Datadsheet for the decision
of 1 June 2006

Case Number: T 0581/02 - 3.5.04
Application Number: 94109332.0
Publication Number: 0630154
IPC: H04N 5/44
Language of the proceedings: EN
Title of invention: Television receiver capable of enlarging and compressing image
Patentee: Hitachi, Ltd.
Opponent: Interessengemeinschaft für Rundfunkschutzrechte GmbH
Schutzrechtsverwertung & Co. KG
Headword: -

Relevant legal provisions:
EPC Art. 54, 56, 84, 114(2), 123(2)
EPC R. 67, 71a(1)

Keyword:
"Main request - novelty (no)"
"First auxiliary request - clarity (no)"
"Second auxiliary request - clarity, novelty, inventive step (yes)"
"Document not admitted by the opposition division (admitted because submitted in due time)"
"Substantial procedural violation (no - error of judgment)"
"Reimbursement of appeal fee (no)"
Decisions cited:
T 0468/99

Catchword:
see points 2.3 and 2.4
Case Number: T 0581/02 - 3.5.04

DEcision
of the Technical Board of Appeal 3.5.04
of 1 June 2006

Appellant:
(Opponent)
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Decision under appeal:
Interlocutory decision of the Opposition
Division of the European Patent Office posted
8 April 2002 concerning maintenance of the
European patent No. 0630154 in amended form.

Composition of the Board:

Chairman: F. Edlinger
Members: M. Paci
J. Willems
Summary of Facts and Submissions

I. This is an appeal by the opponent as sole appellant against the interlocutory decision of the opposition division that European patent No. 0 630 154 (application number 94 109 332.0) as amended met the requirements of the EPC.

II. Opposition had been filed against the patent as a whole and was based on Article 100(a) EPC on the grounds of lack of novelty and lack of inventive step. The following documents were cited as prior art in the notice of opposition:

D1: EP 0 416 619 A2
D3: Proceedings of the 10th annual meeting of the Fernseh- und Kinotechnische Gesellschaft e.V. (FKTG) held on 13-17 September 1982 in Munich, Germany, pages 153-167, Verfahren zur Bildkompression und Bildexpansion, G. Wischermann

III. With the summons to oral proceedings the opposition division fixed a final date (19 January 2002) for making written submissions in preparation for the oral proceedings. On 7 February 2002, in response to the filing of amended claims by the patent proprietor (with the letter dated 18 January 2002, received by the EPO on the same day and transmitted to the opponent with a brief communication dated 25 January 2002), the
opponent submitted the following additional prior art document:

D4: US 4 605 952 A

IV. Oral proceedings before the opposition division were held on 19 February 2002.

V. In the decision under appeal the opposition division held that the patent as amended during the oral proceedings met the requirements of the EPC. D4 was disregarded pursuant to Article 114(2) EPC because it was filed after the final date of one month before the oral proceedings (Rule 71a(1) EPC) and was regarded as prima facie not more relevant than the already cited prior art. The subject-matter of claims 1 and 2 was considered as involving an inventive step because D1 was silent on the problem of providing smooth transitions. The feature of continuous variation of magnification factors was thus not obvious in the claimed combinations.

VI. Oral proceedings before the Board were held on 1 June 2006, during which the respondent filed first and second auxiliary requests.

VII. The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked. He also requested the reimbursement of the appeal fee.
VIII. The respondent (patent proprietor) requested that the appeal be dismissed and the patent be maintained on the basis of one of the following versions:

Main request
- the patent in the version found by the opposition division to meet the requirements of the EPC;

First auxiliary request
- Claims 1 to 15, description columns 1 to 11 and Figures 1 to 10 filed during the oral proceedings on 1 June 2006;

Second auxiliary request
- Claims 1 and 2, description columns 1 to 11 and Figures 1 to 10 filed during the oral proceedings on 1 June 2006.

