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Datasheet for the decision
of 6 March 2009

Case Number: T 0758/06 - 3.5.05

Application Number: 01304860.8

Publication Number: 1211840

IPC: H04L 1/18

Language of the proceedings: EN

Title of invention:
Hybrid ARQ with parallel packet transmission

Applicant:
LUCENT TECHNOLOGIES INC.

Headword:
Incremental redundancy with encoder packet identifier/LUCENT

Relevant legal provisions:
EPC Art. 123(2)
RPBA Art. 15(3)

Relevant legal provisions (EPC 1973):
EPC Art. 56, 84, 113(1)

Keyword:
Clarity and support by the description (no)
Inventive step (no)

Decisions cited:
-

Catchword:
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Boards of Appeal

Chambres de recours

Case Number: T 0758/06 - 3.5.05

D E C I S I O N
of the Technical Board of Appeal 3.5.05
of 06 March 2009

Appellant:	LUCENT TECHNOLOGIES INC. 600 Mountain Avenue Murray Hill NJ 07974-0636 (US)
Representative:	Sarup, David Alexander Alcatel-Lucent Telecom Limited Unit 18, Core 3, Workzone Innova Business Park Electric Avenue Enfield EN3 7XU (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 30 November 2005 refusing European application No. 01304860.8 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman:	D. H. Rees
Members:	M. Höhn
	G. Weiss

Summary of Facts and Submissions

I.　　　This appeal is against the decision of the examining division dispatched 30 November 2005, refusing European patent application No. 01304860.8 for lack of an inventive step according to Article 56 EPC 1973, based on prior art document (following the numbering in the first instance):

D1: DATABASE WWW.3GPP.ORG [Online] 3rd Generation Partnership Project. TSG-RAN Working Group 1; 25 November 2000 (2000-11-25) LUCENT TECHNOLOGIES: "TSGR1#17(00)1382:Asynchronous and Adaptive Incremental Redundancy (A2IR) Proposal for HSDPA" XP002190696.

II.　　　In the notice of appeal filed with letter dated 05 January 2006 it was requested that the decision to refuse be set aside and that a patent be granted.

III.　　A summons to oral proceedings to be held on 6 March 2009 was issued on 3 December 2008. In an annex accompanying the summons the board expressed the preliminary opinion that the subject-matters of the independent claims 1 and 10 lacked novelty (Article 54(2) EPC 1973) over the stop-and-wait (SaW) protocol disclosed in D1 or, depending on the interpretation, were considered at least obvious in the light of this disclosure (Article 56 EPC 1973). The board gave its reasons for these objections and why the appellant's arguments were not found convincing.

IV.　　With a letter dated 27 January 2009 the appellant filed an amended set of claims 1 to 13 as its sole request together with arguments that this request involved an

inventive step. In addition, the board was informed that the appellant would not be present at the oral proceedings and was asked to take the written submission into consideration.

V.   As announced, nobody appeared to represent the appellant at the oral proceedings on 06 March 2009, which were then held in the appellant's absence.

VI.   The appellant had requested in writing that the decision to refuse be set aside and that a patent be granted on the basis of claims 1 to 13 received with the letter dated 27 January 2009.

VII.   Independent claim 1 reads as follows:

"1. A method of transmitting a sub-packet (32) in a parallel channel encoder packet transmission system CHARACTERIZED BY the steps of:
attaching a sequence identifier, a user identifier and an encoder packet identifier that corresponds to at least the number of parallel channels in the packet transmission system to a first sub-packet (32) to produce a first sub-packet (32) with identifiers; and transmitting the first sub-packet (32) with identifiers to a user (x) indicated by the user identifier."

Independent claim 11 is directed to a corresponding method of receiving a sub-packet.

VIII.   After deliberation the board announced its decision.

Reasons for the Decision

1.   The appellant was duly summoned, but did not appear in
        the oral proceedings. According to Article 15(3) RPBA
        the board shall not be 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. Further the appellant was informed in the
        board's communication that if amendments to the
        appellant's case were filed, it would be necessary at
        the oral proceedings to discuss their admissibility and
        their compliance with the EPC, including
        Articles 123(2), 84 and 52(1). In the light of
        Article 15(3) RPBA, the board may consider these issues
        and announce a decision based on new objections arising
        from such newly submitted amendments even if the
        appellant chooses not to attend. There can be no
        question of the appellant being taken by surprise and
        the appellant's right to have an opportunity to be
        heard has been observed (Article 113(1) EPC 1973).

