

**Internal distribution code:**

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

**D E C I S I O N**  
**of 12 February 1993**

**Case Number:** T 0804/91 - 3.5.1

**Application Number:** 85300290.5

**Publication Number:** 0150098

**IPC:** H04N 5/205

**Language of the proceedings:** EN

**Title of invention:**  
Digital luminance processing systems

**Patentee:**  
RCA Licensing Corporation

**Opponent:**  
Interessengemeinschaft für Rundfunkschutzrechte E.V.

**Headword:**  
-

**Relevant legal norms:**  
EPC Art. 52(1), 54(3), 56, 111, 114(2)

**Keyword:**  
-

**Decisions cited:**  
-

**Catchword:**  
-



**Europäisches  
Patentamt**

**European  
Patent Office**

**Office européen  
des brevets**

Beschwerdekammern

Boards of Appeal

Chambres de recours

**Case Number:** T 0804/91 - 3.5.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.5.1**  
**of 12 February 1993**

**Appellant:**  
(Opponent)

Interessengemeinschaft  
für Rundfunkschutzrechte E.V.  
Bahnstraße 62  
D - 40210 Düsseldorf (DE)

**Representative:**

Gornott, Dietmar, Dipl.-Ing.  
Zilleweg 29  
D - 64291 Darmstadt (DE)

**Respondent:**  
(Proprietor of the patent)

RCA Licensing Corporation  
2 Independence Way  
Princeton  
New Jersey 08540 (US)

**Representative:**

Pratt, Richard Wilson  
London Patent Operation  
G.E. Technical Services Co. Inc.  
Essex House  
12/13 Essex Street  
London WC2R 3AA (GB)

**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office dated 13 August 1991  
rejecting the opposition filed against European  
patent No. 0 150 098 pursuant to Article 102(2)  
EPC.**

**Composition of the Board:**

**Chairman:** P.K.J. van den Berg  
**Members:** C.G.F. Biggio  
C. Holtz

## Summary of Facts and Submissions

I. European patent EP-B1-0 150 098 was granted on 19 April 1989, on the basis of the patent application No. 85 300 290.5, filed on 16 January 1985 and claiming rights of priority from patent applications 0 572 364 and 0 603 290 filed respectively on 19 January 1984 and 23 April 1984 in the United States of America.

II. On 15 January 1990 the Appellant

- filed a notice of opposition pursuant to Article 100(a) EPC against the grant of the patent, requesting that the latter be revoked in its entirety, and
- introduced into the opposition procedure the following documents:

D1: US-A-4 074 308;

D2: M. Jacobsen & W. Weltersbach: "Digitaler PAL-Decoder für Farbfernsehempfänger", Nachrichtentechnische Zeitung 35, (1982), No. 8, pages 524 to 529;

D3: H. Schönfelder: "Möglichkeiten der Qualitätsverbesserung beim heutigen Fernsehsystem", Fernseh- und Kino-Technik, Vol. 37, No. 5/1983, pages 187 to 190:

D4: Fernseh- und Kino-Technik, Vol. 37, No. 12/1983, page 519;

D5: W. Weltersbach & M. Jacobsen: "Digitale Videosignalverarbeitung im Farbfernsehempfänger", Part 1: "PAL-Farbdecoder", Fernseh- und Kino-Technik, Vol. 35, No. 9/1981, pages 317 to 323; and

D6: M. Jacobsen & W. Weltersbach: "Digitale Videosignalverarbeitung im Farbfernsehempfänger, Part 2: "Maßnahmen zur Verbesserung der Bildqualität", Fernseh- und Kino-Technik, Vol. 35, No. 9/1981, pages 371 to 379.

III. The Opposition Division

- found that the subject-matter of the independent Claims 1 and 12, as granted, did involve an inventive step over the teaching from documents D1, D2 and D3, and
- referred to said documents in its decision, dated 13 August 1991, rejecting the opposition pursuant to Article 102(2) EPC.

IV. On 12 October 1991, the Appellant filed Notice of Appeal against said decision and paid the appeal fee the same day.

Grounds for Appeal were filed on 3 December 1991.

On this occasion, the Appellant introduced into the procedure the European patent EP-B1-0 135 599, which will be referred to as D7.

