Qualcomm
TECHNOLOGIES, INC

QCAT WCDMA Analysis Guide

80-V5400-3 A

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Submit technical questions at:
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Revision history

Revision	Date	Description
A	Jun 2014	Initial release

1 Introduction

1.1 Purpose

This guide provides interpretation for the various WCDMA outputs produced by the QCAT software application.

Much of the general or common information is derived from or refers to [Q10].

1.2 Scope

Readers of this document are assumed to have moderate to high WCDMA experience and some data analysis expertise.

1.3 Organization

QCAT generates its outputs in the form of tab-delimited ASCII text files, many of which are subsequently exported into a Microsoft Excel workbook by the QCAT export engine. See [Q10] for a detailed description of the QCAT export engine and the Microsoft Excel workbook generated by the export engine. Typically, each output file corresponds to one worksheet in the QCAT workbook.

This document contains illustrations from the Microsoft Excel workbook corresponding to each QCAT output file and explains the output with an emphasis on the corresponding Microsoft Excel worksheet. However, the sections do mention the extension for the QCAT output file that generates the specific worksheet.

The QCAT outputs can be classified into the following broad categories:

- ASCII text information
- Debug information
- Diagnostics summary
- QCAT analyzer information
- Histograms
- GPS maps
- Time plots

This document is divided into sections that describe each of the above categories. The individual outputs are explained in the subsections. Each subsection provides a description and sample of the output.

Note that this guide does not try to cover all possible scenarios encountered in mobile communications. Instead, it provides a set of examples and basic interpretations to assist in interpolating and extrapolating from the given information

1.4 Conventions

Function declarations, function names, type declarations, and code samples appear in a different font, e.g., `#include`.

Code variables appear in angle brackets, e.g., `<number>`.

Commands to be entered appear in a different font, e.g., **`copy a:*.* b:`**.

1.5 References

Reference documents are listed in Table 1-1. Reference documents that are no longer applicable are deleted from this table; therefore, reference numbers may not be sequential.

Table 1-1 Reference documents and standards

Ref.	Document	
Qualcomm		
Q3	*QCAT6 User Guide*	80-V1233-6
Q4	*CDMA Dual-Mode Subscriber Station Serial Data Interface Control Document*	80-V1294-1
Q5	*Serial Interface Control Document for UMTS*	80-V4083-1
Q6	*Serial Interface Control Document for WCDMA*	80-V2708-3
Q7	*QXDM Log File Format Specification*	80-V1595-1
Q9	*Application Note: Software Glossary for Customers*	CL93-V3077-1
Q10	*QCAT CDMA Analysis Guide*	80-V1234-2
Standards		
S1	*Radio Link Control (RLC) Protocol Specification*	3GPP TS 25.322 (R99)
S2	*Physical Layer Procedures (FDD)*	3GPP TS 25.214 (Rel-5)
S3	*Physical Channels and Mapping of Transport Channels onto Physical Channels (FDD)*	3GPP TS 25.211

1.6 Technical assistance

For assistance or clarification on information in this document, submit a case to Qualcomm Technologies, Inc. (QTI) at https://support.cdmatech.com/.

If you do not have access to the CDMATech Support Service website, register for access or send email to support.cdmatech@qti.qualcomm.com.

1.7 Acronyms

For definitions of terms and abbreviations, see [Q1].

2 ASCII Information Outputs

2.1 HSDPA Extended Decode Stats

Data source

- 0x4205 – HS Decode Status
- 0x4206 – HS Decode Status With Data
- 0x420A – UL HS DPCCH Information
- 0x420B – UL HS DPCCH Debug Information
- 0x4213 – MAC HS Reset
- 0x4214 – HS Decode Status With Data Ver 2
- 0x421C – UL HS DPCCH Information Log Packet Edition 2
- 0x4222 – HS Decode Status Log Packet with Data Edition 3

Description

Figure 2-1 and Figure 2-2 display HSDPA Extended Decode Stats outputs.

HSDPA Extended Decode Stats

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																		# of Transmissions for a Successful Decode					
TBS	HS-DSCH Rate (Kbps)	Modulation	# of HS-PDSCH	Drop	SB-	SB- (s)	SB+	SB+ (s)	Dup. SB+	Dup. SB+ (s)	SBLER%	SBLER% (s)	SBLER 1st%	SBLER 1st% (s)	Block-	Block+	Res. BLER%	1	2	3	4	5	>=6
137	68.5	QPSK	1	0	0	0	58	0	0	0	0.000	0.000	0.000	0.000	0	58	0.000	58	0	0	0	0	0
245	122.5	QPSK	1	0	0	0	1	0	0	0	0.000	0.000	0.000	0.000	0	1	0.000	1	0	0	0	0	0
533	266.5	QPSK	1	0	0	0	1	0	0	0	0.000	0.000	0.000	0.000	0	1	0.000	1	0	0	0	0	0
545	272.5	QPSK	1	0	0	0	17	0	0	0	0.000	0.000	0.000	0.000	0	17	0.000	17	0	0	0	0	0
581	290.5	QPSK	1	0	0	0	32	0	0	0	0.000	0.000	0.000	0.000	0	32	0.000	32	0	0	0	0	0
23792	11896	16QAM	15	0	485	175	606	0	4	0	44.455	100.000	95.021	100.000	53	606	8.042	25	572	9	0	0	0
24222	12111	16QAM	15	0	106	12	8	0	0	0	92.982	100.000	92.982	100.000	118	8	93.651	8	0	0	0	0	0
Totals	N/A	N/A	N/A	N/A	1056	432	3353	2531	6	0	23.951	14.580	31.867	14.897	228	5884	3.730	4743	1132	9	0	0	0

MIMO Stream % Time

% of time 1 TB Requested	0.46
% of time 2 TB Requested	99.54
% of time Single Stream Scheduled	34.50
% of time Dual Stream Scheduled	65.50

HS-SCCH Decoding Statistics

Number of sub-frames	32706	
HS-SCCH Attempts	32706	
HS-SCCH Successes	4530	
HS-SCCH Success Rate (%)	13.85	
Antenna	Primary	Secondary
ACK->NACK/DTX Conversion Rate (%)	0.18	0.00
TBS Changes During Retransmission	6	
Modulation Changes During Retransmission	0	
Hs-PDSCH Code Changes During Retx	74	

HS Rate Statistics (Kbps)

Physical Layer Throughput	1736.85

HS MAC Statistics

HS MAC Resets	0

Figure 2-1 HSDPA Extended Decode Stats (MIMO)

HSDPA Extended Decode Stats

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Primary Carrier

TBS	HS-DSCH Rate (Kbps)	Modulation	# of HS-PDSCH	Drop	SB-	SB- (s)	SB+	SB+ (s)	Dup. SB+	Dup. SB+ (s)	SBLER%	SBLER% (s)	SBLER 1st%	SBLER 1st% (s)	Block-	Block+	Res. BLER%	# of Transmissions for a Successful Decode 1	2	3	4	5	>=6
38576	19288	64QAM	15	0	5		20		0		20.000		20.000		5	20	20.000	20	0	0	0	0	0
Totals	N/A	N/A	N/A	N/A	5		20		0		20.000		20.000		5	20	20.000	20	0	0	0	0	0

HS-SCCH Decoding Statistics

Primary Carrier	
Number of sub-frames	25
HS-SCCH Attempts	25
HS-SCCH Successes	25
HS-SCCH Success Rate (%)	100.00
ACK->NACK/DTX Conversion Rate (%)	0.00
TBS Changes During Retransmission	0
Modulation Changes During Retransmission	0
Hs-PDSCH Code Changes During Retx	0

HS Rate Statistics (Kbps)

Primary Carrier	
Physical Layer Throughput	15430.40

Secondary Carrier

TBS	HS-DSCH Rate (Kbps)	Modulation	# of HS-PDSCH	Drop	SB-	SB- (s)	SB+	SB+ (s)	Dup. SB+	Dup. SB+ (s)	SBLER%	SBLER% (s)	SBLER 1st%	SBLER 1st% (s)	Block-	Block+	Res. BLER%	# of Transmissions for a Successful Decode 1	2	3	4	5	>=6
38576	19288	64QAM	15	0	5		20		0		20.000		20.000		5	20	20.000	20	0	0	0	0	0
Totals	N/A	N/A	N/A	N/A	5		20		0		20.000		20.000		5	20	20.000	20	0	0	0	0	0

HS-SCCH Decoding Statistics

Secondary Carrier	
Number of sub-frames	25
HS-SCCH Attempts	25
HS-SCCH Successes	25
HS-SCCH Success Rate (%)	100.00
ACK->NACK/DTX Conversion Rate (%)	0.00
TBS Changes During Retransmission	0
Modulation Changes During Retransmission	0
Hs-PDSCH Code Changes During Retx	0

HS Rate Statistics (Kbps)

Secondary Carrier	
Physical Layer Throughput	15430.40

HS MAC Statistics

HS MAC Resets	0

Figure 2-2 HSDPA Extended Decode Stats (dual carrier)

This output provides each TBS with a combination of the number of HS-PDSCH and the modulation in the table format with the following columns:

- Column 1 – TBS
- Column 2 – Corresponding data rate (TBS x 500)
- Column 3 – Modulation (QPSK or 16 QAM)
- Column 4 – Number of HS-PDSCH
- Column 5 – Drop counter
- Column 6 – SB-; the total number of subblocks that failed CRC
- Column 7 – SB+; the total number of subblocks that decoded CRC successfully
- Column 8 – Dup. SB+; the number of duplicate subblocks, defined as a subblock that has been ACKed, but is still retransmitted in the next transmission
- Column 9 – SBLER = SB-/(SB- + SB+)
- Column 10 – SBLER on first transmission
- Column 11 – Block-; the total number of residual block errors
- Column 12 – Block+; the total number of blocks successfully decoded
- Column 13 – Res. BLER; residual BLER = Blocks-/(Block- + Block+)
- Columns 14 to 19 – Number of transmissions to successfully decode a block (1, 2, 3, 4, 5, 6, or more)
  - Only the received TBS with the combination of the modulation and number of HS-PDSCH received is displayed.
  - Table rows are sorted by the TBS, modulation, and number of HS-PDSCH.
  - This output assumes that the modulation and number of HS-PDSCH do not change in retransmission.
  - When the parser determines that the modulation or number of HS-PDSCH has changed in retransmission, that data should be dropped. In this case, the drop counter of the rows corresponding to each transmission is incremented. The following example shows two transmissions of the same transport block data:
    - First transmission – (TBS, modulation, # of HS-PDSCH) = (3440, QPSK, 4)
    - Second transmission – (3440, QPSK, 5)

The statistics of these two transmissions should not be included in the table, and the drop counter of (3440, QPSK, 4) and (3440, QPSK, 5) should increment.

The following additional statistics are provided in separate tables:

- Number of subframes
- HS-SCCH attempts
- HS-SCCH successes
- HS-SCCH success rate = (HS-SCCH successes/HS-SCCH attempts)*100
- Number of occurrences of TBS changes during retransmissions

- ACK to NACK or DTx conversion %
- TBS changes during retransmission
- Modulation changes during retransmission
- Modulation changes during retransmission
- HS-PDSCH code changes during retransmission
- Physical layer throughput
- HS MAC resets

2.2 WCDMA RLC Summary Statistics

As illustrated in Figure 2-3, this screen will give separate RLC statistics for both UL and DL. Note that the statistics based on 0x4149 and 0x414A are cumulative, which means they will be correct even when some of these log packets are missing:

- Total number of PDU bytes received (DL 0x414A, UL 0x4149/0x4149)
- Total number of SDU bytes to higher layer (DL 0x414A, UL 0x4149/0x4149)
- Total number of data PDUs received (DL 0x414A, UL 0x4149/0x4149)
- Total number of data PDUs NAKed (DL 0x414A, UL 0x4149/0x4149)
- Total number of control PDUs received (DL 0x414A, UL 0x4149/0x4149)
- RLC BLER (PDU error rate) = NAKed PDUs/(Data PDUs + NAKed PDUs)
- RLC PDU throughput = Total PDU bytes/total time
- RLC SDU throughput = Total SDU bytes/total time
- Window open/close (DL 0x4146/0x4144, UL 0x4145/0x414B) – Based on RLC control PDUs in which the WINDOW SUFI indicates a window size of 1
- RLC resets (DL 0x4144, UL 0x4149) – In the uplink direction, this is based on RLC statistics which counts the number of resets; in the downlink, this is determined by counting the number of RLC RESET PDUs received
- Discarded SDUs based on MRW (DL 0x4146/0x4144, UL 0x4145/0x414B) – Counts the number of times MRW is received indicating a discarded SDU; multiple retransmissions of the same MRW are not counted

The log packet names for the log packet codes used in this screen are the following:

- 0x4134 – WCDMA RLC DL AM PDU
- 0x4138 – WCDMA RLC UL AM Statistics Ver 2
- 0x4139 – WCDMA RLC UL AM Statistics
- 0x413B – WCDMA RLC UL AM PDU
- 0x4144 – WCDMA RLC DL AM PDU
- 0x4145 – WCDMA RLC UL AM Control PDU LOG
- 0x4146 – WCDMA RLC DL AM Control PDU LOG
- 0x4149 – WCDMA RLC UL AM Statistics

- 0x414A – WCDMA RLC DL AM Statistics
- 0x414B – WCDMA RLC UL AM PDU

NOTE: Log packets 0x4134 and 0x413B have partial information of the RLC control PDUs, which means that if 0x4145 and 0x4146 are not logged, then this partial information is used instead.

