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**Datasheet for the decision
of 15 November 2016**

Case Number: T 0183/13 - 3.5.05

Application Number: 06124217.8

Publication Number: 1755252

IPC: H04L1/18

Language of the proceedings: EN

Title of invention:

Flexible arq for packet data transmission

Applicant:

Qualcomm Incorporated

Headword:

Packet numbering for ARQ/QUALCOMM

Relevant legal provisions:

EPC Art. 54, 56, 84, 123(2)

Keyword:

Novelty - main request, first and second auxiliary requests
(no)
Inventive step - third and fourth auxiliary requests (no)

Decisions cited:

Catchword:



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Case Number: T 0183/13 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 15 November 2016

Appellant: Qualcomm Incorporated
(Applicant) 5775 Morehouse Drive, R-132 D
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Representative: Tomkins & Co
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 27 June 2012
refusing European patent application No.
06124217.8 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 on 27 June 2012, refusing European patent application No. 06124217.8 on the grounds of lack of clarity (Article 84 EPC) with respect to a main request, non-compliance with Article 123(2) EPC with respect to a second auxiliary request and lack of novelty (Article 54 EPC) with respect to the main request, a first auxiliary request and the second auxiliary request, having regard to the disclosure of

D1: Lucent Technologies: "Asynchronous and Adaptive Incremental Redundancy (A²IR) Proposal for HSDPA", TSG-RAN Working Group 1, TSGR1#17(00)1382, pages 1 to 6, 25 November 2000, Sweden,

or

D2: F. GONG et al.: "An Application-Oriented Error Control Scheme for High-Speed Networks", IEEE/ACM TRANSACTIONS ON NETWORKING, IEEE INC. NEW YORK, US, vol. 4, No. 5, pages 669 to 682, 1 October 1996.

II. Notice of appeal was received on 27 August 2012 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 31 October 2012. The appellant requested that the decision of the examining division be set aside and that a patent be granted on the basis of the claims of the main request or the first and second auxiliary requests on which the decision was based. In addition, oral proceedings were requested as an auxiliary measure.

III. A summons to oral proceedings was issued on 18 July 2016. In an annex to this summons pursuant to

Article 15(1) RPBA, the board expressed its preliminary opinion on the file. It first raised an objection under Article 84 EPC against the main request. It further expressed its view that the three requests did not meet the requirements of Article 54 EPC, having regard to the disclosure of D1 or D2.

- IV. With a letter received on 17 October 2016, the appellant filed third and fourth auxiliary requests and submitted arguments in support of them.
- V. With a further letter dated 11 November 2016, the appellant announced that it would not attend the oral proceedings.
- VI. Oral proceedings were held on 15 November 2016 in the absence of the appellant.

After deliberation on the basis of the written submissions, the board announced its decision.

- VII. Claim 1 of the main request reads as follows:

"A method for sending data packets on an automatic repeat request (ARQ) channel, comprising:
sending a first code with a first sub-packet, the first code indicative of the first sub-packet being a first transmission of a data packet; and
sending a second code with a second sub-packet, the second code indicative of the second sub-packet being a redundant transmission of the data packet and configured to be the same as the first code."

Claim 1 of the first auxiliary request reads as follows:

"A method for sending data packets on an automatic repeat request (ARQ) channel, comprising:
sending a first code with a first sub-packet, the first code indicative of the first sub-packet being a first transmission of a data packet; and
sending a second code with a second sub-packet on the same ARQ channel ID, ACID, as the first sub-packet, the second code configured to be the same as the first code when the second sub-packet is a redundant transmission of the data packet and configured to be different to the first code when the second sub-packet is a new sub-packet of a new packet."

Claim 1 of the second auxiliary request reads as follows:

"A method for sending data packets on an automatic repeat request (ARQ) channel, comprising:
sending at a base station a first code with a first sub-packet, the first code indicative of the first sub-packet being a first transmission of a new data packet if an ARQ Channel ID, ACID, of a previous sub-packet and an ACID of the first sub-packet are equivalent and the first code is not equivalent to a previous code of the previous sub-packet; and
when the new data packet has been properly decoded, determining that a second code for a second sub-packet is different from the first code and sending the second code with the second sub-packet."

Claim 1 of the third auxiliary request reads as follows:

"A method for sending data packets on an automatic repeat request (ARQ) channel, comprising:

sending at a base station a first binary code with a first sub-packet, the first sub-packet represented by A_{ij} , wherein A_{ij} represents the j th sub-packet of a packet that is transmitted to a user A on an ARQ channel having an ARQ channel ID, ACID, i ; the first binary code indicative of the first sub-packet being a first transmission of a new data packet if an ACID of a previous sub-packet and an ACID of the first sub-packet are equivalent and the first code is not equivalent to a previous code of the previous sub-packet; and when the new data packet has been properly decoded, determining that a second binary code for a second sub-packet is different from the first binary code and sending the second binary code with the second sub-packet."

