

FCC RF Test Report

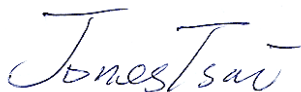
APPLICANT : ASUSTeK COMPUTER INC.
EQUIPMENT : ASUS Phone
BRAND NAME : ASUS
MODEL NAME : ASUS_Z01GD
FCC ID : MSQZ01GD
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Apr. 08, 2017 and testing was completed on Jul. 27, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-D-2010 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG740840A	Rev. 01	Initial issue of report	Aug. 09, 2017



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.5	§24.232(d)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.6	§2.1049 §22.917(b) §24.238(b) §27.53(g)	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Band Edge Measurement	$< 43 + 10 \log_{10}(P[\text{Watts}])$	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Conducted Emission	$< 43 + 10 \log_{10}(P[\text{Watts}])$	PASS	-
3.9	§2.1055 §22.355	Frequency Stability for Temperature & Voltage	< 2.5 ppm for Part 22	PASS	-
	§2.1055 §24.235 §27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a) §27.53(h)	Field Strength of Spurious Radiation	$< 43 + 10 \log_{10}(P[\text{Watts}])$	PASS	Under limit 20.12 dB at 2544.000 MHz



1 General Description

1.1 Applicant

ASUSTeK COMPUTER INC.

4F, No. 150, LI-TE RD., PEITOU, TAIPEI, TAIWAN

1.2 Manufacturer

COTEK ELECTRONICS (SUZHOU) CO., LTD.

No.288, Mayun Road, Suzhou Hi-and-New Tech Park, Jiangsu, PRC

1.3 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, FM Receiver, NFC, and GPS.

Product Specification subjective to this standard	
Sample 1	EUT with SKU 1
Sample 2	EUT with SKU 2
Sample 3	EUT with SKU 3
Sample 4	EUT with SKU 4
Sample 5	EUT with SKU 5
Sample 6	EUT with SKU 6
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna GPS / Glonass / Galileo / BDS: PIFA Antenna NFC: Loop Antenna

<Sample Information>

SKU MB	SKU1	SKU2
DDR4X	6G/ Hynix	6G/ Hynix
UFS 2.1	128G/ Samsung	64G/ Toshiba
CPU	MSM-8998-1-885MPSP-TR-02-0-AB	
TP Module	TIANMA/TA055VVHM08-03 ON CELL	TIANMA/TA055VVHM09-03 ON CELL
Front Camera (8M)	CAMERA MODULE 8M AF (SonyIMX319, XPT 85B-BC28-SU,KT F6518)	
Rear Camera (12+16M)	DUAL CAMERA MODULE 12M+16M/SEMCO/MOMDM82PG3A V0.0	
Battery	ZS551KL BAT/ATL POLY/C11P1701/SMP/PS414997/1S1P/3.85V/13.8WH	

SKU MB	SKU3	SKU4
DDR4X	4G/ Hynix	6G/ Hynix
UFS 2.1	64G/ Toshiba	64G/ Samsung
CPU	MSM-8998-1-885MPSP-TR-02-0-AB	
TP Module	TIANMA/TA055VVHM09-03 ON CELL	TIANMA/TA055VVHM08-00 ON CELL
Front Camera (8M)	CAMERA MODULE 8M AF (SonyIMX319, XPT 85B-BC28-SU,KT F6518)	
Rear Camera (12+16M)	DUAL CAMERA MODULE 12M+16M/SEMCO/MOMDM82PG3A V0.0	
Battery	ZS551KL BAT/ATL POLY/C11P1701/SMP/PS414997/1S1P/3.85V/13.8WH	

SKU MB	SKU5	SKU6
DDR4X	6G Hynix	6G Hynix
UFS 2.1	128G Toshiba	UFS 2.0 64G Toshiba
CPU	MSM-8998-1-885MPSP-TR-02-0-AB	
TP Module	TIANMA/TA055VVHM09-05 ON CELL	
Front Camera (8M)	CAMERA MODULE 8M AF (SonyIMX319, XPT 85B-BC28-SU,KT F6518)	
Rear Camera (12+16M)	DUAL CAMERA MODULE 12M+16M/SEMCO/MOMDM82PG3A V0.0	
Battery	ZS551KL BAT/ATL POLY/C11P1701/SMP/PS414997/1S1P/3.85V/13.8WH	

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH03-HY	

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH11-HY	

Test Site	SPORTON International (ShenZhen) INC.	
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755- 3320-2398	
Test Site No.	Sporton Site No.	FCC Registration No.
	03CH03-SZ	565805



1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 2, 22(H), 24(E), 27(L)
- ♦ ANSI / TIA / EIA-603-D-2010
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