2.   *The appellant's arguments*

        The appellant argued in the submission accompanying the
        new set of claims that prior art document D1 does not
        disclose an encoder packet identifier that corresponds
        to at least a number of parallel channels in the packet
        transmission system, a feature of the new claim 1,
        which was therefore novel over D1. Furthermore, there
        was nothing in D1 that recognized a solution to the
        problem of how to inform a receiver regarding a number
        of parallel channels in a packet transmission system.

The present invention included such information in the encoder packet identifier. This information was useful to a receiver for processing a received communication for reasons that one skilled in the art would appreciate from the description. Given that D1 and the other prior art documents on record did not even recognize the solution recited in the amended claims, they involved an inventive step.

3.   Original disclosure - Article 123(2) EPC

Amended claim 1 is originally disclosed in original claim 1 and on page 8, lines 1 to 10 of the original application (corresponding to paragraph 26 of the application as published). The requirements of Article 123(2) EPC are therefore fulfilled.

4.   Clarity and support by the description - Article 84 EPC 1973

Claim 1 has been amended by adding that the encoder packet identifier "corresponds to at least the number of parallel channels in the packet transmission system". It is not clear what is meant by this phrase.

4.1   Firstly from the term "at least" the board understands that the encoder packet number does not necessarily equal "the number of parallel channels in the packet transmission system". In these circumstances it is not clear what information it might convey. In particular it is not apparent how this number might "inform a receiver regarding a number of parallel channels in a packet transmission system," which is the problem which the appellant alleges that the feature solves. Moreover,

apparently the encoder packet number does not have the
function of a "channel identifier", because the encoder
packet identifier may apparently be higher than the
number of parallel channels in the transmission system.
Thus it is unclear what the function of the added
feature actually is.

4.2   Leaving aside the "at least", the literal meaning of
        the wording "corresponds to … the number of parallel
        channels" would be that the "encoder packet identifier"
        defines the number of channels available for
        transmission in the system, i.e. it would be the same
        for all packets, e.g. 4 in a four channel system. This
        however does not make any technical sense; there would
        be no reason to send this static data with every packet.
        The board speculates that what was intended was that
        the "encoder packet identifier" indicates the actual
        channel used for the particular packet. However this
        would contradict both the normal meaning of "encoder
        packet identifier" and that of the qualifier ("number
        of parallel channels") which has been introduced. The
        added feature therefore lacks clarity for this reason
        as well.

4.3   When interpreting the amendment in the light of the
        description and the drawings the embodiment in figure 4
        is pertinent. It shows the special case of four packets
        A11, A21, A31, A41 for the same user A in the format
        Xij (whereby X characterizes the user, i the encoder
        packet number and j the sub-packet) being sent over
        four parallel channels (see also paragraph 30 of the
        A1-publication). In this special case indicator i
        corresponds to the number of the parallel channel used
        for transmission. If, however, in the same four

parallel channel transmission system first packets of
different users A11, B11, C11, D11 are sent over the
four channels, indicator i does not correspond to the
number of the channel used, because, since they are
parallel packets, they cannot all be sent using
channel 1. On the other hand, if the same packets were
named A11, B21, C31, D41, i.e. identified according to
the number of the channel used, the encoder packet
identifier i would no longer identify the encoder
packet number, but merely the channel used for
transmission. Hence, the added feature in claim 1, even
if interpreted (against its plain meaning) as "an
encoder packet identifier that corresponds to the
number of the parallel channel used" does not specify a
general teaching, but only works under special
conditions as shown in figure 4 of the application and,
in addition, the amended feature is not supported by
the description for the whole range claimed in amended
claim 1.

