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D E C I S I O N
of 15 October 1996

Case Number: T 0265/96 - 3.5.1

Application Number: 91907803.0

Publication Number: 0525028

IPC: H04N 5/91

Language of the proceedings: EN

Title of invention:

A method and an apparatus for preventing unauthorized copying of video signals on tape

Applicant:

COPYGUARD ENTERPRISES S.A.

Opponent:

-

Headword:

COPYGUARD/Preventing unauthorised copying of video signals

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (no) "

Decisions cited:

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Catchword:

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Case Number: T 0265/96 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 15 October 1996

Appellant: COPYGUARD ENTERPRISES S.A.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 7 November 1995
refusing European patent application
No. 91 907 803.0 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: P. K. J. van den Berg
Members: R. Randes
G. Davies

Summary of Facts and Submissions

- I. European patent application No. 91 907 803.0, publication No. 0 525 028, was filed on 18 April 1991, with the international application No. PCT/EP91/00738, claiming priority from NL application 9 000 951, dated 20 April 1990.
- II. Oral proceedings were held before the examining division on 23 October 1995, at the end of which the application was refused on the grounds that the subject-matter of claims 1 of the main and subsidiary requests lacked an inventive step (Articles 52(1) and 56 EPC). The written decision was dispatched on 7 November 1995. Inter alia the following documents were cited in the decision:
- D1: EP-A-0 199 553 (Ryan)
D3: EP-A-0 364 047 (Copyguard = Applicant)
D4: US-A-4 163 253 (Morio)
- III. On 3 January 1996 the applicant lodged an appeal against this decision and paid the prescribed fee. The appellant requested that the decision to refuse the application be set aside. In the written statement setting out the grounds of appeal, filed on 5 March 1996, the appellant filed a main, and first and second subsidiary requests, identical to those refused by the examining division, and argued that the examining division's opinion regarding lack of inventive step was not justified.
- IV. In a communication, dated 19 August 1996, the rapporteur expressed the preliminary opinion that the subject-matter of the claims lacked an inventive step in the light of D3 and D4, and that more discussion of D1 was necessary. Oral proceedings were appointed.

- V. On 11 September 1996 the appellant submitted a new main and first subsidiary request with amended description and drawing pages. The original main and first subsidiary request became second and third subsidiary requests, respectively.
- VI. Oral proceedings were held on 15 October 1996 during which the appellant withdrew the second and third subsidiary requests.
- VII. The application consists of the following documents:

Main request

Claims: 1 to 5, filed on 11 September 1996
Description: pages 1 to 5, filed on 11 September 1996
Drawings: sheets 1/2 and 2/2, filed on 11 September 1996

Subsidiary request

Claims: 1, filed on 11 September 1996
2 to 5, as main request
Description: pages 1 to 2(part), filed on 11 September 1996
pages 2(part) to 5, as main request
Drawings: as main request

- VIII. Claim 1 of the main request reads as follows:

"A method for modifying composite video signals in such a manner that, when recording said signals with a tape recording apparatus, the control of this apparatus is disturbed, which signals comprise image point signals (9) grouped according to successive image lines, and a plurality of lines grouped according to successive frames, said lines and frames being separated by horizontal and vertical blanking intervals respectively, a synchronization pulse (2) and colour

synchronization signals (8) preceding the image point signals (9) in question in the respective horizontal blanking interval, the image point signals (9) having a first, and the synchronization pulses (2) having an opposite or second polarity in respect of a zero level (1), pairs of pulses (6',6") being additionally inserted during blanking intervals of said video signals, the first one (6') of each pair having the first polarity in respect of the zero level (1), and the second one (6") thereof joining said first one (6') having the second polarity in respect of said zero level, and having a height substantially corresponding to the maximum white level of the image point signals (9), so as to influence the automatic gain control of said apparatus in such a manner that said image point signals (9) are attenuated, characterised in that only one additional pair of pulses (6',6") is inserted in the horizontal blanking intervals of at least a plurality of lines of each frame after the colour synchronization signals (8)."

Claim 1 of the subsidiary request reads as follows:

"A method for modifying composite video signals in such a manner that, when recording said signals with a tape recording apparatus, the control of this apparatus is disturbed, which signals comprise image point signals (9) grouped according to successive image lines, and a plurality of lines grouped according to successive frames, said lines and frames being separated by horizontal and vertical blanking intervals respectively, a synchronization pulse (2) and colour synchronization signals (8) preceding the image point signals (9) in question in the respective horizontal blanking interval, the image point signals (9) having a first, and the synchronization pulses (2) having an opposite or second polarity in respect of a zero level (1), an additional pulse (6") having the first polarity

being inserted during the horizontal blanking and after the colour synchronization pulses (8) of at least selected ones of the lines of each frame and after the colour synchronization pulses (8), and having a height substantially corresponding to the maximum white level of the image point signals (9), so as to influence the automatic gain control of said apparatus in such a manner that said image point signals (9) are attenuated, characterised in that, [in] the horizontal blanking intervals of said selected line portions, a single additional pulse (6') having first polarity and having a shape corresponding to said line synchronisation pulse (2) is inserted before said pulse (6") having the second polarity, the rear flank of said additional pulse (2) being continued with the front flank of said pulse (6") having the second polarity."