WCDMA RLC Summary Statistics

DL Logical Channels	Chan 11	Chan 12	Chan 13	Chan 14
Total # of PDU bytes received	1296	270	0	1783908
Total # of SDU bytes to higher layer	372	97	0	1603078
Total # of Data PDUs received	29	7	0	40520
Total # of Data PDUs NAKed	0	0	0	3116
Total # of Control PDUs received	30	6	0	771
RLC BLER [%]	0.00	0.00	N/A	7.14
RLC PDU Tput [Kbps]	0.08	0.02	0.00	109.78
RLC SDU Tput [Kbps]	0.02	0.01	0.00	98.65
Resets	0			0
Window open/close	0			0
Discarded SDUs	0			0

UL Logical Channels	Chan 11	Chan 12	Chan 13	Chan 14
Total # of PDU bytes received	1170	342	0	94038
Total # of SDU bytes to higher layer	228	173	0	54024
Total # of Data PDUs received	23	12	0	1731
Total # of Data PDUs NAKed	0	0	0	5
Total # of Control PDUs received	26	4	0	459
RLC BLER [%]	0.00	0.00	N/A	0.29
RLC PDU Tput [Kbps]	0.07	0.02	0.00	5.79
RLC SDU Tput [Kbps]	0.01	0.01	0.00	3.32
Resets	0	0	0	6
Window open/close				0
Discarded SDUs				0

Figure 2-3 WCDMA RLC Summary Statistics

2.3 PN SRCH Eng Info Summary

Data source

- 0x4179 – WCDMA PN Search Edition2

Description

Sumamrize PN Search activity. Figure 2-4 displays PN SRCH Eng Info Summary output.

PN SRCH Eng Info Summary
Qualcomm Proprietary and Confidential.

PSC	Average Eng [dB] Ant 0	Average Eng [dB] Ant 1	Number of PN searches on this cell
1	-10.2845	-10.3252	12582
3	-25.7544	-25.7333	226
5	-25.7912	-25.7727	116
6	-25.7906	-25.7472	394
7	-25.7352	-25.6149	55
11	-26.4802	-26.4244	56

Figure 2-4 PN SRCH Eng Info Summary

- PSC – Lists all cells PSCs that PN search happened on through out the log.
- Average Eng [dB] Ant 0 – Calculates the average of the strongest paths on Antenna 0 for each searched cell. For example, PN search happened on PSC 10 in this PN search packet and showed the strongest path energy is -11 dB on Ant [0]. The next PN search packet shows PSC 10 with -13 dB on Ant0 being the strongest path energy. Then Average Eng [dB] on Ant 0 is -11.89dB (convert numbers to linear, calculate the average, then calculate back to dB using 10 log10(x))
- Average Eng [dB] Ant 1 – Same as Ant 0 but for Ant 1 which is also shown in the PN packet.
- Number of PN searches on this cell – Total number of PN searches happened on each cell. This can be getting by increasing the cell counter by 1 each time a search happen on a cell then showing the total for each cell.

NOTE: PN SRCH Eng Info Summary SECOND is the same definition but for the second carrier.

2.4 PN SRCH Eng Info All Carriers Summary

Data source

- 0x4179 – WCDMA PN Search Edition 2

Description

Sumamrize PN Search activity. Figure 2-4 displays the PN SRCH Eng Info All Carriers Summary output.

PN SRCH Eng Info All Carriers Summary

Qualcomm Proprietary and Confidential.

Primary Carrier			
PSC	Average Eng [dB] Ant 0	Average Eng [dB] Ant 1	Number of PN searches on this cell
1	-3.481	-4.478	1870
259	-23.974	NaN	2
315	-23.466	NaN	2
439	-24.952	NaN	2

PSC Statistics		
Carrier	PSC	% Time in ASET
Primary	1	99.68
	259	0.11
	315	0.11
	439	0.11

Figure 2-5 PN SRCH Eng Info All Carriers Summary

- Primary carrier and secondary carrier – first and second carrier summaries
- PSC – Lists all cell's PSCs that PN search happened on throughout the log
- Average Eng [dB] Ant 0 – Calculates the average of the strongest paths on Antenna 0 for each searched cell; computed by converting dB numbers to linear, calculating the average, then calculating back to dB using 10 log10(x)
- Average Eng [dB] Ant 1 – Same as Ant 0 but for Ant 1 which is also shown in the PN packet
- Number of PN searches on this cell – Total number of PN searches happened on each cell; this can be gotten by increasing the cell counter by 1 each time a search happens on a cell and then showing the total for each cell
- % time in ASET – Summarizes the percent of time PSC is in ASET

3 Histiogram Outputs

3.1 WCDMA UE Power (Tx) Graph

The graph in Figure 3-1 displays the data PDF and normalized PDF of the UE's Tx power. This packet can be used for capacity studies, where a lower transmit power indicates greater uplink capacity. For this analysis, use the linear average. The standard deviation is calculated in dB space, since the data arrives this way. The difference between the linear and log standard deviation is typically small.

NOTE: Two UEs at the same inband Tx power do not necessarily give the same results. Typically, the UE is not a power meter. Thus, most people should use neither the linear average nor the log average when comparing the performance of two phones.

Data source

- 0x4015 – LOG_WCDMA_AGC_V3
- 0x4031 – LOG_WCDMA_AGC_DB10
- 0x4105 – LOG_WCDMA_AGC
- 0x4165 – LOG_WCDMA_AGC_V2
- 0x4176 – LOG_WCDMA_AGC_EDITION_2

COAHE	COAHE	COAHE	COAHE	COAHE
	WCDMA UE Tx Power Data			
	Qualcomm Proprietary and Confidential.			
	Mean		-19.969	
	Mean (lin)		3.627	
	Stdev		5.756	
	bin val	count	pdf data	norm d...
	-60.00	0	0.000	0.000
	-59.00	0	0.000	0.000
	-58.00	0	0.000	0.000
	-57.00	0	0.000	0.000
	-56.00	0	0.000	0.000
	-55.00	0	0.000	0.000
	-54.00	0	0.000	0.000
	-53.00	0	0.000	0.000
	-52.00	0	0.000	0.000
	-51.00	0	0.000	0.000
	-50.00	0	0.000	0.000
	-49.00	0	0.000	0.000
	-48.00	0	0.000	0.000
	-47.00	0	0.000	0.000
	-46.00	0	0.000	0.000
	-45.00	0	0.000	0.000
	-44.00	0	0.000	0.000
	-43.00	0	0.000	0.000
	-42.00	0	0.000	0.000
	-41.00	0	0.000	0.000
	-40.00	0	0.000	0.000
	-39.00	0	0.000	0.000
	-38.00	0	0.000	0.001
	-37.00	0	0.000	0.001
	-36.00	0	0.000	0.001
	-35.00	0	0.000	0.002
	-34.00	0	0.000	0.004
	-33.00	0	0.000	0.005
	-32.00	0	0.000	0.008
	-31.00	2	0.002	0.011
	-30.00	6	0.007	0.015
	-29.00	2	0.002	0.020
	-28.00	7	0.008	0.026
	-27.00	11	0.013	0.033
	-26.00	12	0.014	0.040
	-25.00	24	0.028	0.047
	-24.00	58	0.068	0.054
	-23.00	37	0.044	0.060
	-22.00	119	0.140	0.065
	-21.00	76	0.090	0.068
	-20.00	120	0.141	0.069
	-19.00	80	0.094	0.068
	-18.00	97	0.114	0.065
	-17.00	81	0.095	0.061
	-16.00	43	0.051	0.055
	-15.00	42	0.049	0.048
	-14.00	13	0.015	0.040

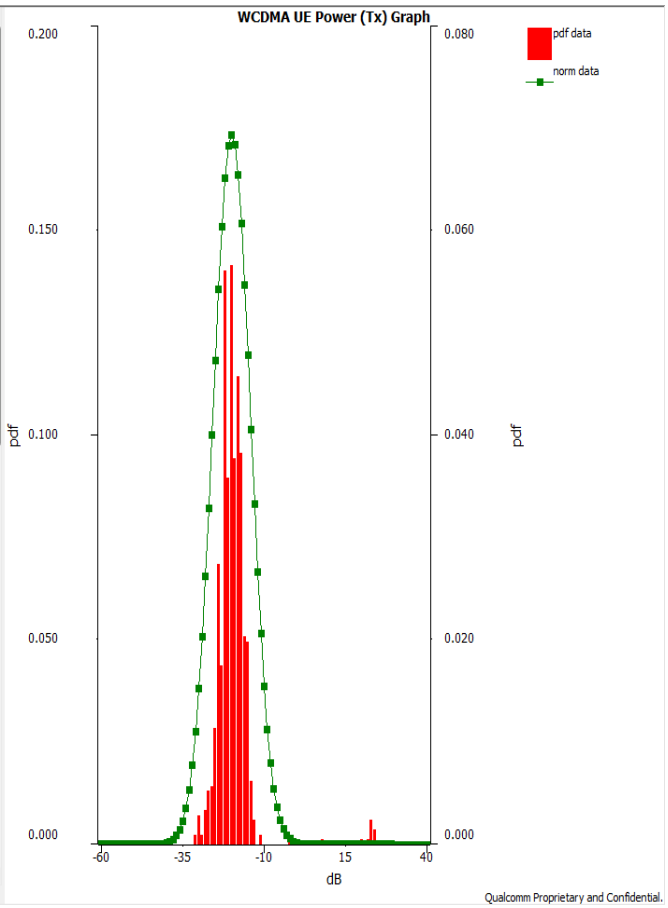


Figure 3-1 WCDMA UE Power (Tx) Graph

3.2 WCDMA UE Power (Rx0) Graph

Data source

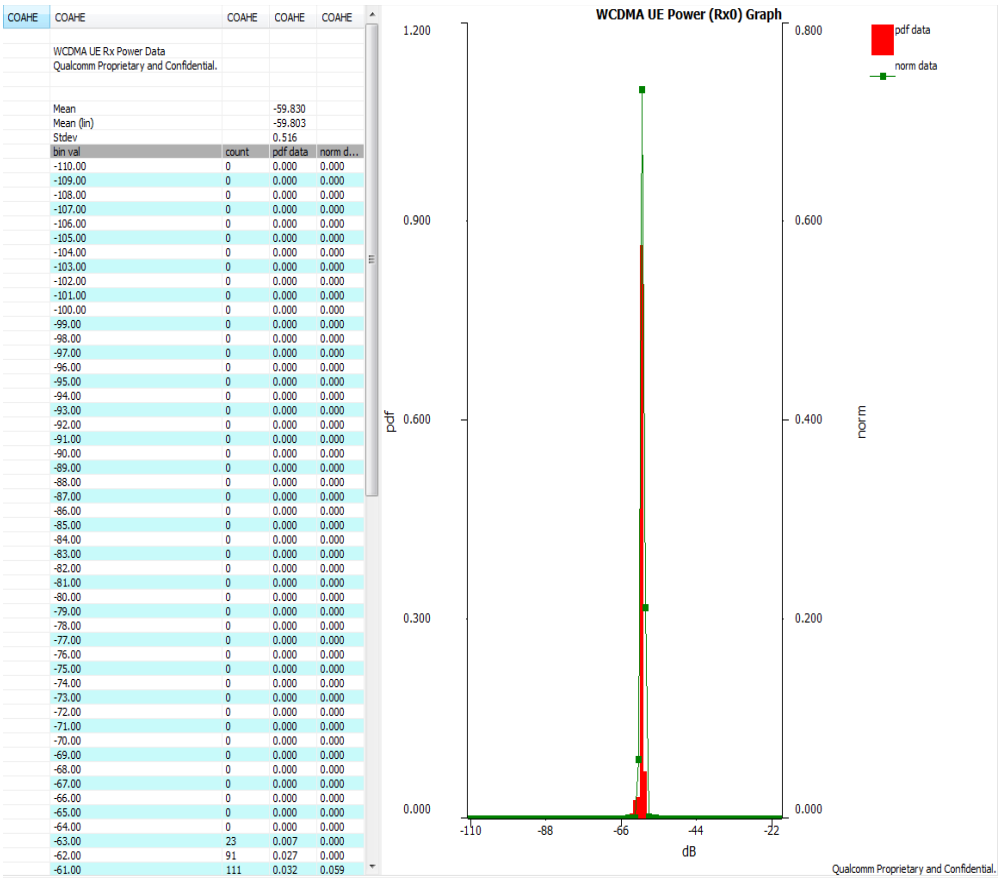
- 0x4015 – LOG_WCDMA_AGC_V3
- 0x4031 – LOG_WCDMA_AGC_DB10
- 0x4105 – LOG_WCDMA_AGC
- 0x4165 – LOG_WCDMA_AGC_V2
- 0x4176 – LOG_WCDMA_AGC_EDITION_2

Description

The WCDMA UE Power (Rx0) Graph displays PDF and norm data vs Rx0 (dB) bin values for carrier 0.

