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**Datasheet for the decision
of 4 December 2018**

Case Number: T 0453/15 - 3.5.03

Application Number: 09008214.0

Publication Number: 2139292

IPC: H04W76/02

Language of the proceedings: EN

Title of invention:

Methods for synchronizing PDCP operations after RRC connection re-establishment in a wireless communication system and related apparatuses thereof

Patent Proprietor:

HTC Corporation

Opponent:

Nokia Solutions and Networks Oy

Headword:

Connection re-establishment in a wireless communication system/HTC

Relevant legal provisions:

EPC Art. 100(c), 123(2)

RPBA Art. 13(1)

Keyword:

Added subject-matter (yes) - patent as granted and first and second auxiliary requests

Added subject-matter (no), extension of protection (no) - third auxiliary request

Decisions cited:

T 0823/96

Catchword:



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Case Number: T 0453/15 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 4 December 2018

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 23 December
2014 revoking European patent No. 2139292
pursuant to Article 101(3) (b) EPC.**

Composition of the Board:

Chairman B. Noll
Members: T. Snell
O. Loizou

Summary of Facts and Submissions

- I. This appeal was lodged by the proprietor (henceforth, "appellant") against the decision of the opposition division revoking European patent No. 2 139 292 on the ground that claim 1 as granted and claim 1 of a first auxiliary request respectively comprised subject-matter extending beyond the content of the application as filed (cf. Articles 100(c) and 123(2) EPC). A further auxiliary request ("corrected second auxiliary request") was not admitted pursuant to Rule 80 EPC.
- II. The opposition to which this appeal relates was based on the grounds for opposition pursuant to Articles 100(a) and (c) EPC.
- III. In the statement of grounds of appeal, the appellant argued that the "corrected second auxiliary request" should have been admitted to the opposition procedure. It requested that the decision under appeal be set aside and a patent granted on the basis of either the patent as granted (main request), or the first auxiliary request, or the "corrected second auxiliary request", or that the case be remitted to the opposition division for consideration of the ground of opposition pursuant to Article 100(a) EPC.
- IV. In a response to the appeal, the respondent requested that the decision to revoke the patent be confirmed, i.e. that the appeal be dismissed.
- V. Both parties conditionally requested oral proceedings.
- VI. In a communication accompanying a summons to attend oral proceedings, the board gave a preliminary opinion, inter alia, that claim 1 as granted and claim 1 of the

first auxiliary request contained subject-matter extending beyond the content of the application as filed. Further, it considered that it was inclined to admit the "corrected second auxiliary request" (hereinafter to be referred to as the second auxiliary request), noting that claim 1, *prima facie*, appeared to comply with Article 123(2) EPC.

- VII. With a response to the board's communication, the appellant re-filed the second auxiliary request and filed a new third auxiliary request.
- VIII. In a response to the board's communication, the respondent argued, *inter alia*, that claim 1 of the second auxiliary request did not comply with Article 123(2) EPC.
- IX. Oral proceedings were held on 4 December 2018. At the oral proceedings, the appellant filed new third and fourth auxiliary requests, replacing the third auxiliary request on file.

The appellant (patent proprietor) requested that the decision under appeal be set aside and that a patent be maintained as granted (main request), *ie.* that the opposition be rejected, or, alternatively, that the patent be maintained in amended form on the basis of the set of claims of a first auxiliary request filed with letter dated 21 October 2014 or a second auxiliary request filed with letter dated 31 October 2018 or either the third or fourth auxiliary requests filed during the oral proceedings.

The respondent (opponent) requested that the appeal be dismissed.

At the end of the oral proceedings, the chairman announced the board's decision.

- X. Claim 1 of the patent as granted (**main request**) reads as follows:

"A communication device (350, 310) of a wireless communication system (300) for synchronising Packet Data Convergence Protocol, PDCP, operations with another communication device (310, 350), the communication device (350, 310) comprising:
means for performing a Radio Resource Control, RRC, reconfiguration procedure to resume all radio bearers other than a signalling radio bearer 1, SRB1, when an RRC connection is re-established;

characterized by:

means for transmitting PDCP Service Data Units, SDUs, after resetting at least one of state variables of Next_PDCP_TX_SN and TX_HFN to initial values and a data radio bearer, DRB, is resumed, or receiving PDCP SDUs after resetting at least one of state variables of Next_PDCP_RX_SN and RX_HFN to initial values and a DRB is resumed."

