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**Datasheet for the decision
of 25 January 2012**

Case Number: T 0103/08 - 3.5.04

Application Number: 99104609.5

Publication Number: 923240

IPC: H04N5/91

Language of the proceedings: EN

Title of invention:

Video copy protection process enhancement

Applicant:

Rovi Solutions Corporation

Headword:

Relevant legal provisions:

EPC 1973 Art. 56, 84, 111(1)
EPC Art. 123(2)

Keyword:

Inventive step - (yes) after amendment

Decisions cited:

Catchword:



Case Number: T0103/08 - 3.5.04

D E C I S I O N
of the Technical Board of Appeal 3.5.04
of 25 January 2012

Appellant: Rovi Solutions Corporation
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted 18 June 2007
refusing European patent application
No. 99104609.5 pursuant to Article 97(1)
EPC 1973.**

Composition of the Board:

Chair: T. Karamanli
Members: C. Kunzelmann
R. Gerdes

Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division to refuse European patent application No. 99 104 609.5.
- II. The decision to refuse was based on the ground that the subject-matter of all claims according to the sole request then on file did not involve an inventive step within the meaning of Article 56 EPC 1973 having regard to the disclosure in documents

O2: WO 91/16791 A1 and

D2: "Macrovision decoder/blanker". In:
Elektor Electronics, Vol. 14, No. 160,
October 1988, pages 44 to 47; XP 000046163

or in documents

D1: WO 93/00769 A1 and

D2: *supra*.

- III. With its statement of grounds of appeal the appellant (applicant) requested as a main request that the decision be set aside in its entirety and the application upheld on the basis of the claims underlying the decision under appeal. The appellant requested oral proceedings if the main request was not allowed.
- 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 dated 22 June 2011. In this communication the board, referring to Article 84 EPC 1973, raised the

- issue as to which features of claim 1 specified how copy protection enhancement was defeated.
- V. With a letter dated 13 September 2011 the appellant filed a new set of claims 1 to 15. In this letter the appellant requested "that the application proceed on the basis of these amended claims" and also indicated that it did not intend to be represented at the oral proceedings.
- VI. The oral proceedings were cancelled and the board issued a communication dated 14 October 2011 pursuant to Rule 100(2) EPC. In this communication the board indicated that it did not see any major obstacle to the patentability of the subject-matter of the independent claims then on file, taken alone. However, the board raised objections under Article 123(2) EPC and Article 84 EPC 1973 against dependent claims.
- VII. With a letter dated 12 December 2011 the appellant filed claims 1 to 14 replacing the previous claims and submitted that these claims met all the requirements of the EPC. There is an obvious typing error in the claim numbering (claim "45" instead of claim "4") in the present claims.
- VIII. Claim 1 reads as follows:
- "A method of defeating a video copy protection signal modification in a video signal that includes a basic video copy protection signal, wherein the signal modification and the basic video copy protection signal provide a copy protection signal, and wherein the signal modification provides copy protection enhancement,

where the basic copy protection signal causes a reduced amplitude video signal to be recorded on a copy, and where the copy protection enhancement comprises gray and black level pulses which are located in an overscan portion in the end of active video lines or fields of the video signal, and which are of a type to cause a video retrace at a time other than the occurrence of a video synchronization signal, the method defeating the copy protection enhancement and comprising the steps of:
generating a signal of at least 20 percent peak white level; and
replacing the gray and black level pulses with the generated signal of at least 20 percent peak white level, or adding the generated signal of at least 20 percent peak white level to the video signal at the overscan portion, to defeat the copy protection enhancement including the gray and black level pulses."

