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D E C I S I O N
of 26 June 2003

Case Number: T 0191/01 - 3.5.1

Application Number: 93116110.3

Publication Number: 0589486

IPC: H04N 5/44

Language of the proceedings: EN

Title of invention:
Compatibility of widescreen and non-widescreen television transmissions

Patentee:
SCIENTIFIC-ATLANTA, INC.

Opponent:
Interessengemeinschaft für Rundfunkschutzrechte GmbH Schutzrechtsverwertung & Co. KG

Headword:
Widescreen/SCIENTIFIC-ATLANTA

Relevant legal provisions:
EPC Art. 56, 111(1)

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0191/01 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 26 June 2003

Appellant: (Opponent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 16 January 2001 rejecting the opposition filed against European patent No. 0589486 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: S. V. Steinbrener
Members: R. S. Wibergh
E. Lachacinski

Summary of Facts and Submissions

I. This is an appeal against the opposition division's decision to reject the opposition against European Patent No. 0 589 486.

II. Claim 1 of the patent as granted reads:

"A method of converting a non-widescreen composite line-and-field scanned video signal into a signal for display on a widescreen television receiver wherein the signal displayed has a non-widescreen aspect ratio, the method characterised by the steps of:
sampling the composite video signal at a first clock rate, producing digital samples therefrom;
separating the digital samples into chrominance and luminance signal components;
writing the digital chrominance signal components representing one line into a first memory means (1155, 1160) at the first clock rate;
writing the digital luminance signal components representing one line into a second memory means (1145, 1150) at the first clock rate;
alternately reading the digital chrominance and luminance signal components from the first and second memory means (1145-1160), respectively, at a second clock rate after a predetermined delay, which second clock rate is higher than said first clock rate;
converting the chrominance and luminance signal components into analog components; and
matrixing the analog components to produce signals representative of colour signals for display on the widescreen television receiver".

Claim 3 is directed to a corresponding apparatus for converting a non-widescreen composite colour television signal into a signal for display on a widescreen television receiver.

III. The notice of opposition was based on Article 100(a) with 56 EPC, lack of inventive step. The following prior art was inter alia referred to:

D1: H.-P. Maly, "Möglichkeiten der Bildbeeinflussung bei Farbvideospeichern", Fernseh- und Kino-technik, 1977, No.12, pp.440-442,

D2: DE-A-31 15 367.

IV. The opposition division decided that the invention involved an inventive step with respect to D2, taken to be the nearest document, and rejected the opposition.

V. The opponent lodged an appeal against this decision, citing three new documents:

D4: US-A-4 399 462,

D5: DE-A-32 33 288 (NB: in the present decision all references to this document are to the page numbers as corrected by hand),

D6: US-A-4 266 242.

VI. In a communication from the Board the opinion was expressed that the reasoning underlying the decision was hardly convincing and that it could be argued that the invention was obvious. It also appeared to the

Board that the documents D4-D6, filed with the grounds of appeal, should be admitted into the proceedings since this would not cause any further delay and the documents appeared relevant.

VII. Oral proceedings were held on 26 June 2003. The appellant (opponent) submitted that each of the documents D2, D4 or D5 rendered the invention obvious for the skilled person who tried to solve the problem of reproducing a standard TV signal on a widescreen receiver. The respondent (patent proprietor) denied this, pointing out in particular that insofar as the prior art concerned aspect ratio changes it was in connection with signal expansions, not compressions, as according to the invention. The exception was D4, where however distortion was introduced in the picture, something which was completely against the purpose of the claimed invention.

VIII. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed and that the patent be maintained.

