

Internal distribution code:

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

**Datasheet for the decision
of 5 October 2017**

Case Number: T 1397/14 - 3.5.05

Application Number: 06007207.1

Publication Number: 1710944

IPC: H04L1/16, H04L1/18

Language of the proceedings: EN

Title of invention:

Handling of erroneous sequence number in a NACK packet

Patent Proprietor:

Innovative Sonic Limited

Opponent:

Telefonaktiebolaget L M Ericsson (publ)

Headword:

NACK sequence numbers/INNOVATIVE

Relevant legal provisions:

EPC Art. 87(1), 123(2)

RPBA Art. 12(4), 13(1)

Keyword:

Added subject-matter - (yes)

Validity of priority claim - (no)

Admission of auxiliary request 0 - (no)

Admission of auxiliary request 2 not admitted at first instance - (yes): consideration of new facts

Decisions cited:

G 0002/98, G 0003/14, T 0484/11, T 0556/13



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 1397/14 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 5 October 2017

Appellant: Innovative Sonic Limited
(Patent Proprietor) 2nd Floor, The Axis
26 Cybercity
Ebene 72201 (MU)

Representative: Grünecker Patent- und Rechtsanwälte
PartG mbB
Leopoldstraße 4
80802 München (DE)

Respondent: Telefonaktiebolaget L M Ericsson (publ)
(Opponent) 164 83 Stockholm (SE)

Representative: Hoffmann Eitle
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 15 April 2014
revoking European patent No. 1710944 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chair A. Ritzka
Members: K. Bengi-Akyuerek
D. Prietzel-Funk

Summary of Facts and Submissions

I. The appeal is against the decision of the opposition division to revoke the present European patent for lack of novelty of the subject-matter of claim 1 as granted (main request) and claim 1 as amended (first auxiliary request), having regard to the disclosure of

D5: 3GPP TS 25.322 V6.4.0 (2005-06), Technical Specification, Release 6, pp. 1-84, June 2005.

The opposition division considered D5 to belong to the state of the art under Article 54(2) EPC, because the subject-matter claimed was not related to the same invention within the meaning of Article 87(1) EPC as disclosed in the following US patent application from which priority was claimed:

P: US 60/594,415.

Moreover, under Rule 116(2) EPC, the opposition division declined to admit into the opposition proceedings the claims of a second auxiliary request, submitted for the first time during the oral proceedings before the opposition division, on the ground that claim 1 was *prima facie* not clear (Article 84 EPC).

The notice of opposition had relied on the opposition grounds of lack of novelty and inventive step (Article 100(a) EPC in conjunction with Articles 54 and 56 EPC) and added subject-matter (Articles 100(c) and 123(2) EPC).

II. With the statement setting out the grounds of appeal, the appellant filed amended claims according to a third

auxiliary request ("Auxiliary Request 3"). It requested that the decision under appeal be set aside, that document D5 not be regarded as prior art under Article 54(2) EPC and that the patent be maintained on the basis of the claims as granted (main request) or on the basis of amended claims according to any of the first to third auxiliary requests.

- III. With a letter of reply, the respondent requested that the appeal be dismissed for added subject-matter (Article 123(2) EPC) and lack of novelty (Article 54 EPC) of claim 1 of all claim requests on file over D5, and for lack of clarity (Article 84 EPC) of claim 1 of the second and third auxiliary requests. It also requested that the second and third auxiliary requests not be admitted into the appeal proceedings.
- IV. In an annex to the summons to oral proceedings pursuant to Article 15(1) RPBA, the board gave its preliminary opinion on the appeal. In particular, it made observations regarding added subject-matter (Article 123(2) EPC), clarity (Article 84 EPC), the validity of the priority claim under Article 87(1) EPC, novelty (Article 54 EPC) and the admissibility of the second and third auxiliary requests under Article 12(4) RPBA.
- V. By a letter of reply dated 19 December 2016, the appellant filed a new set of claims as "Auxiliary Request 0" and advanced observations on the board's communication under Article 15(1) RPBA.
- VI. Oral proceedings were held on 5 October 2017, during which the admissibility and/or allowability of all the claim requests on file were discussed. At the end of the oral proceedings, the appellant withdrew "Auxiliary

Request 3".