Claim 1 of the fourth auxiliary request reads as follows:

"A method for sending data packets on an automatic repeat request (ARQ) channel, comprising:
sending at a base station a first binary code with a first sub-packet, the first sub-packet represented by A_{ij} , wherein A_{ij} represents the j th sub-packet of a packet that is transmitted to a user A on an ARQ channel having an ARQ channel ID, ACID, i ; the first binary code indicative of the first sub-packet being a first transmission of a new data packet if an ACID of a previous sub-packet and an ACID of the first sub-packet are equivalent and the first code is not equivalent to a previous code of the previous sub-packet; and when the new data packet has been properly decoded, determining that a second binary code for a second sub-packet is different from the first binary code and sending the second binary code with the second sub-

packet reusing the representation A_{ij} with the same values of i and j as used for the first sub-packet."

Each request comprises further independent claims directed to a corresponding computer program and a corresponding apparatus.

Reasons for the Decision

1. The appeal is admissible.

2. *Non-attendance at oral proceedings*

The appellant decided not to attend the oral proceedings. According to Article 15(3) RPBA the board is not obliged to delay any step in the proceedings, including its decision, by reason only of the absence at the oral proceedings of any party duly summoned who may then be treated as relying only on its written case. In the present case, the board was in a position to take a decision at the end of the oral proceedings.

3. *Main request*

3.1 Clarity - Article 84 EPC

Claim 1 states that a first sub-packet is sent with a code and that a second sub-packet is sent with the same code. It further states that the code is indicative both of the first sub-packet being a first transmission of a data packet and of the second sub-packet being a redundant transmission of the data packet. This means that a single code value is able in itself to define two states of a sub-packet sent on an

ARQ channel. From the description, it is clear (see in particular paragraph [0055] of the published application and Figure 4) that the base station sends a redundant sub-packet of a data packet with the same code as the first transmitted sub-packet of the same data packet. The description further teaches in paragraph [0055] that "consequently, the remote station can distinguish a new packet from a previous packet". The remote station is however able to make this distinction only if it has the knowledge that a received sub-packet is the second received sub-packet with the same code. The code in itself can thus not be indicative of a sub-packet being a redundant transmission.

Thus claim 1 lacks clarity in that respect (Article 84 EPC).

3.2 Novelty - Article 54 EPC

The board agrees with the finding of the impugned decision that the subject-matter of claim 1 is already known from D1.

D1 relates to the sending of packets on an automatic repeat request (ARQ) channel (see the Introduction: "HARQ" and "HSDPA downlink", and in Figure 2 the illustrated downlink channel, divided into time slots, between Node B and UE). Further, the first and second codes defined in claim 1 can be read onto the value "i" in the labelling $X_{i,j}$ of a sub-packet in Figure 2 of D1. For instance, the sub-packet B11 is the first sub-packet of the packet number 1 sent to user B, and B12 is a sub-packet which is a redundant transmission of the same data packet.

The appellant argued that the code "i" in D1 was not capable of indicating that a particular sub-packet was a first transmission of a data packet and that another sub-packet was a redundant transmission of the same data packet since by itself it conveyed no sub-packet information. The board is however not convinced by this argument, since the code defined in claim 1 as first code and second code also does not have this capability (see section 3.1 above).

For these reasons the board judges that claim 1 does not meet the requirements of Article 54 EPC.

4. *First auxiliary request*

The board agrees with the finding of the impugned decision that the subject-matter of claim 1 is already known from D1.

With respect to claim 1 of the main request, claim 1 comprises the first additional feature that the second sub-packet is sent on the same ARQ channel ID, ACID, as the first sub-packet. An ACID is described in the application (see paragraph [0048]) as representing an identification for sub-packets belonging to the same packet transmitted to a user. Such an ACID can be read onto the preamble described in chapter 5 of D1 (see "The preamble is used to identify encoded sub-blocks for different users") since it identifies the connection between sender (Node B) and receiver (UE) and is the same for all transmitted sub-packets of a packet.

Claim 1 further comprises the additional feature that the second code is configured to be different to the first code when the second sub-packet is a new sub-

packet of a new packet. The first and second codes defined in claim 1 can be read onto the value "i" in the labelling $X_{i,j}$ of a sub-packet in Figure 2 of D1. For instance, the sub-packet B11, with a code "i" equal to 1, is the first sub-packet of the packet number 1 sent to user B, and B12, with a code "i" also equal to 1, is a sub-packet which is a redundant transmission of the same packet number 1. Further, sub-packet B21 is a new sub-packet of a new packet numbered 2, which is sent on the same ACID since it is transmitted to B, and has a code equal to 2 which is different from the first code.

For these reasons, the board judges that claim 1 does not meet the requirements of Article 54 EPC.

5. *Second auxiliary request*

The board agrees with the finding of the impugned decision that the subject-matter of claim 1 is already known from D1.

As stated above in respect of the first auxiliary request, D1 discloses in chapter 5 that a preamble in the sub-packets is used to identify the sub-packets for different users, i.e. the preamble corresponds to the ARQ channel ID, ACID, of claim 1. In Figure 2 for instance, sub-packets B11, B12 and B21 transmitted to user B have the same preamble.