IX. At the end of the oral proceedings the Board announced its decision.

Reasons for the Decision

1. *Construction of claim 1*

Claim 1 contains the feature that the digital chrominance signal components representing one line are written into a first memory means, that the digital luminance signal components representing one line are written into a second memory means and that the digital chrominance and luminance signal components are *alternately read out* from the first and second memory means. For the purpose of the present decision this feature will be interpreted in accordance with the description. From Figure 7 it is clear that there are in fact four line memories, one pair (1145,1150) for storing two consecutive lines (odd and even) of luminance data and one pair (1155,1160) for storing two consecutive lines (odd and even) of chrominance data. In a first time interval the luminance and chrominance data from memories 1145 and 1155 (an odd line) are read out in parallel. In a second time interval the data from memories 1150 and 1160 (an even line) are read out, also in parallel. The word "alternately" thus refers to reading data from either an odd or an even line. It does *not* mean that luminance data and the chrominance data are read out alternately, as the formulation might suggest.

2. *The prior art*

2.1 The starting point for the invention is mentioned in the patent in suit at column 4, lines 20 to 24: "Another problem with the introduction of any new television system is that the broadcasts or home

recorded versions of 4:3 aspect ratio television signals would not be compatible with the new widescreen television receivers". As used in the patent, the word "widescreen" denotes receivers which have an aspect ratio greater than 4:3, such as 16:9 or 1,85:1 (see eg column 3, lines 24 to 35). From the quoted passage it is clear - and this has not been denied by the respondent - that at the relevant date widescreen receivers incompatible with standard TV signals were already known.

2.2 D1 describes the use of RAM memories to manipulate TV images. In Figure 4 it is shown how to process a colour TV signal digitally by sampling the composite signal, then splitting it into its luminance and chrominance components, processing these components separately, merging them, and finally converting the data back to analog.

In Figure 3 a processor is shown where the sampling is performed after the separation of the luminance and chrominance components. Following separate processing the respective signals are D/A-converted and merged.

2.3 D2 describes a method of broadcasting a "Cinemascope" signal (its aspect ratio being 2,35:1) with a standard 4:3 aspect ratio by storing each TV line in a buffer memory (41 in Figure 2), selecting the part of the line to be transmitted and expanding this part so that it fits into a complete TV line. The expansion is effected by reading out the memory more slowly than writing into it.

2.4 D4 describes displaying two different images beside each other on a screen. The respective signals are horizontally compressed by reading out line buffers at twice the storage rate. The display is distorted but "the distortion is tolerated" (column 5, line 46).

2.5 D5 describes how to achieve certain special effects, such as zoom, horizontal or vertical size changes, or any kind of distortions. Explicitly mentioned are aspect ratio changes, required eg for the reproduction of Cinemascope films ("… Formatänderungen, beispielsweise für die Wiedergabe von Cinemascopefilmen", p.5, lines 11 to 14). The processing of colour TV signals is mentioned (p.21) but not shown in the embodiments. A technique for horizontal compression as well as expansion of video signals is explained (page 7, lines 17 to 19). It involves writing data alternately into line memories (11,12 in Figure 1) and reading them out again, whereby the ratio of the write and read frequencies determines the amount of compression or expansion (page 11, lines 26 to 30).

3. *The lateness of documents D4 to D6 and the issue of remittal*

The Board has decided to admit the new prior art cited for the first time by the appellant in the grounds of appeal since it is relevant and since its admission will not delay the appeal proceedings. It is not seen as necessary to remit the case to the first instance for further prosecution (cf Article 111(1) EPC) on the basis of these documents. D5, which the Board considers to be the most relevant document (see below), does not

fundamentally change the argumentation developed by the appellant but rather "fills in a hole": it serves to support the appellant's initial argument that the skilled person when studying the signal expansion described in D2 would have understood that a signal can be compressed in fundamentally the same way.

4. *Inventive step*

4.1 Novelty not being at issue, the only question to be answered is whether the subject-matter of claim 1 involves an inventive step over the cited prior art.

4.2 In the Board's view, the proper starting point is the situation described in the patent in suit (cf point 2.1 above). In the situation where existing widescreen receivers cannot reproduce ordinary TV programs without distortion, what would the skilled person do?