Similar support for:

- Rx1 carrier 0 (WCDMA UE Power (Rx1) Graph) – Same for second Rx antenna
- Rx0 carrier 1 (UE Power (Rx0) SECOND Graph) – Same for second carrier, first Rx antenna)
- Rx1 carrier 1 (UE Power (Rx1) SECOND Graph) – Same for second carrier, second Rx antenna



COAHE	COAHE	COAHE	COAHE	COAHE
	WCDMA UE Rx Power Data			
	Qualcomm Proprietary and Confidential.			
	Mean		-59.830	
	Mean (lin)		-59.803	
	Stdev		0.516	
	bin val	count	pdf data	norm d...
	-110.00	0	0.000	0.000
	-109.00	0	0.000	0.000
	-108.00	0	0.000	0.000
	-107.00	0	0.000	0.000
	-106.00	0	0.000	0.000
	-105.00	0	0.000	0.000
	-104.00	0	0.000	0.000
	-103.00	0	0.000	0.000
	-102.00	0	0.000	0.000
	-101.00	0	0.000	0.000
	-100.00	0	0.000	0.000
	-99.00	0	0.000	0.000
	-98.00	0	0.000	0.000
	-97.00	0	0.000	0.000
	-96.00	0	0.000	0.000
	-95.00	0	0.000	0.000
	-94.00	0	0.000	0.000
	-93.00	0	0.000	0.000
	-92.00	0	0.000	0.000
	-91.00	0	0.000	0.000
	-90.00	0	0.000	0.000
	-89.00	0	0.000	0.000
	-88.00	0	0.000	0.000
	-87.00	0	0.000	0.000
	-86.00	0	0.000	0.000
	-85.00	0	0.000	0.000
	-84.00	0	0.000	0.000
	-83.00	0	0.000	0.000
	-82.00	0	0.000	0.000
	-81.00	0	0.000	0.000
	-80.00	0	0.000	0.000
	-79.00	0	0.000	0.000
	-78.00	0	0.000	0.000
	-77.00	0	0.000	0.000
	-76.00	0	0.000	0.000
	-75.00	0	0.000	0.000
	-74.00	0	0.000	0.000
	-73.00	0	0.000	0.000
	-72.00	0	0.000	0.000
	-71.00	0	0.000	0.000
	-70.00	0	0.000	0.000
	-69.00	0	0.000	0.000
	-68.00	0	0.000	0.000
	-67.00	0	0.000	0.000
	-66.00	0	0.000	0.000
	-65.00	0	0.000	0.000
	-64.00	0	0.000	0.000
	-63.00	23	0.007	0.000
	-62.00	91	0.027	0.000
	-61.00	111	0.032	0.059

Figure 3-2 WCDMA UE Power (Rx0) Graph

4 Time Outputs

This chapter contains time outputs as grids and plots.

Figure 4-1 displays the list of time outputs as grids and plots.

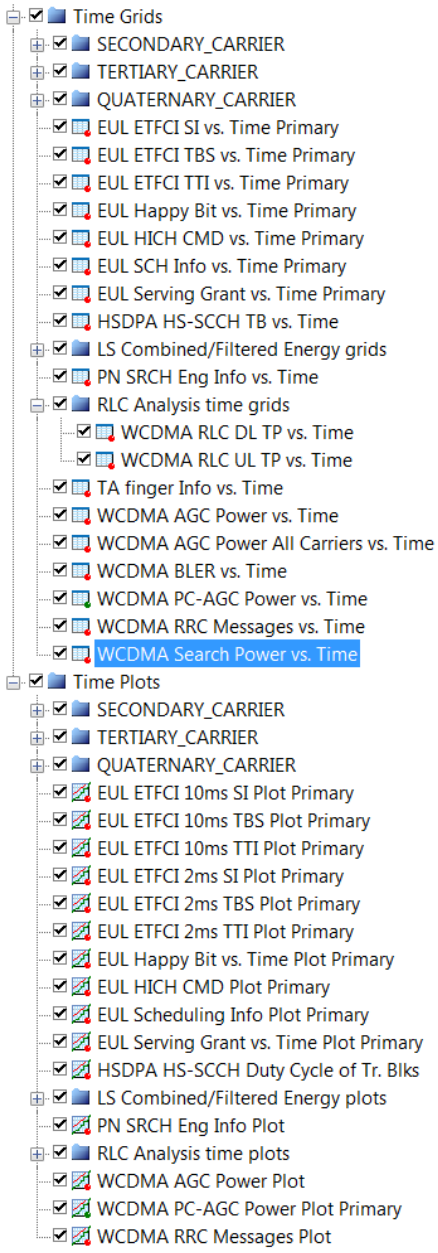


Figure 4-1 List of time outputs as grids and plots

4.1 Time grids only

4.1.1 WCDMA Search Power vs. Time

Data source

- 0x4170 – WCDMA list search Ver 6
- 0x4179 – WCDMA PN Search Edition 2

Description

- ASET/MSET/USET – Active set, monitor set, unmonitored set
- PSC – Primary scrambling code
- Ant – Rx antenna index for search
- Agc (dBm) – AGC power
- Pos (Cx8) – Search position in 1/8 cx1 units
- Inst EcIo (dB) – Instantaneous search power
- Filt EcIo (dB) – Filtered search power; filtered and quantized to 0.5 dB steps

WCDMA Search Power vs. Time
Qualcomm Proprietary and Confidential.

			ASet			MSet (Intra freq)		
			PSC4			PSC1		
Time	Ant	Agc (dBm)	Pos (Cx8)	Inst EcIo (dB)	Filt EcIo (dB)	Pos (Cx8)	Inst EcIo (dB)	Filt EcIo (dB)
08:25:58.335	0	-53.500						
08:25:58.340	0	-53.583						
08:26:00.890	0	-53.667						
08:26:00.896	0	-53.417						
08:26:03.456	0	-53.667						
08:26:03.461	0	-53.833						
08:26:06.011	0	-53.500						
08:26:06.017	0	-53.250						
08:26:08.577	0	-53.667						
08:26:08.582	0	-53.667						
08:26:11.132	0	-53.500						
08:26:11.137	0	-53.333						
08:26:12.437	0	-52.667						
08:26:12.440	0	-52.667						
08:26:12.526	0	-51.917						
08:26:12.546	0	-52.750						
08:26:12.566	0	-52.667						
08:26:12.586	0	-53.417						
08:26:12.606	0	-53.417						
08:26:12.626	0	-53.333						
08:26:12.646	0	-53.417						
08:26:12.666	0	-53.417						
08:26:12.686	0	-53.833						
08:26:12.706	0	-54.167						
08:26:12.726	0	-53.750						
08:26:12.746	0	-53.833						
08:26:12.766	0	-53.583						
08:26:12.786	0	-53.500						
08:26:12.806	0	-53.333						
08:26:12.826	0	-53.417						

Figure 4-2 WCDMA Search Power vs. Time

NOTE: WCDMA Search Power SECOND vs. Time – Same for second DL carrier

4.1.2 TA finger Info vs. Time

Data source

- 0x4186 – WCDMA temporal analysis Ver 2

Description

- Lock state
  - 0x0 – Finger out of lock and does not contribute to data or control demod
  - 0xF – Finger in lock
  - Other – Invalid
- PSC – Primary scrambling code
- POS (Cx8) – Finger position in 1/8 cx1 units
- Ant Id – Rx antenna index assignment
- TPC Idx – Valid for ASET cells only, internal power control group index
- ROT (Hz) – Computed frequency error in Hz
- Ec/Io (dB) – CPICH Ec/Io

TA finger Info vs. Time
Qualcomm Proprietary and Confidential.

PSCs {4,}

Time	LockState [0]	PSC [0]	POS(CX8) [0]	Ant Id [0]	TPC Idx [0]	ROT (Hz) [0]	Ec/Io(dB) [0]	LockState [1]	PSC
00:11:24.352	0x0	4	62905984	0	0	6194.03	-0.64		
00:11:24.390	0x0	4	12574272	0	0	6208.23	-0.64		
00:11:24.430	0x0	4	1069538944	0	0	6222.88	-0.64		
00:11:24.470	0x0	4	1031790208	0	0	6237.52	-0.64		
00:11:24.510	0x0	4	29351552	0	0	6252.17	-0.64		
00:11:24.550	0x0	4	46128768	0	0	6266.82	-0.64		
00:11:24.590	0x0	4	25157248	0	0	6281.47	-0.64		
00:11:24.630	0x0	4	1031790208	0	0	6296.12	-0.64		
00:11:24.670	0x0	4	8380032	0	0	6310.77	-0.64		
00:11:24.712	0x0	4	54517312	0	0	6325.88	-0.64		
00:11:24.750	0x0	4	1073733248	0	0	6340.07	-0.64		

Figure 4-3 TA finger Info vs Time

4.1.3 WCDMA BLER vs. Time

Data source

- 0x4116 – WCDMA BLER

Description

The WCDMA BLER vs. Time output gives a time-ordered list of BLER data, including the number of transport channels in a particular time entry, the window size (in frames), and the calculated error percentage (if available in this entry) for each transport channel. The transport channels are listed as Ch#0 through Ch#32.

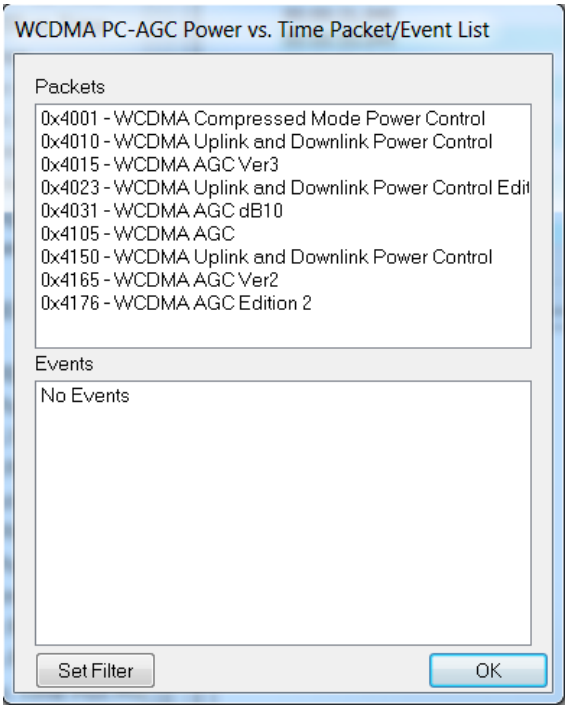
WCDMA BLER vs. Time
Qualcomm Proprietary and Confidential.