4.4   Thus the added feature does not actually solve the
        problem formulated by the appellant in the letter dated
        27 January 2009, i.e. "solution to the problem of how
        to inform a receiver regarding a number of parallel
        channels in a packet transmission system". If the sixth
        packet for a user was identified A61 the receiver would
        apparently be informed by the encoder packet identifier
        that there are 6 parallel channels, which would of
        course be wrong in the example of a four parallel
        channel transmission system. What would actually be
        conveyed by the encoder packet number would be an
        indication of the block boundaries. On the other hand,
        if the sixth packet was identified with the same
        identifiers as the second packet, i.e. as A21 again (as

described in paragraph 39 of the A1-publication), the
encoder packet number would be nothing but a channel
indicator and no longer identify the packet number.
Therefore, either the "at least" does not make sense or
the term "encoder packet number" is misleading giving
rise to a further lack of clarity.

Claim 1 therefore does not fulfil the requirements of
Article 84 EPC 1973. Since the appellant's sole request
is therefore not allowable, the appeal must be
dismissed.

5.   The board considered whether there were nonetheless any
      arguments in favour of continuing the procedure in
      writing. However it does not appear possible to
      overcome the above objection since neither "encoder
      packet identifier" nor "the number of parallel channels
      in the packet transmission system" is actually defined
      in the application as a whole. The board can only
      speculate that what was intended by "the number of
      parallel channels in the packet transmission system" is
      actually the number of parallel channels between the
      transmitter and each user. The board, however, is of
      the opinion that if claim 1 were to be amended in this
      direction it would *prima facie* violate Article 123(2)
      EPC.

6.   Even if that were the intended meaning, and the
      "encoder packet identifier" were in reality a user
      channel identifier, then the idea of having subchannels
      for a user and identifiers for the subchannels would be
      considered commonplace, so that altogether the claimed
      subject-matter would still apparently lack an inventive

step and therefore the prospects of further amendment
leading to an allowable claim would be too remote to
justify continuing the procedure in writing. The
reasons for this conclusion with respect to the
question of inventive step are given below. They
correspond, with the exception of the reference to the
new feature, to the arguments laid out in the
communication accompanying the summons to oral
proceedings. The appellant's submissions of 27 January
2009 did not contain any rebuttal of these arguments.

7.   *The closest prior art*

7.1   The invention relates to hybrid automatic repeat-
        request (HARQ) technology. HARQ uses incremental
        redundancy, where user data is transmitted multiple
        times using different encodings. When a corrupted
        packet is received, the user device saves it and later
        combines it with the retransmissions, to recover the
        error-free packet as efficiently as possible. Even if
        the retransmitted packets are corrupted, their
        combination can yield an error-free packet. D1 deals
        with HSDPA which is part of the UMTS standards and is
        in the same field of HARQ as the application. According
        to an embodiment describing the stop-and-wait (SaW)
        protocol, a code block is coded into sub-blocks. One or
        more encoded sub-blocks are transmitted in one or more
        time slots, i.e. D1 discloses parallel channel encoder
        packet transmission (see e.g. D1, section 4, p. 2, last
        paragraph). The SaW protocol in D1 is also asynchronous
        as in the application (see e.g. the title). From
        figure 2 it can be understood that there are parallel
        channels in form of time slots and - in contrast to
        what is expressed in point 2 on p. 2 of D1, which is

only referring to the point of view of the user entity
- for example after time slot 10 the transmitter has
more than one code block outstanding (in this case code
blocks A1, B1 and C1, because none of them has been
successfully received yet at this time).

7.2   As shown in figure 1 of D1 a code block A1 is encoded
        into sub-blocks A11-A14. It is clear from the
        disclosure of D1 that the whole information content of
        code block A1 is found in every single one of sub-
        packets A11 (NEW sub-packet) and A12-A14 (CONTINUE sub-
        packets). However, sub-packets A12-A14 are either
        repetitions, i.e. re-transmissions, or redundant
        information that has been encoded in a different form
        (see e.g. section 3, point 4 "continuation (redundant
        information)"; section 4, first paragraph "On receiving
        a NACK, the sender sends redundant information (or
        repetition) by transmitting additional encoded sub-
        blocks"). The receiver operation is described in
        section 6 and the flow chart of figure 3 in D1. In case
        a NEW encoded sub-block (e.g. A11) has successfully
        been decoded it is acknowledged ACK and the next NEW
        coded sub-block (e.g. A21) is sent. This shows that all
        the information for code block A1 has been transmitted
        and the next code block A2 can be sent. Only in case
        the decoding has been unsuccessful, a negative
        acknowledgement NACK is followed by sending a CONTINUE
        encoded sub-block (e.g. A12). This clearly shows that a
        CONTINUE encoded sub-block is nothing but a redundant
        version of code block A1 that is only sent in case the
        transmission has not been successful. Also according to
        the application, sub-packets A12 and A11 are not
        necessarily identical (see col. 9, l. 40-41 in
        paragraph 33 of the A1-publication).