- The appellant's final request was that the decision under appeal be set aside and that the patent be maintained on the basis of the claims as granted ("Main Request") or on the basis of "Auxiliary Request 0", submitted by letter dated 19 December 2016, or on the basis of "Auxiliary Request 1" or "Auxiliary Request 2", submitted with the statement setting out the grounds of appeal.
- The respondent's final request was that the appeal be dismissed.

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

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

"A method of detecting an erroneous sequence number of a finite bit length contained in a status report unit (300, 310) in a wireless communications system, the method comprising:
receiving a status report unit (300, 310) output from a receiver of the wireless communications system;

detecting whether a negatively acknowledged sequence number lies in a predetermined range; and

determining that the status report unit (300, 310) comprises an erroneous sequence number when the negatively acknowledged sequence number is not in the predetermined range;

characterized in that the step detecting whether a

negatively acknowledged sequence number lies in a predetermined range comprises:

- calculating a lower limit for the predetermined range by subtracting a modulus base from a sequence number following a sequence number of a last in-sequence acknowledged packet of a transmitter and by performing a modulus operation onto the result with a modulus operation modulo N , wherein N is a number;
- calculating an upper limit for the predetermined range by subtracting the modulus base from a sequence number of a next packet to be transmitted for the first time by the transmitter and by performing a modulus operation onto the result with a modulus operation modulo N ;
- calculating when the negatively acknowledged sequence number is detected in the status report a test value, by subtracting the modulus base from the negatively acknowledged sequence number and by performing a modulus operation onto the result with a modulus operation modulo N ; and
- detecting whether the test value is greater than or equal to the lower limit and whether the test value is less than the upper limit, wherein the modulus base is the sequence number following a sequence number of a last in sequence acknowledged packet."

Claim 1 of **auxiliary request 0** reads as follows (amendments to claim 1 of the main request underlined by the board):

"A method of detecting an erroneous sequence number of a finite bit length contained in a status report unit (300, 310) in a wireless communications system, wherein the wireless communications system is a third generation mobile communications system, and wherein the third generation mobile communications system is operating in an acknowledged mode, the method comprising:

receiving a status report unit (300, 310) output from a receiver of the wireless communications system;

detecting whether a negatively acknowledged sequence number lies in a predetermined range; and

determining that the status report unit (300, 310) comprises an erroneous sequence number when the negatively acknowledged sequence number is not in the predetermined range;

characterized in that the step detecting whether a negatively acknowledged sequence number lies in a predetermined range comprises:

- calculating a lower limit for the predetermined range by subtracting a modulus base from a sequence number following a sequence number of a last in-sequence acknowledged packet of a transmitter and by performing a modulus operation onto the result with a modulus operation modulo N, wherein N is 2 to the power of the finite bit length;
- calculating an upper limit for the predetermined range by subtracting the modulus base from a sequence number of a next packet to be transmitted

for the first time by the transmitter and by performing a modulus operation onto the result with a modulus operation modulo N;

- calculating when the negatively acknowledged sequence number is detected in the status report a test value, by subtracting the modulus base from the negatively acknowledged sequence number and by performing a modulus operation onto the result with a modulus operation modulo N; and
- detecting whether the test value is greater than or equal to the lower limit and whether the test value is less than the upper limit, wherein the modulus base is the sequence number following a sequence number of a last in-sequence acknowledged packet."

