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Datasheet for the decision of 12 May 2021

Case Number: T 1492/16 - 3.5.04

Application Number: 06252483.0

Publication Number: 1763250

IPC: H04N7/26

Language of the proceedings: EN

Title of invention:
Display driving apparatus and method and medium for implementing the display driving method

Applicant:
Samsung Electronics Co., Ltd.

Headword:

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

Catchword:

Europäisches Patentamt
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Boards of Appeal

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Case Number: T 1492/16 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 12 May 2021

Appellant: (Applicant)	Samsung Electronics Co., Ltd. 129, Samsung-ro Yeongtong-gu Suwon-si, Gyeonggi-do, 443-742 (KR)
Representative:	Elkington and Fife LLP Prospect House 8 Pembroke Road Sevenoaks, Kent TN13 1XR (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 26 January 2016 refusing European patent application No. 06252483.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairwoman	B. Willems
Members:	M. Paci
	B. Müller

Summary of Facts and Submissions

I. The appeal is against the examining division's decision refusing European patent application No. 06252483.0, published as EP 1763250 A2.

II. The prior-art documents cited in the decision under appeal included the following:

D14: T. Sikora: "*Digital Consumer Electronics Handbook*", Chapter 8, MPEG Standards, Section 1, Digital Video Coding Standards, pages 8.3 to 8.23 January 1997, XP001059402

D15: N. Chakraborti et al: "*A hybrid Hadamard LPC scheme for picture coding*", IEEE Transactions on Acoustics, Speech, and Signal Processing, vol. 35, no. 3, 1 March 1987, pages 391 to 394, XP55207088, ISSN: 0096-3518, DOI: 10.1109/TASSP.1987.1165140

D16: W. Philips et al: *"A new embedded lossless/quasi-lossless image coder based on the Hadamard transform*", Proceedings of the International Conference on Image Processing, 26 to 29 October 1997, vol. 1, pages 667 to 670, XP010254259, DOI: 10.1109/ICIP.1997.648001, ISBN: 978-0-8186-8183-7

III. The decision under appeal was based on the grounds that claims 1 and 16 did not meet the requirements of Article 84 EPC and that the subject-matter of all the claims of the sole request then on file lacked inventive step over the combined disclosures of documents D15 and D14 or D16 and D14 (Article 56 EPC).

IV. The applicant (hereinafter: appellant) filed notice of appeal. With the statement of grounds of appeal, it submitted a new main request replacing the previous request on file. It requested that the decision under appeal be set aside and that a European patent be granted on the basis of the claims of the sole request filed with the statement of grounds of appeal. The appellant provided arguments as to why the claims met the requirements of Articles 56 and 84 EPC.

V. The board issued a summons to oral proceedings and a communication. The board provisionally found that the subject-matter of all the claims did not involve an inventive step over the combined disclosures of documents D15 and D14 (Article 56 EPC 1973).

VI. By letter dated 17 March 2021, the appellant informed the board that it would not be represented at the oral proceedings.

VII. By letter dated 16 April 2021, the registry of the board informed the appellant that the oral proceedings were cancelled.

VIII. The appellant filed neither arguments nor amendments in response to the board's communication. Thus, it appears from the file that the appellant requests that the decision under appeal be set aside and that a European patent be granted on the basis of the appellant's sole request filed with the statement of grounds of appeal.

IX. Claim 16 according to the appellant's sole request reads as follows:

"A display driving method of driving a display device for displaying images, the display driving method comprising:

encoding image data to be displayed by the display device (1200);

storing the encoded image data in a memory (1210);

reading the encoded image data from the memory (1220); and

decoding the encoded image data read out from the memory to restore the image data (1230),

characterized in that the step of encoding comprises sequentially converting lines of the image data into a plurality of blocks of size Nx1, where N is a positive integer greater than 1, and encoding each block of the size Nx1, and generating a compressed image data no larger than a predetermined size by adjusting a number of bits allocated for quantization based on the predetermined size, the predetermined size being determined according to a storage capacity of the memory (130),

and in that the step of decoding comprises decoding each block of the size Nx1."

Reasons for the Decision

1. The appeal is admissible.

Inventive step (Articles 52(1) and 56 EPC 1973)

2. It is undisputed that document D15 represents **the closest prior art** for the subject-matter of claim 16 (see decision under appeal, point 3.1 and statement of grounds of appeal, page 2, third paragraph). The board agrees with this.

