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**Datasheet for the decision
of 18 May 2022**

Case Number: T 2100/21 - 3.4.02

Application Number: 15784374.9

Publication Number: 3210072

IPC: G02F1/13, G09G3/36, H01L27/32

Language of the proceedings: EN

Title of invention:

SUB-PIXEL FOR A DISPLAY WITH CONTROLLABLE VIEWING ANGLE

Applicant:

Facebook Technologies, LLC

Headword:

Relevant legal provisions:

EPC Art. 123(2), 111(1)
RPBA 2020 Art. 11

Keyword:

Amendments - added subject-matter (no)
Remittal - (yes)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 2100/21 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 18 May 2022

Appellant: Facebook Technologies, LLC
(Applicant) 1601 Willow Road
Menlo Park, CA 94025 (US)

Representative: Murgitroyd & Company
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 12 July 2021
refusing European patent application No.
15784374.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman R. Bekkering
Members: A. Hornung
C. Almberg

Summary of Facts and Submissions

- I. The applicant appealed against the decision of the examining division refusing European patent application No. 15784374.9 on the basis of Article 97(2) EPC because the requirement of Article 123(2) EPC was not fulfilled.
- II. The applicant requests that the decision under appeal be set aside and a patent be granted on the basis of the claims according to a main request or an auxiliary request, both requests filed with the statement setting out the grounds of appeal and underlying the appealed decision.
- III. Claim 1 of the main request reads as follows (some of the features of claim 1 are preceded by the numbering (i) to (iv), as defined in the appealed decision, point 1.1.1):

"An LED display, comprising:

a plurality of pixels,

(i) a plurality of first monolithic inorganic light emitting diode (ILED) addressable array chips, each including a plurality of first ILED emitters, the first ILED emitters on some of the array chips configured to emit light having different emission beam angles with respect to the first ILED emitters on other of the array chips, and at a first colour, the first ILED emitters on each monolithic array chip being shared by more than one display sub-pixel, wherein each sub-pixel is a sub-pixel of the first colour of a different pixel of the plurality of pixels;

(ii) a plurality of second monolithic ILED addressable array chips, each including a plurality of second ILED emitters, the second ILED emitters on some of the array chips configured to emit light having different emission beam angles with respect to the second ILED emitters on other of the array chips and at a second colour, the second ILED emitters on each monolithic array chip being shared by more than one display sub-pixel, wherein each sub-pixel is a sub-pixel of the second colour of a different pixel of the plurality of pixels;

whereby each pixel comprises a sub-pixel of the first colour and a sub-pixel of the second colour;

(iii) whereby the sub-pixel of the first colour shares a first ILED emitter on a first monolithic array chip having a first emission beam angle and a first ILED emitter on another first monolithic array chip having a second emission beam angle different to the first emission beam angle; and

(iv) whereby the sub-pixel of the second colour shares a second ILED emitter on a second monolithic array chip having a third emission beam angle and a second ILED emitter on another second monolithic array chip having a fourth emission beam angle different to the third emission beam angle".

Reasons for the Decision

1. Amendments - Article 123(2) EPC

Claim 1 has not been amended in such a way that it contains subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

1.1 The board agrees with the argumentation of the applicant according to which present claim 1 is based essentially on claims 1, 2, 4 and 7 as originally filed, in combination with the definition of a "Display Sub-Pixel" on page 6 of the patent application as originally filed and with the paragraph on page 12, lines 31 to 35, of the patent application as originally filed. In particular, the basis in the application as originally filed for each feature of present claim 1 is indicated within square brackets, as follows:

"An LED display, comprising:

a plurality of pixels,

[implicit disclosure in combination with the LED display shown in figure 7],

a plurality of first monolithic inorganic light emitting diode (ILED) addressable array chips,

[page 6: each pixel consists of a plurality of sub-pixels, namely R, G and B sub-pixels, wherein a sub-pixel is formed by different, i.e. by a plurality of, ILED addressable array chips (page 12, lines 31 to 35, first sentence); the emitters are disposed on monolithic array chips (page 12, lines 31 to 35, third sentence)],

each including a plurality of first ILED emitters,

[page 6: an addressable array chip has more than one distinct light generating region, i.e. the array chips include a plurality of emitters; see also page 12, lines 31 to 35: each array chip contains emitters (highlighted by the board)],

the first ILED emitters on some of the array chips configured to emit light having different emission beam

angles with respect to the first ILED emitters on other of the array chips,

[according to claim 1 as originally filed, a sub-pixel comprises two light emitting devices, i.e. two array chips, having different emission beam angles; according to page 12, lines 31 to 35, second sentence, each of these two types of array chips has one emission profile, i.e. a specific emission beam angle (see page 3, lines 11 and 12, explaining that a light emission profile comprises a viewing angle)],

and at a first colour,

[page 6: a sub-pixel comprises a single colour, generally R, G or B],

the first ILED emitters on each monolithic array chip being shared by more than one display sub-pixel,

[page 12, lines 31 to 35, third sentence],

wherein each sub-pixel is a sub-pixel of the first colour of a different pixel of the plurality of pixels;