IX. Claim 1 according to the main request and first and second auxiliary requests, respectively, reads as follows:

Main request

"A television receiver comprising: enlargement control means (110,113; 908,909) for digitally compressing or enlarging an input image by vertical and/or horizontal magnification factors, respectively, to a desired size in both vertical and/or horizontal directions, so as to match an aspect ratio of a display apparatus, characterized in that the enlargement control means are adapted to apply vertical and/or horizontal magnification factors which
vary continuously in different areas of the image in the vertical and horizontal directions, respectively, said horizontal and/or vertical magnification factors being digitally changed increasingly on the upper and lower side areas of the image and/or on the left and right side areas of the image."

First auxiliary request

"A television receiver comprising:
enlargement control means (110,113; 908,909) for digitally compressing or enlarging an input image by vertical and horizontal magnification factors, respectively, to a desired size in both vertical and horizontal directions, so as to match an aspect ratio of a display apparatus,
characterized in that
the enlargement control means are adapted to apply vertical and horizontal magnification factors which vary continuously in different areas of the image in the vertical and horizontal directions, respectively."

Second auxiliary request

"A television receiver comprising:
enlargement control means (110,113;) for digitally compressing or enlarging an input image by a vertical magnification factor to a desired size in a vertical direction, so as to match an aspect ratio of a display apparatus,
characterized in that
the enlargement control means are adapted to apply the vertical magnification factor which varies continuously
in upper and lower side areas of a screen of the display apparatus."

Claim 2 of the second auxiliary request is dependent on claim 1.

X. The appellant (opponent) essentially argued as follows:

Main request

The opposition division committed a substantial procedural violation by not admitting D4 into the proceedings because D4 had been filed in direct response to amended claims and was highly relevant to these amended claims, in particular to the added features taken from the description. D4 should at least be admitted into the appeal proceedings in view of its high relevance.

D4 discloses a wide-angle television receiver (see Figure 9) having all the features of the television receiver of claim 1. The wide-angle television receiver shown in Figure 9 of D4 enlarges the input image from the HDTV television transmitter by magnification factors which continuously increase from 1.025 in the central portion of the image to a factor of approximately 3:1 at the extreme edges of the left and right side areas of the image. It is furthermore implicit in the disclosure of D4 that the magnification factors are digitally changed in the left and right side areas of the image (see programmable clock 910 in Figure 9). Hence the subject-matter of claim 1 according to the main request lacks novelty, Article 54(1) and (2) EPC.
First auxiliary request

The amendments made at the opposition stage do not meet the requirements of Article 123(2) EPC (added subject-matter) and Article 84 EPC (clarity and support by the description). The only embodiment which discloses vertical and horizontal magnification factors varying continuously in different areas of the image in the vertical and horizontal directions, respectively, is shown in Figures 9 and 10. In this embodiment, however, the enlarging or compressing of the image is performed by analog circuits. Digital embodiments are shown in the context of Figures 8A-8G, but with varying magnification factors either in the horizontal or vertical direction, not in both directions. Claim 1 is furthermore not consistent with dependent claims 11 to 15 which include features specific to the analog embodiment shown in Figures 9 and 10.

Second auxiliary request

The second auxiliary request should not be admitted into the appeal proceedings because it was filed at a late stage of the oral proceedings before the Board and it comprises substantial changes.

The only embodiment covered by claim 1 is the one shown in Figures 8A to 8D. However, in this embodiment the upper and lower areas of the screen are enlarged, not compressed. In contrast, claim 1 specifies control means for digitally compressing or enlarging an input image. This broadening from one embodiment infringes Article 123(2) EPC.
Claim 1 also lacks clarity (Article 84 EPC) because the expression "upper and lower side areas" is ambiguous: it could mean, on the one hand, one upper area and one lower area or, on the other hand, several upper areas and several lower areas.

In any case, the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC) in the light of the combined teachings of D4 and either D2 or D3. Both D2 and D3 teach that television images can be compressed and/or enlarged not only in the horizontal direction, but also in the vertical direction (see D2, page 667, section 3.2 and D3, page 153, last paragraph). It would therefore be obvious in the light of the teaching of D2 or D3 for the skilled person to extend the horizontal image enlarging technique of D4 to the vertical direction of the image.

