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**Datasheet for the decision  
of 12 June 2018**

**Case Number:** T 2051/13 - 3.5.03

**Application Number:** 05823688.6

**Publication Number:** 1969875

**IPC:** H04B7/185

**Language of the proceedings:** EN

**Title of invention:**

AIRBORNE ONBOARD BASE TRANSCEIVER STATION FOR MOBILE  
COMMUNICATION

**Patent Proprietor:**

Telefonaktiebolaget LM Ericsson (publ)

**Opponents:**

Airbus Operations GmbH (DE)/Airbus Operations SAS (FR)/  
Airbus Operations Limited (GB) /Airbus Operations S.L. (ES)/  
Airbus SAS (FR)  
SIEMENS AG ÖSTERREICH

**Headword:**

On-board mobile communication/ERICSSON

**Relevant legal provisions:**

EPC Art. 56  
RPBA Art. 13(1)

**Keyword:**

Inventive step - (yes)

Late-filed document - justification for late filing (no)

Late-filed request - justification for late filing (yes)

**Decisions cited:**

T 0920/97



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Case Number: T 2051/13 - 3.5.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.03**  
**of 12 June 2018**

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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
23 July 2013 concerning maintenance of the  
European Patent No. 1969875 in amended form.**

**Composition of the Board:**

**Chairman** F. van der Voort  
**Members:** B. Noll  
P. Guntz

## Summary of Facts and Submissions

I. The patent proprietor (appellant 1) and the joint opponents 1 (appellant 2) each lodged an appeal against the decision of the opposition division dated 23 July 2013. In the impugned decision it was found that European patent No. 1969875 and the invention to which it relates, taking into account the amendments made according to auxiliary request 1, met the requirements of the Convention.

II. In the course of the appeal proceedings appellant 1 filed sets of claims with its statement of grounds of appeal on 2 December 2013, with a subsequent letter dated 16 June 2014 and with a letter dated 8 June 2018. All sets were eventually replaced by a single set of claims 1 to 5 during the oral proceedings before the board.

With a letter dated 26 January 2015, appellant 2 submitted, *inter alia*, further prior-art document E3 (see below).

III. In a communication accompanying a summons to oral proceedings, the board gave its preliminary view on, *inter alia*, compliance of claim 1 of each request with Articles 84 and 123(2) EPC and inventive step (Article 56 EPC) of the subject-matter of claim 1 of the main request.

IV. Oral proceedings before the board were held on 12 June 2018.

Appellant 1 requested that the decision under appeal be set aside and that the patent be maintained in amended

form on the basis of the sole request of claims 1 to 5 filed during the oral proceedings before the board.

Appellant 2 requested that the decision under appeal be set aside and that the patent be revoked.

No submission or request was received from the party as of right (opponent 2) during the appeal proceedings.

At the end of the oral proceedings, after deliberation, the board's decision was announced.

V. Claim 1 reads as follows:

"A method for a base station for a cellular communication system comprising a user equipment, UE, onboard an aircraft (1) being at a predetermined altitude and a terrestrial network, characterized in that [*sic*] method comprises the following steps:

- the base station is arranged to be an airborne onboard base station comprising a screening device (2) generating a first signal (S1) being matched to screen a second signal (S2) from the terrestrial network at a predetermined altitude,
- the onboard base station also comprises a signal generator (3) generating a third signal (S3) being stronger than both the first signal (S1) and the second signal (S2),
- the onboard base station establishes a communication link with the UE via the third signal (S3),
- the second signal (S2) is pertaining to a GSM cellular communication system, and wherein

- the first signal (S1) has a signal strength being less than the signal strength of the second signal (S2) but not lower than a value being 7dB below the signal strength of the second signal (S2), such that the signal to noise ratio for the UE is not acceptable for homing in on a certain frequency within a frequency band of the second signal such that the UE cannot establish a communication link to the terrestrial network via the second signal (S2), and wherein

- the third signal (S3) is generated with a signal strength being stronger than the first signal (S1) and at a certain frequency or frequencies and adding at least 7 dB to the second signal in the aircraft for the UE such that the UE can home in on the third signal in order for the onboard base station to establish a communication link with the UE via the third signal."

Claims 2 to 5 are dependent on claim 1.

VI. The following documents are relevant to this decision:

E2\_D9: M. Berioli et al: "IST-2001-37466 WirelessCabin D9 WirelessCabin Target System Specification Document", 18 June 2003, pages 1 to 189;

D2: EP 1 061 686 A1; and

E3: US 6,195,529 B1.