Time	Num Transport Chans	Window Size (frames)	TrCh#0 Err(%)	TrCh#1 Err(%)	TrCh#2 Err(%)	TrCh#31 Err(%)
04:44:08.308	2	200	*	*	0.000	0.000
04:44:10.308	2	200	*	*	0.000	0.000
04:44:12.308	2	200	*	*	0.000	0.000
04:44:14.308	2	200	*	*	1.111	0.000
04:44:16.308	2	200	*	*	0.000	0.000
04:44:16.496	2	200	*	*	0.000	0.000
04:44:18.496	2	200	*	*	0.000	0.000
04:44:20.496	2	200	*	*	1.000	0.000
04:44:22.496	2	200	*	*	1.000	0.000
04:44:24.496	2	200	*	*	0.000	0.000
04:44:26.496	2	200	*	*	0.000	0.000
04:44:28.496	2	200	*	*	0.000	0.000
04:44:30.496	2	200	*	*	0.000	0.000
04:44:32.497	2	200	*	*	0.000	0.000
04:44:34.497	2	200	*	*	1.000	0.000
04:44:36.497	2	200	*	*	1.000	0.000
04:44:38.497	2	200	*	*	0.000	0.000
04:44:40.497	2	200	*	*	0.000	0.000
04:44:42.498	2	200	*	*	0.000	0.000
04:44:44.498	2	200	*	*	0.000	0.000
04:44:46.498	2	200	*	*	0.000	0.000

Figure 4-4 WCDMA BLER vs Time

4.1.4 WCDMA PC-AGC Power vs. Time

Data source



Description

- SIR Est (dB) – SIR estimate averaged over previous 10 ms period
- PA On/Off – Tx on/off
- TX Pwr – Tx power level at end of each 10 ms period

WCDMA PC-AGC Power vs. Time
Qualcomm Proprietary and Confidential.

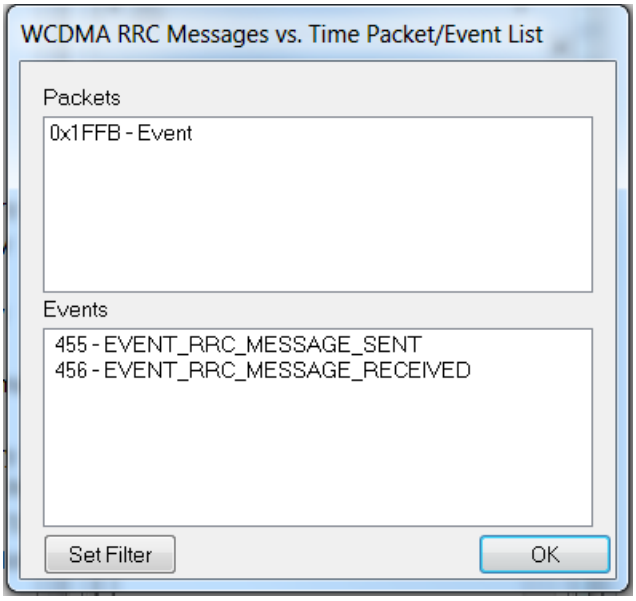
Time	SIR Est (dB)	PA On/Off	Tx Pwr (dBm)
00:01:26.446	-16.98		
00:01:26.456	-16.98		
00:01:26.466	-17.80		
00:01:26.476	18.22		
00:01:26.486	17.04		
00:01:26.496	17.93		
00:01:26.506	16.80		
00:01:26.516	17.02		
00:01:26.526	16.94		
00:01:26.536	16.03		

Figure 4-5 WCDMA PC-AGC Power vs. Time

NOTE: WCDMA PC-AGC Power vs. Time SECOND – Same for second UL/DL carrier

4.1.5 WCDMA RRC Messages vs. Time

Data source



Description

Figure 4-6 displays WCDMA RRC Messages vs. Time.

WCDMA RRC Messages vs. Time
Qualcomm Proprietary and Confidential.

Time	Direction	Channel Type	MsgID	MsgName	Full Message
13:05:57.765	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:57.785	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:57.805	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:57.825	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:57.845	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:57.865	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:57.885	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:57.905	DL	BCCH	22	SysInfo	SYSTEM_INFORMATION_MSG
13:05:58.024	UL	CCCH	4	ConnReq	RRC_CONNECTION_REQU...
13:05:58.225	DL	CCCH	5	ConnS...	RRC_CONNECTION_SETUP...
13:05:58.348	UL	DCCH	6	ConnS...	RRC_CONNECTION_SETUP...
13:05:58.358	UL	DCCH	3	InitDir...	INITIAL_DIRECT_TRANSFE...

Figure 4-6 WCDMA RRC Messages vs Time

4.1.6 HSDPA HS-SCCH TB vs. Time

Data source

- 0x4222 – HS Decode Status Log Packet with Data Edition 3

Description

- Subframe – Total cumulative subframes from the start of the log packet in 100 subframe increments
- Avg Sched Duty Cycle, % - HS-SCCH CRC pass % within this 100 subframe interval

HSDPA HS-SCCH TB vs. Time
Qualcomm Proprietary and Confidential.

Time	Subframe	Avg Sched Duty Cycle, %
13:21:11.297	4500	0
13:21:11.497	4600	0
13:21:11.697	4700	0
13:21:39.710	4800	0
13:21:39.910	4900	2
13:21:40.110	5000	2
13:21:40.310	5100	10
13:21:40.510	5200	2
13:21:40.710	5300	0
13:21:40.910	5400	0
13:21:41.110	5500	0
13:21:41.310	5600	0
13:21:41.510	5700	0
13:21:41.710	5800	0
13:21:41.910	5900	0

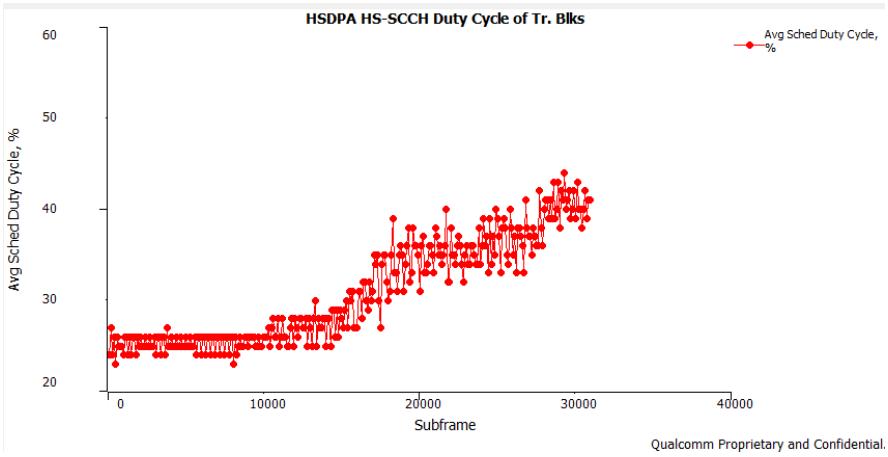


Figure 4-7 HSDPA HS-SCCH TB vs Time grid/plot

NOTE: HSDPA HS-SCCH TB SECOND vs. Time – Second DL carrier information

4.2 Time grids and plots

All plots in this chapter have an associated time grid.

4.2.1 EUL Happy Bit vs. Time Primary

Data source

- 0x4344 – WCDMA Multi Carrier EUL Combined L1 MAC

Description

The EUL Happy Bit UE is transmitting over time. The plot can be either 1 or 0.

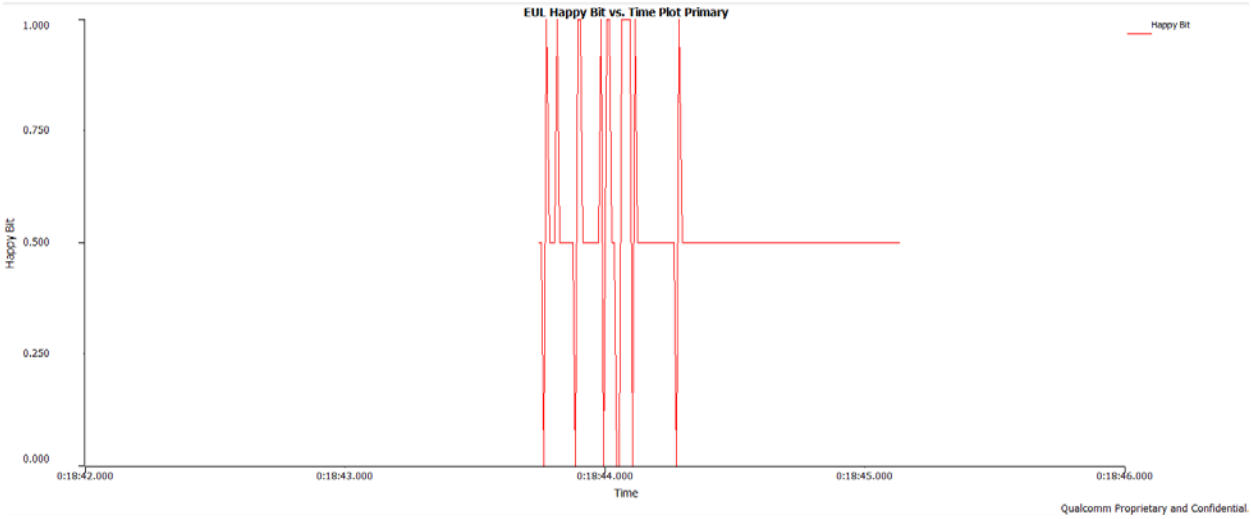


Figure 4-8 EUL Happy Bit vs. Time Primary plot

NOTE: EUL Happy Bit vs. Time Secondary – Second UL carrier information

4.2.2 EUL Scheduling Info Plot Primary

Data source

- 0x430E – EUL MAC-i\is log packet

Description

The EUL Scheduling Info Plot Primary plots the SI fields, i.e., HLBS, TEBS, and UPH, for the highest priority logical channel (HLID). The following are plotted for every TTI:

- HLID – Highest priority Logical channel ID
- TEBS – Total E-DCH Buffer Status
- HLBS – Highest priority Logical channel Buffer Status
- UPH – Based on UE Power Headroom value

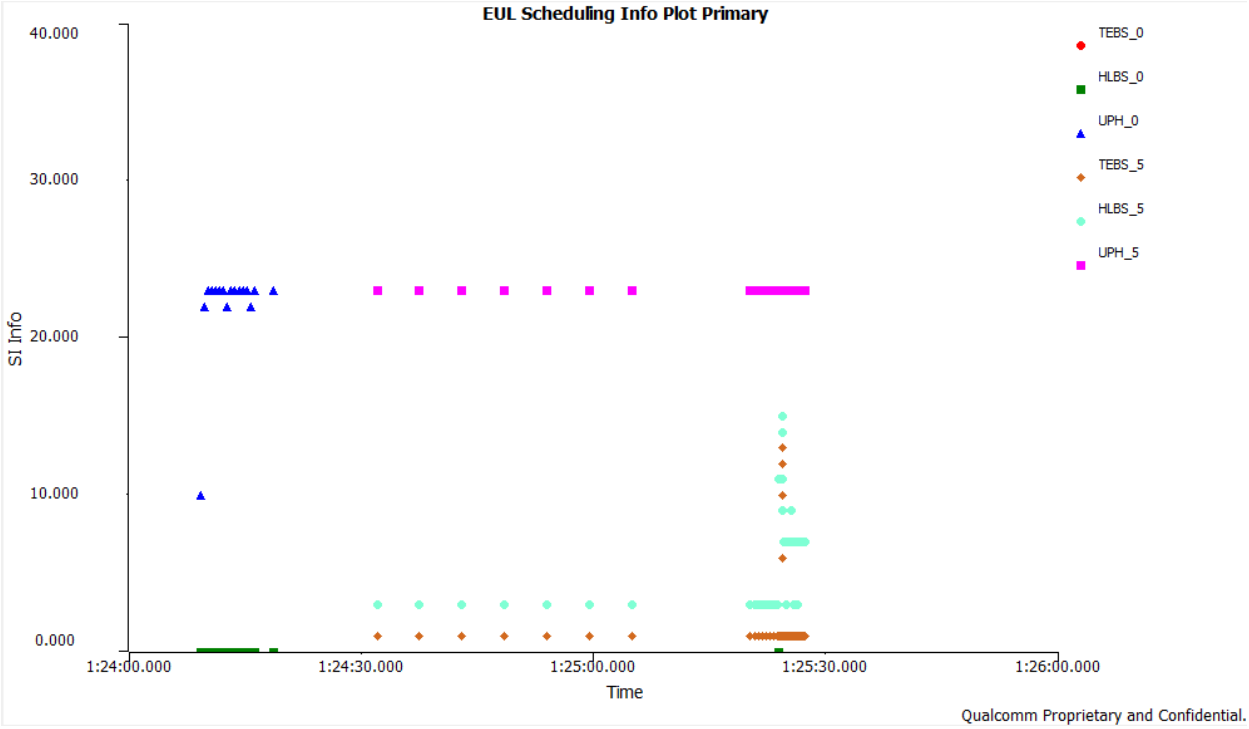


Figure 4-9 EUL Scheduling Info Plot Primary

NOTE: EUL Scheduling Info Plot Secondary – Second UL carrier information; EUL SCH Info vs. Time Primary and Secondary are corresponding time grids.