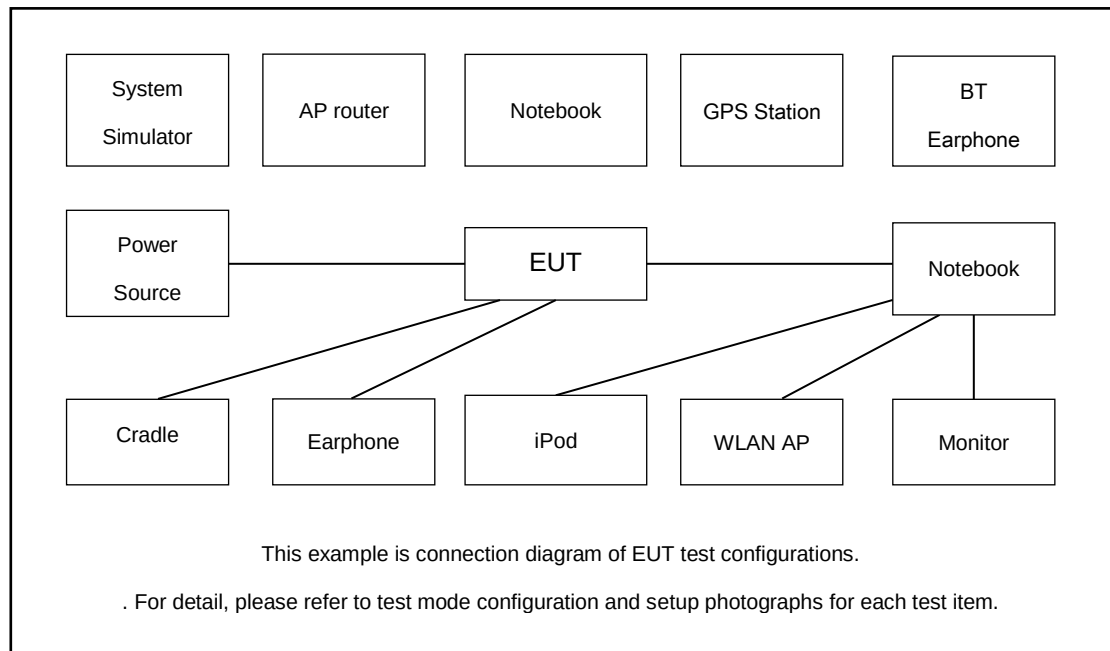
1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V.
2. 30 MHz to 10th harmonic for WCDMA Band IV.
3. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GPRS class 8 Link ■ EDGE class 8 Link	■ GPRS class 8 Link ■ EDGE class 8 Link
GSM 1900	■ GPRS class 8 Link ■ EDGE class 8 Link	■ GPRS class 8 Link ■ EDGE class 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW INSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 6.0 dB and a 10dB attenuator.

Example :

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 6.0 + 10 = 16.0 \text{ (dB)}\end{aligned}$$

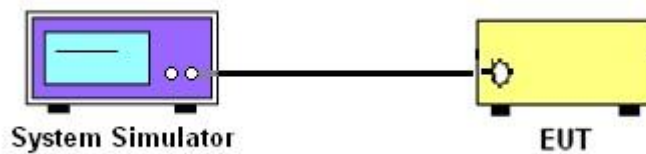
3 Conducted Test Result

3.1 Measuring Instruments

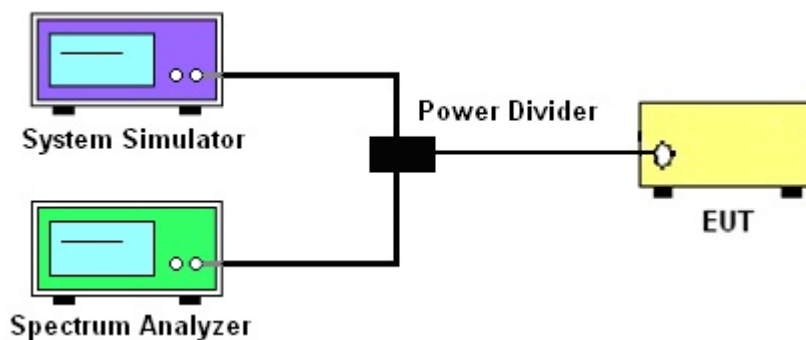
See list of measuring instruments of this test report.

3.2 Test Setup

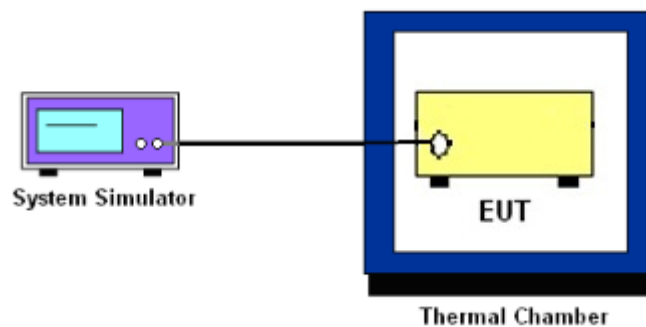
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.



3.4 Conducted Output Power and ERP/EIRP

3.4.1 Description of the Conducted Output Power and ERP/EIRP

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for GSM850 and WCDMA Band V.

The EIRP of mobile transmitters must not exceed 2 Watts for GSM1900 and WCDMA Band II.

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.4.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.



3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.7.1.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. Set EUT to transmit at maximum output power.
4. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
5. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer.
Record the maximum PAPR level associated with a probability of 0.1%.

