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Datasheet for the decision
of 18 November 2015

Case Number: T 2206/11 - 3.5.05
Application Number: 05026149.4
Publication Number: 1672825
IPC: H04L1/00
Language of the proceedings: EN

Title of invention:
Method and apparatus for transmitting and receiving data with high reliability in a mobile communication system supporting packet data transmission

Applicant:
Samsung Electronics Co., Ltd.

Headword:
Uplink control information sent on downlink channel/SAMSUNG

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:
Case Number: T 2206/11 - 3.5.05

DECISION
of Technical Board of Appeal 3.5.05
of 18 November 2015

Appellant: Samsung Electronics Co., Ltd.
(Applicant)
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Suwon-si, Gyeonggi-do, 443-742 (KR)

Representative: Grünecker Patent- und Rechtsanwälte
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 30 March 2011
refusing European patent application
No. 05026149.4 pursuant to Article 97(2) EPC.

Composition of the Board:
Chair
A. Ritzka
Members:
P. Cretaine
F. Blumer
Summary of Facts and Submissions

I. The appeal is against the decision of the examining division, posted on 30 March 2011, refusing European patent application No. 05026149.4 on the grounds that the claims of the main request, a first auxiliary request and a second auxiliary request did not meet the requirements of Article 56 EPC, having regard to the disclosure of D1: EP 1 339 188.

The second auxiliary request was also found to contravene Article 123(2) EPC.

II. Notice of appeal was received on 9 June 2011. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 9 August 2011. The appellant requested that the decision be set aside and that a patent be granted on the basis of a new main request (claims 1 to 12) 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 18 November 2011 was issued on 24 July 2015. In an annex to this summons pursuant to Article 15(1) RPBA, the board expressed its preliminary opinion on the appeal. In particular, objections under Article 56 EPC were raised, based either on D1 or on the prior art acknowledged by the appellant in the description (see paragraph [0029], in particular lines 5 to 9).

IV. Independent claim 1 of the sole request reads as follows:
"A method of transmitting a maximum power ratio of an Enhanced Dedicated Physical Data Channel, E-DPDCH, to a Dedicated Physical Control Channel, DPCCH, whose power is controlled for uplink packet data transmission in a mobile communication system, the method comprising the steps of:
generating a 16-bit user equipment identifier, UE-ID, specific cyclic redundancy check, CRC, by combining a CRC generated for detecting errors from control information with a UE-ID for identifying a user equipment, UE, to receive the control information, wherein the control information comprises the maximum power ratio for uplink transmission;
generating 90 coded bits by adding the UE-ID specific CRC and 8 tails bits to 6-bit control information and encoding the added bits at a coding rate of 1/3;
generating a 60-bit rate-matched block by rate-matching the coded bits according to a rate matching pattern representing positions of bits to be punctured among the coded bits; and
transmitting the rate-matched block to the UE, wherein the rate matching pattern comprises {1, 2, 5, 6, 7, 11, 12, 14, 15, 17, 23, 24, 31, 37, 44, 47, 61, 63, 64, 71, 72, 75, 77, 80, 83, 84, 85, 87, 88, 90}.

The main request comprises further independent claims directed towards a corresponding transmitting apparatus (claim 4), a corresponding receiving method (claim 7) and a corresponding receiving apparatus (claim 10).

Reasons for the Decision

1. The appeal is admissible.
2. Prior art

2.1 D1 discloses a channel coding method for downlink signalling information sent by a base station to user equipment on a 3GPP High Speed Shared Control Channel HS-SCCH (see paragraphs [0003] to [0005], Figures 1 and 2). An 8-bit signalling, or control, information ("Part 1 of the signalling information") is coded and transmitted on the HS-SCCH by:
- generating a 12-bit user equipment identifier cyclic redundancy check ("CRC-1") by combining a CRC generated for detecting errors from control information with a UE-ID for identifying a user equipment to receive the control information;
- generating coded bits by adding the UE-ID specific CRC and 8 tails bit ("N_t intermediate tail bits") to the control information and encoding the added bits at a coding rate of 1/3 (see Figure 2);
- generating a 40-bit rate-matched block by rate-matching the coded bits according to a rate matching pattern representing positions of bits to be punctured among the coded bits (see column 2, lines 2 to 5);
- transmitting the rate-matched block to the UE.