Claim 6 reads as follows:

"Apparatus for defeating a video copy protection signal modification in a video signal, that includes a basic copy protection signal, wherein the signal modification and the basic copy protection signal provide a copy protection signal, and wherein the signal modification provides copy protection enhancement, where the basic copy protection signal causes a reduced amplitude video signal to be recorded on a copy, and where the copy protection enhancement comprises gray and black level pulses which are located in an overscan portion in the end of active video lines or fields of the video signal, and which are of a type to cause a video retrace at a time other than the occurrence of a video synchronization signal,

the apparatus being arranged to defeat the copy protection enhancement and comprising:
means for generating a signal of at least 20 percent peak white level; and
means for replacing the gray and black level pulses with the generated signal of at least 20 percent peak white level, or means for adding the generated signal of at least 20 percent peak white level to the video signal at the overscan portion, to defeat the copy protection enhancement including the gray and black level pulses."

Claims 2 to 5 and 7 to 14 are dependent claims.

- IX. The appellant's final and single request is that the decision under appeal be set aside and that the application proceed on the basis of the claims filed with the letter dated 12 December 2011.
- X. The reasons for the decision under appeal can be summarised as follows:

In a first chain of reasoning, document O2 was considered as the closest prior art.

O2 disclosed a method of copy protection in a video signal. The copy-protected signal comprised both a basic copy protection signal in the form of additional pulses 6 and a copy protection enhancement in the form of pulses 6' and 6". The basic copy protection signal caused a reduced-amplitude video signal to be recorded on a copy, and the copy protection enhancement pulses (6', 6") were located in an overscan portion in active video of the video signal. The copy protection enhancement pulses (6', 6") caused a video retrace at a time other than the occurrence of a video

synchronisation signal. In particular pulse 6' resembled a "real" sync pulse, including its negative going edge which extended down to the normal sync tip.

O2 did not disclose a method of defeating copy protection in a video signal. In particular a step of replacing the enhancement anticopy pulses or adding a signal of a predetermined level to the video signal at the overscan portion in order to defeat copy protection was not disclosed in O2. But D2 disclosed that it was a known objective to defeat anticopy pulses. Thus a person skilled in the art would try to defeat also the copy protection signals known from O2. D2 disclosed that copy protection could be defeated by locating copy protection waveforms and blanking them.

In a second chain of reasoning, document D1 was considered as the closest prior art.

Figure 5 of D1 showed a pseudo-sync pulse 94 located prior to a horizontal sync pulse. From the analogy with figure 7 and the description thereof it was clear that pulse 94 of figure 5 was in the active video region. As to the defeating aspects, the same arguments applied as in the first chain of reasoning.

The same objections applied, *mutatis mutandis*, to apparatus claim 19.

XI. The appellant's arguments can be summarised as follows:

"Basic copy protection", as referred to in the present application, was known at the priority date of the present application and provided copy protection which adversely affected a tape recording apparatus. In particular, a tape recording of a video signal having

basic copy protection would have a reduced amplitude of the video signal so that, when the tape recording was reproduced (using a further tape recording apparatus) and displayed on a television receiver, the display would be unviewable because it was too dark. However, it was essential that basic copy protection had no effect on a television receiver displaying the original copy-protected signal. The present application proposed that basic copy protection was used in combination with a second copy protection technique referred to in the application as "copy protection enhancement". Copy protection enhancement comprised gray and black level pulses located in an overscan portion in the end of active video lines or fields of the video signal. It had no effect on the tape recording apparatus. Instead it caused problems with the display of the tape recording by the television receiver, but only in the low amplitude environment occurring when a tape recording of a video signal having basic copy protection was displayed on the television receiver. In particular the television receiver produced a video retrace at times other than on receipt of synchronisation signals.

The invention as claimed proposed the defeat of copy protection enhancement by generating a signal of at least 20 percent peak white level and replacing the gray and black level pulses with the generated signal, or adding the generated signal to the video signal at the overscan portion.

Copy protection enhancement was not described in any of the prior-art documents and went against the conventional wisdom of those skilled in the art because it had an adverse effect on a television receiver. It also had a synergistic effect when combined with the

basic copy protection. Thus it was not obvious to a person skilled in the art. Therefore, the defeat of copy protection enhancement was not obvious either.