3. The board shares the examining division's view that the picture coding method known from document D15 inherently provides data for driving a display device (see decision under appeal, point 3.1: "*every image or video codec method, as the one disclosed in document D15, has this purpose*").

The method known from document D15 comprises the following steps.

Lines of the image data are converted into a plurality of blocks of size Nx1, where N is a positive integer greater than 1 (see page 391, left-hand column, third paragraph: "*Let u(i) denote the data on the ith row and u^j (i) its individual pixels. Each row of data is divided into equal size (say N) one-dimensional blocks*").

Each block of the size Nx1 is encoded (see page 391, Figure 1 and left-hand column, third paragraph: "*The sequence of blocks of transform data from consecutive rows is made to enter an LPC vector coder serially. An LPC vector coder consists of a set of Kth-order LPC's, one for each transform component in a block (Fig. 1). The Kth-order LPC predicts each transform component using the corresponding transform components of K previous rows*").

The board shares the examining division's view that encoding the image data to generate a compressed image, storing the encoded data in a memory and subsequently reading out the data from a memory are implicit features of a method for coding and decoding image data (see decision under appeal, point 3.1: "*implicit: such steps are present in every image or video codec method or system, as it is well-known*").

Each block of the size Nx1 data read out from the memory is decoded to restore the image data ("*In the receiver, a forward filter reconstructs* v^j *(i) from the quantized values* w^j_q *(i) and* a^j_{qn} *corresponding to* w^j *(i) and* a^j*. A horizontal vector of reconstructed values is then inverse transformed and appended with corresponding data of the same row to form a full row*").

4. For the reasons set out in point 3 above, the board considers that D15 discloses sequentially converting lines of the image data into a plurality of blocks of size Nx1, where N is a positive integer greater than 1, and encoding each block of the size Nx1 (see statement of grounds of appeal, page 1, last paragraph and page 2, third paragraph).

Therefore, the board considers that the subject-matter of claim 16 **differs** from the disclosure of D15 by the step of generating a compressed image data no larger than a predetermined size by adjusting a number of bits allocated for quantisation based on the predetermined size, the predetermined size being determined according to a storage capacity of the memory (see also decision under appeal, point 3.2 and statement of grounds of appeal, page 2, second paragraph).

5. The board shares the appellant's view that the **technical effect** achieved by the difference identified in point 4 above is that it allows the image data to be stored in a memory device having a limited amount of available storage space (see statement of grounds of appeal, page 2, fourth paragraph). Thus, **the objective technical problem** may be formulated as how to process data for a device that has a restriction on the amount

of available data storage space (see statement of grounds of appeal, page 2, fifth paragraph).

6. The board is not convinced that none of the documents cited in the decision under appeal suggests compressing the image data to be no larger than a predetermined size by adjusting a number of bits allocated for quantisation based on the storage capacity of a memory (see statement of grounds of appeal, page 2, sixth paragraph).

7. D14, paragraph 8.3.4, discloses that a rate control algorithm at the encoder adjusts the quantiser step size such that the video buffers will never overflow while keeping them as full as possible to maximise image quality. Although buffer overflow can be avoided by using a large enough video buffer, this would introduce disadvantages such as the costs for implementing large buffers and the undesirable delay between encoder and decoder for the real-time transmission of conversational video. MPEG has defined a minimum video buffer size that needs to be supported by all decoder implementations. This value is identical to the maximum value of the video buffer size that an encoder can use to generate a bitstream. To reduce the delay or encoder complexity, it is possible to choose a virtual buffer size value at the encoder smaller than the minimum video buffer size that needs to be supported by the decoder.

In other words, document D14 discloses choosing a quantiser step size, i.e. allocating the number of bits allocated for the quantised data such that the compressed image data is not larger than the (virtual) buffer size.

8. The board concurs with the examining division that document D14, which explains aspects of the MPEG standards, represents **common general knowledge** and that the person skilled in the art would include the known adaptation of the quantisation step in the method known from document D15 in order to solve the problem identified in point 5 above (see also decision under appeal, point 3.3).

9. In view of the above, the method of claim 16 does not involve an inventive step in view of prior-art documents D15 and D14 (Article 56 EPC 1973).

Conclusion

10. Since the subject-matter of claim 16 does not involve an inventive step, the appellant's sole request is not allowable. Accordingly, the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairwoman:

K. Boelicke B. Willems

Decision electronically authenticated