3.6 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.6.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.6.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 4.2.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
(this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

3.7.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator.
The path loss was compensated to the results for each measurement.
4. The band edges of low and high channels for the highest RF powers were measured.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)]$ (dB)
 $= [30 + 10\log(P)]$ (dBm) - $[43 + 10\log(P)]$ (dB)
 $= -13\text{dBm}$.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.8.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
= $P(W) - [43 + 10\log(P)]$ (dB)
= $[30 + 10\log(P)]$ (dBm) - $[43 + 10\log(P)]$ (dB)
= -13dBm.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.9.2 Test Procedures for Temperature Variation

1. The testing follows FCC KDB 971168 D01 v02r02 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C steps up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.9.3 Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 D01 v02r02 Section 9.0.
2. The EUT was placed in a temperature chamber at $20\pm 5^{\circ}\text{C}$ and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

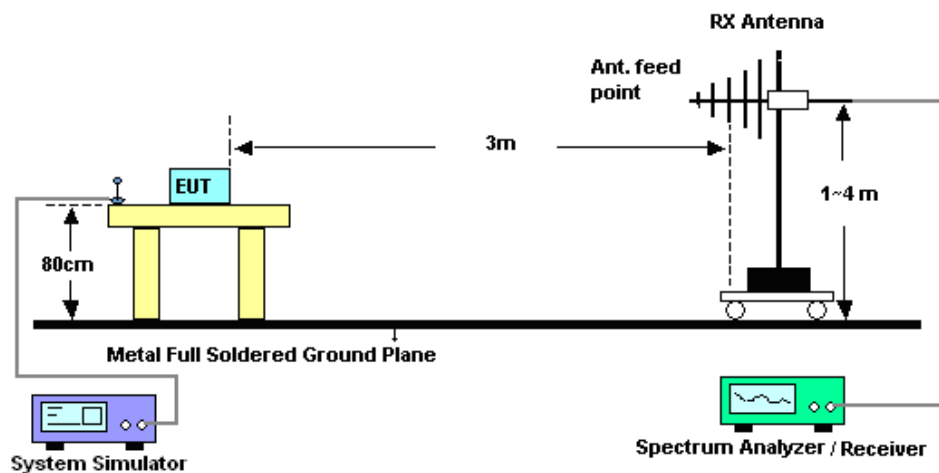
4 Radiated Test Items

4.1 Measuring Instruments

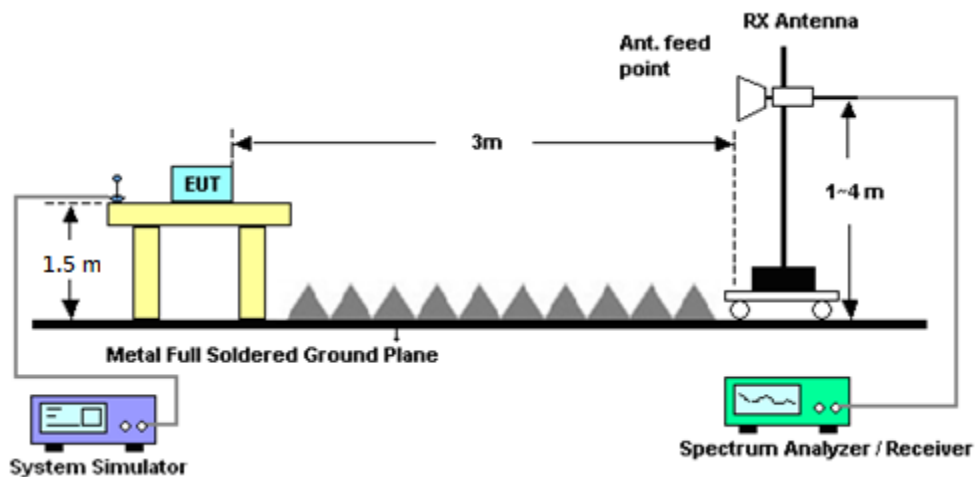
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
12. $ERP \text{ (dBm)} = EIRP - 2.15$
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Jun. 27, 2016	Jun. 13, 2017~ Jun. 14, 2017	Jun. 26, 2017	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30℃ ~70℃	Nov. 16, 2016	Jun. 13, 2017~ Jun. 14, 2017	Nov. 15, 2017	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL883644	Voltage:0~20V; Current:0~5A	Nov. 22, 2016	Jun. 13, 2017~ Jun. 14, 2017	Nov. 21, 2017	Conducted (TH03-HY)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr.20, 2017	Jul. 27, 2017	Apr.19, 2018	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	May 14, 2017	Jul. 27, 2017	May. 13, 2018	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Jul.09.2017	Jul. 27, 2017	Jul. 08, 2018	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Aug. 10, 2016	Jul. 27, 2017	Aug. 09, 2017	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 11, 2016	Jul. 27, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Jan. 06, 2017	Jul. 27, 2017	Jan. 05, 2018	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	61601000198 5	N/A	NCR	Jul. 27, 2017	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 27, 2017	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 27, 2017	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Nov. 09, 2016	Jul. 27, 2017	Nov. 08, 2017	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&00800N1D0	41912&05	30MHz to 1GHz	Jan. 07, 2017	Jul. 27, 2017	Jan. 06, 2018	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1620	1G~18GHz	Sep. 30, 2016	Jul. 27, 2017	Sep. 29, 2017	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 24, 2016	Jul. 27, 2017	Aug. 23, 2017	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 23, 2017	Jul. 27, 2017	Mar. 22, 2018	Radiation (03CH15-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Jul. 27, 2017	N/A	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jul. 27, 2017	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jul. 27, 2017	N/A	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 08, 2016	Jul. 27, 2017	Nov. 07, 2017	Radiation (03CH15-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May. 22, 2017	Jul. 27, 2017	May. 21, 2018	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Mar. 17, 2017	Jul. 27, 2017	Mar. 16, 2018	Radiation (03CH15-HY)

