

OsmoBTS - Bug #1616

osmo-bts-trx / osmo-bts-octphy doesn't provide C/I information to PCU

02/23/2016 04:26 PM - laforge

Status:	Resolved	Start date:	02/23/2016
Priority:	Low	Due date:	
Assignee:	fixeria	% Done:	100%
Category:	osmo-bts-trx		
Target version:	osmo-bts-trx refresh		
Spec Reference:			

Description

osmo-bts-trx doesn't pass signal quality information to the PCU socket, meaning that link/rate adaptation will of course not work as it is supposed to.

Related issues:

Related to OsmoPCU - Feature #1543: link/rate adaptation as per spec	New	02/23/2016
Related to OsmoPCU - Feature #1536: Implement adaptive CS selection	New	02/22/2016
Related to OsmoPCU - Bug #3395: Uplink CS/MCS control is broken osmo-pcu is u...	Resolved	07/14/2018
Related to OsmoBTS - Feature #1855: provide actual BER or C/I values from osm...	Resolved	11/18/2016

History

#2 - 06/22/2016 10:11 PM - laforge

- Assignee set to msuraev

#3 - 07/19/2016 08:06 AM - msuraev

How exactly quality information is passed from DSP to L1 in case of osmo-bts-sysmo? I have trouble locating that place in the code - there doesn't seem to be particular function dedicated to that.

#4 - 07/27/2016 10:29 AM - msuraev

According to void GprsMs::update_cs_ul(const pcu_l1_meas *meas) in src/gprs_ms.cpp the switch to higher/lower CS depends only on link_qual value. Not sure if some spec covers which measurement is supposed to be used for link rate adaptation. Also, it's unclear yet how to convert the values available in particular BTS to be similar to what is reported by sycmobts.

#5 - 07/27/2016 11:08 AM - msuraev

- Status changed from New to In Progress

Note: the DL CS is selected separately in update_error_rate()

#6 - 07/27/2016 11:50 AM - laforge

- Related to Feature #1543: link/rate adaptation as per spec added

#7 - 07/27/2016 11:51 AM - laforge

- Related to Feature #1536: Implement adaptive CS selection added

#8 - 07/27/2016 01:52 PM - laforge

TS 45.008 Annex D contains an "Example Selection of Modulation and Coding Schemes" for 8PSK EGPRS (MCS5-MCS9) based on CV_BEP and MEAN_BEP. Those two values should be reported by a BTS model to the PCU.

For classic GPRS or EGPRS with GMSK, I'm still looking to find similar reference values.

Chapter 8.2 of TS 45.008 contains information on how RxQual and CV_BEP / MEAN_BEP values are computed and encoded.

#9 - 07/27/2016 02:19 PM - laforge

Some papers:

- https://www.netlab.tkk.fi/opetus/s38310/01-02/li_280502.pdf
- <http://eeweb.poly.edu/dgoodman/icc04gprs.pdf>
- <http://queseth.se/olav/pubs/AlgorithmsForLinkAdaptationInGPRS.pdf>
- <http://www.cin.ufpe.br/~nomadic/vtc2000/A18522.PDF>
- <http://investigacion.ac.upc.edu/conferencias/EW2004/papers/156.pdf>

In general, it seems there are BLER and CIR (C/I) based schemes, and that C/I is generally perceived to be superior.

I think the parameters RxLev/Rssi, BER, RxQual (averaged BER) should be provided by every PHY/L1 and thus be a good candidate for reporting measurements to the PCU for GPRS/GMSK. Plus CV_BE and CV_MEAN for EGPRS/8PSK

#10 - 07/28/2016 02:44 PM - msuraev

Version for octphy submitted for review in Gerrit # 622 - 624.

#11 - 07/29/2016 04:35 PM - laforge

another paper:

http://www.uwicore.umh.es/files/paper/2000_international/uwicore_EL00_GPRS%20Link%20Adaptation%20switching%20thresholds%20and%20intervals.pdf

#12 - 08/09/2016 08:04 AM - msuraev

- % Done changed from 0 to 50

Changes for l1sap and bts-pcu protocols have been merged to master. Octphy implementation have been merged, osmo-trx is partially implemented (C/I estimation is missing, extensive testing required).

#13 - 11/18/2016 09:45 PM - laforge

- Target version set to osmo-bts-trx refresh

#14 - 11/18/2016 09:45 PM - laforge

#15 - 11/29/2016 09:09 AM - msuraev

- Status changed from In Progress to Stalled

#16 - 05/30/2017 03:36 PM - laforge

- Subject changed from osmo-bts-trx / osmo-bts-octphy doesn't provide signal quality information to PCU to osmo-bts-trx / osmo-bts-octphy doesn't provide C/I information to PCU

- Priority changed from Normal to Low

#17 - 03/01/2018 11:17 PM - laforge

- Assignee deleted (msuraev)

#18 - 07/15/2018 05:19 AM - laforge

- Related to Bug #3395: Uplink CS/MCS control is broken osmo-pcu is used with osmo-bts-trx/osmo-trx added

#19 - 08/24/2018 03:49 PM - laforge

- Related to Feature #1855: provide actual BER or C/I values from osmo-bts-trx into the PCU added

#20 - 07/16/2019 05:12 PM - fixeria

- Category changed from osmo-bts-octphy to osmo-bts-trx

- Status changed from Stalled to Resolved

- Assignee set to fixeria

- % Done changed from 50 to 100

Please see <https://gerrit.osmocom.org/r/la58043bd2381a4d34d604522e02899ae64ee0d26>, which is now merged.