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THE EUROPEAN PATENT
OFFICE

CHAMBRES DE RECOURS
DE L'OFFICE EUROPEEN
DES BREVETS

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File No.: T 0266/92 - 3.5.1
Application No.: 81 903 038.8
Publication No.: 0 067 168
Classification: H04N 5/05
Title of invention: Horizontal Phase Detector Gain Control

**I N T E R L O C U T O R Y
D E C I S I O N**
of 15 June 1993

Applicant: MOTOROLA, INC.
Proprietor of the patent:
Opponent: Interessengemeinschaft für Rundfunkschutzrechte
e.V.

Headword:

EPC: Art. 56, 114(2) and 112

Keyword: "Inventive step (yes)"- "Late-filed document" - "Modifying
contested decision to detriment of Appellant" -
"Final decision deferred pending the decision of the Enlarged
Board in case G 9/92"

**Headnote
Catchwords**

Case Number: T 0266/92 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 15 June 1993

Appellant: Interessengemeinschaft
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office dated 29 January 1992
concerning maintenance of European patent
No. 0 067 168 in amended form.

Composition of the Board:

Chairman: P.K.J. van den Berg
Members: A.S. Clelland
G. Davies

Summary of facts and submissions

I. European patent No. 0 067 168, claiming a priority date of 29 December 1980, was granted on 10 August 1988 on the basis of European patent application 81 903 038.8, filed on 28 October 1981.

II. Claim 1 as granted reads (omitting the reference signs):

"An apparatus for altering the loop bandwidth of a horizontal phase lock loop in a television receiver by changing the gain of a phase detector within the phase lock loop, said television receiver receiving horizontal and vertical synchronization pulses and including a vertical countdown counter which is reset by a vertical countdown counter reset signal, comprising:

first means for detecting coincidence between a predetermined state of said countdown counter and said vertical synchronization pulses; and

switching means coupled to said phase detector for altering the current in said phase detector to alter its gain,

characterized by:

second means coupled to said first means for generating a first potential when said countdown counter is synchronized with said vertical synchronization pulses and for generating a second potential when said countdown counter is not synchronized with said

vertical synchronization pulses, said switching means being coupled to said second means and responsive to said first and second potentials."

III. The granted patent also included an independent method claim, Claim 6, corresponding in scope to Claim 1.

IV. An opposition was filed on 8 May 1989. The Opponent (Appellant) alleged that the subject-matter of the patent did not involve an inventive step and requested that the patent be revoked in its entirety; an auxiliary request called for oral proceedings to be appointed. The Opponent referred inter alia to the following prior art document:

D1: DE-A-30 17 934.

V. In a letter received on 21 September 1991, in response to a communication from the Opposition Division to both parties suggesting the wording of an independent claim, the Opponent withdrew the request for oral proceedings on the condition that the Patent Proprietor accepted the wording proposed by the Opposition Division. On 8 October 1991, the patent proprietor (Respondent) filed a revised introduction to the description and amended Claims 1 and 6 based on the proposed wording; he requested that the patent be maintained in amended form on the basis of the revised documents.

VI. Claim 1 as amended reads (omitting the reference signs):

"An apparatus for altering the loop bandwidth of a horizontal phase lock loop in a television receiver by

changing the gain of a phase detector within the phase lock loop, said television receiver receiving horizontal and vertical synchronization pulses and including a vertical countdown counter which is reset by a vertical countdown counter reset signal, comprising:

first means for detecting coincidence between a predetermined state of said countdown counter and said vertical synchronization pulses; and

switching means for altering a current in said phase detector;

characterized in that said current is the tail current of a pair of emitter coupled transistors included in said phase detector;

said phase detector being arranged such that an alteration in said current by said switching means alters its gain; and

second means coupled to said first means for generating a first potential when said countdown counter is synchronized with said vertical synchronization pulses and for generating a second potential when said countdown counter is not synchronized with said vertical synchronization pulses, said switching means being coupled to said second means and responsive to said first and second potentials."

