lengthened in that document.

The subject-matter of the independent claims is therefore held to be novel.

5. *Inventive step*

D6 is considered to be an inappropriate starting point for the invention, since the entire thrust of that document is how to overcome the problem of recording a high bandwidth signal on a lower bandwidth recording medium, it being essential to the solution that the signals be **expanded** and recorded on two separate tracks.

In the oral proceedings, both parties took as their starting point the recorder described in the patent specification and illustrated by document D11 supplied by the appellant. It may be noted that no evidence of the publication date of this document has been put forward, but the Board accepts the assertion by the appellant, and not challenged by the respondent, that it was published in 1976. The Board also considers that D11 represents the most appropriate starting point for considering whether the claimed subject-matter involves the required inventive step.

D11 discloses a rotary head helical scan type magnetic recording system having overlap regions in which plural rotary heads simultaneously face a recording medium and using segmented fields, i.e. employing the steps of dividing a video signal for one vertical scanning period into n blocks and recording said divided blocks consecutively onto said recording medium with each of said divided blocks being recorded on different oblique tracks of said medium (see D11, page 9). It is understood that any disturbances in the signal (in particular skew effects) encountered on changing the reading head in use from one track to the next would have been overcome in this equipment by locating the

changeover during the relatively long horizontal blanking period of older video signals and using components and tape of sufficiently high quality that the disturbances could be compensated during that blanking period. This does not however mean that there would have been a period during the overlap when no recording would take place - indeed this is directly contradicted by page 7, line 10: "The tracks of the two heads overlap and thus gaps in the recording are avoided".

The problem therefore faced by the skilled person was to adapt a system of the sort disclosed in D11 to new standards having a much shorter horizontal blanking period, while at the same time allowing the use of cheaper and therefore less precise components and media for the consumer market.

The appellant has sought to persuade the Board that it was common knowledge to avoid changeover problems by avoiding recording during the changeover period. To this end, a wide variety of causes of disturbance were put forward, including insufficient head-to-tape contact, penetration of heads and air flow between tape and cylinder. However at least these problems actually relate to the points where the tape leaves the cylinder, which is only the same as the changeover region in a two-head machine if the tape makes an angle of 180° around the cylinder. In fact it is the normal technique to make this angle slightly greater to avoid these problems. In D11 the angle is given as 190° (page 9). Thus while problems such as skew undoubtedly exist at changeover, it is by no means clear that these are the same problems as occur when the tape leaves the cylinder. It is also clear that a significant reason for having multiple heads in such a system as D11 was to

avoid periods in which no recording could take place (see the sentence from D11 page 7 cited above).

Document D6 relates to recording video signals digitally with high quality by doubling the recording length of the video signal. It mentions that by expanding the signal by a factor of slightly less than two, "disturbance zones" ("Störzone") related to the overlapping period may be avoided (page 9, paragraph 3). The cause or nature of these disturbances is not further disclosed, although it may well be, as proposed by the appellant, that this is because the nature of such disturbances and the usual steps to be taken against them would be obvious to a person skilled in the art. It does not however follow by any means that the solution proposed in D6, which is to avoid recording in an overlapping period, is the usual one. Indeed, it would appear to go against the conventional arrangement (see e.g. the citation from D11 page 7), and is only possible because the expansion of the signal and recording on dual tracks in D6 makes it possible to avoid recording at certain periods without losing any information. Hence the Board considers that the document D6 does not provide convincing evidence that it would be common knowledge to the person skilled in the art that problems resulting from changeover of recording heads in a multiple-head machine should be overcome by avoiding recording during the overlapping period. Further, since the teaching of D6 to avoid recording during the overlapping period is only made practical by the expansion of the signals as a whole, the Board does not consider that the skilled person would read D6 and extract this one teaching in isolation, looking for an implementation method elsewhere. Thus the combination of documents D11 and D6 would not, in the Board's view, contribute to making the claimed invention obvious.

Document D1 relates to applying the segmented-field recording technique to a single-head recorder. It is a fundamental property of such a recorder that there exists a period in every revolution of the recording head when no recording can be made. This document concerns itself with the problem that when a segmented-field technique is adopted, the "dropout" period cannot simply be located in the vertical blanking period, as is conveniently the case when a field corresponds to one rotation of the head. D1 specifically considers using multiple recording heads and rejects this avenue (page 1, lines 23 to page 2, line 1). Thus it does not seem to the Board that this document would be considered by the person skilled in the art to be relevant to his problem. The arguments of the appellant that the problem handled in D1 is in some sense the same as that considered in the disputed patent seem to depend on an ex post facto analysis and an unwarranted abstraction of the nature of the problem. The skilled person has a problem specifically relating to multiple-head systems (there are no "overlap regions" in a single-head system), and would not, in the view of the Board, look for a solution to that problem in a document specifically relating to a problem faced only by single-head systems.

While it is strictly unnecessary to comment further on D1, it is remarked that the main teaching of that document involves compressing the field by shortening the horizontal blanking periods. It would also seem to be an ex post facto argument to suggest that the skilled person would, while rejecting this main teaching, note that an isolated element of the vertical blanking period, "the vertical synchronising pulse" (D1 page 6, line 6), was compressed, and go on to develop a system

in which the necessary compression for redundant periods was derived as a direct consequence of shortening the vertical blanking period as claimed (see point 2 above).

Thus the Board concludes that arguments presented by the appellant do not establish convincingly that the subject-matter of the independent claims of the main request lacks an inventive step. Nor is there any other reason prima facie for the Board to hold that the necessary inventive step is lacking.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

P. K. J. van den Berg