The examining division had misinterpreted the meaning of the claim and the disclosure of O2. According to O2 the additional pulses were affected in terms of reduced amplitude when recorded, but the other parts of the video signal were not affected by the recording. Thus O2 did not disclose a reduced-amplitude video signal. Furthermore, O2 made clear that a video retrace at a time other than the occurrence of a video synchronisation signal did not occur. If the additional pulses in O2 were inserted into at least a part of the active video signal, then at least a white bar or a black and white bar would appear in the left portion of the display. Thus the video signal would not be practical. The additional pulses 6' and 6" were either sync tip level pulses or peak white level pulses and thus distinguished from the gray and black pulses specified in claim 1.

The device of D2 was not a solution for defeating the copy protection of O2 because D2 replaced the copy protection pulses with blanking level. This replacement, when applied to the copy protection signal (6) described in O2, would produce a playability problem. Furthermore, D2 did not disclose replacing or level-shifting black and gray pulses with at least 20 percent peak white signal as specified in claim 1.

D1 did not describe copy protection enhancement as disclosed in the present application and did not describe any defeat techniques. Thus a combination of D1 and D2 would not result in the claimed invention, either.

Reasons for the Decision

1. The appeal is admissible.
2. *Amendments made to the present claims in appeal proceedings (Article 123(2) EPC)*
 - 2.1 Claim 1 has been amended to specify explicitly a method of defeating a video copy protection signal modification as disclosed on page 42, lines 30 and 31 of the application as originally filed. The feature of generating a signal of at least 20 percent peak white level is disclosed in original dependent claim 15 and, for instance, on page 43, line 34 to page 44, line 20 as originally filed. The feature that the copy protection enhancement comprises gray and black level pulses is disclosed, for instance, on page 13, lines 22 to 33, and figure 1b as originally filed.
 - 2.2 Independent apparatus claim 6 comprises the apparatus features, formulated as functional features, corresponding to the method steps specified in claim 1. Furthermore, the only substantial amendment made to those dependent claims which have not been incorporated into the present independent claims is the deletion of a previous dependent claim.
 - 2.3 Hence, regarding the present claims, the application has not been amended in appeal proceedings in such a way that it contains subject-matter which extends beyond the content of the application as filed.

3. *Clarity and support by the description (Article 84 EPC 1973)*
- 3.1 The decision under appeal also held that claim 1 then on file was silent as to the actual physical characteristics of the waveform causing a video retrace. Present claim 1, however, specifies that the copy protection enhancement comprises gray and black level pulses which are located in an overscan portion. Furthermore, present claim 1 specifies that these gray and black level pulses are replaced with a generated signal of at least 20 percent peak white level, or that a generated signal of at least 20 percent peak white level is added to the video signal at the overscan portion, to defeat the copy protection enhancement.
- 3.2 The particular waveform of the gray and black level pulses, which are replaced according to the wording of the claim, is not specified in present claim 1. It might be dependent, for instance, on the TV standard used. Present claim 1, however, unambiguously specifies the numerical value of a pulse level which should result in total defeat of copy protection enhancement including the gray and black level pulses (see page 55, lines 25 to 27 and page 45, line 34 to page 46, line 2 as originally filed).
- 3.3 In view of the above the board finds that the wording of claim 1 meets the requirements of Article 84 EPC 1973.

4. *Inventive step (Article 56 EPC 1973):
first chain of reasoning given in the decision under appeal*
- 4.1 In the first chain of reasoning the examining division considered O2 as the closest prior art. The examining division held that pulses 6' and 6" were of a type to cause a video retrace at a time other than the occurrence of a video synchronisation signal because they included steep negative-going edges.
- 4.2 In respect of pulse 6', O2 discloses that a signal comprising pulse 6', when recorded with a tape recording apparatus, causes "the amplification control 1 to be affected, so that a portion of the subsequent image point signals 9 will be attenuated, which provides an additional deterioration of the image quality" (see page 3, lines 25 to 32). Furthermore, "[t]he additional signals [such as pulses 6' and 6"] have no influence on the control circuits of an image reproducing apparatus having a synchronization which is simpler than that of the recording head of a tape recording apparatus" (see page 4, lines 4 to 7). Figure 3 of O2 discloses that pulse 6' is a negative pulse and essentially reaches down to the normal sync level.
- 4.2.1 Present amended claim 1 however specifies that "the copy protection enhancement comprises gray and black level pulses ... and which are of a type to cause a video retrace at a time other than the occurrence of a video synchronization signal". Since gray and black level pulses in O2 are positive pulses on or above the zero level 1 in figure 3, negative pulse 6' cannot be equated with any of the gray or black level pulses of the copy protection enhancement specified in claim 1.