4.2.3 EUL Serving Grant vs. Time Plot Primary

Data source

- 0x4344 – WCDMA Multi Carrier EUL Combined L1 MAC

Description

EUL Serving Grant vs. Time Plot Primary plots the average serving grant based on E-RGCH and E-AGCH.

- Primary AG – Based on Primary AGCH value received in given TTI
  - Value of AG_VALUE if AGCH_FLAG is true and P_OR_S is P
- Secondary AG – Based on Secondary AGCH value received in given TTI
  - Value of AG_VALUE if AGCH_FLAG is true and P_OR_S is S
- SG – Based on Serving Grant
  - Value of SG_INDEX

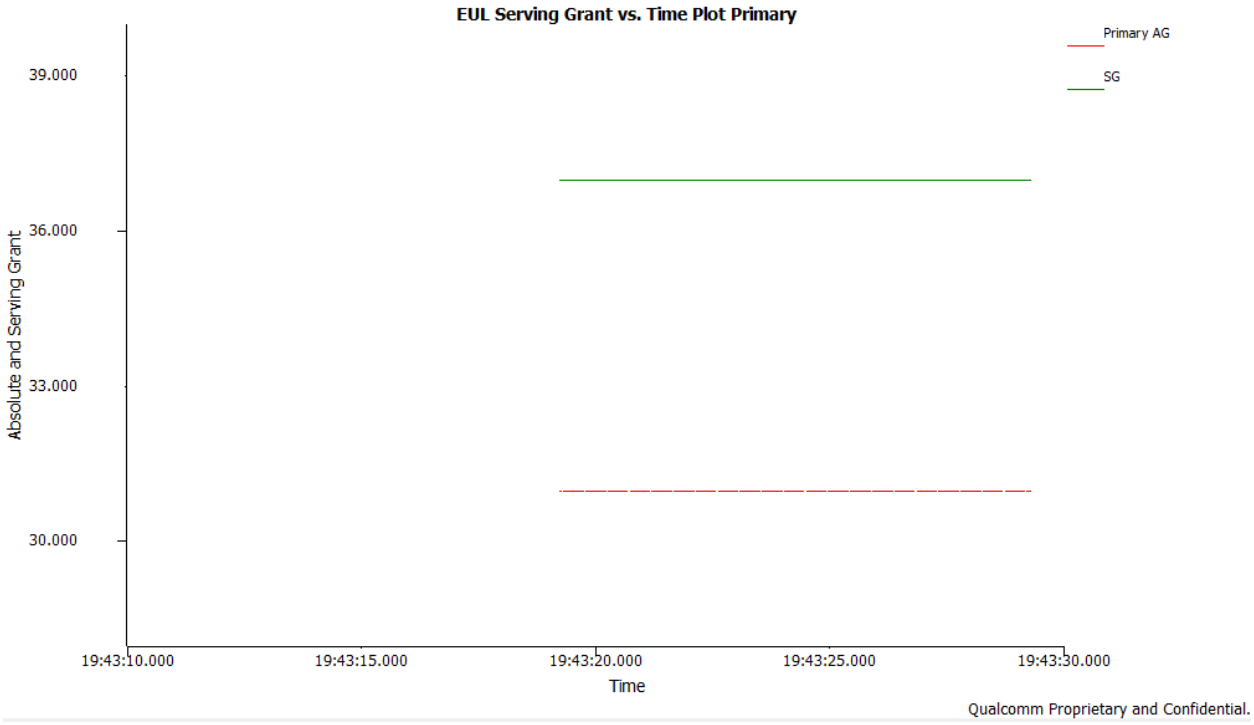


Figure 4-10 EUL Serving Grant vs. Time Plot Primary

NOTE: EUL Serving Grant vs. Time Plot Secondary – Second UL carrier information

4.2.4 WCDMA AGC Power vs. Time

Data source

- 0x4176 – WCDMA AGC Edition 2

Description

The WCDMA AGC Power vs. Time output gives the Rx and Tx power vs time info. Each data point is at a 20 ms interval. Discontinuities in the Tx data (TxAGC) signify periods where the Tx was off; this is recorded in the same AGC packet.

- CFN – Frame count
- Rx0 AGC [dBm] – Rx AGC dBm level for antenna 0
- Rx1 AGC [dBm] – Rx AGC dBm level for antenna 1
- Tx AGC [dBm] – Tx AGC dBm level
- Tx On – Flag indicating whether Tx is enabled or disabled (Y/N)

WCDMA AGC Power vs. Time
Qualcomm Proprietary and Confidential.

Time	CFN	Rx0 AGC [dBm]	Tx AGC [dBm]	Tx On	Rx1 AGC [dBm]
05:18:46.871	3	-64.5	-16.000	Y	
05:18:46.881	4	-64.3	-15.000	Y	
05:18:46.891	5	-63.5	-14.000	Y	
05:18:46.901	6	-64.6	-17.000	Y	
05:18:46.911	7	-64.7	-14.000	Y	
05:18:46.921	8	-64.8	-15.000	Y	
05:18:46.931	9	-65	-14.000	Y	
05:18:46.941	10	-65.1	-15.000	Y	
05:18:46.951	11	-65.1	-16.000	Y	
05:18:46.961	12	-65.1	-15.000	Y	
05:18:46.971	13	-65.3	-14.000	Y	
05:18:46.981	14	-65.1	-13.000	Y	

Figure 4-11 WCDMA AGC Power vs. Time

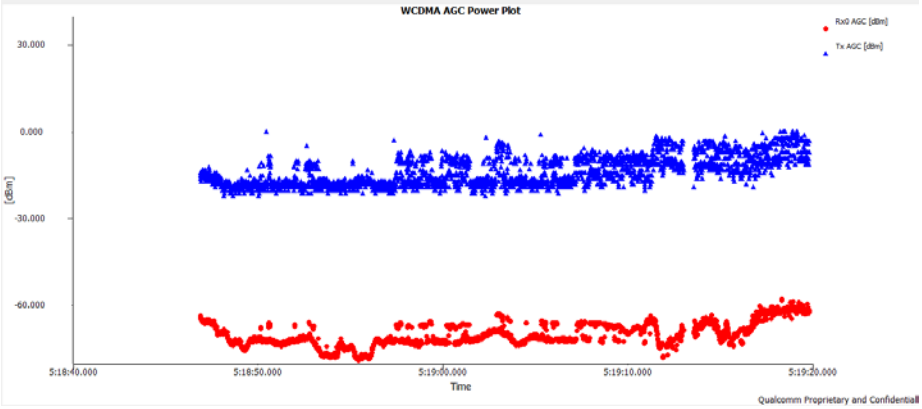
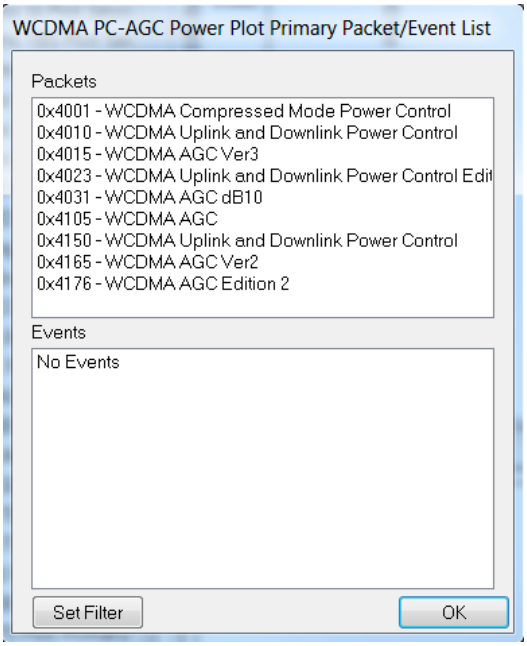


Figure 4-12 WCDMA AGC Power Plot

NOTE: WCDMA AGC Power SECOND vs. Time – Same definition for the second carrier; WCDMA AGC Power TERTIARY vs. Time – Same definition for the third carrier, WCDMA AGC Power QUATERNARY vs. Time – Same definition for the fourth carrier.

4.2.5 WCDMA PC-AGC Power Plot Primary

Data source



Description

The Power Control-AGC vs. Time output gives the SIR estimate whether the AGC Tx PA is on or off.

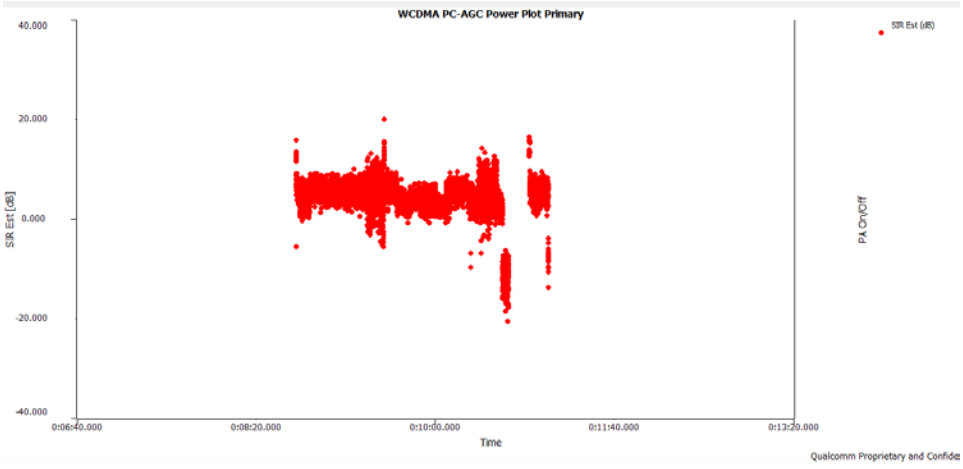


Figure 4-13 WCDMA PC-AGC Power Plot Primary

NOTE: WCDMA PC-AGC Power Plot SECOND – Same definition for the second carrier.

4.2.6 WCDMA Srch Pwr vs. Time

Data source

- 0x4017 – WCDMA List Search Ver 3
- 0x401C – WCDMA List Search Ver 5
- 0x413F – WCMDA List Search
- 0x414F – WCDMA List Search
- 0x4170 – WCDMA List Search Ver 6
- 0x4179 – WCDMA PN Search Edition 2
- 0x4185 – WCMDA PN Search

Description

The Search Power vs. Time output gives the list of search power vs time for each PSC. The range of PSC is 0 to 511. The instantaneous energy of PSC is the filtered energy in the list search packet. PSC = Floor (SC/16). This conversion needs to be done, because the UE reports scrambling codes (SCs) in the range of 0 to 8191, not PSCs. The relation between PSC and SC is PSC * 16 = SC.

Separate time grids and plots are available for:

- ASET – WCDMA Aset Srch Pwr vs. Time
- MSET – WCMDA MSet Srch Pwr vs. Time
- USET – WCDMA USet Srch Pwr vs. Time
- ASET combined (ASET with rx0 and rx1 power combined) – WCDMA ASet Comb Pwr vs. Time
- MSET combined – WCDMA MSet Comb Pwr vs. Time
- USET combined – WCDMA USet Comb Pwr vs. Time

WCDMA ASet Srch Pwr vs. Time
Qualcomm Proprietary and Confidential.