[it is implicit from the overall disclosure of the application that each sub-pixel of a certain colour of the plurality of sub-pixels belongs to a different pixel; see also figure 7 showing that the emitters of each array chip are shared by sub-pixels of different pixels],

a plurality of second monolithic ILED addressable array chips, each including a plurality of second ILED emitters, the second ILED emitters on some of the array chips configured to emit light having different emission beam angles with respect to the second ILED emitters on other of the array chips and at a second colour, the second ILED emitters on each monolithic array chip being shared by more than one display sub-pixel, wherein each sub-pixel is

a sub-pixel of the second colour of a different pixel of the plurality of pixels;

[the basis in the application as filed of these features of the second array chips including the second emitters is the same as for the first array chips including the first emitters; indeed, it is implicit from the application as filed that the R, G and B pixels of the display comprise R, G and B sub-pixels having identical properties],

whereby each pixel comprises a sub-pixel of the first colour and a sub-pixel of the second colour;

[implicit from the application as filed],

whereby the sub-pixel of the first colour shares a first ILED emitter on a first monolithic array chip having a first emission beam angle and a first ILED emitter on another first monolithic array chip having a second emission beam angle different to the first emission beam angle; and

[according to page 12, lines 31 to 35, first sentence, the sub-pixel comprises emitters located on different array chips; in addition, according to claim 1 as originally filed, the sub-pixel comprises light emitting devices, i.e. array chips, having different emission beam angles],

whereby the sub-pixel of the second colour shares a second ILED emitter on a second monolithic array chip having a third emission beam angle and a second ILED emitter on another second monolithic array chip having a fourth emission beam angle different to the third emission beam angle"

[see the basis given above for the sub-pixel of the first colour].

1.2 Appealed decision

1.2.1 According to the appealed decision, point 1.1.3.1, features (i) and (ii) of claim 1 comprise "more details than the cited text" on page 12, lines 31-35 of the application as originally filed. It is not described in the appealed decision what these "details" are, but these "details" are said "to originate from the depiction of the embodiment in figure 7. Extracting a feature from a figure is a priori an intermediate generalization as a depiction interlinks all features depicted". In particular, "the presence of three colors and even the hexagonal tiling geometry are mandatory for achieving a display according to the embodiment in page 12, lines 31 - 35 and figure 7".

While the board concurs with the examining division that a figure alone cannot serve as a basis for extracting specific features having no "appropriate pointer" in the description of the patent application, the board is not convinced by the above argument of the examining division. First of all, as submitted by the applicant, "[c]laim 1 contains **all** features of the passage at page 12, lines 31-35, so there can be no intermediate generalisation" (statement of grounds of appeal, page 6, first paragraph; highlighted in the original). Secondly, as also submitted by the applicant, the board cannot see why "the presence of three colors and the hexagonal tiling geometry" would be mandatory for the display defined in present claim 1. In particular, neither does claim 1 define a feature of a LED display which would require a third colour, nor appears the hexagonal tiling geometry of the pixels in figure 7 to be the only possible geometry compatible with the structure defined in claim 1.

1.2.2 Furthermore, according to the appealed decision, point 1.1.3.2, "the combination of features (i) - (iv) is not

directly disclosed and whether it can be unambiguously derived is contingent on the validity of the assertion that in the context of the application it is implicit that a sub-pixel always comprises two light emitters with different emission beam angles". In view of the disclosure in the patent application of sub-pixels which comprise two identical light emitters for redundancy (see page 6, lines 5 to 8, of the patent application as originally filed), the examining division deduces that it is not implicit that a sub-pixel always comprises two light emitters with different emission beam angles.

The board cannot follow this argument of the examining division because, as submitted by the applicant, "the skilled person reading the application as a whole would understand that it is a key feature of the patent application that a sub-pixel always comprises two light emitters with different emission beam angles" (statement of grounds of appeal, page 7, third paragraph). In particular, this feature is defined in claim 1 as originally filed and is also present in the summary of the invention, page 2, line 35 to page 3, line 2. Concerning the disclosure in the original description of sub-pixels which comprise two identical light emitters for redundancy reasons, the board agrees that it is not explicitly stated that the embodiment of figure 1, described on page 6, lines 5 to 8, of the application as originally filed belongs to the state of the art. However, the applicant's contention that this embodiment "is not a display according to the present invention" is plausible (statement of grounds of appeal, page 7, last paragraph). Indeed, the embodiment described on page 6, lines 5 to 8, relates to pixels with individual Single Emitter Chips, whereas the embodiment according to the invention and described on page 12, lines 31 to 35, relates to pixels using Addressable Array Chips. These two embodiments are,

therefore, not compatible. It is to be noted that the description as originally filed comprises a plurality of further embodiments not falling under the scope of present claim 1.

1.3 In conclusion, the board is unable to see any subject-matter in claim 1 extending beyond the content of the application as filed. Therefore, the amendments carried out in present claim 1 are compliant with the requirement of Article 123(2) EPC.

2. Remittal

2.1 Since the board is not convinced by the argumentation of added subject-matter as provided by the examining division, the appealed decision must be set aside.

2.2 The decision under appeal dealt only with the issue of added subject-matter without considering any of the other requirements of the EPC, especially clarity, novelty and inventive step. The significant scope of the pending examination would require the board to go far beyond the primary object of the appeal proceedings to review the appealed decision (Article 12(2) RPBA 2020). This would not be appropriate and constitutes a "special reason" within the meaning of Article 11 RPBA 2020 to remit the case to the examining division for further prosecution (Article 111(1) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chairman:



H. Jenney

R. Bekkering

Decision electronically authenticated