

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 4 July 2019**

Case Number: T 0583/14 - 3.5.04

Application Number: 10195908.8

Publication Number: 2357794

IPC: H04N5/235, H04N5/353

Language of the proceedings: EN

Title of invention:

Multi-step exposed image acquisition method by electronic shutter and photographing apparatus using the same

Applicant:

Samsung Electronics Co., Ltd.

Headword:

Relevant legal provisions:

EPC Art. 56, 84

Keyword:

Inventive step - main request (no)
Claims - clarity - auxiliary request (no)

Decisions cited:

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0583/14 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 4 July 2019

Appellant: Samsung Electronics Co., Ltd.
(Applicant) 129, Samsung-ro
Yeongtong-gu
Suwon-si, Gyeonggi-do, 443-742 (KR)

Representative: Grünecker Patent- und Rechtsanwälte
PartG mbB
Leopoldstraße 4
80802 München (DE)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 16 October 2013
refusing European patent application
No. 10195908.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman C. Kunzelmann
Members: B. Willems
T. Karamanli

Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division dated 16 October 2013 refusing European patent application No. 10 195 908.8, which was published as EP 2 357 794 A2.
- II. The documents cited in the decision under appeal included the following:
- D2: US 2009/174784 A1;
- D3: JP 2000 278595 A.
- III. The application was refused on the grounds that the subject-matter of claim 1 of the then main request lacked inventive step over the disclosure of D2 combined with the common general knowledge of the person skilled in the art (Article 56 EPC), the subject-matter of claim 1 of the then first and second auxiliary requests lacked novelty over the disclosure of D2 (Article 54(1) and (2) EPC) and the subject-matter of claim 1 of the then third auxiliary request lacked inventive step over the combined disclosures of D2 and D3 and the common general knowledge of the person skilled in the art (Article 56 EPC).
- IV. The applicant filed notice of appeal. With the statement of grounds of appeal, the appellant submitted amended claims in accordance with a main request and first and second auxiliary requests and requested that the examining division's decision be set aside and that a European patent be granted on the basis of the claims of the main request or the first or second auxiliary request. The appellant indicated the basis for the

amendments in the application as filed and provided reasons as to why the claims of all requests met the requirements of Articles 54 and 56 EPC.

V. The board issued a summons to oral proceedings. In a communication under Article 15(1) RPBA (Rules of Procedure of the Boards of Appeal, OJ EPO 2007, 536), annexed to the summons, the board gave the following provisional opinion.

(a) Claim 1 of the main request and claim 1 of the first auxiliary request did not meet the requirements of Article 84 EPC.

(b) Claim 1 did not meet the requirements of Article 56 EPC in any of the requests because the claimed subject-matter lacked inventive step over the disclosure of D2 combined with the common general knowledge of the person skilled in the art.

VI. With a reply dated 23 May 2019, the appellant filed amended claims according to a main request and an auxiliary request. It submitted that the main request corresponded essentially to the second auxiliary request filed with the statement of grounds of appeal and indicated a basis for the amendments made to claim 1 of the auxiliary request. It also submitted arguments as to why the amended claims met the requirements of Article 56 EPC.

VII. The board held oral proceedings on 4 July 2019.

The appellant's final requests were that the decision under appeal be set aside and that a European patent be granted on the basis of the claims of the main request

or the auxiliary request, both requests filed by letter dated 23 May 2019.

At the end of the oral proceedings, the chairman announced the board's decision.

VIII. Claim 1 of the main request reads as follows:

"A photographing method comprising:

displaying (520) a preview image using image data sensed by an image sensor;

setting (530, 535) a predetermined portion on the preview image as a gradation area according to a first user input for gradation effect;

setting (540, 545) a gradation degree regarding the gradation area according to a second user input for gradation degree; and

exposing (550) a plurality of areas of the image sensor corresponding to the gradation area to light based on the set gradation degree,

wherein a plurality of readout timings for acquiring different exposure times are controlled for each of the plurality of areas."

IX. Claim 1 of the auxiliary request reads as follows:

"A photographing method comprising:

displaying (520) a preview image using image data sensed by an image sensor;

setting (530, 535) a predetermined portion on the preview image as a gradation area according to a first user input for gradation effect;

setting (540, 545) a gradation degree regarding the gradation area according to a second user input for gradation degree; and

exposing (550) a plurality of areas of the image sensor corresponding to the gradation area to light based on the set gradation degree,

repeating the step of displaying the preview-image including the gradation effect until it is determined (660) that correct exposure has been applied, and if it is determined that correct exposure has been applied, setting (670) the correct exposure for image generation;

wherein a plurality of readout timings for acquiring different exposure times are controlled for each of the plurality of areas."

X. The appellant's arguments, where relevant to the present decision, may be summarised as follows.

(a) D2 was the closest prior art for the assessment of inventive step (see statement of grounds of appeal, page 3, second paragraph).