IX. The appellant's arguments in support of the patentability of the subject-matter of the independent claims can be summarised as follows. There have been many attempts to solve the problem of unauthorized copying of a video signal as evidenced by the large number of prior art documents which deal with this problem. However, none of these documents show the insertion of a single pulse pair in the horizontal blanking intervals of at least a plurality of lines as claimed. Furthermore document D3 is not relevant because it does not deal primarily with the particular problem solved by the invention, namely disturbing the automatic gain control during recording. Although D1 and D4 do relate to this problem, D1 does not disclose using a single pulse pair on every line, and D4 is not concerned with a conventional recorder. Therefore, D1 and D4 cannot be combined with each other or with D3.

Reasons for the Decision

1. The appeal complies with Article 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. *Admissibility of the amendments*

2.1 The use of the expression "automatic gain control" in the amended claims is not considered to add subject-matter, because it is supported by the idea of "amplification control" described in the originally filed application (page 3, lines 29 to 30). The term "gain" is equivalent to amplification and it is clear from the context of the present application that the gain is automatic because it is varied in dependence on a variable quantity, here the pair of pulses.

3. *State of the art*

3.1 The cited documents are concerned with the prevention of unauthorized copying of video signals by inserting additional pulses to the video signal before distribution. These pulses prevent recording, by a "pirate", but allow normal reproduction, by a viewer (see also first paragraph of the present application).

3.2 D3 discloses such a technique in which a single negative going pulse is added to each video line after the line synchronising pulse and the colour burst (see Figure 2B). The main purpose of this second pulse is to disturb the operation of a time base corrector which could be used in an unauthorized video copying process in order to overcome other copy prevention techniques.

3.3 D4 discloses adding a positive going pulse after the line synchronising pulse on at least selected lines of each frame (see Figure 2F). In D1, pairs of pulses consisting of a negative going pulse followed by a positive going pulse, hereafter referred to as pulse pairs are shown (see Figure 1). According to the main embodiment of D1, a plurality of such pulse pairs are added to a plurality of lines during the vertical blanking interval. The individual pulses of each pair are joined so that the rear flank of the first pulse is continuous with the front flank of the second pulse. The pulses used in D1 and D4 clearly serve the purpose of disturbing the operation of the automatic gain control circuit of a recording apparatus, but only D4 describes an automatic gain control circuit that would be disturbed by these pulses. However, it is clear, from both D1 and D4, that the pulses cause the circuit to behave as though the amplitude of the incoming video signal is much higher than it actually is. As a result, the level of a signal recorded onto the tape is much lower than it should be, so that it cannot be reproduced properly.

3.4 Claim 1 of the main request and claim 1 of the subsidiary request are based on D1 and D4, respectively, but are otherwise essentially equivalent. However, the Board considers D3 to be the nearest prior art document, because, as elaborated further below, and contrary to the appellant's view, this document, by the same applicant, represents the starting point in a logical progression towards the present claim 1.

4. *Inventive step (main request)*

4.1 D3 thus discloses a method of adding a negative pulse to video lines of a conventional video signal. Claim 1 of the main request differs from the teaching of D3 in that, additionally, positive pulses are inserted after

the negative pulses to form pulse pairs in the horizontal blanking interval whereas these pulse pairs are inserted on at least a plurality of lines of each frame. The positive pulses have a height substantially corresponding to white level. The pulse pairs have the effect of improving the copy prevention by disturbing the operation of the automatic gain control circuit during a video recording operation.

4.2 However, it is also stated in D3 (column 4, lines 27 to 32) that the negative pulse may have an effect on the operation of the automatic gain circuit of a recording apparatus. It is also noted that D3 states (column 4, lines 19 to 20) that the negative pulse has an effect on tape recording as well as on time base correction. Therefore the skilled person would consider enhancing the existing effect that disturbs the automatic gain control during a recording operation as the technical problem to be solved.

4.3 The skilled person would turn to D1 which, in addition to its main embodiment, discloses in its introductory part (page 1, line 21 to page 2, line 9) and in its summarising part (page 13, lines 33 to 35) that a single positive pulse may be inserted into the video signal immediately following the sync pulse, namely in the horizontal blanking interval, in order to disturb the automatic gain control. D1 also discloses (page 2, lines 17 to 21) inserting these pulses on every third line of the frame, that is, at least a plurality of lines of each frame as claimed (see also page 13, line 33 to page 14, line 3). The skilled person would realise that, in order to achieve the maximum disturbance, the height of the pulses should be as large as can be accommodated by the video signal, namely white level. This is also disclosed in an embodiment of D1.