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz) for 03CH03-SZ

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.0dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz) for 03CH03-SZ

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.6dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz) for 03CH03-SZ

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.8dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz) for 03CH15-HY

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.4dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz) for 03CH15-HY

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.7dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz) for 03CH15-HY

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.0dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

Conducted Power (*Unit: dBm)							
Band		GSM850			GSM1900		
Channel		128	189	251	512	661	810
Frequency		824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM 1 Tx slot		33.17	33.32	33.33	30.05	30.06	30.09
GPRS 1 Tx slot		33.23	33.37	33.37	30.08	30.09	30.10
GPRS 2 Tx slots		30.39	30.36	30.29	27.11	27.09	27.02
GPRS 3 Tx slots		27.95	28.05	28.01	25.18	25.19	25.14
GPRS 4 Tx slots		26.22	26.39	26.37	23.89	23.85	23.73
EDGE 1 Tx slot		26.91	26.87	26.87	26.03	25.99	26.01
EDGE 2 Tx slots		23.70	23.64	23.65	22.90	22.83	22.82
EDGE 3 Tx slots		21.79	21.80	21.86	21.01	20.95	20.96
EDGE 4 Tx slots		20.37	20.35	20.37	19.70	19.60	19.59
DTM Multi-slot class 5	GSM 1 Tx slot	30.33	30.35	30.27	27.08	27.05	26.99
	GPRS 1 Tx slot	30.30	30.29	30.23	26.93	26.96	26.92
DTM Multi-slot class 9	GSM 1 Tx slot	30.33	30.36	30.21	27.02	27.01	26.92
	GPRS 1 Tx slot	30.29	30.31	30.19	27.01	27.00	26.87
DTM Multi-slot class 11	GSM 1 Tx slot	27.88	27.95	27.98	25.08	25.11	25.09
	GPRS 1 Tx slot	27.86	27.90	27.93	25.05	25.03	25.07
DTM Multi-slot class 5	GSM 1 Tx slot	30.21	30.18	30.08	27.06	27.02	26.94
	GPRS 1 Tx slot	23.63	23.58	23.63	22.87	22.82	22.75
DTM Multi-slot class 9	GSM 1 Tx slot	30.24	30.26	30.11	27.03	27.07	26.96
	GPRS 1 Tx slot	23.69	23.64	23.64	22.85	22.83	22.77
DTM Multi-slot class 11	GSM 1 Tx slot	27.83	27.94	27.87	25.14	25.13	25.04
	GPRS 1 Tx slot	21.73	21.73	21.85	20.92	20.93	20.94



Conducted Power (*Unit: dBm)									
Band	WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Channel	4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
AMR 12.2Kbps	22.51	22.50	22.75	21.10	21.05	20.98	21.30	21.22	21.10
RMC 12.2Kbps	22.51	22.50	22.77	21.14	21.10	20.98	21.34	21.25	21.11
HSDPA Subtest-1	21.52	21.52	21.70	19.93	20.09	19.97	20.33	20.24	20.22
HSDPA Subtest-2	21.50	21.56	21.69	19.91	20.00	19.89	20.25	20.20	20.15
HSDPA Subtest-3	21.06	21.05	21.12	19.67	19.63	19.50	19.85	19.77	19.73
HSDPA Subtest-4	21.05	21.07	21.11	19.60	19.62	19.45	19.80	19.75	19.65
DC-HSDPA Subtest-1	21.49	21.43	21.67	19.93	20.03	19.96	20.30	20.17	20.22
DC-HSDPA Subtest-2	21.44	21.56	21.59	19.91	19.94	19.88	20.25	20.14	20.10
DC-HSDPA Subtest-3	21.05	20.96	21.10	19.62	19.56	19.43	19.80	19.77	19.63
DC-HSDPA Subtest-4	20.95	20.98	21.11	19.59	19.62	19.45	19.72	19.65	19.57
HSUPA Subtest-1	21.40	21.50	21.68	19.94	19.78	19.58	20.20	19.80	19.82
HSUPA Subtest-2	19.60	19.66	19.71	18.06	18.07	17.65	18.22	17.87	18.16
HSUPA Subtest-3	20.62	20.65	20.72	19.09	19.08	18.72	19.15	18.83	19.11
HSUPA Subtest-4	19.62	19.64	19.69	18.06	18.04	17.70	18.19	17.84	18.11
HSUPA Subtest-5	21.48	21.47	21.64	20.13	20.11	20.03	20.35	20.24	20.13