The Appellant submitted that:

- a person skilled in the art would not have needed any inventive activity to derive the subject-matter of the granted Claim 1 from the teaching provided to him by prior art documents D1, D2 and D3, and

- the subject-matter claimed was not new, pursuant to Article 54(3) EPC, over the disclosure of

D7: EP-B1-0 135 599.

Concerning D7, the Appellant submitted that the subject-matter disclosed by said citation was so similar to that of the patent at issue as to render any detailed analysis of said citation superfluous.

He stated that D7 showed a single difference against the patent at issue; said difference consisting in the fact that the circuit  $t_2$  of D7 was not implemented as a FIR filter explicitly.

He submitted, however, that, pursuant to Article 54(3) EPC, said single difference cannot be considered as providing for novelty of the subject-matter of Claim 1, because:

- standard circuits providing for a retarding time delay, like  $t_2$ , do also provide for a low pass frequency response, and
- in the granted Claim 1, the second FIR filter is stated to have a "generally low pass frequency response", which does not constitute a definition thereof which is precise enough.

Relying on the above, the Appellant requested that the appealed decision be set aside and the patent be revoked in its entirety.

Subsidiarily, he requested to be heard at oral proceedings.

- V. The Respondent's (Patentee) submissions were filed on 1 June 1992.

As to the Appellant's submissions based on the documents already mentioned in the opposition procedure, he stated substantially that said submissions did not provide any credible basis for overturning the well-reasoned decision of the Opposition Division.

As to document D7, the Respondent noted that it was introduced into the procedure, for the first time, together with the Appellant's Grounds for Appeal, and stated that:

- D7 did not disclose an arrangement comprising three FIR filters, as claimed by the patent at issue,
- the short comments made by the Appellant on D7 appeared to admit that it discloses only an arrangement comprising two FIR filters, so that it cannot lead a person skilled in the art to use the claimed arrangement, and
- the inadequacies of arrangements comprising only two FIR filters were already commented upon by the Opposition Division in the appealed decision.

According to his **main request**, the Respondent requested, that the appeal be dismissed and, subsidiarily, to be heard at oral proceedings.

The Respondent further filed three different amended versions of independent Claims 1 and 12, of which:

- a first one, filed on 22 January 1993 under the heading "First alternative", represented his **first auxiliary request**,

- a second one, filed on 4 February 1993, represented his **second auxiliary request**, and
- a third one, filed on 22 January 1993 under the heading "Second alternative", represented his **third auxiliary request**.

VI. Independent **Claims 1 and 12**, according to the **main request, i.e. as granted**, read as follows:

Claim 1:

"A processing circuit for frequency dependent amplitude adjustment of digital video luminance signals characterized by the combination of:

- (a) a first FIR filter (31, 35) having an input port for receiving digital video luminance signals and having an output port, said first FIR filter exhibiting a cosine transfer function;
- (b) a second FIR filter (32, 33, 34, 35, 38, 41, 42) having an input port coupled to the output port of said first FIR filter and having an output port, said second FIR filter exhibiting a generally low pass frequency response;
- (c) a third FIR filter (33, 35, 36, 37, 39, 40, 43, to 47) having an input port coupled to the output port of said first FIR filter and having an output port, and including a variable scaling circuit (47) responsive to gain control signals (50), said third FIR filter exhibiting a frequency response which attenuates the relative high frequency spectrum of luminance signals less than the relative low frequency spectrum of luminance signals; and
- (d) combining means (48) coupled to the output ports of said second and third FIR filters for combining filtered signal samples provided thereby, said combined filtered samples (49) corresponding to

processed digital video luminance signal."  
(References (a) to (d) added by the Board).

Claim 12:

"A processing circuit for frequency dependent amplitude adjustment of digital video luminance signals, comprising:

- an input port (30) for applying said luminance signals;

characterized by the combination of:

