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**Datasheet for the decision  
of 17 January 2007**

**Case Number:** T 1002/03 - 3.5.04

**Application Number:** 00950334.3

**Publication Number:** 1197071

**IPC:** H04N 5/44

**Language of the proceedings:** EN

**Title of invention:**

Television receiver for digital signals with offset tuning provisions

**Applicant:**

Thomson Licensing

**Opponent:**

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**Headword:**

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**Relevant legal provisions:**

EPC Art. 56, 96(2), 113(1)

EPC R. 67, 70

**Keyword:**

"Inventive step (yes)"

"Refusal after a single communication"

"Substantial procedural violation (no)"

"Reimbursement of appeal fee (no)"

**Decisions cited:**

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**Catchword:**

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Case Number: T 1002/03 - 3.5.04

**DECISION**  
of the Technical Board of Appeal 3.5.04  
of 17 January 2007

**Appellant:** Thomson Licensing  
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FR-92100 Boulogne-Billancourt (FR)

**Representative:** Lindemann, Robert  
Thomson Holding Germany GmbH & Co. OHG  
European Patent Operations  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 9 May 2003  
refusing European application No. 00950334.3  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** F. Edlinger  
**Members:** M. Paci  
B. Müller

## Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division refusing European patent application No. 00 950 334.3.
- II. The decision under appeal was based on the ground that the subject-matter of independent claims 1 and 5 did not involve an inventive step (Article 56 EPC) in view of the prior art disclosed in document  
  
D1: EP-0 903 937 A2  
  
and of common general knowledge.
- III. With the statement of grounds of appeal the appellant filed two sets of amended claims.
- IV. In a communication annexed to the summons to oral proceedings the board expressed its provisional opinion and attached a copy of EPO Form 2048.2 showing the signatures of the members of the examining division.
- V. During the oral proceedings held on 17 January 2007 before the board the appellant filed a new set of claims 1 to 7 replacing all existing claims, new description pages 2 and 2a and corrected drawings sheets 1/2 and 2/2.
- VI. The appellant requested that the decision under appeal be set aside, that the appeal fee be reimbursed and that a patent be granted in the following version:
- claims 1 to 7 submitted in the oral proceedings;

- description, pages 2 and 2a submitted in the oral proceedings and pages 1 and 3 to 6 as published;
- drawings, sheets 1/2 and 2/2 submitted in the oral proceedings.

VII. Independent claims 1 and 6 now read as follows:

"1. A television receiver (100) for receiving a digital television signal susceptible to an interference caused by an analog television signal in a lower adjacent channel, said television receiver comprising:

a tuner (104) for receiving the digital signal associated with a broadcast channel selected from a plurality of channel locations in a frequency band;

a frequency conversion stage (106), coupled to said tuner, for converting in frequency the digital signal to an intermediate frequency (IF) signal to be output;

a filter (128), coupled to said frequency conversion stage, for attenuating adjacent signals, said filter having a center frequency equal to a nominal frequency;

characterised in that

means (110,130) for determining the absence or presence of the interference are provided, and that

the center frequency of said IF signal can be switched to said nominal frequency or to a second frequency being shifted from said nominal frequency, wherein the second frequency is located closer to the upper band edge of the filter (128), and wherein the second frequency is chosen such that

the lower channel adjacent analog signal is further attenuated by the characteristic of said filter, when the presence of the interference is determined and

the center frequency of said IF signal is accordingly shifted to said second frequency."

"6. A method of receiving a digital television signal susceptible to an interference caused by a lower channel adjacent analog television signal comprising the steps of:

tuning a radio frequency (RF) channel carrying a digital signal and having a lower adjacent analog signal;

determining the absence or presence of said interference;

heterodyning said RF signal with said LO signal to generate a modified intermediate frequency (IF) signal having a second frequency shifted from nominal being located closer to the upper band edge of a filter (128) to which the modified IF signal is applied,

filtering said modified IF signal by said filter, wherein said lower adjacent analog signal is further attenuated by the characteristic of said filter, when the center frequency of said IF signal is shifted to said second frequency upon determination of the presence of said interference."

VIII. The reasoning in the decision under appeal in so far as it is applicable to the new claims 1 and 6 can be summarised as follows:

D1 discloses a television receiver comprising a receiving stage - consisting of a tuner, a frequency conversion stage and an IF filter - which frequency converts the digital television signal of the selected broadcast channel to an intermediate frequency signal

and attenuates the signals from the adjacent broadcast channels.

The subject-matter of claim 1 differs from the receiver of D1 in that the centre frequency of the intermediate frequency signal can be switched from a nominal frequency to a second frequency shifted from the nominal frequency and in that upon switching to the second frequency an analogue television signal present in a lower adjacent channel is further attenuated by said filter.

