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**Datasheet for the decision  
of 8 June 2021**

**Case Number:** T 2286/15 - 3.5.03

**Application Number:** 08874891.8

**Publication Number:** 2301296

**IPC:** H04W72/12

**Language of the proceedings:** EN

**Title of invention:**

Method and arrangement in a telecommunications system

**Patent Proprietor:**

Telefonaktiebolaget LM Ericsson (publ)

**Opponent:**

KELTIE LLP

**Headword:**

Power control in LTE systems/ERICSSON

**Relevant legal provisions:**

EPC Art. 56

RPBA 2020 Art. 13(2)

**Keyword:**

Inventive step - ex-post facto analysis (yes)



**Beschwerdekammern**

**Boards of Appeal**

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Case Number: T 2286/15 - 3.5.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.03**  
**of 8 June 2021**

**Appellant:**

(Opponent)

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**Representative:**

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**Respondent:**

(Patent Proprietor)

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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted on 2 October 2015  
rejecting the opposition filed against European  
patent No. 2301296 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chair**

K. Bengi-Akyürek

**Members:**

T. Snell

R. Winkelhofer

## Summary of Facts and Submissions

- I. The present case concerns the appeal of the opponent (henceforth, **appellant**) against the decision of the opposition division rejecting the opposition.
- II. The following prior-art documents are relevant to the board's decision:
- D2:** 3GPP TSG-RAN WG2 #62bis, document R2-083436, LG Electronics, "Limit endless SR transmission", 30 June - 4 July, 2008, pp. 1-2.
- D12:** 3GPP TSG-RAN WG2 #63, document R2-083830, "Report of 3GPP TSG RAN WG2 meeting #62bis", 18-22 August 2008, pp. 1-148.
- III. The appellant requests that the decision under appeal be set aside and that the patent be revoked.
- IV. The patent proprietor (henceforth, **respondent**) requests as the main (and only) request that the patent be maintained in amended form on the basis of claim 1 of auxiliary request IV as filed with the submission dated 13 March 2020.
- V. The decision was announced at the end of oral proceedings held on 8 June 2021 by videoconference.
- VI. Claim 1 of the **main request** reads as follows:
- "A radio base station (110) for communication with a user equipment (105) in a communications system (100) operating according to LTE standard, arranged to

receive random access transmissions (3C) from user equipments

characterised in that

the radio base station is adapted to determine (3G) whether a user equipment from which a random access transmission has been received has access to dedicated Physical Uplink Control Channel, PUCCH, resources for the transmission of a scheduling request; and in that

the radio base station is further adapted to send a power control command (3H) to a user equipment in response to having determined that the user equipment has access to dedicated Physical Uplink Control Channel, PUCCH, resources for the transmission of a scheduling request."

## **Reasons for the Decision**

### *1. Technical context*

1.1 In an LTE system, the radio base station ("e-nodeB") allocates a periodic resource on a Physical Uplink Control Channel ("PUCCH") to a user equipment ("UE"). The UE sends scheduling requests ("SR") to the e-nodeB on the PUCCH. The power level of the transmission on the PUCCH depends *inter alia* on Transmit Power Control ("TPC") commands sent by the e-nodeB at certain times, e.g. when downlink data are to be transmitted. However, it can happen that the current power level is too low for an SR to be received by the e-nodeB and that no new TPC commands will be received for some time. In this situation, the UE resends the SR continuously at the same power and thus may end up in an indefinite loop. In order to deal with this situation, the present

patent proposes to monitor the number of SRs, and when a threshold is reached, to initiate a transmission on the random access channel ("RACH"). At this moment, either the resources on the PUCCH may be retained or may be released.

- 1.2 Claim 1 of the main request is directed to a radio base station (i.e. an e-nodeB) arranged to receive random access transmissions. Essentially, the base station is adapted to determine whether a UE which sent the random access (RA) transmission has access to PUCCH resources. If so, the base station sends a power control command to the UE, implicitly for controlling the power of transmissions on the PUCCH (NB: it would be clear to the skilled person that the power of RA transmissions cannot be meant here since, in LTE, the power of transmissions on the RACH is automatically ramped up by the UE itself). Thus, the claimed solution enables the UE to transmit an SR with sufficient power to avoid the "indefinite loop" situation referred to above.

2. **Main request** - claim 1 - Articles 83, 84, 123(2) and 123(3) EPC

Admittance of the main request was neither contested by the appellant nor by the board. Furthermore, the appellant raised no objections to claim 1 on the grounds of compliance with Articles 83, 84, 123(2) or 123(3) EPC. The board sees no reason to raise any objection *ex officio* either.