Claim 1 of **auxiliary request 1** reads as follows (amendments to claim 1 of the main request underlined by the board):

"A method of detecting an erroneous sequence number of a finite bit length contained in a status report unit (300, 310) in a wireless communications system, the method comprising:

receiving a status report unit (300, 310) output from a receiver of the wireless communications system;

detecting whether a negatively acknowledged sequence number lies in a predetermined range; and

determining that the status report unit (300, 310) comprises an erroneous sequence number when the negatively acknowledged sequence number is not in

the predetermined range;

characterized in that the step detecting whether a negatively acknowledged sequence number lies in a predetermined range comprises:

- calculating a lower limit for the predetermined range by subtracting a modulus base from a sequence number following a sequence number of a last in-sequence acknowledged packet of a transmitter and by performing a modulus operation onto the result with a modulus operation modulo N, wherein N is 4096;
- calculating an upper limit for the predetermined range by subtracting the modulus base from a sequence number of a next packet to be transmitted for the first time by the transmitter and by performing a modulus operation onto the result with a modulus operation modulo N;
- calculating when the negatively acknowledged sequence number is detected in the status report a test value, by subtracting the modulus base from the negatively acknowledged sequence number and by performing a modulus operation onto the result with a modulus operation modulo N; and
- detecting whether the test value is greater than or equal to the lower limit and whether the test value is less than the upper limit, wherein the modulus base is the sequence number following a sequence number of a last in-sequence acknowledged packet."

Claim 1 of **auxiliary request 2** reads as follows (amendments to claim 1 of the main request underlined by the board):

"A method of detecting an erroneous sequence number

of a finite bit length contained in a status report unit (300, 310) in a wireless communications system, wherein the wireless communications system is a 3rd generation mobile communications system operating in AM, the method comprising:

receiving a status report unit (300, 310) output from a receiver of the wireless communications system;

detecting whether a negatively acknowledged sequence number lies in a predetermined range; and

determining that the status report unit (300, 310) comprises an erroneous sequence number when the negatively acknowledged sequence number is not in the predetermined range;

characterized in that the step detecting whether a negatively acknowledged sequence number lies in a predetermined range comprises:

- calculating a lower limit for the predetermined range by subtracting a modulus base from a sequence number following a sequence number of a last in-sequence acknowledged packet of a transmitter and by performing a modulus operation onto the result with a modulus operation modulo N, wherein N is 4096;
- calculating an upper limit for the predetermined range by subtracting the modulus base from a sequence number of a next packet to be transmitted for the first time by the transmitter and by performing a modulus operation onto the result with a modulus operation modulo N;

- calculating when the negatively acknowledged sequence number is detected in the status report a test value, by subtracting the modulus base from the negatively acknowledged sequence number and by performing a modulus operation onto the result with a modulus operation modulo N; and
- detecting whether the test value is greater than or equal to the lower limit and whether the test value is less than the upper limit, wherein the modulus base is the sequence number following a sequence number of a last in-sequence acknowledged packet."

Reasons for the Decision

1. CLAIMS AS GRANTED (MAIN REQUEST)

Claim 1 as granted comprises the following features (as labelled by the board):

- A) A method of detecting an erroneous sequence number of a finite bit length contained in a status report unit in a wireless communications system, the method comprising:
 - B) receiving a status report unit output from a receiver of the wireless communications system;
 - C) detecting whether a negatively acknowledged sequence number lies in a predetermined range, comprising the steps of
 - C1) calculating a lower limit for the predetermined range by subtracting a modulus base from a sequence number following a sequence number of a last in-sequence acknowledged packet of a transmitter and by performing a modulus operation onto the result with a modulus operation modulo N;

- C2) calculating an upper limit for the predetermined range by subtracting the modulus base from a sequence number of a next packet to be transmitted for the first time by the transmitter and by performing a modulus operation onto the result with a modulus operation modulo N;
- C3) calculating when the negatively acknowledged sequence number is detected in the status report a test value, by subtracting the modulus base from the negatively acknowledged sequence number and by performing a modulus operation onto the result with a modulus operation modulo N;
- C4) wherein N is a number;
- C5) wherein the modulus base is the sequence number following a sequence number of a last in-sequence acknowledged packet;
- C6) detecting whether the test value is greater than or equal to the lower limit and whether the test value is less than the upper limit;
- D) determining that the status report unit comprises an erroneous sequence number when the negatively acknowledged sequence number is not in the predetermined range.

