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D E C I S I O N
of 29 July 1998

Case Number: T 0903/96 - 3.5.2

Application Number: 89305207.6

Publication Number: 0343929

IPC: G11B 20/10

Language of the proceedings: EN

Title of invention:
Digital signal decoding apparatus

Patentee:
Sony Corporation

Opponent:
Interessengemeinschaft für Rundfunkschutzrechte E.V.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (denied)"
"Obvious digitalisation of known analogue circuit using obvious available options"

Decisions cited:
-

Catchword:
-



Case Number: T 0903/96 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 29 July 1998

Appellant: Sony Corporation
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 6 August 1996
revoking European patent No. 0 343 929 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: W. J. L. Wheeler
Members: M. R. G. Villemin
A. C. G. Lindqvist

Summary of Facts and Submissions

I. The Appellant contests the decision of the Opposition Division to revoke European Patent No. 0 343 929. The reason given for the revocation was that the subject-matter of the claims of the main request and the auxiliary request did not involve an inventive step, having regard to the following prior art:

D1: Symposium Record Equipment Innovations Sessions, 12th International Television Symposium, Montreux, 30 May 1981 to 4 June 1981; pages 251 to 260; "An Experiment of Channel Coding for Digital Videotape Recorder", K. Yokoyama et al.

D2: IEEE Transactions on Consumer Electronics, Vol. CE-32, N° 3, August 1986, pages 362 to 371; "AN EXPERIMENTAL DIGITAL VIDEO RECORDING SYSTEM", L.M.H.E. Driessen et al.

D3: Journal of the Institution of Electronic and Radio Engineers, Vol. 55, No. 6, pages 229 to 236; "High data rate magnetic recording in a single channel", C.H. COLEMAN et al.

D4: SMPTE Journal, January 1988, pages 8 to 12; "Adaptive Equalization Techniques for Digital Video Recording Systems", B. Seiichi Mita et al.

II. The claims of the main request and the auxiliary request submitted to the Opposition Division have not been modified during the appeal proceedings.

Claim 1 of the main request (claim 1 as granted) reads as follows:

"Apparatus for decoding a transmitted digital signal, which signal has been precoded in accordance with a class IV partial response method, the apparatus comprising:

receiver means (32, 33) for receiving said transmitted digital signal;

low-pass filter means (34) for limiting the frequency of the output of said receiver means (32, 33), the cut-off frequency of said filter means (34) being the Nyquist frequency of said digital signal;

generator means (36, 37) for generating a clock signal with a frequency (f_s) equal to the transmission rate of said digital signal from the output of said receiver means (32, 33);

converter means (35) for sampling the output of said filter means (34) by said clock signal and thereby producing a binary signal; and

processing means (39a to 44), comprising a class IV partial response decoder (42, 43), for processing the output of said converter means (35) to decode said transmitted digital signal in accordance with said class IV partial response method."

Claims 2, 3 and 4 depend on claim 1.

Claim 1 of the auxiliary request reads as follows:

"Apparatus for decoding a transmitted digital signal, which signal has been precoded in accordance with a class IV partial response method, the apparatus comprising:

receiver means (32, 33) including an amplifier (33) for receiving and amplifying said transmitted digital signal;

low-pass filter means (34) for limiting the frequency of the output of said amplifier (33), the cut-off frequency of said filter means (34) being the Nyquist frequency of said digital signal;

generator means (36, 37) for generating a clock signal with a frequency (f_s) equal to the transmission rate of said digital signal from the output of said amplifier (33);

converter means (35) for sampling the output of said filter means (34) by said clock signal and thereby producing a binary signal; and

processing means (39a to 44) comprising an equaliser in the form of a transversal filter (39a to 41) for processing the binary signal from said converter means (35), and a class IV partial response decoder (42, 43) for processing the output of said transversal filter (39a to 41) to decode said transmitted digital signal in accordance with said class IV partial response method."

Claim 2 depends on claim 1.

III. In reply to observations of the Board in the annex to the summons to attend oral proceedings, the Respondent cited the following document:

D8: US-A-4 504 872.

IV. Oral proceedings were held on 29 July 1998. After deliberation by the Board, the Chairman announced that the decision will be given in writing and no further submissions will be needed unless the Board asks for them.