2.2 The appellant also acknowledged that the transmission of uplink packet data control information on the downlink using channel coding, as defined in column 6, lines 5 to 17 of the description, was generally known in the art at the priority date of the application.

3. Inventive step
3.1 It was common ground during the oral proceedings that the differences between the subject-matter of claim 1 and the disclosure of D1 were the following:

(i) there are 6 bits of control information, instead of 8 bits as in the scheme of D1;

(ii) the user specific CRC has a size of 16 bits, instead of 12 bits as in the scheme of D1;

(iii) the number of coded bits is 90, instead of 56 or 84 bits as in the scheme of D1;

(iv) the rate matched block consists of 60 bits, instead of 40 bits as in the scheme of D1;

(v) the rate matching pattern comprises \{1, 2, 5, 6, 7, 11, 12, 14, 15, 17, 23, 24, 31, 37, 44, 47, 61, 63, 64, 71, 72, 75, 77, 80, 83, 84, 85, 87, 88, 90\}, whereas no specific pattern is given in D1; and

(vi) the control information comprises a maximum power ratio of an Enhanced Dedicated Physical Data Channel to a Dedicated Physical Control Channel whose power is controlled for uplink packet data transmission.

3.2 In respect of features (i) to (iv), the board agrees with the examining division that they represent straightforward measures with no inventive merit in themselves. This was not challenged by the appellant.

The control information defined in feature (vi) is sent on the downlink channel and used by the mobile equipment for controlling its uplink packet data transmission, whereas the control information transmitted on the downlink channel of D1 is used for
controlling the downlink transmission of packets (see paragraph [0003]). The skilled person would, however, straightforwardly apply the coding defined in D1 to uplink control information, as required by feature (vi), since the coding scheme itself is not dependent on the content of the coded information. Therefore feature (vi) alone does not confer an inventive step on the subject-matter of claim 1.

With respect to feature (v), the decision under appeal stated that the skilled person was aware that different puncturing patterns achieved different BLER performances and would apply routine trial and error (e.g. simulations) or normal design procedure (e.g. calculations) in order to minimize the BLER.

The appellant however argued that, contrary to what was described in the application (see column 8, lines 2 to 6), D1 did not suggest that the rate matching pattern was to be specifically selected so as to improve BLER performance. Rather, in paragraph [0020] dealing with BLER performance, D1 explicitly suggested the use of other methods to improve BLER performance, namely interleaving and diversity, thereby leading the skilled person away from adapting the rate matching pattern. Furthermore, the appellant plausibly argued that the process itself of finding and selecting the claimed specific pattern was not a mere routine trial and error procedure, but rather involved complex simulations or calculations necessitating inventive skills, and that the claimed specific pattern defined by feature (v) had been proven to improve BLER performance.

For these reasons, the board considers that the skilled person, starting from D1 as the closest prior art and trying to solve the underlying technical problem of
improving the BLER, would not have been incited by D1
to select a particular rate matching pattern. The use
of the claimed specific rate matching pattern, as
defined by feature (v) of claim 1, therefore involves
an inventive step.

3.3 It should be noted that the above-mentioned reasoning
is also valid when departing from the prior art
acknowledged by the appellant (see paragraph 2.2). Even
if the skilled person were to combine this prior art
with document D1, he would not arrive at the specific
rate matching pattern defined in claim 1 without the
use of inventive skill, for the same reasons as
detailed in paragraph 3.2 above with respect to feature
(v).
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 the following documents:
   - claims 1 to 12 as filed with the statement setting out the grounds of appeal dated 9 August 2011,
   - description:
     - pages 1, 2, 6 to 14, 16 to 20 and 22 to 30 as originally filed,
     - pages 3, 3a, 4, 5, 15, 21 and 31 as filed with letter dated 14 May 2008,
   - drawing pages 1/5 to 5/5 as originally filed.

The Registrar: The Chair:

K. Götz-Wein A. Ritzka

Decision electronically authenticated