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**Datasheet for the decision  
of 3 February 2020**

**Case Number:** T 0696/17 - 3.4.02

**Application Number:** 14171255.4

**Publication Number:** 2778774

**IPC:** G02F1/1333, G02F1/13357

**Language of the proceedings:** EN

**Title of invention:**  
Liquid crystal display apparatus

**Applicant:**  
Samsung Electronics Co., Ltd.

**Relevant legal provisions:**  
EPC Art. 54(1), 56, 76(1)

**Keyword:**

Subject-matter extending beyond the earlier application as  
filed (no, amended claims)  
Novelty and inventive step (yes)



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Case Number: T 0696/17 - 3.4.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.4.02**  
**of 3 February 2020**

**Appellant:** Samsung Electronics Co., Ltd.  
(Applicant) 129, Samsung-ro  
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**Representative:** Land, Addick Adrianus Gosling  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 4 November 2016  
refusing European patent application No.  
14171255.4 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** R. Bekkering  
**Members:** F. J. Narganes-Quijano  
G. Decker

## Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal against the decision of the examining division refusing European patent application No. 14171255.4 filed as divisional application of the earlier patent application No. 06077004.7 (publication No. 1835330).

II. During the first-instance proceedings reference was made to document

D1: JP 2005084270 A.

In its decision the examining division

- decided not to admit into the proceedings the main and the first auxiliary requests then on file (Rule 137(3) EPC), and

- held that claim 1 of the second to fourth auxiliary requests then on file contravened the requirements of Article 76(1) EPC and, in addition, claim 1 of the second auxiliary request was not clear (Article 84 EPC).

III. In reply to a communication of the board annexed to the summons to oral proceedings, the appellant filed with the letter dated 20 December 2019 amended claims 1 to 5 and amended pages 1 to 7 of the description.

With the same letter the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 5 and of pages 1 to 7 of the description submitted with the letter dated 20 December 2019, together with Fig. 1 to 4 of the application as originally filed (main request), or on the basis of a first to a fifth auxiliary request

corresponding, respectively, to the main and the first to fourth auxiliary requests underlying the decision under appeal.

IV. Subsequently, the oral proceedings were cancelled.

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

"1. A liquid crystal display apparatus (200) comprising:

    a liquid crystal panel assembly (100) including;  
    a liquid crystal panel (10),  
    a backlight module (20) having a light source (21) including a plurality of light emitting diodes, LEDs (21b), and arranged to irradiate light to the liquid crystal panel (10), and a light guide plate (22) arranged to guide light from the light source (21), a diffusing plate (23) arranged to diffuse light from the light guide plate (22) to the liquid crystal panel (10), and a reflecting plate (24) arranged to reflect light from the light guide plate (22) to the diffusing plate (23); and

    a housing (30) which surrounds the liquid crystal panel (10) and the backlight module (20), the housing (30) having a front housing part (31) which is arranged to expose a screen of the liquid crystal panel (10) to the outside and a rear housing part (32) formed of a thermally conductive material and arranged at a rear side of the backlight module (20);

    a frame having a front frame part (41) which is configured to expose the screen of the liquid crystal panel (10), and a rear frame part (42) formed of a thermally and electrically conductive material and mounted at a rear side of the liquid crystal panel assembly (100);

a controller (50) interposed between the rear frame part (42) and the rear housing part (23), the controller (50) being arranged to control a whole operation of the liquid crystal display apparatus (200),

wherein the LED light source (21) further includes a circuit board (21a) on to which the plurality of LEDs (21b) are mounted and, the plurality of LEDs are further arranged to irradiate light in a lateral direction of the light guide plate (22),

wherein the rear frame part (42) is arranged to be in contact with the rear housing part (32), and the rear housing part (23) and the rear frame part (42) are arranged either in contact with or adjacent to the LED light source (21) so that the heat generated by the light source (21) is transferred through both the rear housing part (23) and the rear frame part (42),

wherein the rear frame part (42) has an electromagnetic wave shield function of effectively intercepting electromagnetic waves generated by the controller (50) during operation."

The main request also includes dependent claims 2 to 5 referring back to claim 1.

## **Reasons for the Decision**

1. The appeal is admissible.
2. Main request
  - 2.1 The claims of the main request constitute an amended version of the claims of the third auxiliary request

underlying the decision under appeal, the amendments having been made to overcome the objection raised under Article 76(1) EPC in the decision under appeal and also the objections raised under Articles 76(1), 123(2) and 84 EPC by the board in the communication annexed to the summons to oral proceedings in respect of the mentioned third auxiliary request. In particular, in the decision under appeal the examining division held that the then third auxiliary request contravened the requirements of Article 76(1) EPC because, while the corresponding claim 1 required "a controller [...] arranged to control the operation of the liquid crystal display apparatus", the controller was disclosed in the earlier application as filed as controlling "a whole operation of the LCD apparatus" (page 13, lines 4 to 11, of the description). Claim 1 of the present main request specifies that the controller is "arranged to control a whole operation of the liquid crystal display apparatus", and for this reason the present main request overcomes the sole reason given by the examining division in the decision under appeal for the refusal of the then third auxiliary request.

