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Datasheet for the decision of 13 April 2012

Case Number: T 0941/10 - 3.5.03

Application Number: 07120675.9

Publication Number: 1924060

IPC: H04M 1/03, H04M 1/02

Language of the proceedings: EN

Title of invention:
Keypad assembly for a mobile terminal

Applicant:
LG Electronics Inc.

Headword:
Keypad assembly/LG

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
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Case Number: T 0941/10 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 13 April 2012

Appellant: (applicant)
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Representative:
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Decision under appeal:
Decision of the examining division of the European Patent Office posted 22 December 2009 refusing European patent application No. 07120675.9 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: A. S. Clelland
Members: F. van der Voort
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division refusing European patent application No. 07120675.9 (publication number EP 1 924 060 A).

II. The reason given for the refusal was that the subject-matter of claim 1 of a main request and each one of second to fifth auxiliary requests lacked an inventive step, Articles 52(1) and 56 EPC. A first auxiliary request was not admitted into the proceedings, Rule 137(3) EPC.

III. With the statement of grounds of appeal the appellant requested that the decision be set aside and a patent be granted on the basis of claims of a main request or one of three auxiliary requests, all claims as filed with the statement of grounds. Arguments in support were submitted and oral proceedings were conditionally requested.

IV. The appellant was summoned to oral proceedings. In a communication annexed to the summons to oral proceedings the board raised, without prejudice to its final decision, objections against claim 1 of all pending requests under Article 52(1) EPC in combination with Article 56 EPC (lack of inventive step).

V. The following documents which were referred to in the decision under appeal and/or in the board's communication are referred to in the present decision:

D1: EP 1 601 168 A;

D2: US 5 999 821 A;

D3: JP 2004-343267 A;

D4: WO 2005/061204 A;

D5: WO 2005/069681 A; and

D7: GB 2357212 A.

VI. In response to the board's communication the appellant informed the board that it would not attend the oral proceedings. No substantive submissions were filed.

VII. Oral proceedings were held on 13 April 2012 in the absence of the appellant. In accordance with the written submissions the appellant had requested that the decision be set aside and a patent be granted on the basis of claims of a main request or one of three auxiliary requests, all claims as filed with the statement of grounds. After deliberation, the board's decision was announced.

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

"A mobile terminal, comprising a case (102), a printed circuit board (110) for implementing functions associated with the mobile terminal and a microphone (120, 220), wherein the microphone is attached to a lower surface of the circuit board and wherein the case comprises a microphone opening (104) aligned with a sound port (130), the circuit board comprises a hole (112) aligned with the microphone and the sound port and the mobile terminal comprises a sound shielding

element (140,240) provided between the microphone opening and the hole of the circuit board, the sound shielding element defining at least a part of a sound path between the microphone opening of the case, the sound port and the hole of the circuit board.".

Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the mobile terminal further comprises "a keypad (150,250)" and "user input keys" and in that the following feature is added:

"wherein the sound port is positioned outside an area of the keypad covered by the input keys so as not to interfere with the use of the input keys".

Claim 1 of the second auxiliary request differs from claim 1 of the first auxiliary request in that the following feature is added:

"and wherein the keypad, the sound port, and the shielding element are formed as a single assembly".

Claim 1 of the third auxiliary request differs from claim 1 of the second auxiliary request in that the following feature is added:

"and wherein the mobile terminal further comprises a movable part arranged to move between an extended position and a compact position, where it covers the keypad (150,250), the movable part further comprising another sound port, which in the compact position of the movable part is aligned with the opening (104) located on the surface of the housing".

Reasons for the Decision

1. *Procedural matters*

1.1 The board considered it to be expedient to hold oral proceedings for reasons of procedural economy (Article 116(1) EPC). The appellant, which was duly summoned, had informed the board that it would not attend the oral proceedings and, indeed, was absent. The oral proceedings were therefore held in the absence of the appellant (Rule 115(2) EPC, Article 15(3) RPBA).

1.2 The present decision is based on objections under Article 52(1) EPC in combination with Article 56 EPC which had already been raised in the board's communication. The appellant had the opportunity to present its comments on these objections and filed a formal reply without discussing the issues raised in the communication. In deciding not to attend the oral proceedings the appellant chose not to make use of the opportunity to comment at the oral proceedings on any of the objections but, instead, chose to rely on the arguments as set out in the statement of grounds of appeal, which the board duly considered below. Under these circumstances, the board was in a position to give a decision which complied with Article 113(1) EPC.

2. *Main request*

2.1 The examining division regarded D1 as representing the closest prior art and so did the appellant. The board sees no reason to question this.

2.2 D1 discloses, using the language of claim 1 of the main request, a mobile terminal 100 (D1, Fig. 1) including a case 112, a printed circuit board (PCB) 206 (Figs 2 and 3) for implementing functions associated with the mobile terminal (col. 5, lines 21 to 28), and a microphone 210 (Figs 2 to 4). The microphone is attached to an upper surface of the PCB 206 (Figs 3 and 4). Further, the case 112 has a microphone opening 110 (Figs 1 and 2) which is aligned with a sound port 212 (col. 5, lines 37 to 42, and Fig. 2). The mobile terminal 100 further includes a sound shielding element, e.g. gasket 320 and openings 324, 328, 330 and 332 (Fig. 3), which is provided between the microphone opening 110 and the microphone 210 and which defines at least a part of a sound path 400 between the microphone opening 110, the sound port 212, and the microphone 210 (col. 7, lines 38 to 41, and Fig. 4).