VII. Claim 6 was amended in like manner to Claim 1.

VIII. In a decision dated 29 January 1992 the Opposition Division maintained the patent in the amended form.

IX. On 26 March 1992 the Opponent lodged an appeal against this decision and paid the prescribed appeal fee. Cancellation of the decision and the revocation of the patent was requested. On 16 May 1992 a statement setting out the Grounds of Appeal was filed. Reference was made, *inter alia*, to the following documents:

D2: GB-A-2 048 605

D3: US-A-4 048 655.

In a further submission received on 4 January 1993 the Appellant additionally referred to the document:

D4: Extract from lecture "Fernsehtechnik" by Schönfelder, published 1973, Darmstadt, pages 11/3 to 11/11.

X. In a communication pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal, dated 8 April 1993, the Rapporteur expressed the preliminary view that the subject-matter of Claim 1 involved an inventive step since it had not been demonstrated how D1 would lead the skilled person to change the gain of the horizontal phase lock loop (PLL) as a function of a loss of vertical synchronisation.

XI. On 9 June 1993 the Respondent filed a main request that the patent be maintained as granted. Reference was made to appeal G 9/92, pending before the Enlarged Board, which is directed to the question of whether a Board of Appeal is allowed to modify a contested decision to the

detriment of the Appellant. The Respondent considered that such a modification would be equitable in the present case since, in the first instance, the Opponent (Appellant) had implicitly acquiesced in the proposed amendments to the patent; he had stated that he would withdraw his request for oral proceedings provided the claims were amended, which they subsequently were, and yet the appeal had been filed "in spite of this agreement between the parties". Since the Appellant was free to ask the Board to modify the Opposition Division's decision it would be inequitable for the Respondent not to be free to make the same request.

- XII. Oral Proceedings were held on 15 June 1993. In support of the contention of lack of inventive step, the Appellant argued essentially as follows:

The skilled person would deduce from D1 that the vertical synchronisation detector could advantageously be used to alter the gain of the horizontal PLL. As can be seen from Figure 4 of D1, circuits 425 and 426 are involved in determining the period during which the gain of the horizontal phase lock loop should be increased. Circuit 426 additionally supervises the vertical synchronisation and controls directly the vertical deflection unit 22; also for this purpose it depends on circuit 425, which is a divider receiving as input horizontal flyback pulses generated in the PLL. It should be evident that if the PLL does not work properly, circuit 426 will not work properly either and the vertical synchronisation pulses cannot be detected correctly. The state of the vertical synchronisation is therefore also an indication of the state of the horizontal synchronisation. Since it is well known

from, for example, D2 that the horizontal synchronisation can be restored faster if the PLL gain is increased, it would have been obvious to trigger such a change as a function of the state of the vertical synchronisation.

XIII. The Respondent's arguments in support of the patentability of the subject-matter of Claim 1 can be summarised as follows:

Although the circuit known from D1 has a number of features in common with the invention, its aim is different. The problem to be solved in D1 is that signals reproduced from a video recorder may present a phase shift from field to field. The shift is due to variations in tension of the tape during recording and reproduction and is particularly great at the time of switching between the magnetic heads, i.e. near the vertical synchronisation pulse. Therefore it is proposed in D1 to increase the horizontal PLL gain in every field for a predetermined number of scan lines, in particular lines eight to sixteen. The initiating event is therefore a certain line number in each field; according to the invention, however, the initiating event is a loss of vertical synchronisation which, clearly, would normally not occur in each field. In view of the differences in the technical problem in the two cases, the skilled person would not be led by D1 to make the changes necessary to arrive at the invention.

D2, furthermore, merely shows that it is known to increase the horizontal PLL gain following a loss of horizontal synchronisation. The state of the vertical synchronisation is, however, not used for this purpose.