In addition, the board is satisfied that the claims of the present main request meet the requirements of Articles 76(1) and 123(2) EPC. In particular,

- claim 1 is based on independent claims 1 and 6 and dependent claims 2, 4, 7 to 10 and 14 to 17, together with the passages of the description on page 4, lines 3 to 7, page 9, lines 20 to 27, page 12, lines 27 to 30, and page 13, lines 4 to 18, of the earlier application as filed, and also on claim 1 and dependent claims 4 and 6 to 9, together with the passages of the description on page 2, lines 23 to 25, page 6, lines 19 to 21, and page 7, lines 1 to 18, of the application as originally filed;

- dependent claim 2 is based on the passage of the description on page 11, line 27, to page 12, line 5, of the earlier application as filed, and also on the combination of dependent claims 2 and 3 of the application as originally filed;

- dependent claim 3 is based on dependent claim 5 of the earlier application as filed, and also on dependent claim 5 of the application as originally filed,

- dependent claim 4 is based on the passage on page 12, lines 27 to 30, of the description of the earlier application as filed, and also on dependent claim 10 of the application as originally filed; and

- dependent claim 5 is based on dependent claim 3 of the earlier application as filed, and also on dependent claim 11 of the application as originally filed.

The amendments made to the description relate to the adaptation of its content to the invention as defined in the present claims (Rule 42(1)(c) EPC), and to the acknowledgement of the pertinent state of the art (document D1) in the introductory part of the description (Rule 42(1)(b) EPC).

2.2 The subject-matter of claim 1 of the main request essentially corresponds to the subject-matter of a claim 1 amended and proposed for grant by the examining division in a communication under Rule 71(3) EPC - and the text of which was not subsequently approved by the appellant (Rule 71(6) EPC) -, and the board concurs with the examining division that the claimed invention is new and involves an inventive step over the documents of the prior art considered during the first-instance proceedings. In particular, document D1 discloses a liquid crystal display apparatus of the

claimed type (Fig. 8, together with Fig. 1, 11 and 12 and the corresponding description, in particular paragraph [0006]) comprising a backlight module constituted by a light source (array of light emitting elements 9), a diffusion plate (plate 5), and a reflecting plate (plate 8) arranged to irradiate a liquid crystal panel (panel 4), a housing (housing 13 and 7, see also Fig. 11 and 12) surrounding the backlight module and part of the liquid crystal panel and made of a thermally conductive material (aluminium, see paragraphs [0006] and [0008]), and a frame (frame 1 and 2) arranged around the housing and made of a thermally and electrically conductive material (aluminium, see paragraph [0013], last sentence) so as to shield electromagnetic waves generated by a controller of the apparatus (controller 11) arranged between the rear sections of the frame and the housing. While in document D1 the light source of the backlight module is constituted by a planar array of light emitting elements (elements 9 in Fig. 8) arranged between the diffusion and the reflecting plates, in claim 1 the light source is constituted by a plurality of light emitting diodes (LED) and a light guide plate arranged to receive light from the LEDs in the lateral radiation - i.e. forming a so-called edge-lit arrangement - and guide the light to the components of the backlight module as claimed, thus irradiating the liquid crystal panel. Therefore, already for this reason the subject-matter of claim 1 is novel over document D1.

In addition, it was already generally known at the priority date of the application to use a backlight module of the edge-lit type in a LCD display device and also to use LEDs for illumination, but none of the documents on file teaches or suggests the use of a



plurality of LEDs as the light source of an edge-lit backlight module and then arranging both a rear part of the frame and a rear part of the housing which are in contact with each other either in contact with or adjacent to the LED light source as claimed so as to dissipate the heat generated by the LED light source (see description of the application as originally filed, page 3, lines 16 to 18, page 6, lines 22 to 27, page 7, lines 14 to 18, and page 7, line 28, to page 8, line 6).

The board is therefore of the opinion that the LCD apparatus defined in claim 1 is new and involves an inventive step over the available documents of the state of the art (Articles 52(1), 54 and 56 EPC). The same conclusion applies to dependent claims 2 to 5 which are directed to particular embodiments of the LCD apparatus defined in claim 1.

3. In view of the above considerations, the board concludes that the application documents amended according to the present main request meet the requirements of the EPC.

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to grant a patent in the following version:

- claims: No. 1 to 5 filed with the letter dated 20 December 2019;
- description: pages 1 to 7 filed with the letter dated 20 December 2019; and
- drawings: Fig. 1 to 4 of the application as originally filed.

The Registrar:

The Chairman:



M. Kiehl

R. Bekkering

Decision electronically authenticated