### **Reasons for the Decision**

1. *E3 - admission into the appeal proceedings*

- 1.1 E3 was filed by appellant 2 more than one year after the commencement of the appeal proceedings. Appellant 2 argued that E3 disclosed or at least rendered obvious the feature that the signal strength of the first signal S1 is less than the signal strength of the second signal S2, whilst the first signal is still able to screen this second signal.
- 1.2 However, the board notes that this feature was already present in claims submitted by the patent proprietor during the opposition proceedings in response to the notice of opposition, see e.g. independent method claim 11 filed on 20 October 2011. Further, the subject-matter of amended claims that included the feature in question was provisionally held by the opposition division as not obvious having regard to the available prior art, see points 46 to 49 of the annex dated 14 November 2012 to the summons to attend oral proceedings on 4 June 2013.
- 1.3 Due to the fact that claims that included the feature in question had been filed on 20 October 2011, and given the positive preliminary opinion issued by the opposition division, the opponent was given ample opportunity to react within an appropriate time frame during the opposition proceedings, e.g. by submitting additional prior-art documents. The board considers that not addressing the amendments in question during the opposition proceedings but, instead, three years later in appeal proceedings by filing a new prior-art document E3 is not an appropriate reaction.
- 1.4 The board, exercising its discretion pursuant to Article 13(1) RPBA, did not therefore admit E3 into the appeal proceedings.



2. *The patent in suit*

The patent in suit relates to the operation of a mobile communication base station in an aircraft in flight. Mobile user equipment, i.e. a mobile telephone, located in an airborne aircraft is relatively far above the ground. It is however within line of sight of a number of base stations of a terrestrial mobile communication network. This number is considerably larger than when the user equipment is on the ground. Since the mobile user equipment may be in reach of radio signals from, and therefore initiate connections with any of these terrestrial base stations, mobile user equipment operated on board the aircraft and attempting to establish a mobile communication link undesirably block an excessive number of communication resources of the terrestrial mobile communication network. To prevent this effect, it was known in the art to install a mobile base station on board the aircraft. The purpose of this on-board base station is twofold: first, it enables the mobile user equipment to establish a mobile communication in a controlled manner; second, it prevents the mobile user equipment from attempting to establish a connection with a terrestrial base station. For achieving the first purpose, the on-board base station comprises a signal generator for generating a signal, referred to as S3 in the patent specification, for registering the mobile user equipment with the on-board base station. For the second purpose, the on-board base station is provided with a screening device that generates a signal, referred to as S1 in the patent specification, to disturb the detection of a connection signal from a terrestrial base station, referred to as S2 in the patent specification, by the mobile user equipment.

Installing a base station on board an aircraft for generating the signals S1 and S3 was *per se* known in the art. The patent is specifically about defining the relationship between signal strengths of the generated signals S1 and S3 and the signal strength of the received signal S2 from a terrestrial base station.

3. *Claims 1 to 5 filed during the oral proceedings - admission*

3.1 Claim 1 essentially corresponds to claim 12 of the first auxiliary request which was held by the opposition division to meet the requirements of the EPC. The only difference is that in present claim 1 the wording of the last paragraph has been amended to overcome an objection under Article 123(2) EPC raised in the board's communication accompanying the summons to oral proceedings. Therefore, the substantive issues regarding patentability were not affected by the amendments.

Claims 2 to 5 correspond to claims 13 to 16 as granted.

3.2 The board, using its discretion pursuant to Article 13(1) RPBA, therefore admitted the claims filed during the oral proceedings into the appeal proceedings.

4. *Claim 1 - basis for the amendments (Article 123(2) EPC)*

The first four paragraphs of claim 1 are identical to claim 12 as granted, which is based on claim 12 as originally filed. The last three paragraphs of claim 1 are based on page 8, lines 15 to 17, and page 9, lines 15 to 20, of the application as originally filed, i.e.

the international patent application, publication No. WO 2007/073268.

Claim 1 complies with Article 123(2) EPC. This was not contested by appellant 2.

5. *Claim 1 - clarity and interpretation (Article 84 EPC)*

Appellant 2 argued that claim 1 was not clear, as it could be interpreted in manifold ways. The board, however, considers that claim 1, taking into account the amendments made, meets the requirements of Article 84 EPC for the following reasons.

The first four paragraphs of claim 1 define the entities that are present in an on-board base station. These include the screening device for generating the signal S1 and the signal generator for generating the signal S3. The last three paragraphs of claim 1 define signal strengths of S1 and S3 with respect to S2, i.e. the signal received from a terrestrial base station. The user equipment is not part of the on-board base station. However, the user equipment contributes to defining the claimed method by indicating the location at which the signals S1 and S3 have to meet the specifications set out in the last three paragraphs of the claim. This location is thus the place inside the aircraft at which a user equipment attempting to establish a communication with a mobile network can be located during the flight. The definition of the relationships between the signal strengths of the signals S1, S2 and S3 therefore indirectly defines the operation of the screening device and the signal generator, namely such that the screening device and the signal generator must be controlled in such a way that the signal strengths of S1 and S3 are within the

specified value ranges at the location within the aircraft where the user equipment attempting to establish a communication with a mobile network is situated.

6. *Claim 1 - inventive step (Articles 52(1) and 56 EPC)*

6.1 E2\_D9 is a technical specification within a series of documents defining the "WirelessCabin" system which is designed to offer mobile communication services to air passengers and airline crew. The specification was delivered to the Commission of the European Community (CEC) on 18 June 2003 with the security status "Pub", i.e. publicly available. Amongst others, all parties of the present appeal proceedings were participants, and there is no specific confidentiality agreement apparent from E2\_D9. Hence, E2\_D9 was available to the public on the date of delivery, i.e. 18 June 2003.