**ERP/EIRP**

GSM850 ($G_T - L_C = -2.60\text{dB}$)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency	824.2	836.4	848.8
(MHz)			
Conducted Power (dBm)	33.23	33.37	33.37
Conducted Power (Watts)	2.1038	2.1727	2.1727
ERP(dBm)	28.48	28.62	28.62
ERP(Watts)	0.7047	0.7278	0.7278

EDGE850 ($G_T - L_C = -2.60\text{dB}$)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency	824.2	836.4	848.8
(MHz)			
Conducted Power (dBm)	26.91	26.87	26.87
Conducted Power (Watts)	0.4909	0.4864	0.4864
ERP(dBm)	22.16	22.12	22.12
ERP(Watts)	0.1644	0.1629	0.1629



GSM1900 ($G_T - L_C = -1.20\text{dB}$)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency	1850.2	1880	1909.8
(MHz)			
Conducted Power (dBm)	30.08	30.09	30.10
Conducted Power (Watts)	1.0186	1.0209	1.0233
EIRP(dBm)	28.88	28.89	28.90
EIRP(Watts)	0.7727	0.7745	0.7762

EDGE1900 ($G_T - L_C = -1.20\text{dB}$)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency	1850.2	1880	1909.8
(MHz)			
Conducted Power (dBm)	26.03	25.99	26.01
Conducted Power (Watts)	0.4009	0.3972	0.3990
EIRP(dBm)	24.83	24.79	24.81
EIRP(Watts)	0.3041	0.3013	0.3027



WCDMA Band V ($G_T - L_C = -2.60\text{dB}$)			
Channel	4132	4182	4233
	(Low)	(Mid)	(High)
Frequency	826.4	836.4	846.6
(MHz)			
Conducted Power (dBm)	22.51	22.50	22.77
Conducted Power (Watts)	0.1782	0.1778	0.1892
ERP(dBm)	17.76	17.75	18.02
ERP(Watts)	0.0597	0.0596	0.0634

WCDMA Band II ($G_T - L_C = -1.20\text{dB}$)			
Channel	9262	9400	9538
	(Low)	(Mid)	(High)
Frequency	1852.4	1880	1907.6
(MHz)			
Conducted Power (dBm)	21.14	21.10	20.98
Conducted Power (Watts)	0.1300	0.1288	0.1253
EIRP(dBm)	19.94	19.90	19.78
EIRP(Watts)	0.0986	0.0977	0.0951

WCDMA Band IV ($G_T - L_C = -2.60\text{dB}$)			
Channel	1312	1413	1513
	(Low)	(Mid)	(High)
Frequency	1712.4	1732.6	1752.6
(MHz)			
Conducted Power (dBm)	21.34	21.25	21.11
Conducted Power (Watts)	0.1361	0.1334	0.1291
EIRP(dBm)	18.74	18.65	18.51
EIRP(Watts)	0.0748	0.0733	0.0710

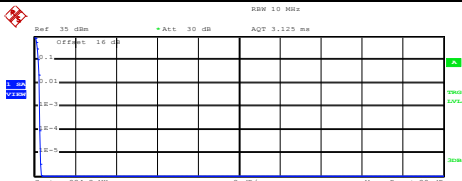
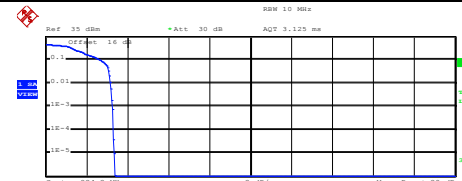
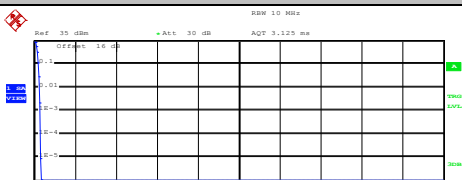
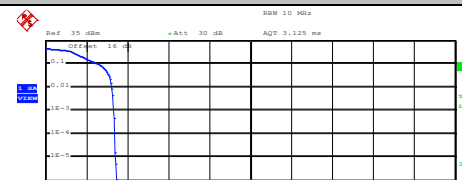
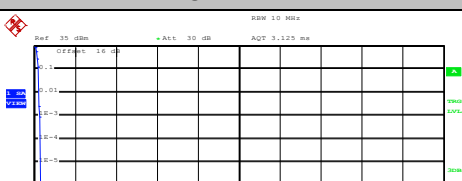
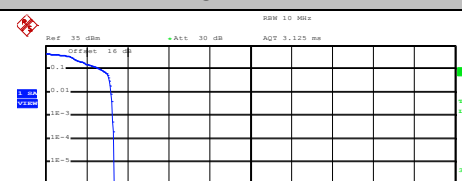
**Peak-to-Average Ratio**

Mode	GSM850		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.28	3.28	PASS
Middle CH	0.32	3.32	
Highest CH	0.28	3.28	