2.3 The subject-matter of claim 1 of the main request differs from the mobile terminal disclosed in D1 in that according to claim 1:

i) the microphone is attached to a lower surface of the circuit board;

ii) the circuit board comprises a hole which is aligned with the microphone and the sound port;

iii) the sound path is between the microphone opening, the sound port, and the hole of the circuit board; and

iv) the sound shielding element is provided between the microphone opening and the hole of the circuit board.

2.4 By providing a hole in the circuit board, which is part of the sound path between the microphone opening and the microphone, the microphone can be mounted on the lower surface of the circuit board. By mounting the electronic components on the lower surface of the circuit board, an arrangement is obtained which minimizes the overall thickness of the mobile terminal (see also the present application as published, col. 4, lines 19 to 23).

2.5 The technical problem starting out from D1 may thus be seen in providing an alternative mounting of the electronic components on the PCB, including the microphone, in order to arrive at a more compact mobile terminal.

The formulation of this problem does not contribute to an inventive step, since it was customary practice at the priority date to optimise, in terms of space requirements, in the case of portable devices provided with a PCB, such as a cellular telephone, the design of the PCB as well as the location and the selection of the various electronic components to be mounted on the PCB, in order to obtain an overall size of the portable device as compact as possible. These considerations were not challenged by the appellant.

2.6 When faced with the above-mentioned technical problem, a person skilled in the art would consider document D5, since it relates to the problem of miniaturising

electronic products which include a PCB, for example a cellular telephone (D5, page 1, lines 9 to 19, page 3, lines 29 to 34, "cellular phone", and page 5, lines 17 to 20 "(for example, the PCB of the cellular phone)").

D5 further discloses that it was well-known at the time to mount the electronic components on a lower surface of the PCB, i.e. the surface facing the inner side of the electronic device, in order to minimise the thickness of the electronic device, e.g. a cellular telephone, (D5, section "BACKGROUND ART" at page 1, lines 16 to 19). In this respect, reference is also made to the present application as published, col. 4, lines 19 to 23: "When the microphone 120 is installed on the circuit board 110, the microphone 120 is typically attached to a lower surface of the circuit board 110" (board's underlining). D5 further discloses an embodiment in which a microphone 100 (Figs 3 and 4) is attached to a lower surface (page 3, lines 29 to 34, "component mount region 200a") of a main PCB 200 for mounting electronic components, in which the PCB 200 comprises a through-hole 202 which is aligned with the microphone 100 and which is part of a sound path between a microphone opening 110a and a sound source (D5, the abstract, page 3, lines 25 to 34, page 4, lines 10 to 14, and Fig. 4).

2.7 Applying the teaching of D5 to the mobile terminal of D1, the skilled person would therefore arrive at a mobile terminal which additionally includes the above-mentioned distinguishing features i) to iii) (see point 2.3). In the mobile terminal thus arrived at the sound shielding element is provided between the microphone opening and the hole of the circuit board (feature iv)).

Hence, without exercising inventive skill, the skilled person would arrive at a mobile terminal which includes all the features of claim 1 of the main request.

2.8 The subject-matter of claim 1 of the main request does not therefore involve an inventive step (Articles 52(1) and 56 EPC).

3. *Auxiliary requests*

3.1 As to the additional feature as defined in claim 1 of the first auxiliary request (see point VIII above), the board notes that positioning the sound port of a microphone of a mobile telephone outside an area of the keypad covered by the input keys was well-known at the priority date, cf. the prior art discussed in the present application (Figs 1 and 2), D1 (col. 1, lines 18 to 28 ("exposed ports"), col. 7, lines 47 to 49, and col. 8, lines 54 to 57 ("decorative cover")), D2 (Figs 1 to 3), D3 (abstract and Fig. 1), and D4 (Figs 1a and 1b).

3.2 The additional feature as defined in claim 1 of the second auxiliary request is implied by D1, col. 5, lines 37 to 42, col. 7, lines 38 to 41, and Figs 3 and 4 (single assembly including keypad layer 204, i.e. dome sheet 316, PCB 312, and sound shielding elements, i.e. openings 330 and 332, of sound port 212 defining air channel 400).

3.3 In the board's view, the additional feature as defined in claim 1 of the third auxiliary request was at the priority date a conventional feature of mobile terminals provided with a movable part (e.g., D7,

page 1, last line, to page 2, line 11, and Fig. 3, "conventional portable cellular phone"). The board notes that the appellant did not argue otherwise.

3.4 In view of the above and the reasoning given at point 2 in respect of claim 1 of the main request, the subject-matter of claim 1 of each one of the auxiliary requests does not involve an inventive step either (Articles 52(1) and 56 EPC).

4. The board notes that the appellant did not rebut the considerations concerning lack of inventive step, which were set out in the board's communication and which correspond to the above considerations.

5. There being no allowable request, it follows that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Fernández Gómez A. S. Clelland