XIV. The Appellant requests that the patent be revoked in its entirety.

The Respondent requests that the patent be maintained on the basis of the patent as granted (main request) or alternatively maintained on the basis of Claims 1 to 9 as maintained by the Opposition Division (auxiliary request).

Grounds for the Decision

1. *Admissibility of the Appeal*

As indicated at point V above, in the course of the opposition procedure, the Opponent (now Appellant) declared that his initial request for oral proceedings would not be maintained if the Patentee accepted the claims proposed by the Opposition Division. He did not however withdraw his request for revocation or formally agree to the proposed claims. In the Board's view, the mere withdrawal of a request for oral proceedings does not imply withdrawal of any other existing request. There may be reasons other than consent as to why a party who had originally requested oral proceedings no longer calls for them, for example a desire to save costs or to obtain a quicker decision. The Board accordingly concludes that the Appellant was adversely affected by the decision within the meaning of Article 107 EPC and is entitled to appeal.

All other conditions laid down in Articles 106 to 108 and Rule 64 EPC having been met, the appeal is admissible.

2. *Admissibility of the amendments*

The Board is satisfied that the claims of the main request meet the requirements of Article 123(2) EPC and that the claims of the auxiliary request meet Article 123(2) and (3) EPC.

3. *Admissibility of Cited Documents*

3.1 D3 and D4 were introduced for the first time in the course of the appeal proceedings. In accordance with Article 114(2) EPC facts or evidence which are not submitted in due time may be disregarded. In particular in opposition proceedings if relevant facts or evidence are submitted by a party only at a late stage of the proceedings without very good reason and if, as a consequence, unnecessary costs are incurred by another party, this will be taken into account in apportionment of costs (see OJ EPO 1989, 417). It is a matter of discretion for the Board as to whether a late-filed document should be admitted and, if it is, whether the Board should itself decide the issue or refer the matter back to the Opposition Division. In accordance with the established jurisprudence of the Boards of Appeal the objective relevance of the document must first be considered.

3.2 Bearing the above in mind, the Board concludes that both documents should be admitted to the proceedings. D3 was cited in the original International Search

Report and appears on the front cover of the patent. Only in the course of the opposition proceedings were Claims 1 and 6 amended to introduce the feature now said to be known from D3, so that its disclosure only became relevant after amendment of the claims. D4 is an extract from a lecture given repeatedly to undergraduate students (see the introduction); the Board accepts that it represents the common general knowledge in the art. No objection can arise to a document serving to show what the skilled person would have known.

4. *Allowability of the Respondent's main request*

If the Board were to grant the Respondent's main request, the Appellant's (Opponent's) position would be worse than had he not appealed, the Opposition Division having maintained the patent on the basis of independent claims more limited than those of the granted patent. The question whether a Board of Appeal is allowed to modify a contested decision to the detriment of the Appellant has, as noted at point XI above, recently been referred to the Enlarged Board of Appeal (pending under number G 9/92). Both the present Appellant and Respondent are already parties to these proceedings (see T 488/91). Since there would be no point in remitting a second similar case which involves the same parties to the Enlarged Board, it was accepted by the parties in the oral proceedings that, if the Board considered the Respondent's main request to be allowable in all other respects, the present proceedings should be suspended until case G 9/92 has been decided.

5. *Inventive step (main request)*

5.1 It is common ground between the parties that the two most relevant documents are D1 and D2, and that the subject-matter of each of Claims 1 and 6 is novel having regard to the disclosure of these documents. The issue of inventive step is accordingly dealt with below.