V. The Appellant (Patent proprietor) argued essentially as follows:

In addition to requiring a class IV partial response decoder in the digital domain, claim 1 of the main request required the specific combination of low-pass filter, generator means, converter means, and processing means defined in paragraphs 3 to 6 of the claim. The claimed apparatus allowed the problem associated with the prior systems to be avoided while still allowing sampling at the transmission rate even though digital processing generally required a sampling frequency twice as high as the transmission rate.

The whole of D1 was concerned with the details of an analogue class IV partial response decoding circuit. Although this document proposed use of a digital demodulator, it did not suggest that there was any problem with analogue decoding circuits nor explain how a digital decoding might be implemented. If the problems of analogue class IV decoding were indeed so apparent from D1, it was hard to comprehend why a digital class IV decoding system was not disclosed over the seven year period between publication of D1 in 1981 and the patentee's invention in 1988. After having disclosed the theory of the class IV partial response method, the authors of D1 went on to propose a system in which this method was performed in the analogue domain. D1 was consistent with all the other cited prior art documents in proposing an analogue implementation.

Claim 1 of the auxiliary request did not merely relate to the use of a digital transversal filter in a digital class IV partial response decoder but also to the choice of the location of this filter between the A/D converter and the decoder. D4 related to a very specific equalisation technique which used a digital transversal filter providing an output to a digital automatic equaliser to implement probabilistic

decoding. This digital filter was disclosed in an entirely different context to the claimed invention, and one which had nothing to do with class IV partial response decoding. D4 indicated that analogue equalisers were not fast enough for the particular probabilistic decoding technique to be employed. This was not a problem applicable to class IV decoding systems. D4 did not demonstrate that the use of a digital transversal filter in a class IV partial response decoding system with the detailed circuit arrangement defined in claim 1 of the auxiliary request was obvious. Hence, a skilled person would not consider D4 to be relevant at all to class IV decoding systems.

D8 had been cited for the first time in the appeal procedure and at such a short notice before oral proceedings that more time would have been needed for studying its whole technical content. Nevertheless, the introduction of D8 in the appeal procedure was not contested since it did not pose a serious threat to the patent. In any case, D8 only disclosed the last part of claim 1 of the main request. To arrive at Figure 1 of the patent in suit, the system known from D8 would require numerous modifications which were neither obvious to the skilled person nor suggested by the cited prior art. It should be concluded from the most pertinent passages of D8, i.e. column 1, lines 16 to 18 and 26 to 30; column 3, lines 10 to 25; column 5, lines 11 to 17 and 27 to 43; column 7, line 53 to column 8, line 10; column 8, lines 18 to 25; first paragraphs of claims 1, 3 and 6, that the structure of the detector disclosed in this document did not render obvious the combination of all the features of the invention as defined in claim 1 of the main request or claim 1 of the auxiliary request. Although individual features of the claimed apparatus were known in the prior art, this did not mean that the claimed apparatus was obvious.

VI. The Respondent (Opponent) argued that the main advantage of digital processing means over analogue processing means, namely that their correct operation is less sensitive to temperature changes and ageing, was well known to the skilled person. It was known from the theory as explained in D3 that recording signals according to the class IV partial response method allowed the sampling of the reproduced signals to be effected at the value of the transmission rate of these signals. D1 suggested the use of a digital class IV partial response digital decoder (page 260, lines 8 to 10). Hence, it was obvious to the skilled person to try to realise a digital class IV partial response decoder on the basis of the analogue class IV partial response decoder shown in Figure 4 of D1 in order to replace this analogue decoder by a digital one. On the other hand, a class IV partial response decoder implemented in the digital domain was known as early as 1985, as attested by document D8. This proved that, between the publication (1981) of D1 and the priority date (1988) of the patent in suit, there was no prejudice against digital decoding of signals precoded in accordance with the class IV partial response method. Therefore, the use of a class IV partial response decoder implemented in the digital domain was obvious in view of D1 and D3 or D1 and D8. Figure 9 of D4 showed the use of an equaliser constituted by a digital transversal filter connected to the output of an analogue-to-digital converter. No inventive step could be seen in the use of a digital transversal filter as an equaliser in a digital class IV partial response decoder because equalisation was already well known in the analogue version of this technique of decoding, as attested for example by Figure 4(b) of D1. Therefore, the subject-matter of claim 1 of the main request and of claim 1 of the auxiliary request did not involve an inventive step.

