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Datasheet for the decision of 16 September 2016

Case Number: T 1626/12 - 3.5.05

Application Number: 09012042.9

Publication Number: 2169871

IPC: H04L1/18, H04W72/04

Language of the proceedings: EN

Title of invention:
Method and apparatus of handling a timer for triggering buffer status report

Applicant:
Innovative Sonic Limited

Headword:
Handling a timer for triggering buffer status report/ INNOVATIVE

Relevant legal provisions:
EPC Art. 56, 84

Keyword:
Claims - essential features - clarity after amendment (yes)
Inventive step - after amendment - auxiliary request (yes)

Decisions cited:

Catchword:

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Case Number: T 1626/12 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 16 September 2016

Appellant: (Applicant)	Innovative Sonic Limited 2nd Floor, The Axis 26 Cybercity Ebene 72201 (MU)
Representative:	Hoefer & Partner Patentanwälte mbB Pilgersheimer Straße 20 81543 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 8 February 2012 refusing European patent application No. 09012042.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	A. Ritzka
Members:	M. Höhn
	F. Blumer

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division, posted on 8 February 2012, refusing European patent application No. 09012042.9 pursuant to Article 97(2) EPC on the grounds of Article 123(2) EPC and lack of inventive step (Article 56 EPC) with regard to prior-art publications:

D1: ERICSSON ET AL: "Robustness of Buffer Status Reporting", 3GPP DRAFT; R2-085386 (DRAFT CR BSR ROBUSTNESS), 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE; 650, ROUTE DES LUCIOLES; F-06921 SOPHIA-ANTIPOLIS CEDEX; FRANCE, no. Prague, Czech Republic; 23 September 2008,

D2: US2008/0045255 A1,

D3: NOKIA CORPORATION ET AL: "PHR and BSR Periodic Timer Start" 3GPP DRAFT; R2-085000 PHR BSR TIMER START 36321 CR, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE; 650, ROUTE DES LUCIOLES; F-06921 SOPHIA-ANTIPOLIS CEDEX; FRANCE, no. Prague, Czech Republic; 23 September 2008 and

D6: ERICSSON: "SR triggering in relation to uplink grants", 3GPP DRAFT; R2-081468, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE; 650, ROUTE DES LUCIOLES; F-06921 SOPHIA-ANTIPOLIS CEDEX; FRANCE, vol. RAN WG2, no. Shenzhen, China, 25 March 2008.

II. The notice of appeal was received on 13 April 2012. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 10 May 2012. The appellant requested with the notice of appeal that

- the appealed decision be set aside,

- a European patent be granted and
- as an auxiliary measure, a date for oral proceedings be set.

In the statement setting out the grounds of appeal the appellant submitted a main request based on the claims submitted during oral proceedings before the first instance as well as first and second auxiliary requests, both filed with the statement setting out the grounds of appeal. Further, it was adhered to the auxiliary request for oral proceedings.

III. In a communication dated 22 March 2016 the board expressed its preliminary opinion that it appeared that claim 1 according to the main request did not fulfil the requirements under Article 84 EPC, because an essential feature of the invention was missing, and did not fulfil the requirements of Article 56 EPC in view of the disclosure of D1.

Since the first auxiliary request appeared to fulfil the requirements of the EPC, the board intended to set the decision under appeal aside and to grant a patent on the basis of the first auxiliary request. However, since the main request was not considered to be allowable and because of the appellant's auxiliary request for oral proceedings, the board was not in a position to issue a decision to grant a patent directly on the basis of the first auxiliary request.

IV. By letter dated 1 June 2016 the appellant withdrew the main request in order to facilitate grant of a patent based on the first auxiliary request as pending on file.

V. Independent claim 1 according to the first auxiliary request reads as follows:

"1. A method for handling a timer for triggering a Regular buffer status report (BSR) in a user equipment (UE) of a wireless communication system, the method comprising:
starting a timer used for triggering a Regular BSR (502); and
characterized by avoiding expiration of the timer used for triggering the Regular BSR (502) by restarting the timer in the transmission time interval (TTI) for which a semi-persistent scheduling uplink grant has been configured (504) with no reception of uplink grant allocation sent on a physical downlink control channel (PDCCH) in said TTI, wherein semi-persistent scheduling is used to periodically allocate transmission resources to the UE."

Reasons for the Decision

1. Admissibility

The appeal complies with Articles 106 to 108 EPC (see Facts and Submissions, point II above). It is therefore admissible.

First auxiliary request

2. Article 84 EPC

The claimed subject-matter is directed to semi-persistent scheduling (SPS) in LTE systems according to which the network periodically allocates transmission

resources to user equipment (UE) at a fixed period, in order to serve upper layer applications which generate semi-static size data periodically for reducing control information sent on a physical downlink control channel (PDCCH). A Buffer Status Report (BSR) is used to provide the network with information about the amount of data in UL buffers of a UE with a BSR retransmission timer. Using configured uplink (UL) grant, the UE can perform periodic data transmission without receiving information on the PDCCH. When the UE performs a Buffer Status Report (BSR) procedure under UL Semi-Persistent Scheduling (SPS), the network cannot allocate UL resources to the UE according to called uplink (UL) grant for the reason that the UE has already configured UL grant to do UL transmission. Hence, in a situation in which the SPS UL grant has been configured, the network may not allocate dynamic UL resources to the UE because the UE has already configured UL grant to do UL transmission.

However, according to the operation of the BSR timer, if no UL resource for new transmission has been received, the BSR timer will expire and the UE will trigger a BSR and a scheduling request (SR) procedure. In this case, the BSR and SR might be triggered unnecessarily, which will cause a waste of network resources.

The invention provides a BSR retransmission timer handling program for avoiding unnecessary BSR retransmissions when the UL SPS has been activated. The claimed solution includes steps of starting a timer used for triggering a BSR and restarting the timer in a transmission time interval (TTI) for which a semi-persistent scheduling uplink grant has been configured. The achieved technical effect is that expiration of the

timer triggering a BSR and an SR procedure can be avoided, i.e. the BSR triggering and the SR procedure can be prevented from being executed due to expiration of the timer.

3. According to the appellant's arguments presented with the statement setting out the grounds of appeal, configuring an uplink grant instead of checking for reception, i.e. without reception of an uplink grant, is an essential feature to be taken into account when assessing inventive step (see page 3, lines 1 to 4). The board concurs with this view.

While SPS provides semi-persistent transmission resources to the UE, i.e. configured UL grant, such that the UE can perform periodic data transmission without receiving PDCCH, SPS does not necessarily rule out that uplink grant allocation information sent on a physical downlink control channel (PDCCH) in said TTI is nevertheless received.

4. By specifying that "a semi-persistent scheduling uplink grant has been configured (504) with no reception of uplink grant allocation sent on a physical downlink control channel (PDCCH) in said TTI", claim 1 comprises this feature regarded as essential and can no longer be considered to cover uplink grant signalling performed in connection with the first uplink grant. Claim 1 according to this request therefore fulfils the requirements under Article 84 EPC.

5. Article 123(2) EPC

The board agrees with the appellant that the subject-matter of claim 1 is originally disclosed in the application as filed, in particular regarding the

aforementioned feature on page 3, lines 3 to 5 and on page 5, lines 6 to 9 ("... under a situation that uplink (UL) Semi-Persistent Scheduling (SPS) has been activated, the network may not allocate UL resources ... to the UE because the UE already has configured UL grant to do UL transmission").

The requirements of Article 123(2) EPC are therefore fulfilled.

6. Article 56 EPC - inventive step

Publication D1, which was considered to be the closest prior art, discloses with regard to the present invention *inter alia* that (see section 5.4.5 Buffer Status Reporting)

- a Buffer Status Report (BSR) shall be triggered if ... the RETX_BSR_TIMER expires and the UE has data available for transmission ("Regular BSR");
- if the Buffer Status reporting procedure determines that a BSR has been triggered since the last transmission of a BSR or this is the first time that a BSR is triggered: if the UE has UL resources allocated for new transmission for this TTI ... start (if not running) or restart (if running) the RETX_BSR_TIMER;
- The UE shall restart (if running) the RETX_BSR_TIMER upon reception of a grant for transmission of new data on UL-SCH.

6.1 The closest prior art D1 does not disclose that
- the uplink grant is a semi-persistent scheduling (SPS) with uplink grant having been configured and
- the timer is restarted in the transmission time interval (TTI) with no reception of uplink grant

allocation sent on a physical downlink control channel (PDCCH) in said TTI.

6.2 The underlying technical problem is regarded as avoiding waste of network resources by unnecessarily triggering the BSR and SR (see [0007], last sentence of the A1 publication).

6.3 This problem is not addressed in D1. According to the teaching of D1 only the reception of uplink resources via network signalling is a trigger for restarting the timer. There are no hints in D1 that would motivate the skilled person to ask why network signalling should be omitted. Even if the skilled person was to apply the teaching of D1 to semi-persistent scheduling (SPS), the timer would be restarted only in connection with the signalling performed with the first SPS uplink grant. Any additional restarting of the timer would require more network signalling according to D1 in order to trigger the timer more often, which is in contrast to the solution according to claim 1.

6.4 Thus, neither the problem that the timer would not be restarted in the same TTI, if there is configured grant in that TTI and no PDCCH for UL grant in that TTI is addressed in D1, nor the solution of restarting the timer in that TTI is obvious from D1.

6.5 The subject-matter of claim 1 is therefore not rendered obvious by the disclosure of D1. The same reasoning applies to corresponding independent claims 4 and 7. The dependent claims also involve an inventive step, because they refer back to the independent claims.

6.6 None of the further prior art publications on file renders the claimed solution obvious either.

D2 does not disclose SPS for transmitting uplink data and does not disclose ignoring the transmission of scheduled information based on a timer.

According to D3 a Periodic BSR periodically reports the status of the uplink buffer of the UE and the trigger of a Regular BSR leads to a trigger of a scheduling request. D3 does not disclose a timer for a Regular BSR.

Consequently, neither D2 nor D3 discloses that a timer is restarted in the transmission time interval (TTI) with no reception of uplink grant allocation sent on a physical downlink control channel (PDCCH) in said TTI.

D6 is background art which does not render the claimed solution obvious either.

7. Thus, the first auxiliary request fulfils the requirements of the EPC.

8. Since the board's finding is positive with regard to the appellant's highest-ranking first auxiliary request on file, there is no need for oral proceedings, which were requested by the appellant as an auxiliary measure, and the decision can be taken in the written procedure.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the department of first instance with the order to grant a patent on the basis of the first auxiliary request as filed with the statement setting out the grounds of appeal with description pages and drawings to be adapted.

The Registrar: The Chair:

L. Malécot-Grob A. Ritzka

Decision electronically authenticated