Time	Num Tasks	PSC328[0]	PSC328[1]
13:20:47.089	1		-4.999
13:20:47.109	1		-4.999
13:20:47.130	1		-4.999
13:20:47.151	1		-4.999
13:20:47.157	1		-4.999
13:20:47.177	1		-4.999
13:20:47.197	1		-4.999
13:20:47.217	1		-4.999
13:20:47.237	1		-4.999
13:20:47.269	1		-4.999
13:20:47.289	1		-4.999
13:20:47.310	1		-4.999
13:20:47.331	1		-4.999
13:20:47.337	1		-5.499
13:20:47.357	1		-5.499
13:20:47.377	1		-5.499
13:20:47.397	1		-5.499
13:20:47.417	1		-5.499

Figure 4-14 WCDMA ASet Srch Pwr vs. Time

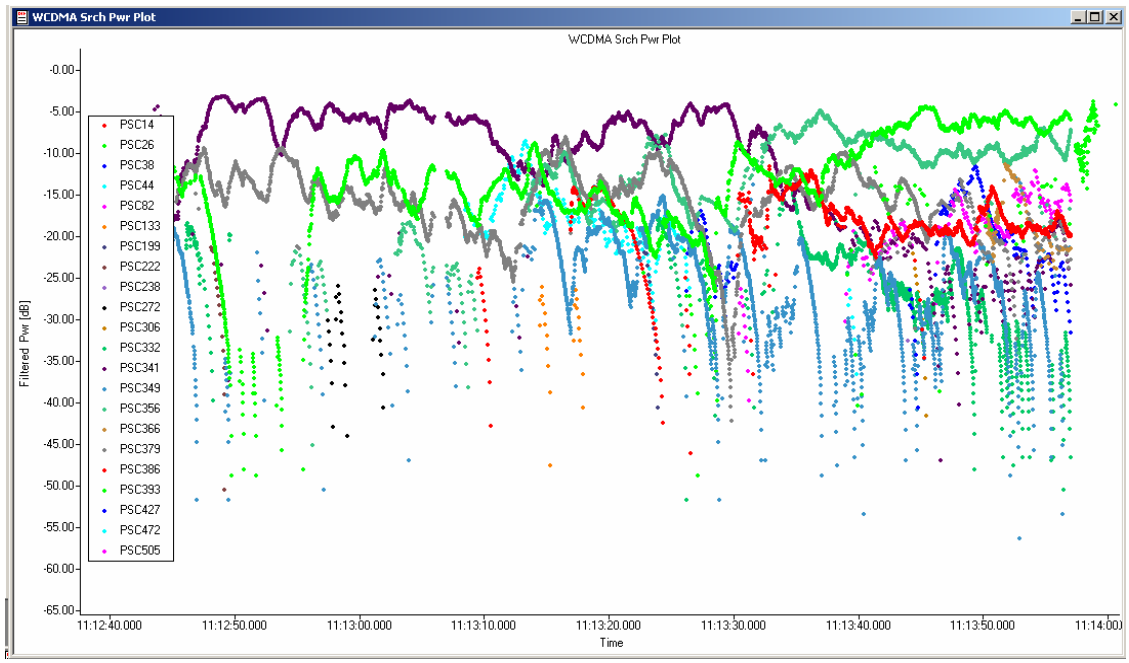


Figure 4-15 WCDMA Srch Pwr Plot

4.2.7 WCDMA RSCP Pwr vs. Time

Data source

- 0x4017 – WCDMA List Search Ver 3
- 0x401C – WCDMA List Search Ver 5
- 0x413F – WCMDA List Search
- 0x414F – WCDMA List Search
- 0x4170 – WCDMA List Search Ver 6
- 0x4179 – WCDMA PN Search Edition 2
- 0x4185 – WCMDA PN Search

Description

The RSCP power vs time output gives the received signal code power vs time for each PSC. The range of PSC is 0 to 511. The sum of filtered energy and Rx AGC value gives the RSCP value, i.e., RSCP = RxPower + E_c/I_0. The units of RSCP are in dBm.

Note that the UE reports the cell's SC, not its PSC, in the list search packet. See Section 4.2.6 for the conversion between SC and PSC.

Separate time grids and plots are available for:

- ASET – WCDMA ASet RSCP Pwr vs. Time
- MSET – WCDMA MSet RSCP Pwr vs. Time
- USET – WCDMA USet RSCP Pwr vs. Time
- ASET combined (ASET with rx0 and rx1 power combined) – ASet Comb RSCP Pwr vs. Time

WCDMA ASet RSCP Pwr vs. Time
Qualcomm Proprietary and Confidential.

Time	Num Tasks	PSC328[0]	PSC328[1]
13:20:47.089	1		-84.199
13:20:47.109	1		-83.199
13:20:47.130	1		-81.599
13:20:47.151	1		-80.899
13:20:47.157	1		-81.199
13:20:47.177	1		-81.899
13:20:47.197	1		-82.399
13:20:47.217	1		-80.999
13:20:47.237	1		-81.199
13:20:47.269	1		-81.199
13:20:47.289	1		-80.899
13:20:47.310	1		-80.499
13:20:47.331	1		-78.499
13:20:47.337	1		-79.299
13:20:47.357	1		-82.099
13:20:47.377	1		-81.999

Figure 4-16 WCDMA ASet RSCP Pwr vs. Time

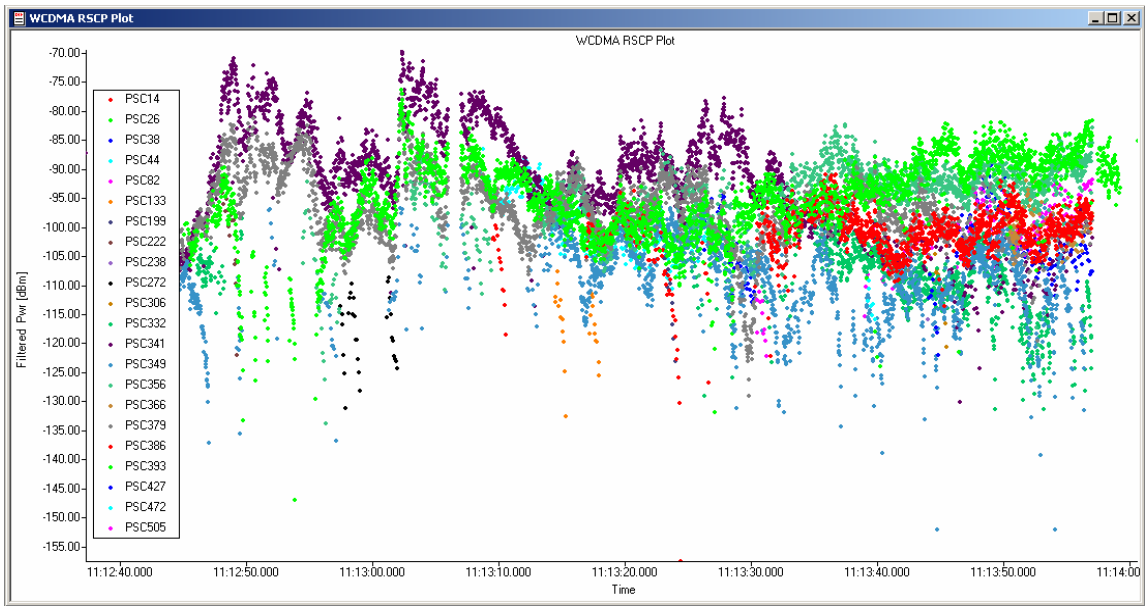


Figure 4-17 WCDMA RSCP Plot

4.2.8 WCDMA RLC DL TP vs. Time

The DL RLC throughput (TP) vs time output gives the RLC AM data throughput vs time. TOT_NUM_PDU_BYTE_RXD contains the accumulated number of PDU bytes received. To calculate the throughput, a delta is used (current minus previous) divided by the time (current minus previous).

PDU throughput = (current data - previous data)/(current timestamp - previous timestamp)

A similar calculation is made for the SDU throughput using the TOT_NUM_SDU_BYTE_RXD field.

If there is an accumulator reset in the log file, which can be signaled by the TOT_NUM_PDU_BYTE_RXD being less than the previous value, the throughput calculation is restarted, with this new value being the first value. Thus, the next throughput value will be calculated using the next packet (current minus previous).

The log packet used is WCDMA RLC DL AM statistics (0x414A).

Figure 4-18 displays WCDMA RLC DL TP Plot.

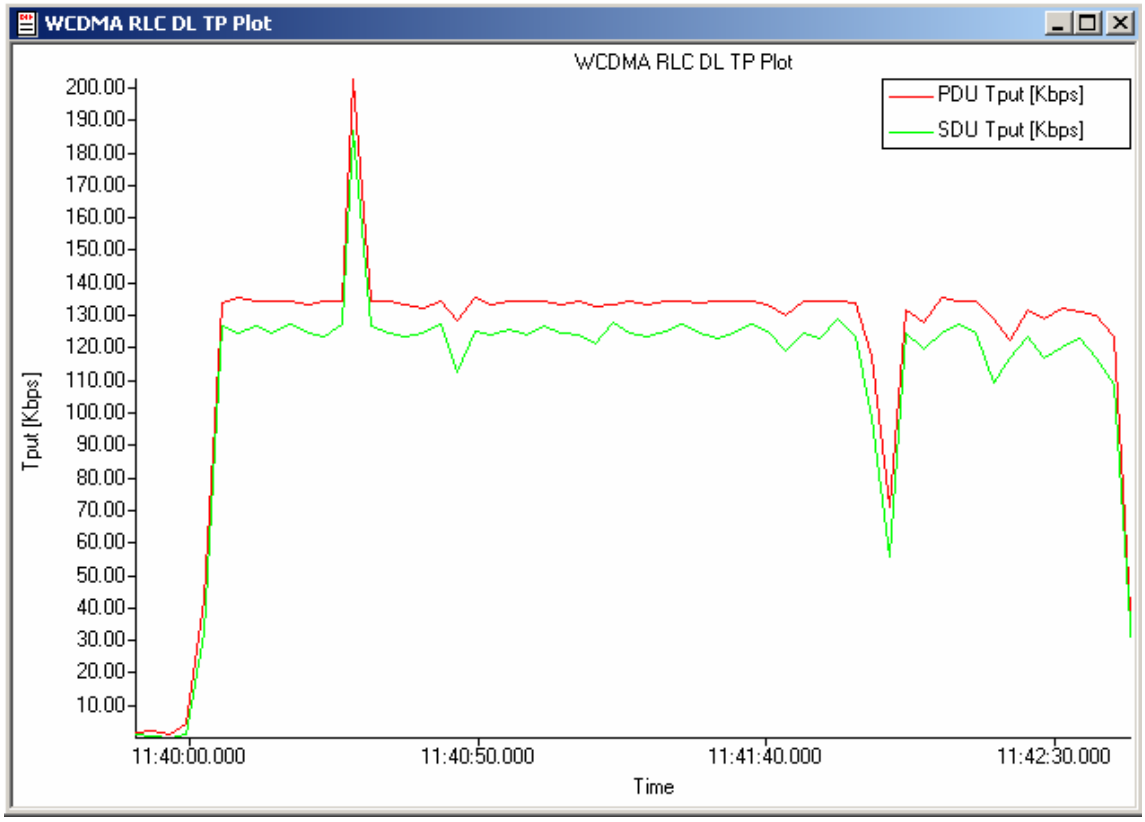


Figure 4-18 WCDMA RLC DL TP Plot

4.2.9 WCDMA RLC UL TP vs. Time

This procedure is identical to WCDMA RLC DL TP vs. Time. The log packet used is WCDMA RLC UL AM statistics (0x4138, 0x4139, 0x4149).

Figure 4-19 displays the WCDMA RLC UL TP Plot.