- XI. Claim 1 of the **first auxiliary request** is the same as claim 1 as granted except that the wording "at least one of", which occurs twice in the characterising part, is deleted.

- XII. Claim 1 of the **second auxiliary request** is the same claim 1 of the first auxiliary request except that the following wording is added to the end of the claim:

"; wherein the communication device (350) is an Evolved UMTS Terrestrial Radio Access Network, E-UTRAN, (350),

and the other communication device (310) is a user equipment, UE, (310)."

XIII. Claim 1 of the **third auxiliary request** is the same as claim 1 of the second auxiliary request except that the following wording is deleted:

", or receiving PDCP SDUs after resetting state variables of Next_PDCP_RX SN and RX_HFN to initial values and a DRB is resumed".

Claim 2 of the **third auxiliary request** reads as follows:

"A method used in an Evolved UMTS Terrestrial Radio Access Network, E UTRAN, (350), of a wireless communication system for synchronising Packet Data Convergence Protocol, PDCP, operations with a user equipment, UE, (310) of the wireless communication system, the method comprising:
performing a Radio Resource Control, RRC, reconfiguration procedure to resume all radio bearers other than a signalling radio bearer 1, SRB1, when an RRC connection is re-established; characterized by:
transmitting PDCP Service Data Units, SDUs, after resetting state variables of Next_PDCP_TX_SN and TX_HFN to initial values and a data radio bearer, DRB, is resumed."

XIV. In view of the board's decision, the fourth auxiliary request is not relevant.

Reasons for the Decision

1. *General technical considerations*

1.1 The present patent concerns generally LTE ("Long Term Evolution") systems (although the claims as granted are not limited to LTE), and more particularly the recovery process from a disconnection due to radio link failure.

1.2 For ease of comprehension, the meaning of certain LTE-based acronyms are as follows:

E-UTRAN = evolved universal terrestrial radio access network (NB: this includes a base station)

UE = user equipment

RRC = radio resource control

PDCP = packet data convergence protocol

SDU = service data unit

SRB = signalling radio bearer

DRB = data radio bearer

Next_PDCP_TX_SN = next PDCP transmit sequence number

TX_HFN = transmit hyper frame number

Next_PDCP_RX_SN = next PDCP receive signal number

RX_HFN = receive hyper frame number

1.3 The technical background is set out in paragraph [0003] of the patent:

"If an RRC connection is disconnected due to radio link failure, an RRC re-establishment procedure needs to be initiated to re-establish the RRC connection. During the RRC re-establishment procedure, a UE resumes a signal radio bearer 1 (SRB1) and configures a lower layer to re-activate security (including integrity protection and ciphering) using the previously configured algorithm immediately when receiving an RRC Connection Re-establishment message from an E-UTRAN. To resume all radio bearers other than the SRB1, the E-URTAN shall initiate an RRC Connection reconfiguration procedure after the RRC connection is

re-established, wherein the RRC Connection reconfiguration procedure is to modify the RRC connection. However, it is not clearly specified how to resume SRBs and data radio bearers (DRBs) after the RRC Connection re-establishment procedure and the subsequent RRC connection reconfiguration in some scenarios. Hence, a mechanism for synchronizing PDCP operations after RRC connection re-establishment needs to be improved."

2. *Main request - claim 1 - added subject-matter (Articles 100(c) and 123(2) EPC)*

2.1 The ground for opposition pursuant to Article 100(c) EPC corresponds to the provisions of Article 123(2) EPC. The essential test for compliance with Article 123(2) EPC is that an amendment must be directly and unambiguously derivable from the application documents as filed, taking into account matter implicit to a person skilled in the art. Where there is ambiguity, it follows that objection arises.