3. **Main request** - claim 1 - inventive step (Articles 52(1) and 56 EPC)

- 3.1 It was not disputed that the priority claim is not valid as regards the subject-matter of claim 1.

Consequently, document **D12**, which along with **D2** the appellant took to represent the most relevant prior art document, constitutes prior art within the meaning of Article 54(2) EPC.

3.2 The characterising part of claim 1 is limited by two features:

A: the radio base station is adapted to determine whether a UE from which an RA transmission has been received has access to dedicated PUCCH resources for the transmission of a scheduling request; and

B: the radio base station is further adapted to send a power control command to a UE in response to having determined that the UE has access to dedicated PUCCH resources for the transmission of a scheduling request.

3.3 The technical effect of these features (which - as will be explained below - are not disclosed in either document D2 or D12 cited by the appellant and thus represent the distinguishing features over the prior art) is to improve the speed and reliability of recovering from the indefinite loop situation of endless SR transmissions when using a fall-back to transmission on the RACH, e.g. as disclosed in D2, section 2, "Proposal 2". Implicit in **feature A** is the concept that the UE may retain access to PUCCH resources, so that these do not have to be newly allocated, thus saving time. The technical effect of **feature B** is that when the UE's access to PUCCH resources is determined after receiving an RA transmission, the radio base station then becomes active to control the power on the PUCCH, so that the next SR transmission(s) can be more reliably received.

- 3.4 The objective technical problem can therefore be seen as *how to improve, in the systems of D12 and D2, the speed and reliability of the recovery from the indefinite loop situation of endless SR transmissions over the PUCCH when using a fall-back transmission on the RACH.*
- 3.5 The appellant argued that the subject-matter of claim 1 lacked an inventive step when starting out from the disclosure of documents D12 and D2, which in view of the reference to D2 in D12 the appellant held to constitute a *single* document, and combining this disclosure with the common general knowledge of the skilled person. It was argued that D2 disclosed the feature of falling back to transmissions on the RACH, and that D12 identified the problem that the power of SR transmissions may be set too low. In this respect, the appellant referred to the passage on page 32 of D12 entitled "Limit Endless SR Transmission", which reports on a discussion of document D2, and which includes the comment:

"Ericsson thinks that the power of the SR could potentially be set to *[sic]* low (e.g. wrong pathloss estimate) and there is no power ramping. Then it might happen [that] the UE gets stuck".

The appellant argued that there was a known mechanism to solve this problem, namely the e-nodeB sending power control commands. This was therefore the obvious solution. The appellant further remarked that RACH was an emergency channel, and that if PUCCH was in place, the natural approach would be to "sort out" this channel.

3.6 This argumentation is however based on an *ex-post facto* analysis. Although D12 is apparently a report of a discussion concerning D2, it is not clear in which context the reference to "the power of the SR being set too low" is meant, and in particular whether this is intended to apply to "Proposal 2" of this document, i.e. the fall-back to RA transmission, or is only a general reference to the problem of endless transmission of SRs on the PUCCH.

Furthermore, neither D2 nor D12 proposes the idea of combining RA transmissions with *maintaining PUCCH resources*. Hence, the skilled person would not obviously have arrived at the solution of the base station *determining whether a UE from which an RA transmission has been received has access to dedicated PUCCH resources for the transmission of a scheduling request* (cf. **feature A**).

3.7 Furthermore, in respect of the argument that the obvious solution to the power of an SR transmission being too low for detection is to increase the power, the UE could implement this in numerous ways, e.g. by the UE ramping up the power itself as in the case of RA transmissions, or by waiting for the normal TPC mechanism to take effect (cf. point 1.1 above), or by some other mechanism involving the UE and/or the e-nodeB. It follows that **feature B** of claim 1 is not obvious either, i.e. the base station sending a power control command to a UE *in response to having determined that the UE has access to dedicated PUCCH resources for the transmission of a scheduling request*.

3.8 The subject-matter of claim 1 of the main request therefore involves an inventive step (Articles 52(1) and 56 EPC).



4. Given that no other objections were invoked by the appellant and the board, claim 1 of the main request complies with all 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 opposition division with the order to maintain the patent on the basis of claim 1 of the main request, filed as auxiliary request IV on 13 March 2020, and the description and the drawings to be adapted.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated