

OsmoBTS - Feature #4794

Downlink Repeated SACCH support

10/09/2020 04:57 PM - laforge

Status:	In Progress	Start date:	10/09/2020
Priority:	Low	Due date:	
Assignee:	dexter	% Done:	90%
Category:			
Target version:			
Spec Reference:	3GPP TS 44.006 Section 11.2		
Description			
In 3GPP Rel-7 (?) of GERAN, the concept of "repeated SACCH" was introduced.			
The rationale for SACCH improvement can be found in 3GPP TDoc GP-042668 Section 1/2 (even though if later sections have not been implemented as suggested there): Particularly with AMR as a voice codec, the voice quality performance is better than that of control channels (and estimated 5dB).			
So in the end, even though the voice channel would still be acceptable, calls fail due to signaling failure, both on SACCH and FACCH.			
Repeated SACCH support basically replaces downlink System Information on SACCH (or even pending SAPI3 frames) with re-transmissions of SAPI0 frames. Due to some related logic (and sigaling in the TS 44.004 header), the MS can then even combine the bursts from multiple transmissiosn to decode the SACCH block.			
Related issues:			
Related to OsmoBTS - Feature #4795: Uplink Repeated SACCH Support		In Progress	10/09/2020
Related to OsmoBTS - Feature #4796: Downlink Repeated FACCH Support		In Progress	10/09/2020

History

#1 - 10/09/2020 05:00 PM - laforge

- Related to Feature #4795: Uplink Repeated SACCH Support added

#2 - 10/09/2020 05:10 PM - laforge

- Related to Feature #4796: Downlink Repeated FACCH Support added

#3 - 10/12/2020 05:04 PM - laforge

#4 - 10/16/2020 09:00 AM - laforge

See also: Chapter 7.2 of "GSM/EDGE Evolution and Performance".

#5 - 11/09/2020 10:55 PM - dexter

- Assignee set to dexter

3GPP TS 44.004 specifies an SRR bit in the SACCH uplink block format. This bit is used to request a repeated SACCH downlink SACCH from the BTS. When the MS is unable to decode the downlink SACCH blocks from the BTS, it should set the SRR bit. My idea for a first experiment was to trigger this by sending malformed SACCH blocks to the MS, so far this did not work, even though the MS has the Repeated ACCH Capability bit in CM3 set.

Note: Some of the work here overlaps with repeated FACCH support (Repeated ACCH Capability bit / signalling).

#6 - 11/11/2020 05:37 PM - dexter

- Status changed from New to In Progress

- % Done changed from 0 to 60

The SACCH repetition can now be requested from the MS. When I understand the spec correctly then only SAPI0 frames may be repeated, all others are not repeated.

See also: <https://gerrit.osmocom.org/c/osmo-bts/+21105> I1sap: add repeated downlink SACCH

#7 - 11/16/2020 10:30 PM - dexter

- % Done changed from 60 to 70

See also:

<https://gerrit.osmocom.org/c/osmo-bts/+21105> I1sap: add repeated downlink SACCH

#8 - 11/19/2020 03:13 PM - dexter

- % Done changed from 70 to 80

The patch is still in review. I think we have most problems addressed now. See also: <https://gerrit.osmocom.org/c/osmo-bts/+21105>

#9 - 11/24/2020 12:00 AM - dexter

- % Done changed from 80 to 90

The patches are up for review, no open review issues at the moment.