The "WirelessCabin" radio access network as described in section 8.1.2 on page 92, first paragraph, is a base station within the terminology of claim 1. It includes a "Node B" radio element (page 91, Fig. 8.1.1) and a noise generator (page 92, last paragraph, third sentence). The noise generator is a screening device within the terminology of claim 1 and generates a noise floor (see Fig. 8.1.2) that aims at preventing on-board user equipment from roaming into a terrestrial network via a terrestrial base station. The noise floor corresponds to the first signal S1 of claim 1. The "Node B" radio element emits an in-cabin signal upon which a user equipment may register with the on-board base station. The "Node B" radio element is therefore a signal generator and the in-cabin signal corresponds to the third signal S3 in claim 1. The in-cabin signal is shown as a signal peak in the left-hand portion of

Fig. 8.1.2. The operation of the noise generator and the generation of the in-cabin signal as defined is such that the noise floor power level must be higher than the power of the terrestrial signal, and the in-cabin signal must be higher than the noise floor power level (see the last paragraph on page 92 and Fig. 8.1.2). Using these conditions for the signal levels, it is expected that a passenger mobile user equipment registers with the on-board radio wireless network for establishing a mobile communication, whilst at the same time the user equipment is prevented from roaming into terrestrial networks (page 92, last paragraph).

6.2 The method according to claim 1 differs from the method disclosed in E2\_D9 in particular by the following features:

(a) The first signal S1 has a signal strength that is less than the signal strength of the second signal S2 but not lower than a value being 7 dB below the signal strength of the second signal S2; and

(b) the third signal S3 is generated with a signal strength adding at least 7 dB to the second signal S2 in the aircraft.

The effect of these features is that an implementation of signal levels is provided such that a class of user equipment having a signal-to-noise ratio of about 7 dB can be reliably screened from registering with a terrestrial network via a terrestrial base station. The technical problem starting out from E2\_D9 may thus be formulated as implementing the method of E2\_D9 such as to achieve this effect.

6.3 The skilled person starting out from E2\_D9 would not consider setting the signal strength of the first signal S1 lower than that of the second signal S2. In E2\_D9, it is explicitly stated that the level of the noise floor must be higher than the signal level of the signal from a terrestrial ground base station. The board does not agree with appellant 2's argument that the indication in E2\_D9 that the noise floor generator makes the passenger mobile "deaf" for terrestrial systems would be understood by the skilled person to mean that the power level of the noise floor is to be set at a level just above the minimum signal-to-noise ratio of the passenger mobile user equipment relative to the level of the signal received from the terrestrial system. In the board's judgment, making the mobile "deaf" is rather to be understood as meaning that the mobile user equipment cannot listen to the signals from the terrestrial systems.

Further, appellant 2 argued that the skilled person would be led by the teaching of document D2 to set the level of the first signal S1 lower than that of the second signal S2, since D2 taught to set interference signal power level so that the carrier-to-interference ratio does not allow terminal operation (typically 0 dB). In the board's view, however, the skilled person would not understand this teaching as meaning that the power of the interference signal is set smaller than the power of the signal from the terrestrial network, since D2 explicitly suggests that the interference signal is "typically 0 dB", i.e. that the interference signal is about the same level as the signal from the terrestrial system.

6.4 Appellant 2 further argued that D2 would lead the skilled person to consider a screening method in which

the interference signal has a level of 0 dB in relation to the signal received from the terrestrial system only in close proximity to the on-board antenna emitting the interference signal. At some distance from the on-board antenna the interference signal would therefore inevitably be at a level that is less than that of the signal from the terrestrial network, taking into account that the signal level of the interference signal, by nature, continuously decreases with increasing distance from the on-board antenna.

- 6.5 The board does not agree. Referring to point 5 above, the relationship between the signal levels in D2 and in E2\_D9 are similarly to be understood with reference to the location at which the user equipment attempts to establish a connection with the mobile network. Neither E2\_D9 nor D2 suggests considering an arrangement in which the signal strength of the interference signal at the location where the user equipment is situated and attempts to establish a connection is less than the signal strength of the signal from the terrestrial network.
- 6.6 For the above reasons the skilled person faced with the above-mentioned problem would not have arrived at the claimed method when starting out from E2\_D9, even if the teaching of D2 were taken into account. The board therefore concludes that having regard to E2\_D9 either alone or in combination with D2 the method of claim 1 and, hence, of the dependent claims 2 to 5, is not obvious and therefore involves an inventive step (Article 52(1) and 56 EPC).
7. The board concludes that, taking into account the amendments made by the proprietor according to the set of claims 1 to 5 as filed during the oral proceedings

before the board, the ground for opposition pursuant to Article 100(a) EPC does not prejudice the maintenance of the patent on the basis of these claims.

8. The board did not further examine whether the description of the patent specification has to be adapted. These are matters that are considered best dealt with by the opposition division.

## Order

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

The decision under appeal is set aside.

The case is remitted to the opposition division for further prosecution on the basis of claims 1 to 5 of the sole request as submitted during the oral proceedings.

The Registrar:

The Chairman:



G. Rauh

F. van der Voort

Decision electronically authenticated