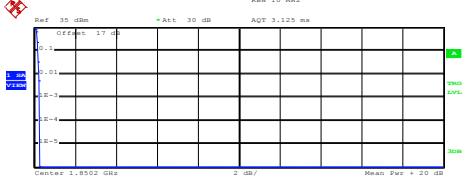
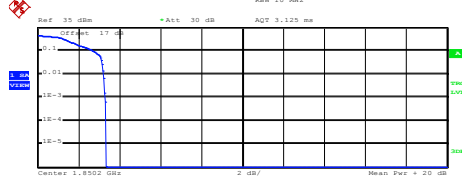
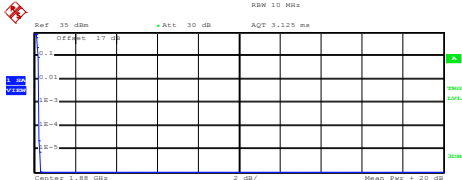
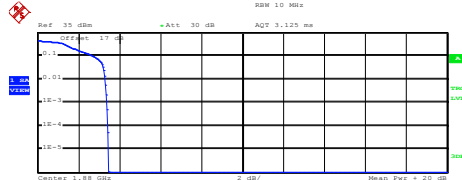
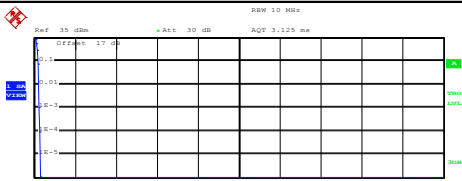
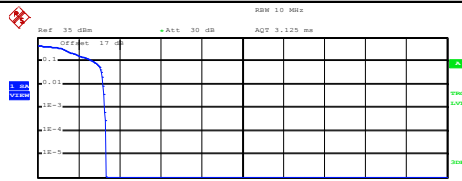
Mode	GSM1900		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.28	3.32	PASS
Middle CH	0.24	3.40	
Highest CH	0.24	3.28	

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	3.40	2.92	2.60	PASS
Middle CH	3.00	3.32	2.72	
Highest CH	3.08	3.20	2.68	

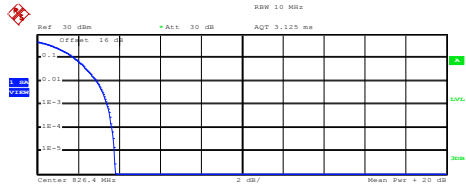
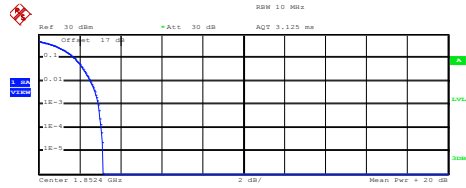
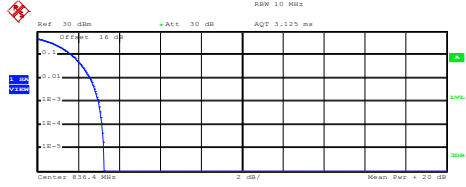
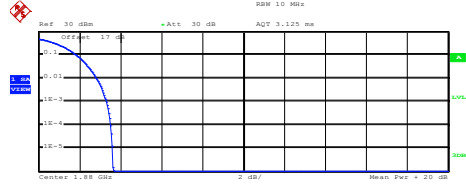
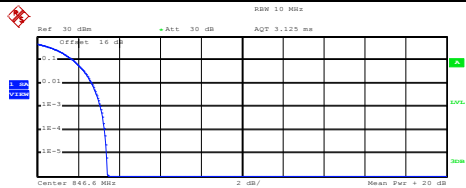
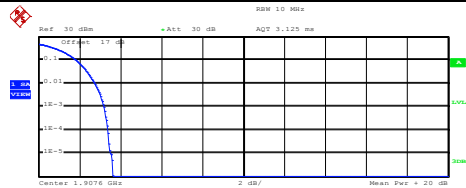


GSM850 (GPRS class 8)		GSM850 (EDGE class 8)	
Lowest Channel		Lowest Channel	
 Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 824.2 MHz, 2 dB, Mean: Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.57 dBm Peak 29.89 dBm Crest 0.32 dB 10 % 0.20 dB 1 % 0.28 dB .1 % 0.28 dB .01 % 0.28 dB Date: 14.JUN.2017 10:35:41		 Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 824.2 MHz, 2 dB, Mean: Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 23.70 dBm Peak 27.07 dBm Crest 3.37 dB 10 % 2.68 dB 1 % 3.16 dB .1 % 3.28 dB .01 % 3.32 dB Date: 14.JUN.2017 13:50:02	
Middle Channel		Middle Channel	
 Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 836.4 MHz, 2 dB, Mean: Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.61 dBm Peak 29.96 dBm Crest 0.35 dB 10 % 0.20 dB 1 % 0.28 dB .1 % 0.32 dB .01 % 0.32 dB Date: 14.JUN.2017 10:35:55		 Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 836.4 MHz, 2 dB, Mean: Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 23.69 dBm Peak 27.14 dBm Crest 3.45 dB 10 % 2.60 dB 1 % 3.24 dB .1 % 3.32 dB .01 % 3.40 dB Date: 14.JUN.2017 13:50:16	
Highest Channel		Highest Channel	
 Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 848.8 MHz, 2 dB, Mean: Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.59 dBm Peak 29.89 dBm Crest 0.30 dB 10 % 0.20 dB 1 % 0.24 dB .1 % 0.28 dB .01 % 0.32 dB Date: 14.JUN.2017 10:36:08		 Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 848.8 MHz, 2 dB, Mean: Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 23.80 dBm Peak 27.14 dBm Crest 3.34 dB 10 % 2.72 dB 1 % 3.20 dB .1 % 3.28 dB .01 % 3.36 dB Date: 14.JUN.2017 13:50:29	



