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D E C I S I O N
of 8 October 2004

Case Number: T 1000/01 - 3.5.1

Application Number: 98118076.3

Publication Number: 0905987

IPC: H04N 11/04

Language of the proceedings: EN

Title of invention:

Image decoding method and apparatus, and data recording medium

Applicant:

Matsushita Electric Industrial Co., Ltd.

Opponent:

-

Headword:

Image decoding method/MATSUSHITA

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (yes, after amendment)"

Decisions cited:

-

Catchword:

-



Case Number: T 1000/01 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 8 October 2004

Appellant: Matsushita Electric Industrial Co., Ltd.
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Osaka 571-8501 (JP)

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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 2 April 2001
refusing European application No. 98118076.3
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. V. Steinbrener
Members: R. S. Wibergh
G. E. Weiss

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse European patent application No. 98 118 076.3.
- II. The following documents will be referred to in the present decision:
- D1: JP-A-7 66913
- D5: US-A-5 699 170
- D6: EP-A-0 706 164.
- III. According to the examining division's decision, D1 rendered obvious the subject-matter of claim 1 in the version before them. D1 was a JP patent application of which no translation existed but which was interpreted in accordance with the corresponding, but late published, US patent D5.
- IV. On appeal, the appellant requested grant of a patent based on a new set of claims filed together with the statement of grounds.
- V. By communication dated 16 July 2004, the Board introduced document D6 which was cited in the European Search Report. Various observations relative to Articles 84 and 123(2) EPC were made on the claims. The Board furthermore doubted that the subject-matter of the newly filed claim 1 involved an inventive step in view of documents D5 and D6.

VI. By letter dated 6 September 2004, the appellant filed new claims 1-3. It was argued that the objections under Article 84 and 123(2) EPC had been overcome and that the claimed apparatus now involved an inventive step.

VII. Oral proceedings were held on 8 October 2004. During the oral proceedings the appellant filed a new set of claims and an amended description.

VIII. Claim 1 reads:

"An image decoding apparatus of a portable terminal equipment for decoding compressively coded data obtained by coding an image signal including a luminance signal and a color difference signal, to output the image signal to a display of the portable terminal equipment, said apparatus comprising:
mode signal generating means for generating a display mode signal (123) which indicates whether a display mode of the image signal is a monochrome display mode or a color display mode;
mode decision means (105) for deciding which of the display modes between the color display mode and the monochrome display mode is set, on the basis of the display mode signal (123);
data selecting means (106) for, on the basis of the output of the mode decision means (105), outputting the coded data of the luminance signal and the coded data of the color difference signal in the color display mode, and abandoning the coded data of the color difference signal and outputting the coded data of only the luminance signal in the monochrome display mode;
and

decoding unit for decoding the coded data output from the data selecting means (106), wherein said mode signal generating means switches the display mode signal (123) from one indicating the color display mode to one indicating the monochrome display mode when a power voltage supplied from a power supply of the portable terminal equipment drops below a predetermined level."

IX. The appellant requested that the decision under appeal be set aside and that a patent be granted as main request with the following documents:

- claims 1 to 3 as submitted at the oral proceedings;
- description: pages 6, 7, 8, 10, 11, 17, 18, 20, 22 as submitted at the oral proceedings;
- description: pages 1 to 5, 9, 12-16, 19, 21, 23-39 as originally filed;
- drawings: Figures 1 to 10(e) as originally filed;

or in the alternative to remit the case to the first instance for further prosecution.

X. At the end of the oral proceedings the Board announced its decision.

Reasons for the Decision

1. *Admissibility of the appeal*

The appeal meets the requirements referred to in Rule 65(1) EPC and is therefore admissible.

2. *The invention*

The invention relates to an image decoding apparatus for decoding a luminance signal (Y) and colour difference signals (U,V) which have been coded in accordance with some data compression method, such as MPEG. Depending on the voltage level of the power supply, the apparatus works either in a colour display mode, in which both the luminance and the colour difference signals are decoded and displayed (after conventional conversion to RGB (red, green, blue) signals), or in a monochrome display mode, in which only the luminance data are displayed and the "coded data of the color difference signal" are abandoned before the signal reaches the decoding unit. By abandoning the colour difference data in this way, the power needed for the data processing can be reduced (see paragraph [0086]).