Alternatively, the skilled person could derive this information from D4 which describes the same technique (Figure 2F and the associated description on page 6, lines 17 to 38). Although the main embodiment of D4 does not disclose pulse pairs having flanks which are "continued", the Board is of the opinion that this is clearly suggested (column 9, lines 10 to 14).

Therefore the Board considers that it would be immediately obvious to the skilled person that it is desirable to add the positive pulses of D1 or D4 to the negative pulses of D3. In particular, the combination would lead to a single pulse pair per line in at least a plurality of lines as claimed. The subject-matter of claim 1 of the main request accordingly lacks an inventive step.

- 4.4 The appellant argues that D3 primarily solves a different problem, since it uses a negative pulse for disturbing a time base corrector and not an automatic gain control circuit as claimed. The Board is not convinced by this argument, since, as explained above, D3 states that the negative pulse may achieve the latter effect under certain circumstances. In fact, D3 states that the effect on the automatic gain control depends on varying the width and/or position of the negative pulse. This is in general agreement with the present application as originally filed (page 3, lines 25 to 33). In addition, during the oral proceedings, the appellant suggested that if the position of the negative pulse in D3 is moved towards the active part of the line, the probability that the automatic gain control would be disturbed is increased. This is because the probability that the negative pulse

is followed by a high white level is increased. In fact, this appears to give the skilled person a hint that, instead of hoping for a white level signal after the negative pulse, it could be provided by an additional white level pulse.

- 4.5 The appellant also argues that D1 teaches away from the claimed arrangement of pulse pairs. Firstly, D1 discloses (page 13, lines 12 to 13) adding at least twenty-five pulse pairs during the vertical blanking interval, which is more than one pair on every line as required by the claim. Secondly, D1 states (page 13, lines 12-13) that using the vertical blanking is essential to the invention. Furthermore, this confirms the skilled person's general knowledge that the vertical blanking should be used for additional signals in order to avoid interference with the active picture area. However, the Board is of the opinion that D1 suggests more than these particular solutions. Thus, the description of the basic idea of D1 does not suggest using more than one positive pulse per line (see 4.3 above). The skilled person would recognise that the use of multiple pulse pairs in the vertical blanking interval is an alternative to distributing the pulses throughout the field because it is a further development of the technique discussed in the introductory part of the description of D1. This does indeed correspond to the general knowledge that additional signals can be inserted throughout the frame or in the vertical blanking interval depending on design factors, such as duration of the additional signal or the likelihood of interference, for example. Furthermore, starting from the nearest prior art of D3, there is only one pulse per line.

4.6 Furthermore, according to the appellant, D1 states (page 2, lines 14 to 17) that adding pulses to lines of a picture frame has the drawback that the black level is depressed, and thus would not be considered by the skilled person. However, D1 discloses that this drawback is overcome by inserting the pulses on every third line of the frame, so that the skilled person is not led away from using a plurality of lines, but merely made aware of the trade-off between achieving the maximum disturbance and causing black level depression. It is also pointed out that, although the Board has interpreted the claim to mean that the pulse pairs are distributed throughout the frame, the wording does not exclude the interpretation that they are confined to the vertical blanking interval.

4.7 Finally, the appellant argues that the recorder disclosed in D4 is not conventional, so that the techniques used in that document cannot be applied to conventional systems. However, the Board has found no evidence of this, since D4 gives clear indications to the contrary, namely that the recorder and automatic gain control are described as conventional (for example in the abstract lines 10 to 16, and at column 2, lines 38 to 42). Furthermore, there appears to be little point in proposing a scheme to prevent piracy if it only works when the "pirates" use a non-conventional type of recorder.

5. *Inventive step (subsidiary request)*

5.1 Claim 1 of the subsidiary request is equivalent to claim 1 of the main request, but is based on D4 instead of D1. Claim 1 of the subsidiary request specifies in the characterising part that the adjoining flanks of the pulses in the pair are "continued". However, the Board considers that this feature corresponds in substance to the feature in the preamble of claim 1 of

the main request which states that the first pulse of each pair is "joining" the second one. In fact, in the oral proceedings, the appellant made clear that the independent claims of both requests were considered to contain the same subject-matter, although they were delimited against different prior art. The subject-matter of claim 1 of the subsidiary request accordingly also lacks an inventive step.

6. There being no other requests, it follows that the appeal must be dismissed.

Order

for these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

P. K. J. van den Berg