- (a) switch means (83) having first (A), second (A') and third (B) input ports and first and second output ports for selectively connecting its first and second input ports respectively or alternatively connecting its first and second output ports simultaneously to its third input port;
- (b) means (31, 51, 75, 76, 77, 86, 87, 41) coupled between said input port and said switch means first input port and exhibiting the transfer function  $W(1+3z^{-1}+3z^{-2}+z^{-3})$  where W is a scale factor;
- (c) means (31, 51, 75, 76, 84, 85) coupled between said input port and the second input port of said switch means and exhibiting the transfer function  $2+3z^{-1}+3z^{-2}+2z^{-3}$ ;
- (d) means (31, 51, 75) coupled between said input port and the third input port of said switch means exhibiting the transfer function  $z^{-1}(1+z^{-1})$ ;
- (e) signal combining means (48) having first and second input ports and having an output port at which processed luminance signal is available;
- (f) means (42) exhibiting the transfer function  $z^{-1}$  for coupling the first output port of said switch means to the first input port of said signal combining means;
- (g) means (43, 44, 45, 46, 47, 82) for coupling the second output port of said switch means to the

second input port of said signal combining means, including circuitry exhibiting the transfer function  $K(-1+2z^{-1}-z^{-2})$  where K is a scaling factor " (Reference signs (a) to (g) added by the Board).

VII. The claims according to the **first auxiliary request**.

Independent **Claim 1** was so amended that its precharacterising clause and its characterising feature (a) read as follows:

"A **digital processing circuit for processing digital composite video signals inclusive of luminance and chrominance components, comprising a comb filter (18), responsive to said digital composite video signals, for providing, at an output thereof, a digital video luminance signal substantially free of accompaniment by said chrominance component and characterized by further comprising, for frequency dependent amplitude adjustment of said luminance signal:**

(a) a first FIR filter (31, 35) having an input port (30) **coupled to receive said digital video luminance signal** and having an output port, said first FIR filter exhibiting a cosine transfer function;" (**amendments emphasised**).

Independent **Claim 12**, was so amended that its precharacterising clause and its characterising features (b), (c) and (d) read as follows:

"A processing circuit for **processing digital composite video signals inclusive of luminance and chrominance components, comprising a comb filter (18), responsive to said digital composite video signals, for providing, at an output thereof, a digital video luminance signal substantially free of accompaniment by said chrominance**

**component and characterized by further comprising**, for frequency dependent amplitude adjustment of said luminance signal:"

- "(b) means (31, 51, 75, 76, 77, 86, 87, 41) coupled between **said comb filter output** and said switch means first input port and exhibiting the transfer function  $W(1+3z^{-1}+3z^{-2}+z^{-3})$  where W is a scale factor;
- (c) means (31, 51, 75, 76, 84, 85) coupled between **said comb filter output** and the second input port of said switch means and exhibiting the transfer function  $2+3z^{-1}+3z^{-2}+2z^{-3}$ ;
- (d) means (31, 51, 75) coupled between **said comb filter output** and the third input port of said switch means exhibiting the transfer function  $z^{-1}(1+z^{-1})$ ;"  
(amendments emphasised).

VIII. The claims according to the **second auxiliary request**.

Independent **Claim 1**, was so amended that its precharacterising clause and its characterising feature (a) read as follows:

"A **digital processing circuit for processing digital composite video signals inclusive of luminance and chrominance components, comprising a signal separation filter (18), responsive to said digital composite video signals, for providing, at an output thereof, a digital video luminance signal substantially free of accompaniment by said chrominance component and characterized by further comprising**, for frequency dependent amplitude adjustment of said luminance signal:

- (a) a first FIR filter (31, 35) having an input port (30) coupled to receive **said digital video luminance signal** and having an output port, said first FIR filter exhibiting a cosine transfer

function, **having a first null at a frequency substantially higher than the frequencies comprising the luminance signal component of the video signal;**" (amendments emphasised).

Independent **Claim 12**, was so amended that its precharacterising clause and its characterising features (b), (c) and (d) read as follows:

"A processing circuit **for processing digital composite video signals inclusive of luminance and chrominance components, comprising a signal separation filter (18), responsive to said digital composite video signals, for providing, at an output thereof, a digital video luminance signal substantially free of accompaniment by said chrominance component and characterized by further comprising, for frequency dependent amplitude adjustment of said luminance signal:**"

- "(b) means (31, 51, 75, 76, 77, 86, 87, 41) coupled between **said comb filter output** and said switch means first input port and exhibiting the transfer function  $W(1+3z^{-1}+3z^{-2}+z^{-3})$  where W is a scale factor;
- (c) means (31, 51, 75, 76, 84, 85) coupled between **said comb filter output** and the second input port of said switch means and exhibiting the transfer function  $2+3z^{-1}+3z^{-2}+2z^{-3}$ ;
- (d) means (31, 51, 75) coupled between **said comb filter output** and the third input port of said switch means exhibiting the transfer function  $z^{-1}(1+z^{-1})$ ;" (amendments emphasised).