It is well-known for a user trying to improve the quality of the picture received on an analogue television to press a "fine tune" button on his remote control. Pressing the "fine tune" button shifts the frequency of a local oscillator (and thus the intermediate frequency) by a small amount, thereby improving the filtering out of unwanted signals in adjacent broadcast channels and reducing interference. It would be obvious to transfer this idea to a digital TV receiver and to automate the function performed by the user with the remote control. In doing so the skilled person would arrive at the subject-matter of claim 1.

The decision also indicated in "further comments" that claims 1 and 5 did not meet the requirements of Article 84 EPC because the claims were too broad, the description merely supporting an upward shifting of the IF signal by 62.5 kHz and no alternative way of reducing the disturbing signals.

IX. The appellant essentially argued as follows:

*Inventive step*

The television receiver of D1 addresses the same problem as the claimed invention (the interference from television signals in adjacent channels) but proposes a different solution (an improved filter). The "fine tuning" buttons on a TV remote control are used by a user for centring the IF frequency rather than deliberately shifting it away from the centre. Moreover, the direction in which the centre frequency is shifted is randomly selected by the user ("+" and "-" buttons). The claimed invention, in contrast, shifts the centre frequency towards the "upper band edge of the filter" in order to avoid the particular problem of interference caused by the sound carrier of an analogue television signal in an adjacent lower broadcast channel. Since D1 proposed a different solution to the same problem and since shifting of the IF signal in a digital receiver (with precisely tuned frequencies) went against the usual considerations of the person skilled in the art, the claimed invention was not rendered obvious by the prior art.

*Reimbursement of the appeal fee*

The decision to refuse the application was preceded by a single official communication which merely referred to the international preliminary examination report (IPER) and contained no warning that the following stage might be the refusal of the application. In view of the examiner's positive opinion on a claim he had suggested in the first Written Opinion during the international phase, there was a reasonable likelihood

that the examination might have led to a positive result. It is furthermore normal practice for an applicant to first try to get a broader scope of protection before subsequently limiting the claims in view of convincing arguments from the examining division. Thus the immediate refusal of the application does not comply with the provisions of Article 96(2) EPC and constitutes a substantial procedural violation justifying reimbursement of the appeal fee.

Moreover, the decision notified to the appellant was not signed by the members of the examining division and the signatures of the appointed examiners could not be found by online file inspection, which points to another substantial procedural violation.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Article 123(2) EPC*
  - 2.1 The amendments made to claims 1 to 7 are disclosed in the application as filed; see in particular page 2, lines 16 to 28 and original claims 1 and 5. Figures 1 and 2B contain obvious corrections (Rule 88 EPC) of errors indicated in the international preliminary examination report (IPER). The amendments to the description briefly describe document D1.
  - 2.2 The board is therefore satisfied that the requirements of Article 123(2) EPC are met.



3. *Article 84 EPC*

3.1 Although the only value disclosed in the application for the frequency shift is 62.5 kHz, it would be unduly limiting to demand that this value should be present in independent claims 1 and 6. A person skilled in the art would understand from the description that slightly different values would work equally well with the NTSC standard and that the frequency shift might have different optimal values with other analogue television standards (for instance PAL or SECAM), in order to achieve the desired effect of shifting the sound carrier of the lower adjacent signal (which has a frequency at the edge of the inband digital signal) out of the passband of the (conventional SAW) filter without affecting the desired inband digital signal (page 2, lines 10 to 12 and lines 25 to 28; page 5, lines 7 to 10; page 6, lines 5 to 14; figures 2A and 2B).

3.2 The claims are accordingly clear and supported by the description, Article 84 EPC.

4. *Inventive step*

4.1 It has not been disputed that D1 (figure 1) discloses a television receiver for receiving digital television signals comprising a tuner (3 to 5) for selecting a desired broadcast channel, a frequency conversion stage (including a first mixer 6 and a filter 8) for down-converting the digital signal to an intermediate frequency signal (hereinafter "IF signal") and a passband filter (21) filtering the IF signal for

attenuating analogue television signals in adjacent channels.

4.2 The television receiver of claim 1 therefore differs from that of figure 1 of D1 by the features in the characterising portion of the claim.

4.3 These distinguishing features achieve the technical effect of reducing interference by further attenuating the analogue television signal in the lower adjacent channel, particularly its sound carrier located at the upper end of the lower adjacent channel (see also point 3.1 above). The television receiver of D1 achieves substantially the same technical effect (see for instance paragraphs [0003], [0005], [0007] and [0019]), although no specific reference to the sound carrier is made in D1.

4.4 The objective technical problem must thus be defined as finding an alternative solution for further attenuating an analogue television signal in the lower adjacent channel, in particular its sound carrier.