VII. The Appellant submitted the following requests:

- As a main request, that the decision under appeal be set aside and that the patent be maintained unamended,
- As an auxiliary request, that the patent be maintained in amended form on the basis of claims 1 and 2 and description page 5 of the "second conditional submission" as filed with the letter dated 2 May 1996, the remaining parts of the patent specification being unamended.

VIII. The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Admissibility of document D8*

In reply to the observations of the Board formulated in the annex to the summons to attend oral proceedings, the Respondent cited document D8 for the first time. As will be clear from the following reasons for this decision, D8 is relevant to the subject-matter of the patent in suit. On these grounds, document D8 cannot be disregarded in application of Article 114(2) EPC and is introduced into the appeal proceedings.

3. Novelty has not been contested by the Respondent. Therefore, the main issue to be considered in the present appeal is whether the subject-matter of claim 1 of the main request and claim 1 of the auxiliary request involves an inventive step within the meaning of Article 56 EPC.

4. *Appellant's main request*

4.1 Closest prior art

The Board agrees with the parties that D1 discloses the closest prior art. This document describes (see Figure 4) an apparatus including analogue circuits for decoding a transmitted signal which has been precoded in accordance with a class IV partial response method, the apparatus comprising receiver means (play back amplifier) for receiving the transmitted digital signal. The processing means comprises an analogue class IV partial response decoder to decode the reproduced analogue signals transmitted through an analogue equaliser (see particularly Figure 4(b)).

4.2 Starting from the prior art analogue class IV partial response decoding system disclosed in D1, the problem to be solved by the patent in suit is the realisation of a decoding system of reduced manufacturing cost and provided with means for reducing influences exerted by temperature characteristic and/or aging changes (see description of the patent specification, column 5, lines 7 to 16).

It is well known to the skilled person that temperature and aging changes generally negatively influence the reliability of analogue circuits and that solutions have to be found in order to reduce the effects of these changes. The ever increasing use of digital techniques has been an important trend in electronic signal processing for many years. For these reasons, in the Board's judgement, the problem stated above is an obvious one for the skilled person to try to solve and cannot contribute to an inventive step.

4.3 In addition to components in common with the precoding

circuits of the apparatus disclosed in D1, the apparatus defined in claim 1 recites the following features (labelled (a), (b), (c) and (d) by the Board):

- (a) low-pass filter means (34) for limiting the frequency of the output of said receiver means (32, 33), the cut-off frequency of said filter means (34) being the Nyquist frequency of said digital signal;
- (b) generator means (36, 37) for generating a clock signal with a frequency (f_s) equal to the transmission rate of said digital signal from the output of said receiver means (32, 33);
- (c) converter means (35) for sampling the output of said filter means (34) by said clock signal and thereby producing a binary signal;
- (d) processing means (39a to 44), comprising a class IV partial response decoder (42, 43) for processing the output of said converter means (35) to decode said transmitted digital signal in accordance with said class IV partial response method.

4.4 The question to be answered is whether the digitalisation of the decoding apparatus known from D1 by the combination of the above features (a) to (d) involves an inventive step with regard to the cited prior art.

The class IV partial response decoding system described in D1 is implemented in the analogue domain. It is observed that the decoding part (see Figure 4(b)) of this known system includes analogue components (adder and 1 bit delay unit) corresponding to the digital components (adder 42 and data latch 43) of the decoding

part of the embodiment described with reference to Figure 3 of the patent in suit.

The skilled person, at the priority date of the patent in suit, knew that the characteristics of the analogue decoder disclosed in D1 were adversely affected by the effects of temperature and/or aging changes. The skilled person also knew that, in general, the characteristics of digital circuits are much less affected by temperature changes and aging and that their effects could, at least in theory, be reduced by replacing the analogue class IV partial response decoder by a digital class IV partial response decoder and it would therefore have been obvious to him to investigate whether it was possible in practice to implement a class IV digital partial response decoder. Following this obvious path of investigation, the skilled person would note that:

- Taking advantage of the fact that the clock frequency for decoding is low, D1 suggests that "it will be easy to build a demodulator in digital form" (page 260, lines 8 to 10).
- Documents D8 and D3 each describe a concrete example of a digital class IV partial response decoder suitable for a magnetic tape recorder operating at a transfer rate of about 117 MHZ (see D8, column 2, lines 49 to 55; column 5, lines 27 to 33; Figure 3; and D3, page 229, left-hand column, second paragraph). The decoder known from D8 is disclosed in more detail than the decoder known from D3. The technical comments of the Board will therefore proceed mainly in respect to the decoder of D8.