5.2 D1 is concerned with the problem of discontinuities or sudden changes in the horizontal sync pulses which can occur during the vertical blanking interval when the TV is fed from a video tape recorder, the problem being particularly acute in cheap recorders because of the mechanical tolerances in an opposed pair of heads which scan alternately and a simple transport mechanism (see paragraph bridging pages 8 and 9 of D1). This problem is solved in D1 by shortening the phase detector time constant and thus increasing loop gain during a predetermined portion of all vertical synchronisation intervals in order to enable the phase-lock loop (PLL) to respond quickly to phase discontinuities in the **horizontal** synchronisation. This change in time constant is performed wholly automatically at a predetermined point in each vertical blanking interval and is not dependent on any detection of loss of lock of either horizontal or **vertical** synchronisation. The vertical synchronisation detector of D1 is not described in detail but is presented as a prior art circuit well known to the skilled person. It is implicit in D1 that the detector fulfils its normal function of generating synchronisation pulses for the vertical deflection circuits, using a reference signal derived from the horizontal (line) synchronisation

pulses for identifying the vertical synchronisation pulses in the received TV signal.

- 5.3 It is accordingly necessary to consider whether the skilled person, having the disclosure of D1 at his disposal, would find it obvious to change the detector gain of the horizontal PLL as a function of a loss of **vertical** synchronisation.
- 5.4 According to the description of the contested patent (column 2, lines 26 to 35), the detection of loss of vertical synchronisation in order to increase the gain of the horizontal PLL has the advantage that there is no need for a horizontal coincidence (synchronisation) detector. This results in a simplification of the complete circuit since a vertical synchronisation detector would in any case be present. The Appellant has submitted that the skilled person would recognise that the function of the vertical synchronisation detector in D1 would be disturbed if the horizontal PLL does not work properly. The vertical synchronisation detector would thus also function as a horizontal synchronisation detector.
- 5.5 It is no doubt true that in D1 a loss of horizontal synchronisation will influence the output of the vertical synchronisation detector. However, the disclosure of D1 itself in no way suggests this line of thought. It describes only the normally occurring case in which the incoming TV signal can be disturbed by noise and the line synchronisation reference signal is implicitly assumed to be correct.

- 5.6 It could be argued that the skilled person would, on the basis of his general knowledge, be aware that the line synchronisation pulses will not always be ideal and might upset the count of the vertical countdown counter. Even assuming that he would indeed realise this, the prior art nowhere suggests approaching the problem from the direction of the vertical synchronization and making use of the vertical synchronization in order to provide horizontal synchronisation information. It would appear more straightforward to concentrate on the source of the errors and thus try to improve the stability of the line synchronisation signal inputted to the counter.
- 5.7 The Board accordingly concludes that the skilled person would not be led by the disclosure of D1 to use the vertical synchronisation pulses to alter the time constant of the horizontal PLL.
- 5.8 Turning now to the disclosure of D2, in this document a loss in horizontal synchronisation results in an increase in the PLL gain of the horizontal synchronisation detector. There is no reason why the skilled person would omit this detector. To detect, as proposed in the invention, a loss of horizontal synchronisation **indirectly** by way of the vertical synchronisation is not suggested by the teaching of D2 and would not, in the Board's view, have been obvious to the skilled person.
- 5.9 Nor does it appear to the Board that the skilled person would be led by a combination of the disclosures of D1 and D2, or indeed of either of these documents with any of the other prior art of the application and

opposition files, in the direction of the claimed invention.

5.10 The Board thus concludes that the subject-matter of each of Claims 1 and 6 involves an inventive step.

6. *Inventive step (auxiliary request)*

The conclusions reached in paragraph 5 above also apply to Claims 1 and 6 according to the auxiliary request, which include all the features of the respective claims of the main request.

7. Since Claim 1 of the main request has been found allowable in substance it will be necessary to suspend the proceedings as was indicated in paragraph 4 above, until G 9/92 has been decided by the Enlarged Board.

Order

For these reasons, it is decided that:

1. The subject-matter of both requests of the Respondent meets the substantive requirements of the EPC.
2. A final decision on whether the Respondent's main request is allowable is deferred pending the decision of the Enlarged Board in case G 9/92.

The Registrar:

The Chairman:

M. Kiehl

P.K.J. van den Berg