1.1 *Added subject-matter (Article 123(2) EPC)*

The board agrees with the respondent that present claim 1 does not comply with Article 123(2) EPC, for the following reasons:

- 1.1.1 Feature C4) implies that N is any number. However, the present application as originally filed indicates in a consistent manner that N equals 4096 throughout all the examples described (cf. page 4, last paragraph to

page 6, first paragraph). Hence, the board holds that the skilled person would not directly and unambiguously derive from the original disclosure that the modulo divisor N could be any arbitrary number, as suggested by feature C4). As a result, feature C4) constitutes an inadmissible generalisation of the original content.

1.1.2 The appellant argued that claim 3 of the original application was a basis for feature C4) of claim 1. The board is not convinced. Claim 3 as originally filed in fact reads (emphasis added by the board):

*"... performing a modulus operation with the sequence number following the sequence number of the last in-sequence acknowledged packet of the transmitter as a **modulus base**."*

According to the appellant, it would be clear to the skilled reader from the above that the value of the "modulus base" was not restricted to a particular number and that therefore N could be any general figure. However, the board concurs with the respondent that the "modulus base" in claim 3 refers merely to the value of a "base" which is to be subtracted from the variables "VT(A)" and "VT(S)" according to the relevant value range, namely $\{x | (VT(A) - \mathbf{base}) \bmod 4096 \leq (x - \mathbf{base}) \bmod 4096 < (VT(S) - \mathbf{base}) \bmod 4096\}$, rather than to the divisor (i.e. "4096") of the modulo operation itself (cf. original description, page 4, last line to page 5, first line). Hence, claim 3 does not lend itself to indicating that the respective modulo divisor of the modulus operation could be any number, as implied by present feature C4). Therefore, contrary to the appellant's view, the term "modulus base" cannot be taken to be synonymous with a modulo divisor, i.e. with

number "N", in this case.

1.2 *Validity of priority claim (Article 87(1) EPC)*

The board agrees with the opposition division and the respondent that claim 1 of the main request does not validly claim priority from priority application P under Article 87(1) EPC, for the reasons set out below.

1.2.1 In order to fulfil the requirement for claiming priority of "the same invention" within the meaning of Article 87(1) EPC, the skilled person must be able to derive the subject-matter of a claim of the European patent application directly and unambiguously, using common general knowledge, from the priority document as a whole (cf. G 2/98, OJ EPO 2001, 413, Headnote).

1.2.2 As to feature C4) of present claim 1, priority application P expressly and exclusively indicates that the modulo divisor, i.e. number N, is supposed to equal 4096 throughout the entire document. Hence, the skilled person in the field of 3GPP-based mobile networks would at most assume that modulo divisor N may be derived from 2^{12} (= 4096) based on using 12-bit sequence numbers in the AM (acknowledged mode) scenario (see e.g. priority application P, page 4, section "Background", item (1): "*SN of an AMD PDU is represented by 12 bits. Therefore, it will wrap around back to 0 after 4095*"). However, the board finds that the skilled person would not directly and unambiguously derive from priority application P that the modulo divisor N could be any number as claimed. Hence, the board concludes that claim 1 of the main request does not reflect the "same invention" as priority application P.

1.2.3 In view of the above, the main request is not allowable under Article 123(2) EPC and claim 1 of the main request does not relate to the "same invention" within the meaning of Article 87(1) EPC as described in priority application P, which in turn means that document D5 is indeed to be regarded as state of the art under Article 54(2) EPC and thus is relevant to the question of novelty.

2. AUXILIARY REQUEST 0

The claims of this auxiliary request were filed for the first time in reply to the board's communication under Article 15(1) RPBA, and present claim 1 differs from claim 1 of the main request basically in that it further specifies that (emphasis added by the board)

E) the wireless communications system is a third generation mobile communications system which operates in an acknowledged mode;

F) modulo divisor N is 2 to the power of the finite bit length.