4.4.1 Figure 3 of D8 illustrates a digital decoder for digital signals precoded according to the class IV

partial response method (see D8, column 5, lines 11 to 14). The precoded data input to this decoder comes as an analogue signal applied to an analogue to digital converter 24 producing a binary signal delivered to latch 30 and adder 32.

It is known from the theory (see the description of the prior art in the contested patent, column 2, lines 34 to column 3, line 40; and, in particular, prior art documents D1, section 3.2, D3, section "Post-equalization" and D8, column 1, lines 11 to 30) that the class IV partial response method is a particular class of partial response method implying the specific transfer function $[(1-D^2)]$, where D designates a sampling cycle (delay unit).

The operation of the digital decoder known from D8 is based on the recognition that an $[1-D^2]$ filter is equivalent to a pair of interleaved $[1-D]$ filters, each being operative in a respective section on alternate data bits, one filter operating on odd, or phase 1 data bits and the other on even, or phase 2 data bits (see column 2, lines 25 to 30). The decoded signals from phases 1 and 2 in the decoder described in D8 are multiplexed in the multiplexer 23, which acts to interleave the phases to recover the original data (see D8, column 7, lines 43 to 46 and Figure 4c). Since this decoder is a digital system showing the overall specific transfer function $[(1-D^2)]$ of a class IV partial response system, it is clear that document D8 discloses an apparatus for decoding a transmitted digital signal, which signal has been precoded in accordance with a class IV partial response method, the apparatus comprising processing means including a class IV partial response decoder 30, 32, for processing the output of the converter means 24 to decode the transmitted digital signal in accordance with the class IV partial response method.

It follows from the above that a concrete digital decoder having all the features recited in part (d) of paragraph 4.3 above was known before the priority date of the patent in suit.

- 4.4.2 The Appellant argued that the fact that a digital class IV partial response decoder might be known from D8 did not render obvious the combination of the remaining features in claim 1, in particular low-pass filter means, generator means and converter means. For the following reasons, this argumentation is not convincing:

The previously known theory explains (see in particular D3, page 232, section "Post-equalisation" and Figures 10(a) and (b)), in agreement with the disclosure in the description of the contested patent (see in particular Figure 2 and column 5, lines 35 to 40) that, when the particular class IV partial response method is used as the recording and reproducing system in a digital VTR or the like, the frequency response of the reproduced signal has spectral nulls at both DC and at the Nyquist rate $1/2T$ (half the data rate f_s).

It should be emphasized here that this band-limited data transmission is imposed by the transfer function, $[(1-D^2)]$, inherent to the class IV partial response processing system acting as a filter itself. Once a sampling rate $1/T$ ($= f_s$) has been chosen, the class IV partial response transfer function $[(1-D^2)]$ imposes a zero transmission at frequencies 0 and $1/2T$ (Nyquist frequency). In other words, the idea behind the class IV partial response method is to process signals having a transmission rate f_s by means of a system having a bandwidth narrower than the range 0 to f_s and namely equal to the Nyquist frequency $1/2T$ ($= f_s/2$). This makes this partial response coding technique attractive

to reduce bandwidth occupancy. Furthermore, because rotary head magnetic transducers used in video tape recording generally exhibit a reduced sensitivity to high-frequency and low-frequency signals, the class IV partial response is well suited for digital magnetic recording and reproducing processes in video tape recorders to which the description of the patent in suit refers.

Therefore, summarising, the properties of the class IV partial response method were not discovered by the inventor of the claimed apparatus, but are rooted in the principles of this method on the basis of which not only the claimed apparatus operates, but also the apparatus described in prior art documents D1, D3 and D8.

4.4.3 Claim 1 and the description of the patent in suit are entirely silent about the nature of the receiver means 32, 33 for receiving the transmitted precoded digital data and there is no indication as to the original cause and/or the nature of the high frequency components delivered by this receiver means. In the Board's opinion, when signals to be processed are contaminated by parasitic high frequencies produced in receiver means or introduced in other parts of a transmission channel (e.g. by noise sources), then the use of low-pass filter means for merely limiting the high frequency components, as indicated in claim 1, see paragraph 4.3 above, feature (a) is an obvious routine technical measure.