IX. The claims according to the **third auxiliary request**.

Independent **Claim 1** was so amended that its precharacterising clause and its characterising features (a) and (d) read as follows:

"A **digital processing circuit for processing digital composite video signals inclusive of luminance and chrominance components, comprising a comb filter (18), responsive to said digital composite video signals, for providing, at an output thereof, a digital video luminance signal substantially free of accompaniment by said chrominance component and characterized by further comprising, for frequency dependent amplitude adjustment of said luminance signal:**

(a) a first FIR filter (31, 35) having an input port (30) coupled to receive said digital video luminance signal and having an output port, said first FIR filter exhibiting a cosine transfer function;"

"(d) combining means (48) coupled to the output ports of said second and third FIR filters for combining filtered signal samples provided thereby, said combined filtered samples (49) corresponding to processed digital video luminance signal, **said combining means being coupled to the output of said third FIR filter by apparatus comprising:**

(d1) a coring circuit (82) having a threshold value input port, said coring circuit having a signal path connected between said third FIR filter and said combining means;

(d2) digital control means (81), having an input port coupled to the output port of said third FIR filter, for developing digital threshold values and applying them to the threshold input port of said coring circuit; and

- (d3) **a fourth FIR filter (78, 79, 80) having an input port coupled to the output port of said first FIR filter (31, 51) and an output port coupled to said digital control means, said fourth FIR filter exhibiting a low pass frequency response.**"  
(References d1) to d3) added by the Board;  
**amendments emphasised).**

Independent **Claim 12**, was so amended that its precharacterising clause and its characterising features (b), (c), (d) and (g) read as follows:

"A processing circuit **for processing digital composite video signals inclusive of luminance and chrominance components, comprising a comb filter (18), responsive to said digital composite video signals, for providing, at an output thereof, a digital video luminance signal substantially free of accompaniment by said chrominance component and characterized by further comprising, for frequency dependent amplitude adjustment of said luminance signal:**"

- "(b) means (31, 51, 75, 76, 77, 86, 87, 41) coupled between **said comb filter output** and said switch means first input port and exhibiting the transfer function  $W(1+3z^{-1}+3z^{-2}+z^{-3})$  where W is a scale factor;
- (c) means (31, 51, 75, 76, 84, 85) coupled between **said comb filter output** and the second input port of said switch means and exhibiting the transfer function  $2+3z^{-1}+3z^{-2}+2z^{-3}$ ;
- (d) means (31, 51, 75) coupled between **said comb filter output** and the third input port of said switch means exhibiting the transfer function  $z^{-1}(1+z^{-1})$ ;"
- (g) means (43, 44, 45, 46, 47, 82) for coupling the second output port of said switch means to the

second input port of said signal combining means, including circuitry exhibiting the transfer function  $K(-1+2z^{-1}-z^{-2})$  where K is a scaling factor, and an adaptive coring circuit (81, 82) responsive to coring control circuitry (31, 51, 75 to 80) coupled to said input port and exhibiting the transfer function  $D(1+z^{-1})(1+z^{-2})^2$  where D is a scaling factor." (Amendments emphasised).

Dependent Claims 8 and 13, as granted, were deleted; the subject-matter thereof having been incorporated into Claim 1 and 12 respectively, whereas dependent Claims 2 to 7 and 9 to 11, as granted, were maintained unchanged.

- X. On 16 December 1992, the Board summoned the parties to oral proceedings, which took place on 12 February 1993.
- XI. During said oral proceedings the parties further developed the submissions they had already made in writing.

As to Claims 1 and 12 according to the main and first auxiliary requests, the Respondent submitted that the subject-matter of said claims was distinguished against the teaching from D1 because said teaching is restricted to analog filtering circuits whereas the patent at issue claims digital FIR filters.

He pointed out that, in the apparatus according to the patent at issue, only the luminance signals are processed by the circuits according to Claims 1 and 12; the chrominance signals being already suppressed by comb filter 18 (see: column 3, line 48 to column 4, line 5), so that the cutoff frequency of the first FIR filter -having a cosine transfer function- may be chosen to be higher than the cutoff frequency of the corresponding

filter according to D1, whose function is mainly that of suppressing the chrominance signals.