(b) The disclosure of D2 was limited to situations which involved a horizon, i.e. the disclosure of D2 was restricted to photographing landscapes (see statement of grounds of appeal, page 3, second paragraph).

- (c) Although D2 disclosed different gradations, the gradation for one camera was fixed. The gradation fixed for one camera could not be adjusted to the lighting conditions.
- (d) D2 did not disclose that the gradation degree was input by a user, i.e. D2 did not disclose that the gradation degree could be varied according to the needs of the photographer (see statement of grounds appeal, page 5, second paragraph and letter dated 23 May 2019, page 2, fourth paragraph).
- (e) Allowing the user to input the gradation degree had the effect that the user could change the gradation degree if the result of the applied gradation was not satisfying. Therefore, the problem to be solved was to improve the picture quality by adapting the gradation to difficult lighting conditions.
- (f) D2 did not provide an incentive to add a manual gradation degree setting (see statement of grounds of appeal, page 5, second paragraph). Providing a manual input in the method known from D2 would make the method more cumbersome, which was in clear contrast to the teaching of D2 (see letter dated 23 May 2019, the paragraph bridging pages 2 and 3).
- (g) The description of the present application, paragraph [0077] specified that the multi-step exposure referred to in Figure 7 included the multi-step exposure described with reference to Figures 3A and 3B and the gradation exposure described with reference to Figures 5A and 5B. Since the latter encompassed setting the gradation area and the degree of gradation, it was immediately apparent that the multi-step exposure

referred to in step S630 of Figure 7 encompassed setting the area and the gradation degree.

XI. The examining division's arguments, where relevant to the present decision, may be summarised as follows.

(a) D2 was the closest prior art for the assessment of inventive step (see decision under appeal, point 9.1).

(b) At the priority date of the present application, cameras were equipped with various manual setting possibilities (see decision under appeal, point 9.3).

Reasons for the Decision

1. The appeal is admissible.

2. *Interpretation of claim 1 of the main request*

As an aside, the board notes that claim 1 of the main request corresponds to claim 1 of the main request which is the basis of the decision under appeal, with errors having been corrected. The board's assessment of inventive step is based on an interpretation of claim 1 in accordance with Figure 6 and the corresponding description. Thus, the claim feature of setting a predetermined portion on the preview image as a gradation area according to a user input has, in a simple implementation, the technical meaning that the user positions a horizontal line in the image and the area above the line is selected as a gradation area.

The appellant did not contest the board's interpretation of claim 1.

3. *Main request - inventive step (Article 56 EPC)*

- 3.1 It is not disputed that D2 is the closest prior art for the assessment of inventive step, and the board agrees (see also points X(a) and XI(a) above).

D2 discloses a photographing method comprising the following steps:

displaying a preview image using image data sensed by an image sensor (see paragraph [0058]: "*the user may identify the horizon manually by virtue of moving a cursor 56 shown in a viewfinder of the camera 36 [...] while viewing the image he or she wishes to take a picture of*");

setting a predetermined portion on the preview image as a gradation area (see paragraph [0058]: "*the user may identify the horizon manually by virtue of moving a cursor 56 shown in a viewfinder of the camera 36 [...] the cursor 56 may be in the form of a horizontal line displayed across the image within the viewfinder*" and paragraph [0062]: "*the integration periods for rows above and below the horizon row R_{HORZ} change gradually ...*" and "*the gray filter circuitry 44 causes the integration period of the rows to begin to gradually increase just above R_{HORZ} on thru to row N*");

setting a gradation degree regarding the gradation area (see Figures 12 and 13 and paragraph [0062]: "*As is shown in FIG. 12 [...] the integration period increases linearly. As is shown in FIG. 13, however, the change in integration period may be otherwise, such as non-linear*"); and

exposing to light a plurality of areas of the image sensor corresponding to the gradation area based on the set gradation degree, wherein a plurality of readout timings for acquiring different exposure times are controlled for each of the plurality of areas (see paragraphs [0056] and [0062]: "*the second image representing the photograph image desired by the user is obtained using the different integration periods above and below the horizon 14*" and "*the gray filter circuitry 44 causes the integration period of the rows to begin to gradually increase just above R_{HORZ} on thru to row N* ").

- 3.2 The board is not convinced that the disclosure of D2 is limited to situations which involve a horizon (see point X(b) above). Document D2, paragraph [0041], discloses that the camera in general compensates for limitations in its dynamic range by adjusting the integration period and gives the specific example of landscape photography. However, the teaching of D2 is not limited to this specific example, i.e. the detection of the horizon in landscape photography.
- 3.3 Moreover, the board is not persuaded that D2 discloses one fixed gradation degree for the camera (see point X(c) above). D2, paragraph [0064], discloses that the relative change in integration periods (i.e. the gradation degree) may be predefined or dynamic and the grey filter circuitry may implement an auto-exposure loop to dynamically determine the relative integration periods (i.e. the gradation degree).
- 3.4 Thus, claim 1 of the main request differs from the disclosure of D2 in that the former specifies that the user inputs the gradation degree (see point X(d) above).