2.2 Claim 1 is directed at a communication device (either an E-UTRAN or a UE) having means for transmitting PDCP SDUs, or receiving PDCP SDUs. Claim 1 as granted thus embraces a E-UTRAN which only comprises means for transmitting PDCP SDUs (downlink only) as well as an E-UTRAN which only comprises means for receiving PDCP SDUs (uplink only), as well as a UE which only comprises means for transmitting PDCP SDUs (uplink only) as well as a UE which only comprises means for receiving PDCP SDUs (downlink only). The conjunction "or" can be understood in the sense that the communication device (E-UTRAN or UE) may also comprise means adapted to both transmit and receive PDCP SDUs (uplink and downlink).

2.3 The set of claims as originally filed includes independent claim 11 directed to an E-UTRAN and independent claim 14 directed to a UE. Claim 11 only comprises means for (re)-transmitting SDUs and claim 14 only comprises means for receiving SDUs. Respective dependent claims 13 and 16 comprise resetting features, in particular transmit (TX) features in the E-UTRAN (claim 13) and receive (RX) features in the UE (claim 16). These claims are consistent with Fig. 3 of the application, which discloses a transmitting PDCP entity in the E-UTRAN and a receiving PDCP entity in the UE. Consequently, the claims as filed and Fig. 3 are clearly only directed to downlink transmission.

2.4 It follows that the device claims 11 to 16 as originally filed and Fig. 3 do not provide support for claim 1 as granted, since claim 1 embraces downlink and/or uplink transmission. It therefore has to be examined whether there is direct and unambiguous support in other parts of the application as filed, taking into account of matter implicit to the skilled person based on common general knowledge.

2.5 The appellant argued that Article 123(2) EPC was not infringed essentially for the following reasons:

The UMTS standard and LTE standard documentation belong to the common knowledge of the skilled person. From the LTE standard documents, e.g. those submitted by the appellant, it is clear that there is a PDCP entity in both the UE and the E-UTRAN and that communication is bi-directional. Further, it follows from claims 1 and 4 as well as claims 6 and 10 as filed (referring to the application as granted EP 2 139 292 A2), that resetting to initial values all four parameters Next_PDCP_TX_SN,

TX_HFN, Next_PDCP_RX_SN, and RX_HFN takes place in both the E-UTRAN and the UE. This is corroborated by the description in paragraphs [0022] and [0023] and Fig. 7. In this respect, the description here refers to a transmitting PDCP entity and a receiving PDCP entity without stipulating either a E-UTRAN or UE. In addition, the skilled person would understand that synchronisation of PDCP operations (cf. col. 1, lines 35 and 39) is inherently a two-way process. It follows that the skilled person, who is a communications engineer with knowledge of the UMTS and LTE standard documentation, would understand that the uplink embodiments covered by claim 1 are fully supported by the application as filed.

2.6 The board is not convinced by these arguments. The board notes that there is nothing in the description and drawings that could be considered as a direct and unambiguous disclosure of either a E-UTRAN receiving PDCP SDUs, a UE transmitting PDCP SDUs, or a single PDCP entity which resets all four TX and RX parameters. In this respect, figures 7, 10 and 11 refer to "solutions 6, 9 and 10" respectively. In the description, it is clearly stated that for all these solutions, the TX parameters are reset in the transmitting PDCP entity and the RX parameters are reset in the receiving PDCP entity (cf. paragraphs [0023], [0032] and [0035]), and all these embodiments use reference numerals referring back to Fig. 3 which illustrates only the downlink direction of communication. It is also not inherent from common general knowledge that a re-establishment procedure disclosed for a E-UTRAN in communication with a UE is to be applied to the UE which communicates with a E-UTRAN, however obvious that possibility may be. In accordance with case law, "whilst common general

knowledge must be taken into account in deciding what is clearly and unambiguously implied by the explicit disclosure of a document, the question of what may be rendered obvious by that disclosure in the light of common general knowledge is not relevant to the assessment of what is implied by the disclosure of that document. On the contrary, these two questions must be strictly separated" (cf. T 823/96, point 4.5 of the reasons). Finally, "synchronisation operations" can apply only to downlink transmission.