With the help of graphics, he showed that this choice provides for an overall filtering effect which is not obtained by D1, i.e. an attenuation of the relative high frequency spectrum of the luminance signals which is less than that of the relative low frequency spectrum of said signals.

In respect of citation D7, he submitted that the disclosure of said citation was not opposable to the novelty of the subject-matter of Claim 12, certainly not according to any of the auxiliary requests.

The Appellant submitted that the distinction made - analog filters in D1 against digital filters in the patent at issue - was irrelevant for the issue of inventive step, because

- the fundamental characteristics of FIR filters are identical, irrespective of the fact that the filtered signals might be analogue or digital signals, and
- the implementation in digital form of FIR filters, of the kind disclosed by D1, was disclosed by citation D2, with reference to its Figure 2 on page 525, by citation D3, with reference to its Figure 2 on page 188, and by citation D5, with reference to its Figure 4 on page 319.

He pointed out that the amended precharacterising clauses of Claims 1 and 12, according to the first auxiliary request, did not provide for any effective further limitation of the subject matter of said claims, since the respective drafts of said claims, as granted,

were directed to processing circuits for frequency dependent amplitude adjustment of digital video luminance signals only, without any reference to the chrominance component.

Moreover, he pointed out that:

- the function of the first FIR filter according to D1 is not restricted to the suppression of the chrominance signals; this being only a preferable arrangement, when no specific independent colour and sound trapping is provided (column 10, lines 52 to 59),
- when such independent colour and sound trapping is provided (see: D2, page 527, Figure 7), the choice of the cutoff frequency of the FIR filter - having a cosine transfer function - is freely determinable by a person skilled in the art, as a function of the overall filtering effect looked for, and
- none of the independent claims according to the main and to the first auxiliary request mentions any specification for the cutoff frequency of the FIR filter having said cosine transfer function.

In respect of citation D7, he submitted that the disclosure of said citation was surely opposable to the novelty of the subject-matter of Claim 12 either as granted or according to the first and second auxiliary requests.

As to Claims 1 and 12, according to the second auxiliary request, the Respondent submitted that

- the feature: "said first FIR filter exhibiting a cosine transfer function, having a first null at a

frequency substantially higher than the frequencies comprising the luminance signal component of the video signal", mentioned by Claim 1, provided for a very significant distinction of the subject-matter of said claim, since such a feature was not disclosed by any of the prior art documents D1 to D6,

- support for said feature could be found in the specification of the patent as granted (column 3, lines 40 to 42; column 4, line 30, Equation (1); column 4, lines 40 to 43; Figure 3, elements 30, 31, 51; and column 8, line 3 considered together with Figure 6, with switch 83 in the position indicated by reference sign "B"), and
- said feature was inherent in Claim 12, given the definition of the transfer function of the first filter as  $z^{-1}(1+z^{-1})$ .

The Appellant pointed out that the expression: "a frequency substantially higher than the frequencies comprising the luminance signal component of the video signal" did not provide for an unambiguous specification of the frequency at which said first FIR filter - exhibiting a cosine transfer function - should have its first null and stressed that the frequency response of a filter is unambiguously defined, only when the cutoff frequency of said filter is specified.

He disputed, moreover, that support for the feature added to the characterising clause of Claim 1 could be found in the passages of the specification of the patent as granted referred to by the Respondent.

As to Claims 1 and 12 according to the third auxiliary request, the Respondent submitted that none of the

documents D1 to D6 discloses digital control means (81), having an input port coupled to the output port of said third FIR filter, for developing digital threshold values and applying them to the threshold input port of a coring circuit, as mentioned in Claim 1.

The Appellant submitted that the principle of adapting the thresholds of coring circuits, as a function of the characteristics of the received luminance signal, was already known e.g. from D2 (see the headline: "Studiotechnik abgewandelt", page 528 to page 529, and page 527, Figure 7) and from D3 (see: page 189, right-hand column and Figure 5).