3.5 The board does not agree with the appellant that the problem to be solved is to improve the picture quality by adapting the gradation to difficult lighting conditions (see point X(e) above). This definition of the problem to be solved is based on the assumption that the claim specifies an iterative method for setting the gradation area and the gradation degree. However, the claim does not specify such an iterative process. Instead the claim specifies only one (first) user input for setting the gradation area and one (second) user input for setting the gradation degree.

Therefore, the problem to be solved is to provide further input means for setting the gradation degree.

3.6 The board agrees with the examining division that, at the priority date, cameras were equipped with various manual setting possibilities (see point XI(b) above).

The board does not share the appellant's view that D2 does not provide an incentive to add a manual selection of the gradation degree (see point X(f) above).

D2, paragraph [0056], discloses that the horizon detection circuitry analyses the image in order to set the horizon for the purpose of grey filtering. D2, paragraph [0058], discloses that the horizon detection circuitry accepts the row identified by the cursor set by the user as the horizon. Thus, D2 discloses that for the purpose of grey filtering the horizon may be automatically set based on image analysis or set by the user.

The board has not been persuaded that adding a manual selection of the gradation degree runs counter to the teaching of D2. Rather, the board is of the opinion

that, similar to providing means for manually setting the gradation area, the person skilled in the art would provide means for manually setting the gradation degree.

3.7 In view of the above, claim 1 of the main request does not meet the requirements of Article 56 EPC because the claimed subject-matter lacks inventive step over the disclosure of document D2 combined with the common general knowledge of the person skilled in the art.

4. *Auxiliary request - clarity (Article 84 EPC)*

4.1 The clarity of a claim is not diminished by the mere breadth of a term contained in it, if the meaning of that term - either per se or in light of the description - is unambiguous for the person skilled in the art (see also Case Law of the Boards of Appeal of the European Patent Office, 8th edition 2016, II.A.3.3).

4.2 Claim 1 of the auxiliary request specifies "*repeating the step of displaying the preview-image including the gradation effect until it is determined (660) that correct exposure has been applied*".

4.3 The clause following "until" expresses a condition to be met for stopping the repetitive or continuous display of the preview image.

4.4 However, it is not clear which image is displayed until this condition is met.

4.4.1 The claim specifies repetitively displaying the preview image including the gradation effect. Hence, not the

image input to the sensor but a processed image is repetitively displayed.

The part of the claim preceding the phrase cited in point 4.2 above only mentions the gradation effect in connection with the input of the gradation area. Thus, the claim establishes a link between the preview image including the gradation effect and the gradation area. However, the claim does not specify successive inputs for the gradation area. Therefore, it is not clear whether successively displayed images are subjected to gradation processing using different settings for the gradation area.

Moreover, the claim does not establish a link between the successively displayed preview images and the gradation degree. It is, therefore, not clear whether successively displayed processed images are subjected to gradation processing using different settings for the gradation degree.

- 4.4.2 Claim 1 specifies displaying a preview image using image data sensed by the image sensor and repetitively displaying a processed image. It is, however, not clear whether the processing is carried out on the same raw image data stored in a memory or whether the processing is preceded by inputting a new image to the sensor. The use of the definite article ("*the preview-image including the gradation effect*") suggests the former. However, the claim does not specify storing the image output by the sensor. The description, paragraph [0076] discloses that the multi-step exposure shown in Figure 7 is preceded by displaying the image which is currently input through the lens. Thus, according to the description, the successive iterations of the

gradation processing are carried out on different images input to the sensor.

- 4.4.3 According to the description, paragraph [0077], the multi-step exposure (i.e. applying different exposure times to different parts of the image) shown in Figure 7 includes the multi-step exposure described with reference to Figures 3A and 3B and the gradation exposure described with reference to Figures 5A and 5B. Paragraph [0072] describes a method for acquiring an image having an exposure based on the gradation exposure described with reference to Figures 5A and 5B. In this method the user can set the gradation area and the gradation degree. However, Figure 7 only shows setting the gradation area. Combining the disclosures relating to Figures 6 and 7 it is not clear whether the gradation degree is set within the iterative loop (together with the area) or outside the iterative loop.
- 4.5 In view the above, claim 1 of the auxiliary request does not meet the requirements of Article 84 EPC, because which data is displayed when repeating the display of the "*preview-image including the gradation effect*" is ambiguous.
5. Since neither of the appellant's requests is allowable the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



B. Atienza Vivancos

C. Kunzelmann

Decision electronically authenticated