GSM1900 (GPRS class 8)		GSM1900 (EDGE class 8)	
Lowest Channel		Lowest Channel	
 Center 1.8502 GHz 2 dB/ Mean Per + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.54 dBm Peak 26.79 dBm Crest 0.25 dB 10 % 0.20 dB 1 % 0.24 dB .1 % 0.28 dB .01 % 0.28 dB Date: 14.JUN.2017 11:30:46		 Center 1.8502 GHz 2 dB/ Mean Per + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 22.11 dBm Peak 25.45 dBm Crest 3.34 dB 10 % 2.72 dB 1 % 3.24 dB .1 % 3.32 dB .01 % 3.36 dB Date: 14.JUN.2017 11:47:38	
Middle Channel		Middle Channel	
 Center 1.85 GHz 2 dB/ Mean Per + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.56 dBm Peak 26.86 dBm Crest 0.30 dB 10 % 0.20 dB 1 % 0.24 dB .1 % 0.24 dB .01 % 0.24 dB Date: 14.JUN.2017 11:30:57		 Center 1.85 GHz 2 dB/ Mean Per + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 22.01 dBm Peak 25.45 dBm Crest 3.44 dB 10 % 2.76 dB 1 % 3.32 dB .1 % 3.40 dB .01 % 3.44 dB Date: 14.JUN.2017 11:47:53	
Highest Channel		Highest Channel	
 Center 1.9098 GHz 2 dB/ Mean Per + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.50 dBm Peak 26.79 dBm Crest 0.28 dB 10 % 0.20 dB 1 % 0.24 dB .1 % 0.24 dB .01 % 0.28 dB Date: 14.JUN.2017 11:31:13		 Center 1.9098 GHz 2 dB/ Mean Per + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 22.10 dBm Peak 25.45 dBm Crest 3.34 dB 10 % 2.72 dB 1 % 3.20 dB .1 % 3.28 dB .01 % 3.36 dB Date: 14.JUN.2017 11:48:04	