It has been pointed out above that the class IV partial response method used in the claimed apparatus and in the system known from D8 or D3 can be seen as a technique deliberately introducing a system equivalent to a low-pass filter for frequencies less than one-half the sampling frequency. It is known from the Nyquist

sampling theorem that if an input signal has a maximum frequency f_{\max} , the signal must be sampled at a rate f_s , such that $f_s \geq 2f_{\max}$. Using this theorem, it can be seen that the transfer function as plotted in Figure 2 of the patent in suit, although being periodic, is only of practical interest up to the frequency $f_{\max} \leq f_s/2$, the frequency $f_s/2 = 1/2T$ being the Nyquist frequency. In order to match the natural filtering properties of the class IV partial response system used in the claimed apparatus, it is obvious that the low-pass filter 34 inserted after the receiver means 33 should have a cut-off frequency also equal to the Nyquist frequency.

The A/D conversion means 24 in the system disclosed in D8 are not preceded by low-pass filter means, but since D8 mentions no receiver means connected before this A/D conversion means 24, it cannot be concluded that D8 teaches away from the combination of receiver means with low-pass filter. Moreover, it is observed that:

- The reproducing channel in the system disclosed in D3 includes a playback preamplifier (see Figure 1). This document mentions an "implicit low-pass filtering" of the data signals produced according to the class IV partial response method (three last lines above Figure 10), the use of a phase-equalised low-pass filter to avoid excessive high-frequency noise and that of a low-pass filter, included in the digital decoder shown in Figure 11, and having a response 6dB down at the Nyquist frequency (page 232, right-hand column, last paragraph to page 233, left-hand column, second paragraph).

- Document D2 (see page 364, left-hand column, last paragraph, the whole of right-hand column and Figure 3) discloses the use of a low-pass Nyquist filter connected after the playback amplifier and the equaliser in the decoding channel of a class IV partial response decoder.

4.4.4 The description of the patent in suit and the Appellant's submissions do not substantiate the view or convey the idea that the use of the claimed low-pass filter means 34 might bring an unexpected or surprising effect in the operation of the processing of the digital signals according to the class IV partial response method. It follows that the provision of low-pass filter means as recited in claim 1 (see paragraph 4.3 above, feature (a)) does not involve an inventive step.

4.4.5 Analogue signals to be digitally processed require sampling. The sampling theorem states that the sampling frequency should be at least twice the highest transmission rate of the digital signals to be processed. Since a class IV partial response system passes signal frequencies ranging from 0 up to $f_s/2 = 1/2T$, the provision of generator means (36, 37) for generating a clock signal with a frequency (f_s) equal to the transmission rate of the digital signal from the output of the receiver means (32, 33), see paragraph 4.3 above, feature (b), is obvious in view of the sampling theorem. It can be seen that a similar strategy is adopted for the sampling in D8. Each one of the bit streams in the interleaved phases 1 and 2 has a "transmission rate" half the transmission rate of the original impulse train. The clock section 20 receives clock pulses in synchronism with the data stream and

divides the input clock pulses by 2 and applies pulses alternately to the A/D converters 24 of the respective sections for the phases 1 and 2 (see D8, column 3, lines 31 to 36 and column 5, lines 27 to 38).

This kind of sampling is also apparent from Figure 12 of D3 where it can be seen that two 5-bit A/D converters in respective phase channels are clocked with clock pulses at half the frequency of the input data rate to digitise odd and even samples, respectively, having the same half frequency (D3, page 233, right-hand column, lines 20 to 30 and page 234, left-hand column, lines 19 to 22).

It is the hallmark and the merit of the prior art class IV partial response method, not those of the claimed invention, to allow sampling at a practicable rate equal to the transmission rate, instead of sampling at twice the transmission rate which had previously been thought necessary. Therefore, the features of claim 1 recited in sections (b) and (c) of paragraph 4.3 above are obvious from the prior art disclosed in D8 or D3.