#### **Reasons for the Decision**

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is therefore admissible.
2. *Novelty*

Citation D1 discloses an analog equivalent of the digital filter structure claimed by Claim 1 according to the main request, said analog filter comprising (see: Figures 1 and 5):

- (a) a first filter - exhibiting a cosine transfer function (column 6, lines 8 to 17) - formed by the first part of the delay line ((110) or (510)) and the taps  $t_1$  and  $t_2$ ;
- (b) a second filter, having an input port coupled to the output port of the first filter and an output port, and being formed by the taps  $t_4$  and  $t_5$ , and by an adder (520), said second filter basically

exhibiting a low-pass frequency characteristic (see: Figure 6c and curve  $V_b = \frac{1}{2}(b+c)$ );

- (c) a third filter, having an input port coupled to the output port of the first filter and an output port, and being formed by the taps  $t_3$  to  $t_6$  and by the adders (520) and (530), the output of said third filter being fed to a scaling circuit which is controlled by signals coming from a peaking circuit, so that said third filter exhibits a frequency response in which the relatively high frequency portion of the video luminance signal is less attenuated than the relatively low frequency portion of said signal (see: Figure 6c and curve  $V_p = \frac{1}{2}(b+c) - \frac{1}{2}(a+d)$ );
- (d) an adder (550) combining the output signals from the second and the third filters, and providing at its output a processed luminance signal.

2.1. Thus the disclosure of citation D1 teaches a person skilled in the art how to realise an analog circuit for processing analog video luminance signals, said circuit comprising three analog filters and exhibiting a frequency response in which, independently of each other, the frequency responses of the three filters can be determined and suitably combined to provide for a desired overall frequency response.

The individual and the overall frequency response of the three analog filters disclosed by D1 are so strictly analogous to those of corresponding FIR filters that, in the Board's view, it is justified to consider them as analog "FIR" filters, albeit this definition is not explicitly mentioned in the disclosure of D1; this view having been expressed by the Appellant and not disputed by the Respondent.

2.2. Consequently, the subject-matter of Claim 1 is distinguished against the teaching from D1 essentially because said teaching is restricted to the use of analog "FIR" filters, whereas the patent at issue claims digital FIR filters.

The subject-matter of Claim 1, according to the main request, is hence novel pursuant to Article 54 EPC, which indeed was never disputed during the procedure.

3. *Inventive step*

The Board is, however, of the opinion that the distinction which leads to consider the subject-matter of Claim 1 as novel over D1, i.e. analog "FIR" filters in D1 against digital FIR filters in the patent at issue, is irrelevant for the appreciation of inventive step, because

- the fundamental characteristics of such filters are identical, irrespective of the fact whether they are analogue or digital filters and the filtered signals are analogue or digital signals respectively, and
- the digital implementation of "FIR" filters, of the kind disclosed by D1, is known from citation D2 - which discloses said implementation with reference to its Figure 2, on page 525 - from citation D3 - which discloses said implementation with reference to its Figure 2, on page 188 - and from citation D5 - which discloses said implementation with reference to its Figure 4, on page 319.

3.1. The Board's opinion is also based on the following considerations.

The function of the first "FIR" filter according to D1 is not restricted to the suppression of the chrominance signals; this being only a preferable arrangement, when no specific independent colour and sound trapping is provided (see: column 10, lines 52 to 59).

When such independent colour and sound trapping is provided (see: D2, page 527, Figure 7), the choice of the cutoff frequency of the "FIR" filter - having a cosine transfer function - is freely determinable by a person skilled in the art, as a function of the overall filtering effect looked for.

Independent Claim 1, according to the main request, does not mention any specification for the cutoff frequency of the first FIR filter, having a cosine transfer function.

Citations D2, D3, D5 and D6 teach a person skilled in the art how to implement a combination of "FIR" filters, of the kind disclosed by D1 and intended for processing video luminance signals, in order that its overall frequency response will be highly similar to the one shown by Figures 6a and 6c of D1 and by Figure 1 of the patent at issue.

In view of the similarities set out above, the person skilled in the art, having to design a digital circuit intended for processing video luminance signals, made up of such a combination of FIR filters and having an overall frequency response as shown by Figure 1 of the patent at issue, would have no difficulties in deriving, from the processing circuit known from Figures 1 and 5 of D1, a digital processing circuit that falls within the scope of Claim 1 according to the main request.

3.2. The Board is, consequently, of the opinion that

- once the desired overall frequency response has been defined, it would pose no problem to a person skilled in the art, starting from the known basic structure using a delay line and a suitable number of adders and multipliers, to design a luminance processing circuit as claimed by Claim 1, according to the main request, and
- the subject-matter of said claim has to be considered as not involving an inventive step pursuant to Article 56 EPC.

Hence, the Respondent's main request may not be granted.

