

**Internal distribution code:**

- (A) [ - ] Publication in OJ
- (B) [ - ] To Chairmen and Members
- (C) [ - ] To Chairmen
- (D) [ X ] No distribution

**Datasheet for the decision  
of 19 January 2016**

**Case Number:** T 2245/11 - 3.5.05

**Application Number:** 07784538.6

**Publication Number:** 2039040

**IPC:** H04L1/00

**Language of the proceedings:** EN

**Title of invention:**

Methods and systems for processing overhead reduction for control channel packets

**Applicant:**

Qualcomm Incorporated

**Headword:**

Overhead reduction for control channel packets/QUALCOMM

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step - after amendment

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
Boards of Appeal  
Chambres de recours**

European Patent Office  
D-80298 MUNICH  
GERMANY  
Tel. +49 (0) 89 2399-0  
Fax +49 (0) 89 2399-4465

Case Number: T 2245/11 - 3.5.05

**D E C I S I O N  
of Technical Board of Appeal 3.5.05  
of 19 January 2016**

**Appellant:** Qualcomm Incorporated  
(Applicant) Attn: International IP Administration  
5775 Morehouse Drive  
San Diego, CA 92121 (US)

**Representative:** Carstens, Dirk Wilhelm  
Wagner & Geyer  
Gewürzmühlstraße 5  
80538 München (DE)

**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted on 31 May 2011  
refusing European patent application  
No. 07784538.6 pursuant to Article 97(2) EPC.

**Composition of the Board:**

**Chair** A. Ritzka  
**Members:** P. Cretaine  
D. Prietzel-Funk

## Summary of Facts and Submissions

I. The appeal is against the decision of the examining division, posted 31 May 2005, to refuse European patent application No. 07784538.6 on the grounds of lack of novelty (Article 54 EPC) of a main request and lack of inventive step of an auxiliary request, having regard to the disclosure of

**D6:** SIEMENS: "Improved UF Specific CRC Generation", 15 April 2002, 3GPP DRAFT; R1-02-0493 (UE SPECIFIC CRC GENERATION), 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE; 650, ROUTE DES LUCIOLES; F-06921 SOPHIA-ANTIPOLIS CEDEX; FRANCE.

In support of its argumentation, the examining division referred to the documents

**D11:** "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Multiplexing and channel coding (FDD) (Release 5)", 3GPP STANDARD; 3GPP TS 25.212, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE; 650, ROUTE DES LUCIOLES; F-06921 SOPHIA-ANTIPOLIS CEDEX; FRANCE, no. V5.0.0, March 2002, pages 1-74,

and

**D12:** "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Multiplexing and channel coding (TDD) (Release 5)", 3GPP STANDARD; 3GPP TS 25.222, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE; 650, ROUTE DES LUCIOLES; F-06921 SOPHIA-ANTIPOLIS CEDEX; FRANCE, no. V5.0.0, 1 March 2002, pages 1-60.

both cited as references in document **D6**.

The auxiliary request was also considered to infringe Article 123(2) EPC.

- II. Notice of appeal was received on 29 July 2011 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 10 October 2011. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or the auxiliary request (denominated auxiliary request 1) on which the decision was based, or on the basis of auxiliary request 2 filed with the statement setting out the grounds of appeal. In addition, oral proceedings were requested as an auxiliary measure.
- III. A summons to oral proceedings scheduled for 19 January 2016 was issued on 27 October 2015. In an annex to this summons, the board gave its preliminary opinion on the appeal pursuant to Article 15(1) RPBA. An objection under Article 54 EPC was raised against the main request and an objection under Article 56 EPC was raised against auxiliary request 1, both based on the disclosure of **D6**. An objection under Article 56 EPC was raised against auxiliary request 2, based on the combination of **D6** and **D4**: US 2002/0170013.
- IV. With a letter dated 16 December 2015, the appellant provided arguments in support of novelty and inventive step of the claims of the main request and of auxiliary requests 1 and 2.
- V. Oral proceedings were held as scheduled on

19 January 2016. During them, the appellant submitted a new set of claims 1 to 9 replacing the claims of the main request on file. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 9 of the main request submitted at the oral proceedings before the board or on the basis of auxiliary request 1 submitted with the letter dated 5 April 2011 or of auxiliary request 2 submitted with the statement setting out the grounds of appeal. After deliberation, the board announced its decision.

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

"A method for receiving information from an access point over a wireless link at an access terminal comprising:  
receiving a packet comprising payload data and error detection data;  
processing the received packet using at least a descrambling operation on only the error detection data based on a first identifier associated with an access terminal to produce a processed packet, the error detection data having a 16-bit length, and the first identifier having a 16-bit length, matching the 16-bit length of the error detection data;  
  
determining whether the received packet is targeted to the access terminal based on the processed packet, wherein said determining comprises error detection on each processed packet at a MAC layer, wherein control packets directed to another access terminal are masked as corrupt and discarded."

The main request comprises a further independent claim (claim 8) directed to a corresponding system.

Considering the outcome of the decision, the details of the auxiliary requests do not need to be mentioned.