4.5 Summarising, the Board concludes as follows:

The skilled person knows that the digital processing of analogue signals has several advantages that would help in solving the problem addressed in the patent in suit. Under the incentive of D1 that, "as the clock frequency is low, it will be easy to build a demodulator in digital form" (page 260, lines 8 to 10) and taking into account that the concrete realisation of a digital class IV partial response decoder is disclosed in D8 or D3, the skilled person would therefore envisage implementing in a digital version the analogue class IV partial response decoder illustrated by Figure 4 of D1. On applying the principles of the class IV partial

response method and the teaching of the prior art (in particular D3), the skilled person would need no inventive ability for envisaging the possible use of low-pass filter means having the Nyquist frequency as cut-off frequency and for sampling the output of the filter at the data transmission rate, using an A/D converter clocked by clock signals generated from the output of the receiver means.

It follows that the solution to the problem addressed in the patent in suit by the combination of the features recited in claim 1 of the Appellant's main request can be derived without an inventive step from a general consideration of the teachings of D1 and D3 or D1 and D8, taking into account the general theoretical knowledge of the person skilled in the art. Therefore, the Appellant's main request cannot be allowed.

5. *Appellant's auxiliary request*

The subject-matter of claim 1 of the auxiliary request differs from that of claim 1 of the main request in that the receiver means includes an amplifier and the processing means comprises an equaliser in the form of a transversal filter inserted between the converter means and the decoder.

- 5.1 To provide in the receiver means an amplifier for receiving and amplifying the digital data signals is a matter of normal design procedure, see for example the head pre-amplifier in the class IV partial response digital decoder of the system known from D3 (Figure 11)

and the analogue class IV partial response decoder described in D1 (Figure 4(b)) which is provided with receiver means including an amplifier ("play back amplifier").

5.2 Regardless of which particular pulse shape has been chosen in a channel of a processing system, some distortion inevitably remains in output signals as a result of imperfect filter design, incomplete knowledge of the channel characteristics of the system, etc. In fact, in order to approach an ideal frequency response, an equaliser may help to improve the transmission properties of any real analogue or digital information transmission channel. An equaliser often requires experimental adjustment because, as already mentioned above, the user does not know the channel characteristics exactly so it is a usual technical measure to connect an adjustable equalising filter to the output of a receiving unit. For this reason, a transversal filter, that is a delay line with taps provided with adjustable weighting coefficients, is a common choice to restore pulses which have been attenuated and distorted by any transmission medium.

Concrete realisations are disclosed in the prior art. An analogue equaliser (EQ) is inserted between the playback amplifier (HA) and the analogue class IV partial response (1, 1) of the decoder circuit described in D1 (see Figure 4(b)). An example of digital transversal filter connected to the output of an A/D converter is given in document D4 (see Figure 9 and page 11, section "Operation Mode Selection").

The Appellant pointed out that D4 did not relate to the class IV partial response technique. However, D4 does concern digital video recording systems and neither the description of the patent in suit nor the Appellant's submissions suggest that the transversal digital filter

had to be especially adapted for use in a class IV partial response decoding system or resulted in an unexpected or surprising effect. In the Board's judgement it is an obvious option available to the skilled person to introduce an equaliser in the form of a digital transversal filter in a class IV partial response decoding system.

The Appellant further argued that the prior art did not render obvious the claimed place of insertion of the transversal filter 39a to 41, namely between the converter means 35 and the class IV partial response decoder 42, 43. This argument is not convincing, because, since the claimed transversal filter 39a to 44 processes digital signals to be decoded, it is most appropriate to insert it between the output of the last processing unit before decoding, in the present case, the output of the A/D converter means 35, and the input of the claimed class IV partial response decoder 42, 43. In addition to this, neither the description of the patent in suit nor the Appellant's submissions suggest that the location of the transversal filter in the claimed apparatus departed from that which a skilled person would have logically chosen. In the Board's opinion, no surprising effect results from this location.

5.3 It follows from the above that the subject-matter of claim 1 of the auxiliary request does not involve an inventive step within the meaning of Article 56 EPC. Consequently, the Appellant's auxiliary request is not allowable.

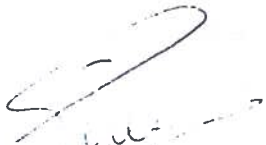
6. In conclusion, since neither of the Appellant's requests can be allowed, the appeal has to be dismissed.

Order

For these reasons it is decided that:

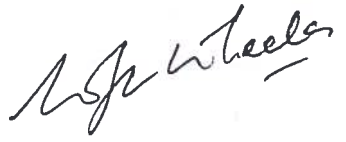
The Appeal is dismissed.

The Registrar:



M. Kiehl

The Chairman:



W. J. L. Wheeler