2.1 *Admissibility under Article 13 RPBA*

2.1.1 As to the admissibility of the present auxiliary request, the appellant argued that new feature E) corresponded to a literal insertion of dependent claims 4 and 5 as granted and that feature F) had been added as a reaction to the board's communication under Article 15(1) RPBA. Furthermore, present claim 1 did not add any new issues to be discussion and *prima facie* overcame the outstanding objections. Also, the respondent and the board had had sufficient time to study this new claim request.

2.1.2 In appeal proceedings, the admissibility of claim requests filed after a party has submitted its statement setting out the grounds of appeal or its response thereto, which "shall contain a party's complete case" (Article 12(2) RPBA), is, in principle, governed by Article 13(1) and (3) RPBA. By virtue of Article 13(1) RPBA, a board's discretion in admitting any amendment to a party's case "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". The board notes that the list of criteria set out in Article 13(1) RPBA is not exhaustive ("... in view of inter alia ..."). Thus, other well-established criteria relevant to the admissibility issue may also be taken into account, such as whether a claim amendment is likely to overcome the objections in response to which it has been filed or whether it is clearly allowable, without giving rise to new objections (see e.g. T 484/11, Reasons 4.1.2).

2.1.3 In the present case, the board agrees with the respondent that the use of a third-generation mobile communications system which is supposed to operate in an acknowledged mode according to added feature E) automatically implies that the bit length of the underlying sequence number must be a pre-determined specific figure. By way of contrast, however, features A) and, more importantly, new feature F) still allow for the use of a "finite bit length". Such a contradiction immediately renders the subject-matter of present claim 1 unclear, contrary to Article 84 EPC. Moreover, claim 1 is indeed open to such an objection under Article 84 EPC according to G 3/14 (OJ EPO 2015, 102) because feature F) does not arise from a literal insertion of complete dependent claims as granted into present claim 1. Consequently, claim 1 is not *prima*

facie allowable under Article 84 EPC.

2.2 As a result, the board has decided not to admit auxiliary request 0 into the appeal proceedings under Article 13(1) RPBA.

3. AUXILIARY REQUEST 1

Claim 1 of this auxiliary request is identical to that of the first auxiliary request underlying the appealed decision. It differs from claim 1 of the main request in that it further specifies that

G) modulo divisor N is 4096.

3.1 *Added subject-matter (Article 123(2) EPC)*

Again, the board agrees with the respondent that the combination of the use of a sequence number having a "finite bit length" according to feature A) and a modulo divisor N equalling 4096 according to added feature G) is not disclosed in the entire application as originally filed. The appellant conceded that the term "bit length" is not mentioned at all throughout the original application. Rather, the board holds that the combination of features A) and G) constitutes an unallowable intermediate generalisation, contrary to Article 123(2) EPC.

3.2 *Validity of priority claim (Article 87(1) EPC)*

Since priority application P even expressly mentions the use of sequence numbers having a bit length of 12 bits when transmitting acknowledged mode data "AMD" (see in particular page 4, section "Background", item (1)), the reasoning of point 3.1 above under

Article 123(2) EPC applies a *fortiori* to the issue of the validity of the priority claim. Consequently, document D5 is indeed state of the art under Article 54(2) EPC and thus is relevant to the question of novelty in the present case.

3.3 In view of the foregoing, auxiliary request 1 is not allowable under Article 123(2) EPC and does not validly claim the right of priority from application P under Article 87(1) EPC.

4. AUXILIARY REQUEST 2

Claim 1 of this auxiliary request is identical to claim 1 of the second auxiliary request, which the opposition division did not admit into the opposition proceedings. It differs from claim 1 of the main request basically in that it further comprises feature E) (including the abbreviations "3rd" and "AM") and feature G).

4.1 *Admissibility under Article 12(4) RPBA*

4.1.1 Claim 1 of the present auxiliary request had been filed for the very first time during the oral proceedings before the opposition division, i.e. not in due time within the meaning of Article 114(2) EPC. The opposition division declined to admit it into the proceedings on the grounds that it was late-filed and not compliant with Article 84 EPC. The appellant, however, submitted this auxiliary request again with the statement setting out the grounds of appeal, and requested that the decision of the opposition division not to admit present claim 1 be overturned.