The same applies to negative pulse 6 illustrated in figure 1 of O2.

- 4.3 In respect of pulse 6", O2 discloses that "[a]n amplification of the effect can be obtained in the manner of Fig. 3C, in which the additional pulse 6' at its end is continued by an oppositely directed pulse 6"" (see page 3, lines 34 to 36). Figure 3C discloses that pulse 6" has its peak at a higher level than the highest level of gray wedge 9 (see page 3, lines 19 to 24). Thus the appellant's argument that pulse 6" is a peak white level pulse is convincing.
- 4.3.1 Thus in view of the gray or black level pulses comprised in the copy protection enhancement specified in claim 1, pulse 6" too cannot be equated with a pulse of copy protection enhancement as specified in claim 1.
- 4.4 The general argument given in the decision under appeal that a steep negative-going edge will, or is likely to, cause a video retrace does not convince the board. Firstly, O2 explicitly states that the additional signals have no influence on the control circuits of an image-reproducing apparatus (see section 4.2 above). Secondly, according to a number of television standards, a horizontal synchronisation pulse should have a duration of 4.7 μ s within error margins (see for instance page 44, lines 21 to 28 of the application as filed). The synchronisation level is also specified in standards. A narrowed synchronisation pulse width together with an attenuated video signal will cause a television set to fail to extract the synchronisation signal reliably (see page 33, line 11 to page 34, line 8 of the application as filed). Hence in standard television systems a steep negative-going edge will not

necessarily be extracted as a synchronisation signal, even if it reaches the synchronisation level.

4.5 The board agrees with the decision under appeal that D2 discloses the objective of defeating anticopy pulses. But D2 concerns defeating the basic copy protection (in the terminology of the present application); see D2, paragraph headed "Upsetting the AGC". The specific copy protection enhancement comprising gray and black level pulses, as specified in claim 1 of the present application, is considered neither in D2 nor in O2 (see sections 4.2 and 4.3 above). Furthermore, D2 discloses a decoder/blanker whose task is "to recognize the MacroVision anti-copy burst in 10 successive lines in the VBI, and replace it with a blank (black) level" (see paragraph headed "MacroVision decoder/blanker"). D2 does not suggest that a signal of at least 20 percent peak white level (in addition to or instead of the blank (black) level pulses) would be able to defeat anticopy pulses.

4.6 In view of the above, the board finds that it would not have been obvious to a person skilled in the art, in view of documents O2 and D2, to provide a method of defeating copy protection enhancement as specified in claim 1.

5. *Inventive step (Article 56 EPC 1973):
second chain of reasoning given in the decision under appeal*

5.1 In the second chain of reasoning the examining division considered D1 as the closest prior art. According to the decision under appeal, "a) Fig. 7 shows (a) copy protection signal(s) 'similar to the signal 94 in the FIG. 5', and b) a chroma burst is inserted as a copy

protection signal 102 prior to a horizontal sync signal 104 ...". However, the decision under appeal does not indicate which signals described in D1 correspond to the basic copy protection signal and the copy protection enhancement respectively.