XI. The respondent’s arguments can be summarised as follows.

Main request

The opposition division's decision not to admit document D4 into the proceedings was justified. D4 was not, prima facie, more relevant than the prior art already cited and thus did not meet the conditions set by the established case law for admitting late-filed facts and evidence. Moreover, there was no excuse for the late filing of D4 because, even if one were to accept the appellant's arguments, this document would also have been relevant to granted claim 1 and thus should have been filed with the notice of opposition.
D4 does not prejudice the novelty of the subject-matter of claim 1. The image displayed by the wide-angle television receiver shown in Figure 9 of D4 has the same 5:3 aspect ratio as the HDTV camera. There is thus no need to enlarge and match the image between camera and TV receiver. Indeed the wide-angle television receiver of D4 is incapable of allowing a choice of the desired size and thus lacks control means for compressing or enlarging an input image to the desired size "so as to match an aspect ratio of a display apparatus". Decompression of an input signal in the TV receiver of Figure 9 is achieved by adapting the sampling frequency of the D/A converter (see circuits 910 and 916 and column 8, lines 38-42) so as to display the original image. This is a purely analog processing of the video signals, not a means for digitally compressing or enlarging an input image.

First auxiliary request

There is no inconsistency between the wording of claims 1 and 11 to 15 and the embodiment shown in Figures 9 and 10 because "digitally" in claim 1 does not mean that everything must be digital. For instance, the correction circuits 908 and 909 in Figure 9 could be digital even though the corresponding deflection circuits 906 and 907 are analog. Moreover, the wording of claim 1 does not mean that the magnification factors are necessarily changed in both vertical and horizontal directions, but rather that the television receiver must be capable of doing so in both directions. Hence the wording of claim 1 is not inconsistent with the embodiments shown in Figures 8A to 8G either.
Accordingly, the requirements of Articles 84 and 123(2) EPC are met.

Second auxiliary request

Although in the embodiment shown in Figures 8A-8D the input image is enlarged (not compressed) in the vertical direction, it is clearly stated in paragraph [0042] of the description that the image can also be compressed in the vertical direction. Accordingly, Article 123(2) EPC is not infringed.

The plural form in the expression "upper and lower side areas" comes from the fact that there are two side areas: an upper side area and a lower side area. This expression is therefore sufficiently clear (Article 84 EPC).

In D4, the image displayed on the wide-angle television receiver has exactly the same aspect ratio of 5:3 as on the HDTV camera. The only reason for compressing and subsequently decompressing the video signal is to obtain, at an intermediate stage, a horizontally compressed video signal which can be easily displayed on a NTSC 4:3 aspect ratio television receiver. This problem does not exist in the vertical direction. There is therefore no incentive for a skilled person to apply the compression/decompression technique of D4 to the vertical direction, regardless of whether D2 or D3 suggest that compression/enlargement in the vertical direction is similar to that in the horizontal direction. Accordingly, the subject-matter of claim 1 involves an inventive step also in view of the combined teachings of D4, D2 and D3.
Reasons for the Decision

1. The appeal is admissible.

2. Admissibility of document D4 (Article 114(2) EPC)

2.1 The opposition division issued a summons to oral proceedings, drew attention to the points to be discussed and fixed a final date for making written submissions in application of Rule 71a(1) EPC. The patent proprietor filed amended claims one day before that date (see point III supra). The opponent made written submissions and filed D4 with a letter received on 7 February 2002, this being three days after the deemed reception of the transmitted amended claims by the opponent on the tenth day following the posting (25 January 2002) in accordance with Rule 78(2) EPC.

2.2 It is undisputed that D4 was submitted after the final date fixed by the opposition division, and that the indication of the facts, evidence and arguments in support of the grounds on which the opposition is based shall be contained in the notice of opposition (Rule 55(c) EPC). Nevertheless, if the subject of the proceedings has changed and new facts and evidence are filed in due time in reaction to a such change, this may lead to the conclusion that they should be admitted on these grounds (see in particular the German and French versions of Rule 71a(1) EPC: "zuzulassen sind" and "qu'il ne convienne de les admettre"). In any case, an application of Article 114(2) EPC presupposes a finding that something was not "submitted in due time".