### **Reasons for the Decision**

1. The appeal is admissible.
2. Prior art

**D6** is a third generation (3G) standardisation paper relating to an improved UE specific CRC generation. The 16 bits-CRC is intended to be sent with control data through an HS-SCCH downlink control channel from an access point to an access terminal UE. The CRC is scrambled at the access point using a 16 bits-UE specific CRC scrambling code issued from the 10 bits-UE-Id (see Figure 1). **D6** teaches that, effectively, the CRC scrambling code is used as a 16 bit UE-Id (see page 1, last sentence). By receiving the scrambled CRC, the intended UE is able to correctly decode it using its UE-Id. In particular, the "first identifier associated with an access terminal" defined in claim 1, and the "Media Access Controller Identifier" defined in independent claim 8, which is also according to paragraph [1024] of the description an identifier associated with a specific terminal, can both be read onto the UE specific CRC scrambling code of **D6**.

**D4** relates to an HS-SCCH signaling scheme for the third generation (3G) mobile communication system, wherein the CRC of a control packet is modulo-2 added with a UE-ID having the same number of bits (see paragraphs [0035] and [0036]). At the receiver, the received CRC is modulo-2 added with the CRC generated from the

received packet (see paragraph [0053]). The result is the transmitted UE-ID, which may also be associated with a group of UEs (see paragraph [0052]).

**D11** and **D12** are cited in **D6** and relate to the multiplexing and channel coding for the HS-SCCH downlink control channel in the FDD (Frequency Division Duplex) and TDD (Time Division Duplex) cases, respectively. From **D11** and **D12**, it is clear that the scrambling of data is performed only in the FDD case, as "UE specific masking for HS-SCCH" in paragraph 4.6.7 in **D11**, whereas no such masking is disclosed in **D12**. Therefore the CRC scrambling scheme described in **D6** does not foresee a scrambling of data in the case of TDD.

### 3. Main request

#### 3.1 Admissibility

Claim 1 corresponds to claim 1 of the previous main request, with the additional features that the determining step comprises error detection on each packet at a MAC layer of an access terminal and that control packets directed to another access terminal are marked as corrupt and discarded. Independent claim 8 contains the same features as claim 1 expressed in terms of a system claim.

These amendments are supported by the description (see paragraphs [0032], [0033] and [0066]). Moreover, they were introduced by the appellant during the oral proceedings before the board with a view to more precisely defining the subject-matter of claim 1 with respect to the prior art, in order to overcome the inventive-step objections raised by the board in

respect of the previous main request and auxiliary request 1. For these reasons the board exercised its discretion according to Article 13(1) RPBA to admit the main request, replacing the previous main request, into the proceedings.

### 3.2 Inventive step

The subject-matter of claim 1 first differs from the disclosure of **D6** in that it relates to a packet receiving process at an access terminal. **D6**, although indicating in paragraph 3 a decoding process of a received CRC at an, either intended or unintended, UE does not explicitly describe a descrambling operation on the CRC based on the UE-Id.

The subject-matter of claim 1 further differs from the disclosure of **D6** in that a received control packet is processed for error detection at a MAC layer of the access terminal and is marked as corrupt and discarded if it is directed to another access terminal. **D6** is silent about the decoding processing steps of a received control packet. The technical effect of this distinguishing feature is that a received control packet is first processed for error detection only, based on the received scrambled CRC and the UE-ID of the access terminal. If the descrambling of the CRC based on the UE-ID is not successful, the packet is discarded without further processing, thereby saving resources and reducing the processing time in that case.

The objective technical problem, based on the above-mentioned second distinguishing feature, can thus be formulated as how to more efficiently send control information to access terminals. The skilled person,



starting from **D6** and trying to solve this problem, would be incited by the whole disclosure **D6** to improve the specific UE-ID based CRC scrambling scheme disclosed therein in order to decrease the probability of incorrect acceptance of a control packet by an unintended UE (see paragraph "3. Comparison"). The skilled person would not get any hint from **D6** to address the processing-time and resources-saving issues. The appellant plausibly argued in that respect that a timely transmission of downlink control packets in UMTS/CDMA systems, to which **D6** was related, was not as crucial as for OFDM systems, for which the invention was designed (see paragraphs [1002] and [1027] of the published application). In an OFDM system, the downlink control packets usually had to transmit subcarrier allocation information to the access terminals at a very high frequency.

The skilled person would also not get any hint from **D4** to the above-mentioned second distinguishing feature. Like **D6**, **D4** relates to a CDMA system and describes the receiving process in general terms (see for instance paragraph [0053]: "The UE processes the message and generates the expected CRC"). **D4** is actually silent about any preliminary sole error detection processing, possibly leading to discarding of packets at an access terminal.

For these reasons, the board judges that the subject-matter of claim 1 involves an inventive step, having regard to the cited prior art (Article 56 EPC).

Independent claim 8 contains substantially the same features as claim 1, expressed in terms of a system claim. Thus, claim 8 also meets the requirements of Article 56 EPC.

4. Since the appellant's main request is allowable, there is no need for the board to consider the auxiliary requests.
5. Correction of the minutes

The minutes of the oral proceedings of 19 January 2016 are herewith corrected by replacing, in the "order", "pages 1 to 15" with "pages 1 and 15".

### **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 with the order to grant a patent on the basis of:
  - claims 1 to 9 of the main request submitted in the oral proceedings before the board,
  - pages 3 to 6, 8, 9, 11, 13 and 14 as originally filed, pages 7, 10 and 12 as filed with the letter of 26 February 2009, pages 1 and 15 as filed with the letter of 4 November 2009, pages 2, 2a and 2b as filed with the letter of 25 May 2010,
  - drawings sheets 1/7 to 4/7, 6/7 and 7/7 as originally filed and drawings sheet 5/7 as filed with the letter of 26 February 2009.

The Registrar:

The Chair:



L. Malécot-Grob

A. Ritzka

Decision electronically authenticated