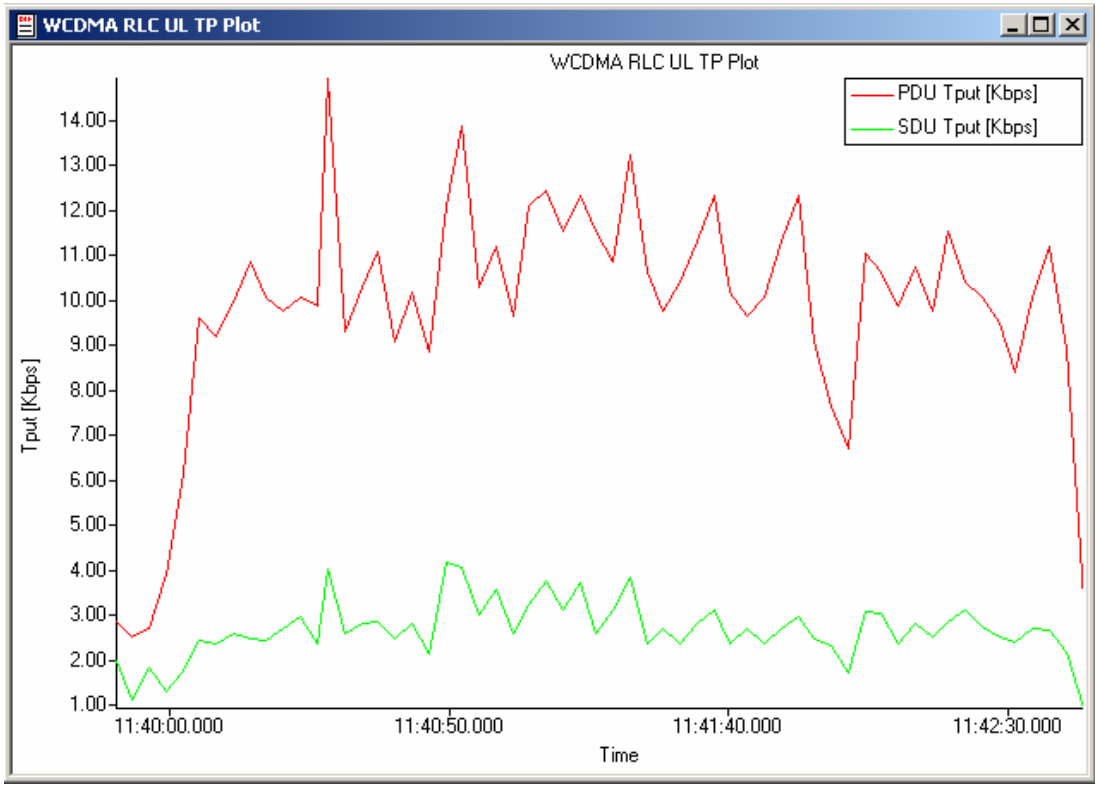


Figure 4-19 WCDMA RLC UL TP Plot

4.2.10 EUL ETFCI TTI vs. Time Primary grid and plot

Data source

- 0x4344 – WCDMA Multi Carrier EUL Combined L1 MAC

Description

The EUL ETFCI TTI vs. Time Primary grid contains the columns for both EUL ETFCI 2 ms TTI vs time plot and EUL ETFCI 10 ms TTI vs time plot.

NOTE: EUL ETFCI TTI vs. Time Secondary grid and plot – Same definition for the second UL carrier information

The plots will have the x-axis expressed in terms of timestamps beginning at the log packet time and increasing for each 2 ms CFN or subfn, where TTI = 2 ms.

For 10 ms TTI, the description is the same except the x-axis is expressed in terms of timestamps beginning at the log packet time and increasing for each 10 ms CFN or subfn where TTI = 10 ms.

Y-axis plots

Whenever the dtx_flag field is 0, the following fields are plotted:

- ETFCI value – ETFCI value is plotted into a column based on the retx_ctr value. The column ETFC CTR0 stores the ETFCI with retx_ctr =0, ETFC CTR1 with retx_ctr =1, and so on. ETFC CTR2+ stores the ETFCI with retx_ctr >2.
- cm_gap
- The value of etfci_table is indicated in the legend area. This is a hack due to the fact that the free text legend is not supported in plotting. etfci_table is plotted as a clear dot or not visible.

Whenever the dtx_flag field is 1, dtx_flag is plotted on -1.

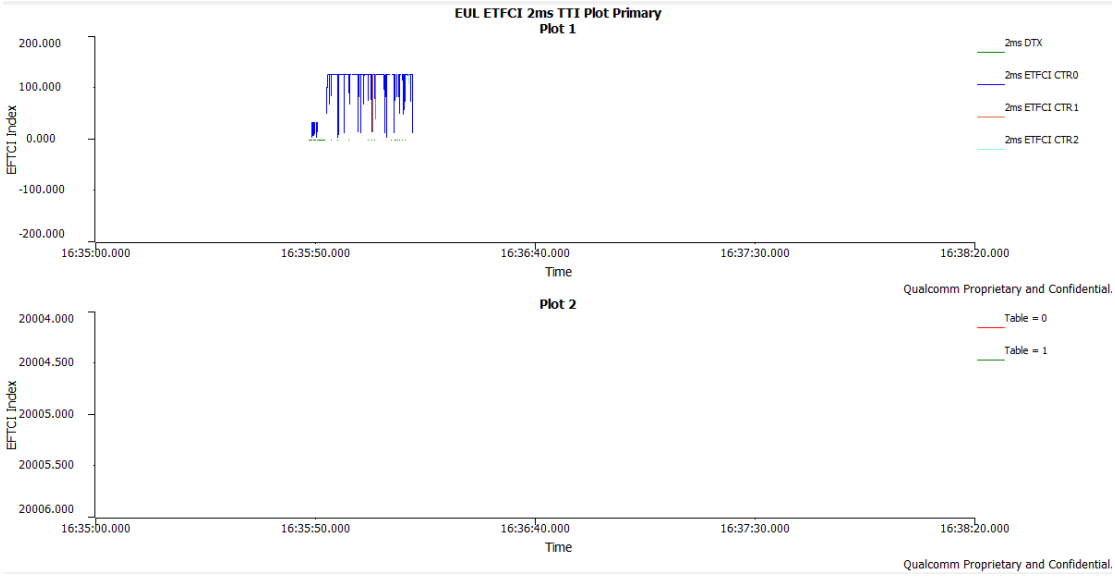


Figure 4-20 EUL ETFCI 2ms TTI Plot Primary

4.2.11 EUL ETFCI TBS vs. Time Primary grid and plot

Data source

- 0x4344 – WCDMA Multi Carrier EUL Combined L1 MAC

Description

The EUL ETFCI TBS vs. Time Primary grid contains the columns for both EUL ETFCI 2 ms TBS vs time plot and EUL ETFCI 10 ms TBS vs time plot.

NOTE: EUL ETFCI TBS vs. Time Secondary grid and plot – Same definition for the second UL carrier information.

The plots will have the x-axis expressed in terms of timestamps beginning at the log packet time and increasing for each 2 ms CFN or subfn, where TTI = 2 ms.

Y-axis plots

Whenever the dtx_flag field is 0, the following fields are plotted:

- The number of transmitted bits, ranging from 0 to 20,000 TBS CTR0 for retx_ctr = 0; TBS CTR1 for retx_ctr = 1; TBS CTR2 for retx_ctr = 2; and TBS CTR2+ for retx_ctr > 2. Note that the 0x4309 packet contains the formula for calculating the number of transmitted bits. It is indicated in the TBS column of 0x4309
- CM is plotted on 20005 when cm_gap is 1
- The value of etfci_table is indicated in the legend area. This is a hack due to the fact that the free text legend is not supported in plotting. etfci_table is plotted as a clear dot or not visible.

Whenever the dtx_flag field is 1, dtx_flag is scaled on -1. For 10 ms TTI, the description is the same except the x-axis is expressed in terms of timestamps beginning at the log packet time and increasing for each 10 ms CFN or subfn where TTI = 10 ms.

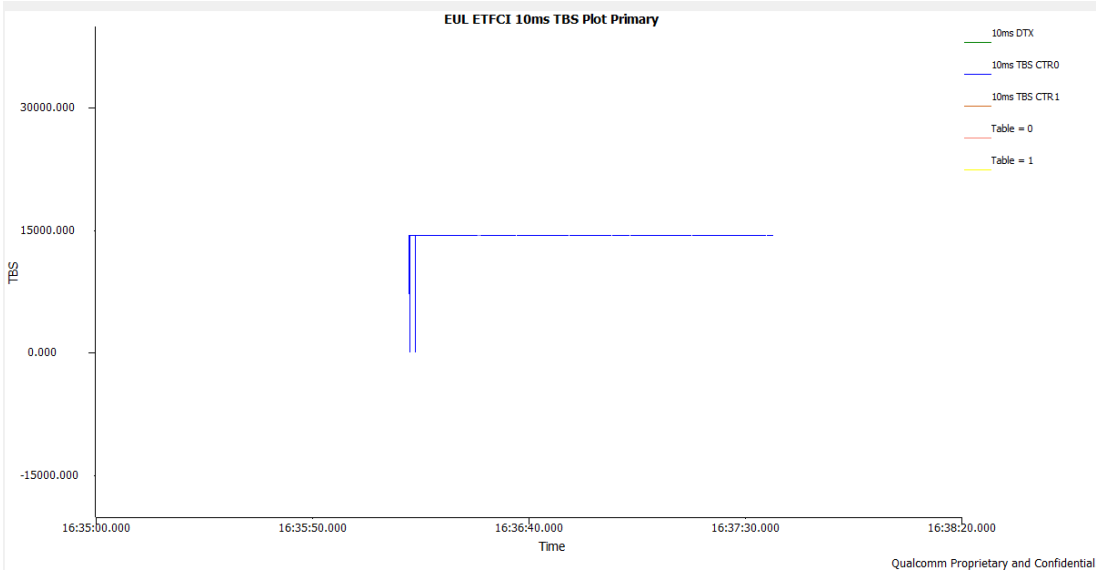


Figure 4-21 EUL ETFCI 10ms TBS Plot Primary

4.2.12 EUL ETFCI SI vs. Time Primary grid and plot

Data source

- 0x4344 – WCDMA Multi Carrier EUL Combined L1 MAC

Description

EUL ETFCI SI vs. Time grid contains the columns for both EUL ETFCI 2 ms SI vs time plot and EUL ETFCI 10 ms SI vs time plot.

The plots will have the x-axis expressed in terms of timestamps beginning at the log packet time and increasing for each 2 ms CFN or subfn, where TTI = 2 ms.

For 10 ms TTI, the description is the same except the x-axis is expressed in terms of timestamps beginning at the log packet time and increasing for each 10 ms CFN or subfn where TTI = 10 ms.

Y-axis plots

Whenever the dtx_flag field is 0, the following fields are plotted:

- The SI when SI is present, triggered by the event/timer, EV CTR0 for retx_ctr = 0; EV CTR1 for retx_ctr = 1; EV CTR2 for retx_ctr = 2; and EV CTR2+ for retx_ctr > 2
- The SI when SI is present, triggered by the padding, PD CTR0 for retx_ctr = 0; PD CTR1 for retx_ctr = 1; PD CTR2 for retx_ctr = 2; and PD CTR2+ for retx_ctr > 2

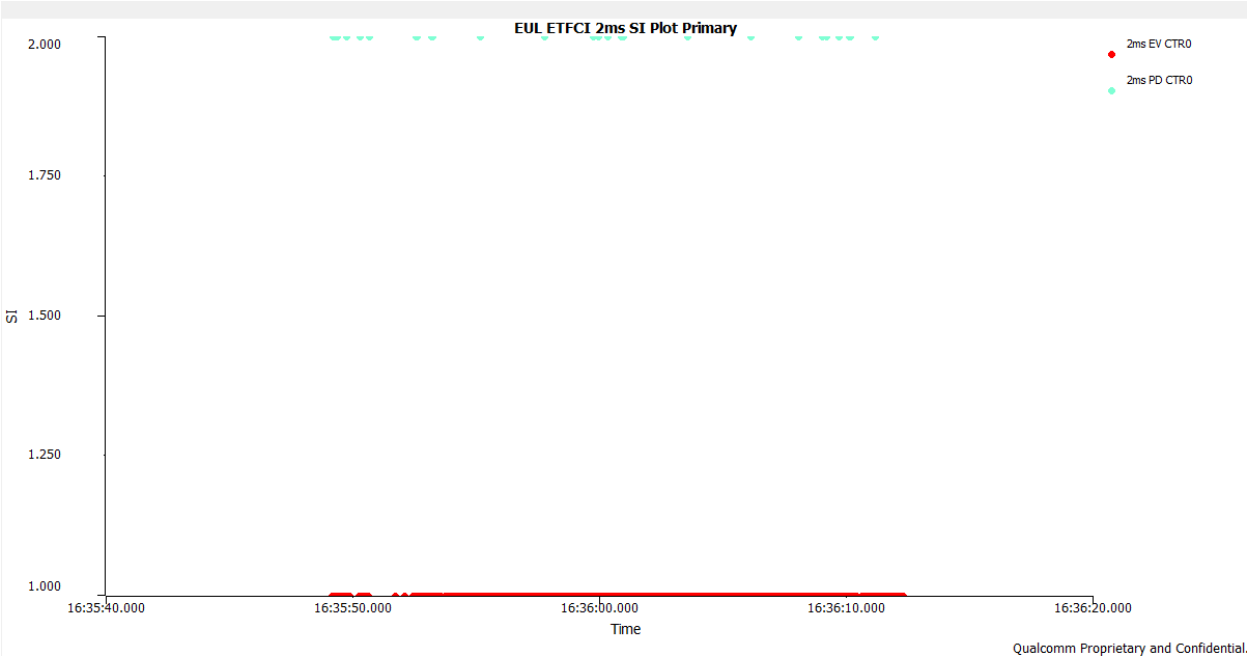


Figure 4-22 EUL ETFCI 2ms SI Plot Primary

NOTE: EUL ETFCI SI vs. Time Secondary grid and plot – Same definition for the second UL carrier information.