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This requires an evaluation of the new facts and evidence, their relationship to the change of the subject of the proceedings, a timely reaction and other relevant circumstances (see, for instance, T 468/99, not published in the OJ EPO, point 1.1).

2.3 In the present case the introduction of the feature that magnification factors vary "continuously", first into claim 1 of the main request filed on 18 January 2002 and then into claim 2 of the main request filed in the oral proceedings on 19 February 2002, had a decisive influence on the decision of the opposition division (see points 5 to 7 of the minutes). The new feature was not present in any of the dependent claims as granted. Thus the opponent could not reasonably be expected to pre-emptively extend his search for relevant material to cover such amendments within the opposition period. In the written submissions after the final date (see e.g. page 2, paragraphs 2 and 3 of the letter dated 5 February 2002), the opponent satisfactorily showed the relationship between the new facts derived from D4 and the amendments of claim 1. In the judgement of the Board, these submissions therefore have to be considered as a reaction to a change of the subject of the opposition proceedings. They could not reasonably have been filed before the reception of the amended claims by the opponent and were thus submitted in due time three days after the deemed reception. D4 could not therefore be disregarded pursuant to Article 114(2) EPC.

2.4 Even if the opposition division came to the wrong conclusion that D4 was not filed in due time and could be disregarded, this conclusion constitutes an error of
judgment of the relevant circumstances and not a substantial procedural violation within the meaning of Rule 67 EPC. The opposition division applied existing law not arbitrarily, but in a manner which is consistent with the established jurisprudence relating to late-filed documents (prima facie relevance). The Board also notes that according to the minutes of the oral proceedings (see point 1 of the minutes) the parties were heard on the admissibility of D4 (Article 113(1) EPC). But the opposition division wrongly decided the question of whether D4 and the relevant submissions actually were a reaction to a new factual situation or an attempt to introduce new facts and evidence which should have been introduced within the nine month period for filing an opposition, or at least before the final date fixed in accordance with Rule 71a(1) EPC.

Main request

3. **Novelty (Article 54(2) EPC)**

3.1 D4 discloses a television system comprising an HDTV camera (1 in Figure 1), a high-definition video encoder (Figure 1) and a wide-angle television receiver (Figure 9). The HDTV camera generates an image with an aspect ratio of 5:3. The image is then output to the high-definition video encoder which comprises an aspect-ratio compression block (15) in which the image is horizontally compressed. The video samples of a central first portion of the image are slightly compressed (by 2.5%). The video samples of outer left and right portions of the image (second portions) however are nonlinearly compressed by a compression
factor continuously increasing from a factor of 1.025 (ie compressed by 2.5%) to a factor of approximately 3:1 at the lateral edges of the image (see Figure 5; column 3, line 53, to column 6, line 33). It is not disputed by the parties that the purpose of this compression is to adapt the transmitted video signal so that it can be displayed on the standard NTSC television receiver having a 4:3 aspect ratio. On a standard NTSC television receiver the slightly compressed central portion of the input video signals (first portion of the original image) is fully displayed whereas the second portions of the image represented by the more compressed side portions of the video samples are overscanned, i.e. not displayed (see column 3, line 65, to column 4, line 14). However, in the case of a wide-angle television receiver (Figure 9) with the same 5:3 aspect ratio as the HDTV camera, the compressed second portions must be expanded in a complementary fashion at the receiver in order to display the image in its original format comprising both first and second portions of the scene (see claim 8; column 1, lines 38 to 60; column 8, lines 3-46).

3.2 The wide-angle television receiver of D4 thus receives video signals representing an input image (the compressed image for display on a standard NTSC receiver) having a 4:3 aspect ratio and enlarges this image in the horizontal direction to the desired size so as to match the 5:3 aspect ratio of the wide-angle television receiver. The horizontal magnification factors are the exact inverse of those used for compressing the image. As a result, the horizontal magnification factors vary continuously in different
areas. They are increased from a value of approximately 1.025 in the central region of the image to a maximum value of 3:1 at the left and right edges of the image.