4.5 In D1 the further attenuation of analogue television signals in a (lower or higher) adjacent channel is obtained by improving the frequency response of the IF filter. An improved IF filter is described which consists of a first surface acoustic wave (SAW) filter, a first compensation amplifier, a variable attenuator, a second compensation amplifier and a second SAW filter, all sequentially connected (D1, paragraphs [0017] to [0021], figures 1 and 3). This complex filter passes the IF signal (36 MHz) and attenuates signals in the adjacent channels by 60 dB or more and presumably has a

frequency response with steep edges. The filtered IF signal is then converted by a second mixer into a second intermediate frequency (4 MHz). There is no suggestion in D1 of determining the presence of interference and slightly shifting the centre frequency of the IF signal (36 MHz in D1) in order to attenuate adjacent analogue signals (by the action of the existing filter, tuned to 36 MHz in D1).

4.6 The appellant has not contested that TV remote controls having two "fine tuning" buttons were well known before the priority date of the application. These two buttons enable the user to attempt to improve the tuning to a selected television channel by increasing or decreasing the centre frequency of the IF signal in small successive steps. After each step the user must visually assess whether the quality of the picture has improved. The best picture quality is thus found by trial and error. The user has no knowledge of the underlying cause of the problem, which would usually be that the response of the tuner is not exactly centred on the selected channel.

4.7 In contrast to the television receiver of D1 and to the above fine tuning, the television receiver of claim 1 relies neither on an improved filter nor on a trial and error process for improving the picture quality. No feedback from the user about the quality of the picture is needed either. The television receiver of claim 1 determines the presence of interference (i.e. the presence of an analogue television signal in a lower adjacent channel). When interference is detected it shifts the centre frequency of the IF signal upwards ("closer to the upper band edge of the filter") in

order to shift the whole analogue TV signal of the lower adjacent channel further away from the passband of the filter. This frequency shift effectively removes the problem of interference by the sound carrier without requiring any improvement of the filter. The digital television signal in the selected channel is not much affected as long as the frequency shift remains small (62.5 kHz is only approximately one percent of the width of a broadcast channel).

- 4.8 Even if the fine tuning method performed by the user were automated, it would still be a trial and error method requiring an automatic assessment of the picture quality at each step. Moreover, the initial direction of the frequency shift would be randomly chosen. It is thus unlikely that it would lead the skilled person to the claimed invention.
- 4.9 Summarising, D1 and the common general knowledge do not suggest the combination of features set out in claims 1 and 6 of determining the presence of an interference caused by an analogue television signal from a lower adjacent channel and of using the result of this determination to deliberately shift the centre frequency of the IF signal upwards (not in a random direction) to reduce interference using existing means (the IF filter) in a manner which may appear simple in hindsight.
- 4.10 For the above reasons the board concludes that claims 1 and 6 and their dependent claims meet the requirements of Article 56 EPC.

5. *Request for reimbursement of the appeal fee*

5.1 It is established jurisprudence of the boards of appeal that an examining division does not exceed its discretionary power pursuant to Article 96(2) EPC ("as often as necessary") by proceeding to an immediate refusal after a first communication, provided that the decision complies with Article 113(1) EPC, i.e. is based on grounds on which the appellant has had an opportunity to present comments (see Case Law of the Boards of Appeal of the EPO, 4th edition 2001, page 262, first two full paragraphs, and pages 420-421).

5.2 In the present case the examining division's first and only official communication under Article 96(2) EPC stated that the deficiencies mentioned in the IPER gave rise to objections under the corresponding provisions of the EPC. The IPER contained a detailed reasoning as to why the subject-matter of independent claims 1 and 5 did not involve an inventive step and why claim 1 was unclear. In reply to the official communication the appellant filed a new set of claims in which only claim 1 had been amended to overcome the objection of lack of clarity in the IPER. In the board's view no special warning in the official communication was necessary in these circumstances. The reasons given in the decision under appeal were essentially the same as those presented in the IPER on which the appellant had had an opportunity to present comments. Accordingly the appellant's right to be heard (Article 113(1) EPC) was not violated and the examining division did not exercise its discretion in an unreasonable way by refusing the application after a single official communication.

5.3 Regarding the appellant's submission that the examining division's decision which was notified to the applicant was not signed by the appointed examiners, it is not contested that the notified decision contained their names and a seal on EPO Form 2007. Rule 70(2) EPC, which provides that a seal may replace the signatures of the employees responsible for the decision, was therefore complied with. Moreover, the board has checked that the signatures of the three examiners responsible for the decision were actually available on EPO Form 2048.2 and has sent a copy to the appellant with the summons to oral proceedings.

5.4 Accordingly the examining division did not commit a substantial procedural violation and already for this reason the conditions under Rule 67 EPC for the reimbursement of the appeal fee are not met.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent in the following version:
  - claims 1 to 7 submitted in the oral proceedings;
  - description, pages 2 and 2a submitted in the oral proceedings and pages 1 and 3 to 6 as published;
  - drawings, sheets 1/2 and 2/2 submitted in the oral proceedings.
3. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:

D. Sauter

F. Edlinger