D1 further teaches to send to a user X a packet numbered "i", comprised of sub-packets $X_{i,j}$, "j" being the numbering of a sub-packet in a packet for the retransmission scheme (see Figure 2). For instance, B21 is a sub-packet with a code "i" equal to 2 sent to user B. B21 is the first transmission of a new data packet

sent to B, i.e. on the same ARQ channel ID as the previous sub-packet B12 having a different code i equal to 1. B12 has been positively acknowledged (see "ACK(B) in Figure 2), which means that the packet numbered 1 to which sub-packets B11 and B12 belong has been properly decoded (see page 4, line 2: "If the decoding is successful, it transmits an ACK"). It is thus implicit from D1 that when the packet to which B21 belongs is acknowledged, a next sub-packet B31 can be sent to B, having a code 3 different from the code 2 of B21.

For these reasons, the board judges that claim 1 does not meet the requirements of Article 54 EPC.

6. *Third auxiliary request*

6.1 Admissibility

Although this request was submitted at a relatively late stage of the proceedings, the board admitted it into the appeal proceedings under Article 13(1) RPBA, since it was regarded as an appropriate - though unsuccessful (see points 6.2 and 6.3 below) - reaction to the observations made in the board's communication under Article 15(1) RPBA that the main request and the first and second auxiliary requests lacked novelty.

6.2 Article 123(2) EPC

Claim 1 has been amended with respect to claim 1 of the second auxiliary request by adding, inter alia, that $A_{i,j}$ represents the j th sub-packet of a packet that is transmitted to a user A on an ARQ channel having an ARQ channel ID, ACID, i . The description in paragraphs [0048], [0051], [0052], [0060] and [0061] of the published application does utilise this kind of

representation for sub-packets. However, it is stated in [0048] that all sub-packets represented by $A_{i,j}$ belong to a packet "i". Therefore the index "i" also represents an identifier of a packet, regardless of the fact that the representation $A_{i,j}$ may be reused after the current packet has been successfully received. Since claim 1 does not contain this limitation, its subject-matter extends beyond the content of the application as originally filed, contrary to the requirements of Article 123(2) EPC.

6.3 Inventive step - Article 56 EPC

Claim 1 adds to claim 1 of the second auxiliary request the feature defining the representation of the first sub-packet by $A_{i,j}$ (see point 6.2 above) and the feature that the first and second codes are binary codes.

The representation of a sub-packet by the symbol " $A_{i,j}$ " is not a technical feature per se but merely constitutes a presentation of information. According to the case law of the boards of appeal, this feature thus cannot contribute to an inventive step of the subject-matter of the claim.

D1 discloses (see chapter 4 and Figure 2) that decimal numbers, e.g. 1 or 2, are used as codes assigned to the first and second sub-packets (see section 5 above). It is however obvious that these codes are implemented as binary codes with the data processing systems of Node B and of the UE.

Therefore the features that claim 1 adds to claim 1 of the second auxiliary request are either non-technical features or implicit from D1.

The appellant argued that the flags "NEW" and "CONTINUE" described in chapter 3 of D1 did not anticipate the first and second binary codes defined in claim 1. The argumentation of the board is however not based on these flags but on the numbering of sub-packets described in chapter 4 of D1 in connection with Figure 2 (see section 5 above).

The appellant further argued that reuse of an ARQ channel ID for new packets sent to a mobile station was not possible in D1. The board is not convinced by this argument, since it is implicit from Figure 2 of D1 that the sub-packets B11 and B21, sent to the mobile station B and belonging to different packets, may be sent through the same channel from Node b to mobile station B.

For these reasons, the board judges that the subject-matter of claim 1 does not involve an inventive step, having regard to the disclosure of D1 (Article 56 EPC).

7. *Fourth auxiliary request*

7.1 Admissibility

Although this request was submitted at a relatively late stage of the proceedings, the board admitted it into the appeal proceedings under Article 13(1) RPBA, since it was regarded as an appropriate - though unsuccessful (see points 7.2 and 7.3 below) - reaction to the observations made in the board's communication under Article 15(1) RPBA that the main request and the first and second auxiliary requests lacked novelty.

7.2 Article 123(2) EPC

Claim 1 comprises the feature that $A_{i,j}$ represents the j th sub-packet of a packet that is transmitted to a user A on an ARQ channel having an ARQ channel ID, ACID, i .

Therefore, claim 1 does not meet the requirements of Article 123(2) EPC for the reasons given in section 6.2 above.

7.3 Inventive step - Article 56 EPC

Claim 1 adds to claim 1 according to the third auxiliary request the feature that the second sub-packet is sent reusing the representation $A_{i,j}$ with the same values of i and j as used for the first sub-packet.

This added feature merely specifies that the symbol used to represent the second sub-packet is the same as the symbol used to represent the first sub-packet. The reuse of a representation of information being also merely a representation of information, this feature cannot, according to the case law of the boards of appeal, contribute to an inventive step of the subject-matter of claim 1.

For these reasons, the board judges that the subject-matter of claim 1 does not involve an inventive step, having regard to the disclosure of D1 (Article 56 EPC).

8. *Conclusion*

In the absence of an allowable request the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



K. Götz-Wein

A. Ritzka

Decision electronically authenticated