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7.3   If one compares figure 4 of the application with figure
       2 of D1, it becomes apparent that not only the way of
       encoding packets is similar, but also the indicators
       used when describing a sub-packet in the form "Xij",
       whereby X=user, i=packet number and j=sub-packet (1=NEW
       sub-block and 2...4=CONTINUE sub-block, thereby
       indicating whether it is a first transmission or a re-
       transmission of redundant information; see D1, p. 2,
       point 4 and section 6). This is identical to what is
       described in the application (see end of paragraph 29
       of the A1-publication).

7.4   The purpose of the sequence identifier is to indicate a
       first transmission or a re-transmission of a sub-packet.
       Hence the board disagrees with the appellant's argument
       made in the statement setting out the grounds of appeal
       that D1 does not disclose a sequence identifier.

7.5   The user identifier serves the purpose of indicating
       that the associated sub-packet is intended for this
       user (see e.g. paragraph 26 and col. 9., l. 1-2 of the
       A1-publication). D1 also discloses an user identifier
       (see section 5, p. 3, "The preamble is used to identify
       encoded sub-blocks for different users").

7.6   It was common ground before the first instance that D1
       discloses all the features of the independent claims
       except for an encoder packet identifier. The expression
       "encoder packet identifier" in its broadest meaning
       would be anything which identifies an encoder packet.
       On one approach, the board could simply discard the
       unclear qualifying phrase ("that corresponds to at
       least the number of parallel channels in the packet

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transmission system") which has been added to this
feature.

7.7   In this case according to the above analysis of D1 the
        identifier i of a sub-packet Xij has the function of an
        encoder packet identifier, since it identifies an
        encoder packet. All this information of D1 is found in
        a single embodiment, i.e. the stop-and-wait protocol
        SaW.

7.8   Even if one interprets D1 in a way that because of the
        mention on p. 2, point 2 there is no explicit
        disclosure of attaching an encoder packet identifier to
        a sub-packet, the board considers this obvious. Since
        D1 shows parallel channels in form of time slots and
        also mentions to transmit one or more encoded sub-
        blocks in one or more time slots (see e.g. D1,
        section 4, p. 2, last paragraph), D1 at least hints at
        the use of the identifier i for identifying an encoder
        packet in a parallel channel encoder packet
        transmission.

7.9   If the board takes the effect of the qualifying phrase
        to mean that the "encoder packet identifier" is in
        reality a channel identifier, it considers that the
        skilled person would understand that, because of
        identifier i, the SaW protocol as shown in figure 2 of
        D1 would work the same way if three code blocks A1, A2,
        A3 were sent to the same user instead of three code
        blocks A1, B1, C1 to different users. The fact that
        such a separate identifier i is foreseen in figure 2
        would prompt the skilled reader to think of it as
        necessary in order to solve the problem of a parallel
        channel encoder packet transmission where more than one

code block is outstanding. In the board's judgment it
would be obvious to the skilled reader that the
identifier i serves the purpose of identifying an
encoder packet in case several code blocks are sent to
the same user (e.g. A1, A2, A3...) before the first
code block has been positively acknowledged, thereby
rendering obvious the idea of having subchannels for a
user and identifiers for the subchannels.

7.10   Therefore, the subject-matter of claim 1, even if
        interpreted in the way as explained in section 6 above,
        is considered obvious over the SaW embodiment disclosed
        in D1.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar   The Chairman

K. Götz   D. H. Rees