3.3. In this situation, any consideration of citation D7, in order to appreciate

- whether or not, pursuant to Article 54(3) EPC, the disclosure of D7 might be opposable to the novelty of the subject-matter of Claims 1 or 12, according to the main request, and accordingly,
- whether or not, the introduction of D7 into the present appeal procedure might be admissible under Article 114(1)(2) EPC,

may be dispensed with.

4. *First auxiliary request*

It is noted that the subject-matter claimed by Claim 1 - according to the main request - concerned a processing circuit for frequency dependent amplitude adjustment of digital video luminance signals only, without any chrominance component.

Consequently, the specifications added to the amended precharacterising clause of Claim 1 - according to the first auxiliary request - were already implicitly contained in the subject-matter of Claim 1, as according to the previous request.

4.1. The Board is, therefore, of the opinion that the features added to the amended precharacterising clause of Claim 1 - according to the first auxiliary request - neither modify the overall subject-matter claimed by said claim, nor provide for any effective further delimitation thereof, in respect of that claimed by Claim 1 according to the previous request.

4.2. The Board is, hence, of the opinion that

- the considerations, already mentioned in respect of Claim 1 according to the main request (points 2 to 3.2), do also apply to Claim 1 according to the first auxiliary request, and
- the subject-matter of said claim lacks an inventive step pursuant to Article 56 EPC.

Hence, the Respondent's first auxiliary request may not be granted and any consideration of citation D7 may be dispensed with (see: point 3.3).

5. *Second auxiliary request*

The Respondent submitted that

- support for the feature: "said first FIR filter exhibiting a cosine transfer function, having a first null at a frequency substantially higher than the frequencies comprising the luminance signal component of the video signal", mentioned by

Claim 1 according to the second auxiliary request, could be found in the specification of the granted patent (column 3, lines 40 to 42; column 4, line 30, Equation (1); column 4, lines 40 to 43; Figure 3, elements 30, 31, 51; and column 8, line 3 considered together with Figure 6, with switch 83 in the "B" position), and

- said feature was inherent in Claim 12, given the definition of the transfer function of the first filter as  $z^{-1}(1+z^{-1})$ .

5.1. It is to be noted that the mentioned passages of the specification of the patent, as granted, read as follows:

- (a) "A baseband analog composite video signal from element 12 is applied to the input of an analog-to-digital converter (ADC) 14 which samples the signal at a rate of, e.g., four times the color subcarrier frequency and generates digital representations of the analog signal" (column 3, lines 37 to 43, where reference is made to Figure 2);
- (b) "The transfer function exhibited at the output of adder 51 relative to the input samples applied to port 30 is a cosine response. In "z" transform notation the transfer function is described by the equation

$$S_{51}/S_{IN}=1+z^{-1} \quad (1)$$

where  $S_{51}$  and  $S_{IN}$  are the values of the signal samples at the output port of adder 51 and input port 30 respectively" (column 4, lines 23 to 35 and Equation 1, with reference to Figure 3);

(c) "Circuit elements 33, 35, 42, 43 and 45 are delay elements which delay samples by one sample period and are for example latches clocked synchronously at the sample rate" (column 4, lines 40 to 43, with reference to Figure 3); and

(d) "The second transfer function is generally a wideband response with a null at 7.2 MHz (for NTSC sample rate)" (column 8, lines 1 to 3).

5.2. The Board finds nowhere, in said mentioned passages of the specification of the patent as granted, a statement providing for a clear unambiguous support for the feature: "said first FIR filter exhibiting a cosine transfer function, having a first null at a frequency substantially higher than the frequencies comprising the luminance signal component of the video signal", mentioned by Claim 1 according to the second auxiliary request.

Even considering the statement of column 8 (lines 1 to 3) together with Figure 6 where the switch 83 is in the position indicated by reference sign "B", the Board cannot find any support for said feature.

5.3. In fact, the functioning of the circuit shown in Figure 6 - when the switch 83 is in the "B" position - is disclosed in column 8 (lines 19 to 28) of the patent at issue and summarised by the transfer function described by equation (9) mentioned there, which reads:

$$F_B = -Kz^{-1} + (K+1)z^{-2} + (K+1)z^{-3} - Kz^{-4}$$

and which is stated to be: "in general a cosine like frequency response having a null at approximately 7.2 MHz".