2.7 With respect to claims 1, 4, 6 and 10 as filed, the board notes the following:

2.7.1 Claim 1 as filed reads "A method used in an Evolved UMTS Terrestrial Radio Access Network (E-UTRAN) (350) for synchronizing Packet Data Convergence Protocol (PDCP) operations after a Radio Resource Control (RRC) Connection Re-establishment procedure with a user equipment (UE) (310), the method comprising: when an RRC connection is re-established, initiating an RRC Reconfiguration procedure to resume all radio bearers other than a signaling radio bearer 1 (SRB1); and characterized by: when a data radio bearer (DRB) mapped on Radio Link Control (RLC) Acknowledged Mode (AM) is resumed, re-transmitting a designated group of PDCP Service Data Units (SDUs) to the UE (310)." (Board's underlining).

Claim 4 as filed reads:

"The method of claim 1, characterized in that the method further comprises: when the DRB mapped on RLC AM or a DRB mapped on RLC UM is resumed, resetting state variables of Next PDCP TX SN. [sic] TX HFN,

Next PDCP RX SN, and RX HFN to initial values, respectively; preferably the DBR comprises the SRB1 and an SRB2." (Board's underlining)".

2.7.2 If, for the sake of argument, claims 1 and 4 are interpreted as meaning that all four state variables mentioned in claim 4 are reset in the E-UTRAN, this does not provide direct and unambiguous support for one of the embodiments embraced by claim 1 as granted, namely that the E-UTRAN comprises means only for receiving PDCP SDUs, since this concerns an intermediate generalisation of claims 1 and 4. Claims 6 and 10 likewise do not provide support for a UE only comprising means for transmitting PDCP SDUs, which is a further embodiment embraced by claim 1 as granted. Consequently, for these reasons alone, claim 1 as granted does not comply with Article 123(2) EPC.

2.7.3 Furthermore, noting that the claims as filed normally attempt to define in general terms subject-matter which is described in detail and illustrated in the description and drawings, the board questions the literal meaning of claims 1 and 4 that all four state variables are reset in the E-UTRAN, since that meaning is not supported at all by the description and drawings (see above). Further, it is to be noted that the variables Next_PDCP_TX_SN, TX_HFN, Next_PDCP_RX_SN, and RX_HFN relate to PDCP data flows (cf. paragraph [0022]), and claim 1 mentions only a single flow of PDCP SDUs, i.e. that re-transmitted from the E-UTRAN to the UE. All the variables mentioned in claim 4 should therefore logically refer to these PDCP SDUs, which would plausibly lead the skilled person to conclude that claim 4 is incorrectly formulated and that the two RX variables are in fact reset in the receiving entity (UE). This interpretation is moreover fully consistent

with the the device claims 11, 13, 14 and 16. The board therefore does not consider claims 1 and 4 as being a direct and unambiguous disclosure of an E-UTRAN with means for both transmitting and receiving PDCP SDUs.

The same reasoning applies, *mutatis mutandis*, to claims 6 and 10 with respect to the UE.

2.8 The board concludes that claim 1 as granted comprises subject-matter extending beyond the content of the application as filed (cf. Article 100(c) and 123(2) EPC).

3. *First auxiliary request - claim 1 - added subject-matter (Article 123(2) EPC)*

3.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request only in that the wording "at least one of" has been deleted. This however makes no difference to the matters discussed above.

Consequently, the board concludes that claim 1 of the first auxiliary request does not comply with Article 123(2) EPC.

4. *Second auxiliary request - claim 1 - added subject-matter (Article 123(2) EPC)*

4.1 Claim 1 of the second auxiliary request is limited to the case of a E-UTRAN as transmitting device and a UE as receiving device. However, claim 1 still defines means, in the E-UTRAN, for receiving PDCP SDUs. Consequently, the same objection exists as discussed above in connection with claim 1 as granted.