3.3 Claim 1 of the main request refers to "enlarging an input image". This has to be construed in the context that signals are input to the receiver which represent an image which is not further defined. In particular, it is not excluded that portions are compressed for transmission and decompressed in the receiver to display the original image. Furthermore, claim 1 does not specify that the control means allow a choice of the desired size. It follows that the only feature of claim 1 which is not *explicitly* present in the wide-angle television receiver of D4 is that the control means are suitable for digitally enlarging the horizontal magnification factors. However, this does not mean that everything must be done digitally (as admitted by the respondent for the corresponding wording of first auxiliary request). In the wide-angle television receiver shown in Figure 9 of D4 the horizontal enlarging is carried out by a programmable clock (910) which adjusts the speed at which data stored in a frame memory (904) is output to a digital-to-analog converter (916) so that the compression effected by the encoder is expanded in a complementary fashion at the receiver (see column 8, lines 23-55). At least this essential part of decompressing portions of the input signals stored in the frame memory, the addressing and reading out the frame memory, would therefore be digital.

3.4 It is therefore concluded that the subject-matter of claim 1 according to the main request lacks novelty.
under Article 54(1) and (2) EPC, having regard to the disclosure of document D4.

4. Since independent claim 1 is not allowable, the respondent's main request is refused.

First auxiliary request

5. Admissibility of the request

5.1 Claim 1 of the first auxiliary request is identical to independent claim 2 of the main request. Thus the appellant could not be taken by surprise. Accordingly, the request is admitted into the proceedings.

6. Clarity and support by the description (Article 84 EPC)

6.1 Claim 1 according to the first auxiliary request differs from granted claim 1 in that the claim now specifies that the control means are suitable for digitally compressing or enlarging an input image and one of the alternatives vertical and/or horizontal of granted claim 1 has been chosen by specifying "vertical and horizontal directions" and "vertical and horizontal magnification factors" which vary continuously in different areas of the image in the vertical and horizontal directions, respectively [Note: the differences with respect to the version of claim 1 as granted are highlighted in bold].

6.2 Since these amendments were made during the opposition proceedings, according to Article 102(3) EPC they must meet the requirements of the Convention, for example
those of Article 84 EPC of clarity and support by the description.

6.3 In the present case, the only disclosed embodiment which describes vertical and horizontal magnification factors varying continuously in different areas of the image in the vertical and horizontal directions, respectively, is shown in Figures 9 and 10 (see also the corresponding description in paragraphs [0043] to [0047]). According to this embodiment, the enlarging or compressing of the image is achieved by means of a vertical saw-tooth wave generated by a vertical deflection circuit (906) and a horizontal saw-tooth wave generated by a horizontal deflection circuit (907). The vertical and horizontal deflection circuits change the gradient and the phase of the generated saw-tooth waves in order to enlarge or compress the image. Moreover, first and second deflection current correcting circuits (908, 909) vary the gradient of the saw-tooth waves in the upper, lower, left and right side areas of the image to change the magnification factors in these areas so that the displayed image has enlarged and compressed portions and an undistorted centre portion (see Figure 10D). However, this embodiment does not disclose how the respective magnification factors "vary continuously" in the different areas, nor how they vary from one area to the neighbouring area.

6.4 In the other embodiments shown in Figures 8A-8G it is not disputed that the enlargement or compression is performed digitally. The magnification factors vary continuously, for example in the vertical direction, in upper and lower parts in that they increase from a
given value in the centre towards the upper and lower borders (Figure 8C). However, in contrast to claim 1, they vary either in the horizontal or vertical direction, but not in both.

6.5 Claim 1 is not clear as such concerning the expressions "digitally compressing or enlarging" and "varies continuously in different areas of the image" because there are several different areas, horizontal and vertical directions, enlargement and compression and no specified relationship of input and displayed aspect ratios. The Board cannot accept the respondent's argument that claim 1 has to be construed as meaning that the control means is merely capable of providing a choice of adapting an image in both directions because claim 1 does not specify such a feature. The different embodiments of the description, analog and digital, horizontal and/or vertical variations, do not support a single technically meaningful interpretation of claim 1. In these circumstances claim 1 of the first auxiliary request does not comply with the requirements of Article 84 EPC.