The Board finds, however, that

- said transfer function is not that of the first FIR filter formed by elements 31 and 51, as stated by Claim 1, on the contrary,
- said transfer function is that of the whole chain of elements which are connected between input port 30 and output port 49 of the circuit according to Figure 6 - when the switch 83 is in the "B" position - as stated in column 8 (lines 19 to 28) of the patent at issue, and
- said whole chain of elements, which are connected between input port 30 and output port 49 of the circuit according to Figure 6 - when the switch 83 is in the "B" position - comprises a plurality of elements, other than those (31, 51) forming the first FIR filter, so that, from the specification of the patent at issue, no information may be derived as to the frequency at which said first FIR filter, having a cosine transfer function, would exhibit its first null.

5.4. The Board is, consequently, of the opinion that

- the feature: "said first FIR filter exhibiting a cosine transfer function, having a first null at a frequency substantially higher than the frequencies comprising the luminance signal component of the video signal", mentioned by Claim 1 according to the second auxiliary request, is neither supported by the specification of the patent at issue, nor by the disclosure, as a whole, of the corresponding patent application as filed, whose text, in this respect, is identical to that of the patent as granted, and

- said claim is thus inadmissible pursuant to Article 123(2) EPC, because there is no basis for the said feature in the application as filed.

Hence, the Respondent's second auxiliary request may not be granted and consideration of citation D7 may be dispensed with (see: point 3.3).

6. *Third auxiliary request*

Independent Claims 1 and 12, according to the third auxiliary request, are so drafted that

- the subject-matter of Claim 1 results from the incorporation of the features mentioned by dependent Claim 8, as granted, into the subject-matter of Claim 1, as according to the main request, and
- the subject-matter of Claim 12 results from the incorporation of the features mentioned by dependent Claim 13, as granted, into the subject-matter of Claim 12, as according to the main request.

Claims directed to such subject-matters were never submitted to the Opposition Division, which consequently, never considered the patentability thereof neither in respect of the prior art (D1 to D6) submitted to it nor, *a fortiori*, in respect of D7.

6.1 Having regard to the above and in accordance with the well established jurisprudence of the Boards of Appeal, the Board is of the opinion that it would be unfair to the Respondent to pursue the examination of the present appeal by itself, since this would deprive him of his

right to have the opposition against his patent examined by two instances.

- 6.2. The Board is, consequently, of the opinion that it should use its discretion under Article 111(1), second sentence thereof, and remit the case to the first instance, for further prosecution on the basis of the Respondent's third auxiliary request.
7. For the sake of completeness, the Board considers it appropriate to devote a few lines to citation D7.
- 7.1. Citation D7, i.e. European patent EP-B1-0 135 599, which the Appellant introduced into the procedure with the Grounds for Appeal, derives from European patent application No. 83 109 517.9 filed on 24 September 1983, i.e. prior to the priority dates (19 January and 23 April 1984) claimed by the patent at issue.

Pursuant to Article 93 EPC, said European patent application No. 83 109 517.9 was published on 3 April 1985, i.e. after the priority dates claimed by the patent at issue.

According to the wording of paragraphs 3 and 4 of Article 54 EPC, it is only the content of said European patent application No. 83 109 517.9, as filed, which constitutes prior art and this only in respect of the Contracting States DE and FR commonly designated by both said European patent application and the patent at issue. European patent EP-B1-0 135 599 does not constitute prior art.

- 7.2. The Board notes that European patent application No. 83 109 517.9 was published on 3 April 1985 and, hence, was available to the Appellant, prior to 15 January 1990.

Nevertheless said document was not introduced into the procedure on 15 January 1990, the date at which the Appellant filed notice of opposition against the grant of the patent at issue.

- 7.3. No objection concerning the late filing of D7 was raised by the Respondent, who merely submitted that D7 did not anticipate his invention pursuant to Article 54 EPC.
- 7.4. It is up to the first instance to consider in how far the content of said European patent application No. 83 109 517.9 may be novelty destroying with regard to the patent as amended according to the third auxiliary request, and, to use its discretion under Article 114(2) EPC to decide whether or not the introduction of the said European patent application into the procedure should be admitted.

**Order**

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

1. The decision under appeal is set aside.
2. The Respondent's main request, first and second auxiliary requests are refused.
3. The case is remitted to the first instance for further prosecution on the basis of the Respondent's third auxiliary request.

The Registrar:

The Chairman:

M. Kiehl

P.K.J. van den Berg