4.2.13 EUL HICH CMD vs. Time Primary grid and plot

Data source

- 0x4344 – WCDMA Multi Carrier EUL Combined L1 MAC

Description

The EUL HICH CMD vs. Time Primary grid contains the columns of received HICH values vs time for all the cells and also the combined HICH decision. Each cell is uniquely identified by the value of the PSC field. At a timestamp, a cell can be either a normal cell, indicated by column PSCn, or a serving cell, indicated by column PSCn(SV).

The number of PCSn and PSCn(SV) columns is decided by the total number of active cells seen from the log file(s). In each log item, current active cells are known from the PSC field. The change of PSC from one log item to another accumulates the total number of PSCn and PSCn(SV) in the final output.

The plots will have the x-axis expressed in terms of timestamps beginning at the log packet time and increasing by either 2 ms when TTI = 2 ms or 10 ms when TTI = 10 ms.

Y-axis plots

When dtx_flag = 0:

- The HICH value is plotted for PSCn. The HICH value is plotted on the same scale for PSCn and PSCn(SV) with different colors.
- COMB_HICH is plotted. The value of ACK_NS in combined HICH is treated as ACK.

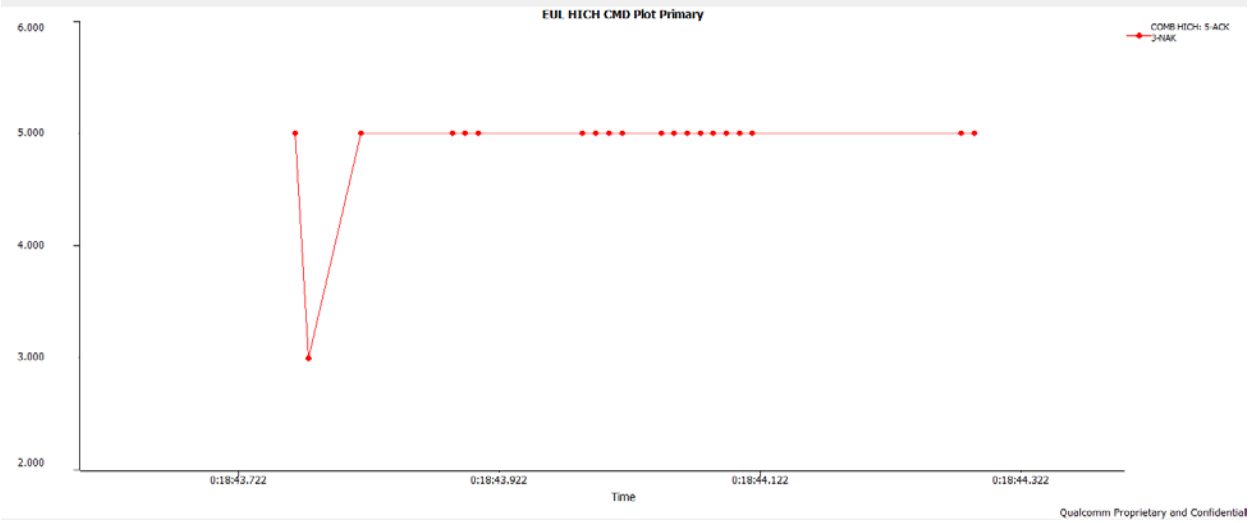
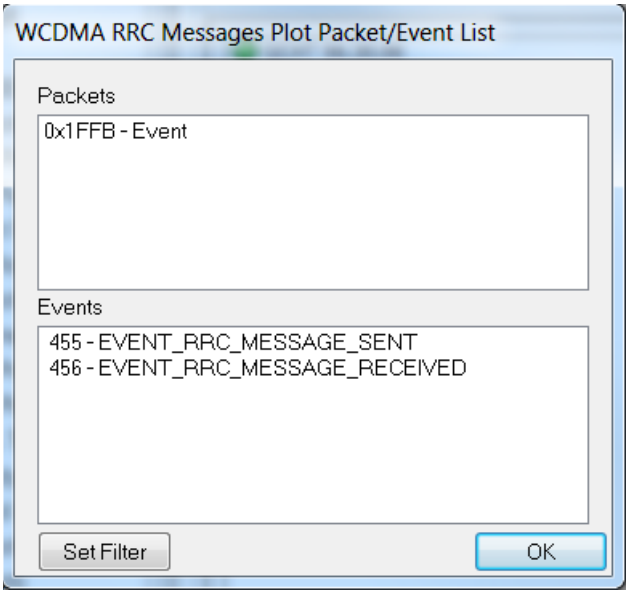


Figure 4-23 EUL HICH CMD Plot Primary

NOTE: EUL HICH CMD vs. Time Secondary grid and plot – Same definition for the second UL carrier information.

4.2.14 WCDMA RRC Messages Plot

Data source



Description

Figure 4-25 displays the WCDMA RRC Messages Plot.

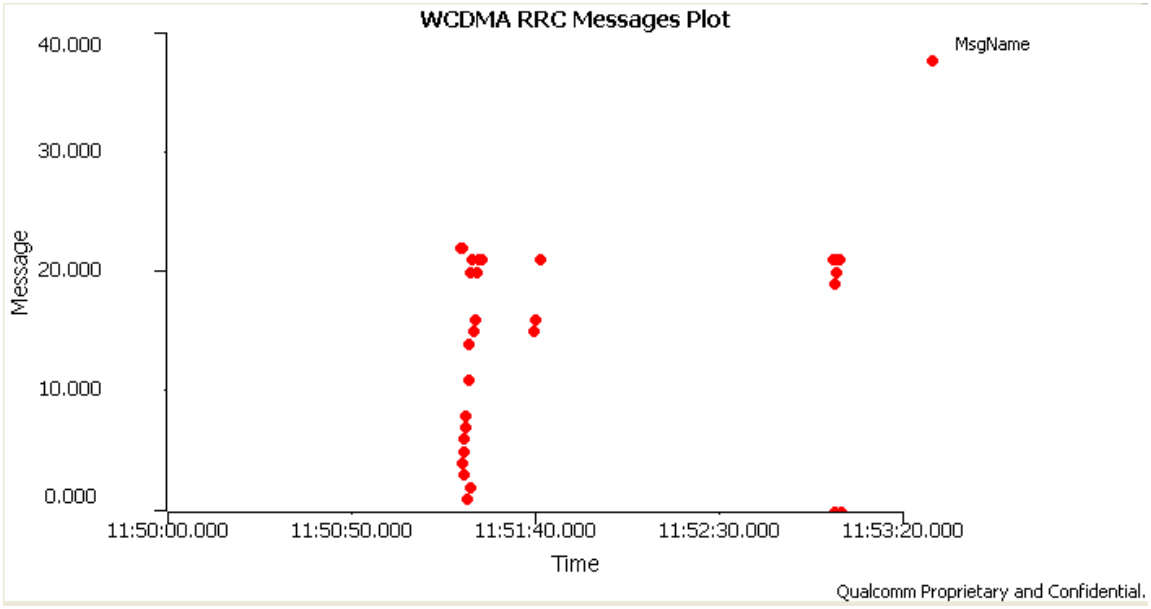


Figure 4-24 WCDMA RRC Messages Plot

4.2.15 PN SRCH Eng Info vs. Time/Plot

Data source

- 0x4179 – WCDMA PN Search Edition 2

Description

This plot shows PN search results (the strongest path in each search) for each cell over the time.

PN SRCH Eng Info vs. Time
Qualcomm Proprietary and Confidential.

Time	PSC1 dB0	PSC1 dB1
00:06:55.275	-6.499	-7.465
00:06:55.316	-9.910	-11.975
00:06:55.336	-11.386	-12.150

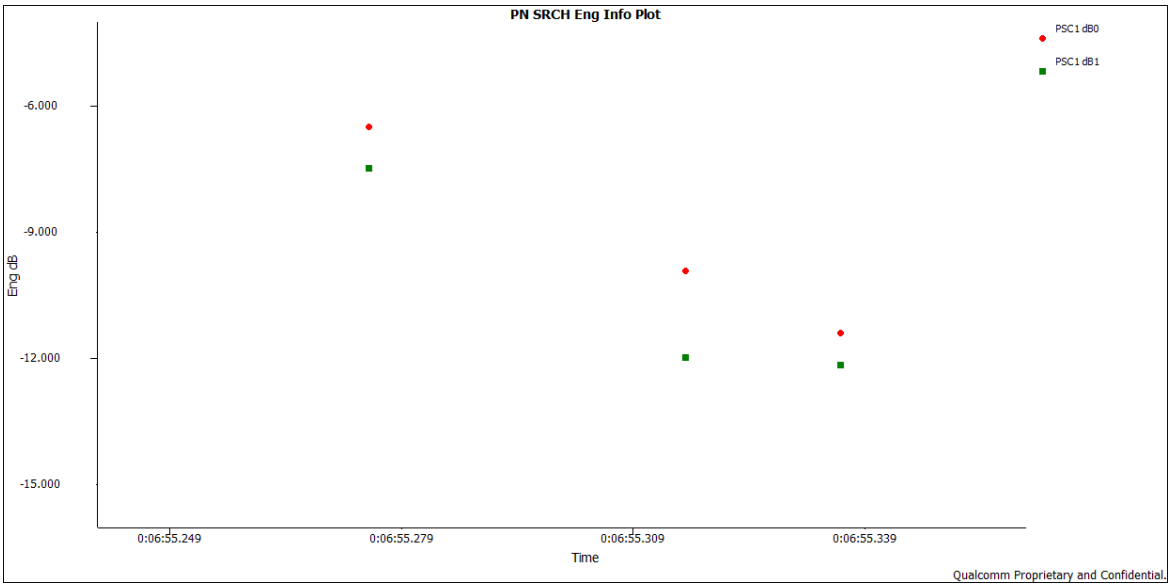


Figure 4-25 PN SRCH Eng Info Plot

NOTE: PN SRCH Eng Info SECOND vs. Time/Plot – Same definition for the second DL carrier;
PN SRCH Eng Info TERTIARY vs. Time/Plot – Same definition for the third DL carrier,
PN SRCH Eng Info QUATERNARY vs. Time/Plot – Same definition for the fourth DL carrier.

4.2.16 WCDMA AGC Power All Carriers vs. Time

Data source

- 0x4176 – WCDMA AGC Edition 2 (Ver 2)

Description

The WCDMA AGC Power All Carriers vs. Time output displays the Rx and Tx power vs time info for all carriers on DL and UL. Each data point is at a 20 ms interval. Discontinuities in the Tx data (TxAGC) signify periods where the Tx was off; this is recorded in the same AGC packet.

- CFN – Frame count
- RxAGC (CxChy) (dBm) – Rx AGC power level for carrier x, Rx antenna y
- Cx Tx AGC (dBm) – Tx AGC power level for carrier x
- TX ON – Overall Tx on/off

WCDMA AGC Power All Carriers vs. Time
Qualcomm Proprietary and Confidential.

Subpacket	Time	CFN	RxAG...	RxAG...	RxAG...	RxAG...	RxAG...	RxAG...	RxAG...	RxAG...	C0 Tx...	C1 Tx...	TX ON
0	05:18:46.871	3	-64.50								-16.00		Y
	05:18:46.881	4	-64.30								-15.00		Y
	05:18:46.891	5	-63.50								-14.00		Y
	05:18:46.901	6	-64.60								-17.00		Y
	05:18:46.911	7	-64.70								-14.00		Y
	05:18:46.921	8	-64.80								-15.00		Y
	05:18:46.931	9	-65.00								-14.00		Y
	05:18:46.941	10	-65.10								-15.00		Y
	05:18:46.951	11	-65.10								-16.00		Y
	05:18:46.961	12	-65.10								-15.00		Y
	05:18:46.971	13	-65.30								-14.00		Y
	05:18:46.981	14	-65.10								-13.00		Y

Figure 4-26 WCDMA AGC Power All Carriers vs. Time