3. *The prior art*

D6 describes a field emission colour display intended for use in a portable computer. The display requires RGB signals to be applied frame-wise, colour by colour, to an emitter plate. Emitted electrons impinge on parallel conductive stripes functioning as anode electrodes and covered by material luminescing in the

red, the green, and the blue. In order to save power a threshold detector enables an energy conservation mode when the battery voltage drops below a predetermined level (column 8, lines 46 to 54; Figure 3B). In the energy conservation mode the colour display is switched to a monochrome mode in which only the G (green) signal is used. All anodes are energized such that electrons impinge on them all. The high voltages thus need not be switched, which saves power. Furthermore, the frequency of the clock signal applied to the row and column circuits is reduced, and the frame memory (80 in Figure 2) is placed in standby since in the monochrome mode no buffering of the RGB signals is needed (column 6, lines 11 to 34; column 7, lines 42 to 53). At the end of the description it is pointed out that "while the disclosure describes a three-colour display device, it is intended to include any colour display generation scheme employing field emission" (column 11, lines 7 to 10). Nothing is said about decoding the incoming signal.

4. *Inventive step*

4.1 The examining division held that D5 was the closest prior art. During the appeal proceedings, however, the claims have been extensively amended, so that the Board and also the appellant are of the opinion that the nearest document is now D6.

4.2 D6 discloses all features of claim 1 except the data selecting means and the decoding unit. It is thus not known from D6 to abandon compressively coded color difference signals. It is however disclosed in D6 to

- abandon the R and B signals and display only the G signal in the monochrome mode.
- 4.3 Starting out from D6 the skilled person would readily consider adding to the known apparatus a signal decoder, for example for MPEG, since this is a common image coding standard. The technical problem with which D6 is concerned is to reduce the power consumption in order to extend the battery life. This task naturally involves not only the display but the whole computer with all its circuits, including the decoder. The crucial question is therefore whether the skilled person would have arrived at the invention when considering the described computer, additionally equipped with an MPEG decoder, in the light of the main technical problem of saving energy.
- 4.4 In D6 it is suggested to switch over to a monochrome mode when the battery is low, ie not to use the R and B signals but only the G signal. It is recognised that considerable power can be saved by not buffering any signals in the frame memory 80, which can then be set in a stand-by mode. On studying D6, the skilled person, concerned with ways of reducing the power consumption, may realise that not only the processing of the R and B signals in connection with this memory but any processing of these signals is superfluous once it has been decided not to use them for driving the display. Therefore, he might investigate whether the R and B signals could be abandoned at an earlier stage of the signal chain than shown in D6.
- 4.5 The appellant has pointed out that the display in D6 is controlled by RGB signals (and not luminance and colour

difference signals), since only these correspond to the colours of the luminescent materials used. It is well known that the RGB signals can be computed from the luminance and colour difference signals available in particular from an MPEG decoder (see equations (1) to (3) in the present application). Therefore, the appellant argues, the skilled person would not have abandoned the colour difference signals since these would be needed to produce the G signal which according to D6 is used in the monochrome mode.

- 4.6 The Board finds this argument convincing. The salient feature in D6 is the memory 80 which, due to the nature of the display, stores RGB data, not luminance and colour difference data. Because of the presence of this memory the skilled person would be led to assume that if a colour display generation scheme involving luminance and colour difference signals were used, as arguably suggested in D6 ("it is intended to include any color display generation scheme"), these signals would be converted to RGB before display. When investigating whether the R and B signals could be abandoned at an earlier stage of the signal processing (see paragraph 3.4 above) the skilled person would not have looked further than to such conversion means since, as the appellant has observed, the colour difference signals entering the decoder are required for proper conversion into RGB signals. He would not have considered the circuitry upstream of the conversion means, such as the decoder, and thus would not have arrived at the invention.

In this connection it may be noted that although in D6 the G signal is used in the monochrome mode, the

luminance signal could possibly be used instead since this signal is defined to produce a monochrome image. If this were done the colour difference signals *could* in fact be abandoned before decoding. However, starting from D6 the skilled person *would* have no reason to follow this course since D6 does not suggest that substituting the luminance signal for the G signal would be beneficial in this - or any other - way.

4.7 None of the other cited prior art documents can be combined with D6 in such a way as to lead to the invention. Document D5, in particular, although suggesting that colour data received by a monochrome fax machine should be abandoned before the decoder, would not have been considered by the skilled person because it does not address the problem of saving power. In D5 the reason for abandoning the colour data is that no circuits are then needed for buffering the colour data (column 13, lines 39 to 49), an advantage which is irrelevant in the present case since such circuits are anyway included and used in the colour display mode.

4.8 Thus, the subject-matter of claim 1 involves an inventive step (Article 56 EPC).

5. *Further requirements of the Convention*

The Board is satisfied that the application and the invention to which it relates also meet all other requirements of the EPC. Thus, the appellant's main request for grant of a patent is allowed.

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 3 as submitted at the oral proceedings;
 - description: pages 6, 7, 8, 10, 11, 17, 18, 20, 22 as submitted at the oral proceedings;
 - description: pages 1 to 5, 9, 12 to 16, 19, 21, 23 to 39 as originally filed;
 - drawings: Figures 1 to 10(e) as originally filed.

The Registrar:

The Chairman:

M. Kiehl

S. Steinbrener