7. Hence the respondent's first auxiliary request is refused.

Second auxiliary request

8. Admissibility of the request

8.1 Claim 1 of the second auxiliary request essentially restricts the claimed subject-matter to one of the three alternatives comprised in claim 1 of the main request. This does not constitute a substantial change.
by which the appellant (opponent) could have been surprised. Thus, although it was late-filed, the Board decided to admit the request.

9. **Articles 84 and 123(2) EPC (amendments)**

9.1 The Board is satisfied that the amendments made to claim 1 meet the requirements of Article 123(2) EPC (see Figures 2 and 5 to 8A-8D and, for instance, paragraph [0042] of the patent which can also be found in the application as filed). Claim 1 does not specify that the control means does both enlarging and compressing. It merely has to be suitable for "digitally compressing or enlarging an input image", which is disclosed (see above references). In the embodiment shown in Figures 8A-8D, which relates to the display of an input image of 4:3 aspect ratio on a 16:9 aspect ratio screen (see paragraph [0040]), the magnification factor applied to the image is increased and varies continuously (linearly increasing in Figure 8C) in the upper and lower side areas. Therefore the Board is also convinced that the expression "upper and lower side areas" clearly refers to two areas, one at the top and one at the bottom of the screen. Thus the amendments made to claim 1 are, in the Board's view, not objectionable under Article 84 EPC.

10. **Novelty and inventive step (Articles 54(1) and (2) and 56 EPC)**

10.1 In D4 the image displayed on the wide-angle television receiver is identical to the image on the HDTV camera and has exactly the same 5:3 aspect ratio. D4 does not disclose the features of the characterising portion of
present claim 1, in particular varying vertical enlargement factors. The subject-matter of claim 1 is thus considered to be new (Article 54 (1) and (2) EPC).

10.2 The only reason for horizontally compressing the image samples at the emitter end and expanding them at the receiver end is so that the transmitted compressed video signal can be easily displayed on a standard NTSC television receiver with a 4:3 aspect ratio. A similar problem does not however exist in the vertical direction. There is therefore no incentive for a skilled person to extend the horizontal compression/decompression of D4 to the vertical direction. The teaching of documents D2 and D3 (see D2, page 667, section 3.2 and D3, page 153, last paragraph) to which the appellant referred does not change this conclusion. D2 states that "3/4 Scanning lines are converted to N scanning lines" and "N/4 lines are abandoned". This concept would be completely incompatible with the teaching of D4 because the displayed image would then not correspond to the original 5:3 image. D3 merely states that the teaching relating to image processing in the horizontal direction is also applicable to a large extent to image processing in the vertical direction. This statement might be taken as an indication that, for a different aspect ratio of the camera in D1, the compression/decompression of video samples in D1 could possibly be applied to portions of the horizontal lines. But this would not lead to the display of an image on the screen where the vertical magnification factor in upper and lower areas of a screen varies continuously in the meaning of the opposed patent. Instead,
according to D1 the original magnification factor would be restored for displaying the image.

10.3 For the above reasons the Board concludes that the subject-matter of claim 1 according to the second auxiliary request is novel and involves an inventive step.

10.4 No objection has been raised against dependent claim 2 and the amendments made to the description. The Board has no reason to object to them.

10.5 Accordingly the respondent's second auxiliary request is allowable.

11. Reimbursement of the appeal fee

11.1 According to Rule 67 EPC, reimbursement of the appeal fee shall be ordered where the Board of Appeal deems an appeal to the allowable, if such reimbursement is equitable by reason of a substantial procedural violation.

11.2 In the present case, as explained under section 2 supra, the Board has come to the conclusion that the opposition division did not commit a substantial procedural violation by not admitting document D4 into the proceedings. Thus the request for reimbursement of the appeal fee has to be refused.
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 maintain the patent as amended in the following version filed as second auxiliary request in the oral proceedings on 1 June 2006:

   claims 1 and 2,
   description, columns 1 to 11 and
   Figures 1 to 10.

3. The request for reimbursement of the appeal fee is refused.

The Registrar: The Chairman:

D. Sauter          F. Edlinger