The respondent explained in the oral proceedings before the Board that such distortion has often simply been accepted. This does not mean however that also the (notional) skilled person would have accepted it. A distortion is clearly a drawback which should ideally be removed as a matter of course. In the real world this may or may not be done, but the decision whether to endeavour to develop TV sets offering a distortion-free picture is not technical but commercial: it would depend on expectations as to how willing the public would be to buy such TV sets. Ignoring such non-technical considerations, the *technical problem* was simply to find a way of avoiding distortion of normal (4:3 aspect ratio) TV signals when reproduced on a widescreen receiver.

4.3 Furthermore, the undistorted image will necessarily (because of the different aspect ratios) cover only a part of the widescreen area. The exact horizontal position of this area is, again, a non-technical choice. It will here be assumed that the area should be centred on the widescreen monitor.

4.4 The problem being one of aspect ratio conversion, the skilled person would search for documents in this technical area. An important question is whether he would limit his search to the reproduction of normal TV images on a widescreen monitor, ie to exactly the problem before him, or whether he would also try to find analogies. The Board here takes the view that the skilled person would try to generalize his problem as much as possible, especially in consideration of the fact that widescreen monitors are of a relatively recent date. The essence of the problem is clearly the transformation of a TV image of a certain format into an image of a different format. This is what the skilled person would look for.

4.5 In doing so he would find D5 since this document concerns horizontal size changes, any kind of distortions, and aspect ratio changes. It is true, as the respondent has pointed out, that the only explicitly mentioned aspect ratio change is from a wide format (Cinemascope) to normal (4:3). But this is only an example ("beispielsweise"). And, most important, D5 discloses a circuit which is *expressly* described as capable of compressing as well as expanding video signals. It appears to the Board that the skilled

person could not have overlooked the fact that D5 might contain a solution to his problem.

4.6 D5 teaches to compress a video signal in order to reduce the image width. As shown in Figure 1, this is achieved by sampling and digitizing the video signal (which could be a colour signal), storing the data alternately in line memories (11,12) and reading them out alternately. The signal is compressed by setting the read frequency to a value higher than the write frequency (page 8, lines 18 to 22).

Thus, D5 would suggest to the skilled person that a solution to his problem would consist in sampling the composite video signal at a first clock rate, writing the digital signals representing one line alternately into first and second line memories at the first clock rate, and reading them from the memories alternately at a second clock rate which is higher than said first clock rate.

In this connection it is noted that the principle of varying the ratio of the input and output clocks to effect format changes was already well known as such. Thus D4 suggests a ratio of 1:2 to accommodate two compressed images on the screen, and D2 mentions the ratio 1,76:1 to go from the Cinemascope to normal format (page 5, last paragraph to page 6, first paragraph). The skilled person would thus readily understand the concept underlying the teaching of D5 and its consequences.

4.7 The remaining differences between the method of claim 1 and D5 are limited to details of the luminance and chrominance signal processing. These features are related to the separate problem of sampling a colour TV signal. In addressing this problem the skilled person would learn from D1 that it is possible to sample the signal before splitting it up in its luminance and chrominance components (Figure 4). The mixing of the components can be made either digitally, before the D/A converter (Figure 4), or in an analog fashion, after D/A conversion (Figure 3). According to claim 1 the composite video signal is sampled, the chrominance and luminance signal components are separated and processed, and then converted back to analog and matrixed. No inventive step can be seen in this particular choice of the order of operations, which results from a mixture of the circuits shown in Figure 3 and Figure 4 of D1, nor is it stated in the patent in suit that this would be the case.

4.8 There remains the feature in claim 1 that the signals are read out from the memories "after a predetermined delay". This feature serves to position the image horizontally. It is however self-evident that this effect can be achieved by a delay since, due to the raster scanning, the horizontal position is a function of time. D4 gives an example of this: an image is displayed in the right half of the screen by delaying the video signal correspondingly (cf eg Figure 2).
It follows that the method of claim 1 is obvious (Article 56 EPC). The same applies for the apparatus defined in claim 3.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

M. Kiehl S. V. Steinbrener