- 5.2 It is an object of the invention disclosed in D1 "to modify a video signal in such a way that it can be displayed in a normal manner on a standard television or video monitor device, yet copies made of the modified video signals by VCRs will reproduce a video signal containing disturbances which cause a generally unviewable display on monitor devices" (see page 5, lines 19 to 23). Furthermore, the description of figure 5 makes clear that signal 94 will cause the horizontal synchronisation circuit of a monitor device to attempt to synchronise to signal 94 instead of the correct horizontal synchronisation pulse (page 10, line 27 to page 11, line 5). Thus, signal 94 is not a copy protection pulse. Instead, D1 specifies that figure 7 "is a waveform diagram of a copy protection signal, similar to the signal 94 in the Fig. 5, which does not interfere with the viewability of an original or master video signal on a monitor device" (page 11, lines 28 to 30). More specifically, a copy protection signal 102 is inserted prior to a horizontal synchronisation signal. The following line of video information is modified by recording a different copy protection signal 106. This sequence of modification can be repeated and recorded onto a video cassette tape by a mastering VCR. When this recorded signal is reproduced by a typical VCR, the copy protection signals do not interfere with the synchronisation-separating circuitry of a video monitor. Thus it is displayed as a normal unmodified signal would be. If, however, an attempt is made to copy this recorded

signal, a comb filter of the VCR reproducing that copy will modify the video signal upon playback of the new recording. More specifically, if the copy protection signals are properly selected, the output of the VCR reproducing that copy will comprise signals which interfere with the synchronisation signals as though they were similar to the signals 94 of figure 5 (see page 11, line 28 to page 15, line 14 and figures 7 to 9).

5.3 Hence the copy protection signals described in D1 within the context of figures 5 and 7 to 9 cause synchronisation to occur at an incorrect time. Also other embodiments disclosed in D1 cause incorrect synchronisation (see, for instance, page 17, lines 22 to 26, page 20, lines 3 to 7 and page 21, lines 7 to 9). Some embodiments may cause a disturbance in circuitry which depends upon chroma burst signals for a reference (see page 22, lines 23 to 29, page 23, lines 22 to 24 and page 24, lines 19 and 20). But D1 does not disclose that these copy protection signals cause a reduced-amplitude video signal. On the contrary, D1 discloses "unique methodologies" which utilise "the fact that VCRs contain comb filter circuits to separate chroma signals and reduce chroma crosstalk from adjacent video tracks during reproduction" (see page 3, lines 22 to 32). These "unique methodologies", according to D1, distinguish the invention of D1 from known copy protection systems which may, for instance, insert signals into a video waveform that cause the automatic gain control (AGC) circuitry in some VCRs to record an incorrect signal level onto videotape (see page 1, lines 19 to 21).

5.4 Hence the board finds that the method of copy protection disclosed in D1 does not provide the

combination of a basic copy protection signal and a copy protection enhancement as specified in present claim 1. Moreover, D2 does not suggest that a signal of at least 20 percent peak white level (in addition to or instead of blank level pulses) would be able to defeat anticopy pulses (see point 4.5 above).

- 5.5 In view of the above, the board finds that it would not have been obvious to a person skilled in the art, in view of D1 and D2, to provide a method of defeating copy protection enhancement as specified in claim 1.
6. Thus the board is convinced that the objections based on the two chains of arguments given in the decision under appeal no longer apply and that the method of defeating a video copy protection signal modification as specified in present claim 1 involves an inventive step within the meaning of Article 56 EPC 1973.
7. Independent apparatus claim 6 comprises the apparatus features, formulated as functional features, corresponding to the method steps specified in claim 1. Thus the above arguments concerning Articles 84 and 56 EPC 1973 also apply to claim 6.
8. The board does not see any other obstacle to the patentability of the subject-matter of the present claims.
9. *Remittal (Article 111(1) EPC 1973)*

The appellant has made substantial amendments to the claims in appeal proceedings and requested that the application proceed on the basis of the present, amended claims. Moreover, the description has not been brought into line with the claims then on file in the

first-instance proceedings, and the decision under appeal is silent as to amendments to the description which may be necessary. Hence the board exercises its discretion under Article 111(1) EPC 1973 and remits the case to the first instance for adaptation of the description.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent with the following claims and a description to be adapted:

Claims 1 to 14 filed with the letter dated 12 December 2011.

The Registrar:

The Chair:



K. Boelicke

T. Karamanli

Decision electronically authenticated