4.2 The board concludes that claim 1 of the second auxiliary request does not comply with Article 123(2) EPC.

5. *Third auxiliary request - admissibility*

5.1 The third auxiliary request was filed during the oral proceedings following a discussion of the earlier requests.

5.2 Article 13 RPBA reads:

"(1) Any amendment to a party's case after it has filed its grounds of appeal or reply may be admitted and considered at the Board's discretion. The discretion shall be exercised in view of inter alia the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy.

(2) Other parties shall be entitled to submit their observations on any amendment not held inadmissible by the Board ex officio.

(3) Amendments sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues which the Board or the other party or parties cannot reasonably be expected to deal with without adjournment of the oral proceedings."

5.3 With respect to Articles 13(1) and (3) RPBA, the board notes that the amendments with respect to the second auxiliary request consist merely of deleting the wording "or receiving PDCP SDUs after resetting state variables of Next_PDCP_RX SN and RX_HFN to initial values and a DRB is resumed" from claim 1, with a corresponding amendment to claim 2, and were therefore

not complex. In this respect, the only matters to be discussed were compliance with Articles 123(2) and (3) EPC, whereby essentially only the latter was an entirely new issue. However, with regard to Article 123(3) EPC, no long discussion was required, and, moreover, the respondent had already anticipated this matter and commented on it in its reply dated 2nd November 2018 (cf. point 7). Consequently, both the board and the respondent were in a position to deal with this matter. Finally, the board was of the opinion that, prima facie, claims 1 and 2 of the request complied with Articles 123(2) and (3) EPC.

- 5.4 The respondent argued that the request should not be admitted for the following reasons:

The appellant could have filed the request at the beginning of the appeal phase or at least before the oral proceedings. The appellant had in fact continued the same behaviour exhibited in the opposition oral proceedings and was "learning on the fly" rather than setting out a complete case at the earliest stage of the proceedings. Furthermore, the request was prima facie not compliant with Article 123 EPC.

- 5.5 The board agrees that it would have been preferable to have filed the request earlier but does not see, in the circumstances of this case, which is essentially concerned only with the limited issue of compliance with Article 123 EPC, how an earlier filing would have materially affected the respondent's ability to respond to filing of the request. Considering the reasons given in point 5.3 above, the board decided to admit the request.

6. *Third auxiliary request - Articles 123(2) and (3) EPC*

6.1 Re Article 123(2) EPC: Claim 1 is based on claims 11 and 13 as filed (the latter comprising three alternative characterising features of which the second feature is relevant here). Claim 2 is based on claims 1 and 4 as filed, whereby the omission of the feature in claim 4 of resetting the two RX variables is supported by the corresponding device claim 13. Claims 1 and 2 therefore comply with Article 123(2) EPC.

6.2 Re Article 123(3) EPC:

6.2.1 Claim 1 as granted comprises means for transmitting PDCP SDUs or receiving PDCP SDUs. The respondent argued that claim 1 as granted defined only a transceiver, i.e. a communications device that was capable of transmitting and receiving. Deletion of the means for receiving therefore broadened the scope.

6.2.2 As already stated above (cf. point 2.2 above), the board considers that claim 1 as granted embraces a communication device with: (i) only means for transmitting, or (ii) only means for receiving, or (iii) with means for transmitting and receiving. The board sees no reason to interpret the term "or" in claim 1 only as "and", as essentially argued by the respondent.

6.2.3 Since claim 1 as amended is narrower in scope than interpretation (i), the scope of protection has not been extended within the meaning of Article 123(3) EPC.

6.2.4 These comments apply, mutatis mutandis, to method claim 2.

7. *Conclusion*

Having regard to the third auxiliary request, the ground for revoking the patent has been overcome by amendment. It follows that, on the basis of the third auxiliary request, the decision under appeal is to be set aside and the case remitted to the opposition division, inter alia for examination of the ground of opposition pursuant to Article 100(a) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution on the basis of the claims of the third auxiliary request filed during the oral proceedings.

The Registrar:

The Chairman:



G. Rauh

B. Noll

Decision electronically authenticated