- 4.1.2 In appeal proceedings, the admissibility of claim amendments filed with the statement setting out the grounds of appeal is, in principle, subject to Article 12(4) RPBA, which confers on a board the discretionary power "to hold inadmissible facts, evidence or requests which could have been presented or were not admitted in the first instance proceedings".
- 4.1.3 As to the review of the opposition division's exercise of discretion, the board is aware that, according to decision G 3/14 of the Enlarged Board of Appeal, the claims of an opposed patent as amended may be examined for compliance with Article 84 EPC only when, and then only to the extent that, the corresponding amendments *introduce* non-compliance with Article 84 EPC (cf. G 3/14, Order). Thus, the opposition division's decision not to admit the claim on the grounds of lack of clarity apparently does not comply with that rule (see point 4.1.4 below). But it has to be taken into consideration that decision G 3/14 was issued on 24 March 2015 and thus only *after* the issuance of the decision under appeal (i.e. issued on 15 April 2014). Therefore, in the present case, the board judges that the opposition division exercised its discretion on the basis of the then relevant case law and facts (i.e. late-filed claim request under Rule 116(2) EPC), according to the right principles (i.e. *prima facie* relevance in connection with Article 84 EPC), and in a reasonable way (see appealed decision, Reasons 9).
- 4.1.4 However, the board is now in the position to exercise its discretion under Article 12(4) RPBA taking into account the conclusions drawn in decision G 3/14. In the present case, the incorporation of features F) and G) into claim 1 of the present auxiliary request amounts to a literal insertion of complete dependent

claims as granted (namely claims 4 and 5) into an independent claim ("Type B amendment") within the meaning of G 3/14 (see Reasons 2). From that it follows that the above amendments are not open to objections under Article 84 EPC (cf. G 3/14, Reasons 81). The board finds that the answer given in G 3/14 justifies admitting claim 1 of the present auxiliary request into these appeal proceedings and has therefore decided to admit the present request, exercising its discretion under Article 12(4) EPC (in accordance with e.g. T 556/13, Points 2.1.4 to 2.1.8).

4.2 *Added subject-matter (Article 123(2) EPC)*

4.2.1 The board again finds that the combination of the use of a sequence number having a "finite bit length" according to feature A) and a modulo divisor N equalling 4096 according to added feature G) contravenes Article 123(2) EPC, for the same reasons as set out in point 3.1 above.

4.2.2 The appellant argued at the oral proceedings before the board that the mere mention of the use of a "3rd generation mobile communications system operating in AM" according to feature E) implicitly demonstrated that the bit length of the respective sequence numbers had to be 12 bits and thus that N must be $2^{12} = 4096$. The board, however, fully agrees with the respondent that feature E) can be broadly interpreted and does not necessarily refer to a specific 3GPP-based telecommunications standard precisely defining the bit length of sequence numbers of an acknowledged mode. Accordingly, from the present application as filed it is derivable neither that 12-bit sequence numbers are to be used nor that $N = 4096$ according to feature G)

necessarily results from 2¹².

4.3 *Validity of priority claim (Article 87(1) EPC)*

The reasoning concerning auxiliary request 1 set out in point 3.2 above applies *mutatis mutandis* to claim 1 of the present auxiliary request. Furthermore, and in line with the observations made in point 4.2.2 above, the expression "3rd generation mobile communications system" cannot necessarily be equated with a specific standard such as the reference particularly made in priority application P, namely standard document "3GPP TS 25.322 V6.3.0 (2005-03)", which would indeed imply that the use of the acknowledged mode (AM) corresponds to sequence numbers having a bit length of 12 bits. However, the present application does not refer to any specific standard document.

4.4 Accordingly, auxiliary request 2 is likewise not allowable under Article 123(2) EPC and present claim 1 does not validly claim the right of priority from application P under Article 87(1) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



K. Götz-Wein

A. Ritzka

Decision electronically authenticated