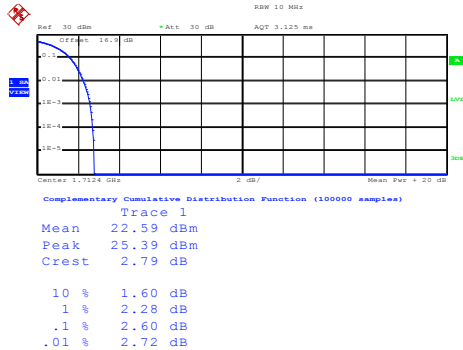


WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)																												
Lowest Channel	Lowest Channel																												
 Center 826.4 MHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 <table><tr><td>Mean</td><td>22.99 dBm</td></tr><tr><td>Peak</td><td>26.80 dBm</td></tr><tr><td>Crest</td><td>3.80 dB</td></tr></table> <table><tr><td>10 %</td><td>1.80 dB</td></tr><tr><td>1 %</td><td>2.88 dB</td></tr><tr><td>.1 %</td><td>3.40 dB</td></tr><tr><td>.01 %</td><td>3.64 dB</td></tr></table>	Mean	22.99 dBm	Peak	26.80 dBm	Crest	3.80 dB	10 %	1.80 dB	1 %	2.88 dB	.1 %	3.40 dB	.01 %	3.64 dB	 Center 1.8524 GHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 <table><tr><td>Mean</td><td>22.95 dBm</td></tr><tr><td>Peak</td><td>26.09 dBm</td></tr><tr><td>Crest</td><td>3.14 dB</td></tr></table> <table><tr><td>10 %</td><td>1.76 dB</td></tr><tr><td>1 %</td><td>2.52 dB</td></tr><tr><td>.1 %</td><td>2.92 dB</td></tr><tr><td>.01 %</td><td>3.08 dB</td></tr></table>	Mean	22.95 dBm	Peak	26.09 dBm	Crest	3.14 dB	10 %	1.76 dB	1 %	2.52 dB	.1 %	2.92 dB	.01 %	3.08 dB
Mean	22.99 dBm																												
Peak	26.80 dBm																												
Crest	3.80 dB																												
10 %	1.80 dB																												
1 %	2.88 dB																												
.1 %	3.40 dB																												
.01 %	3.64 dB																												
Mean	22.95 dBm																												
Peak	26.09 dBm																												
Crest	3.14 dB																												
10 %	1.76 dB																												
1 %	2.52 dB																												
.1 %	2.92 dB																												
.01 %	3.08 dB																												
Date: 13.JUN.2017 12:03:07	Date: 14.JUN.2017 09:48:26																												
Middle Channel	Middle Channel																												
 Center 830.4 MHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 <table><tr><td>Mean</td><td>23.18 dBm</td></tr><tr><td>Peak</td><td>26.44 dBm</td></tr><tr><td>Crest</td><td>3.27 dB</td></tr></table> <table><tr><td>10 %</td><td>1.68 dB</td></tr><tr><td>1 %</td><td>2.60 dB</td></tr><tr><td>.1 %</td><td>3.00 dB</td></tr><tr><td>.01 %</td><td>3.16 dB</td></tr></table>	Mean	23.18 dBm	Peak	26.44 dBm	Crest	3.27 dB	10 %	1.68 dB	1 %	2.60 dB	.1 %	3.00 dB	.01 %	3.16 dB	 Center 1.85 GHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 <table><tr><td>Mean</td><td>22.73 dBm</td></tr><tr><td>Peak</td><td>26.37 dBm</td></tr><tr><td>Crest</td><td>3.64 dB</td></tr></table> <table><tr><td>10 %</td><td>1.84 dB</td></tr><tr><td>1 %</td><td>2.84 dB</td></tr><tr><td>.1 %</td><td>3.32 dB</td></tr><tr><td>.01 %</td><td>3.52 dB</td></tr></table>	Mean	22.73 dBm	Peak	26.37 dBm	Crest	3.64 dB	10 %	1.84 dB	1 %	2.84 dB	.1 %	3.32 dB	.01 %	3.52 dB
Mean	23.18 dBm																												
Peak	26.44 dBm																												
Crest	3.27 dB																												
10 %	1.68 dB																												
1 %	2.60 dB																												
.1 %	3.00 dB																												
.01 %	3.16 dB																												
Mean	22.73 dBm																												
Peak	26.37 dBm																												
Crest	3.64 dB																												
10 %	1.84 dB																												
1 %	2.84 dB																												
.1 %	3.32 dB																												
.01 %	3.52 dB																												
Date: 13.JUN.2017 12:03:26	Date: 14.JUN.2017 09:48:38																												
Highest Channel	Highest Channel																												
 Center 846.6 MHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 <table><tr><td>Mean</td><td>23.00 dBm</td></tr><tr><td>Peak</td><td>26.44 dBm</td></tr><tr><td>Crest</td><td>3.44 dB</td></tr></table> <table><tr><td>10 %</td><td>1.76 dB</td></tr><tr><td>1 %</td><td>2.68 dB</td></tr><tr><td>.1 %</td><td>3.08 dB</td></tr><tr><td>.01 %</td><td>3.28 dB</td></tr></table>	Mean	23.00 dBm	Peak	26.44 dBm	Crest	3.44 dB	10 %	1.76 dB	1 %	2.68 dB	.1 %	3.08 dB	.01 %	3.28 dB	 Center 1.9076 GHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 <table><tr><td>Mean</td><td>22.39 dBm</td></tr><tr><td>Peak</td><td>26.02 dBm</td></tr><tr><td>Crest</td><td>3.63 dB</td></tr></table> <table><tr><td>10 %</td><td>1.84 dB</td></tr><tr><td>1 %</td><td>2.76 dB</td></tr><tr><td>.1 %</td><td>3.20 dB</td></tr><tr><td>.01 %</td><td>3.40 dB</td></tr></table>	Mean	22.39 dBm	Peak	26.02 dBm	Crest	3.63 dB	10 %	1.84 dB	1 %	2.76 dB	.1 %	3.20 dB	.01 %	3.40 dB
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.01 %	3.40 dB																												
Date: 13.JUN.2017 12:03:37	Date: 14.JUN.2017 09:48:56																												



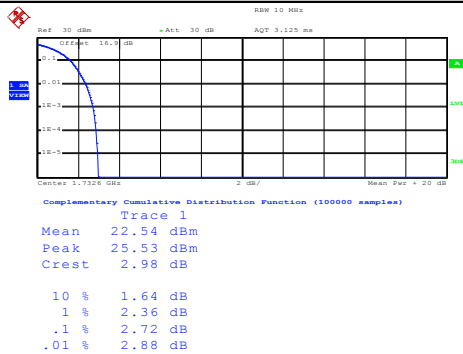
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



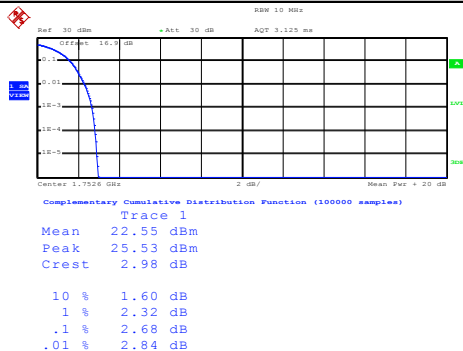
Date: 14.JUN.2017 10:12:17

Middle Channel



Date: 14.JUN.2017 10:12:31

Highest Channel



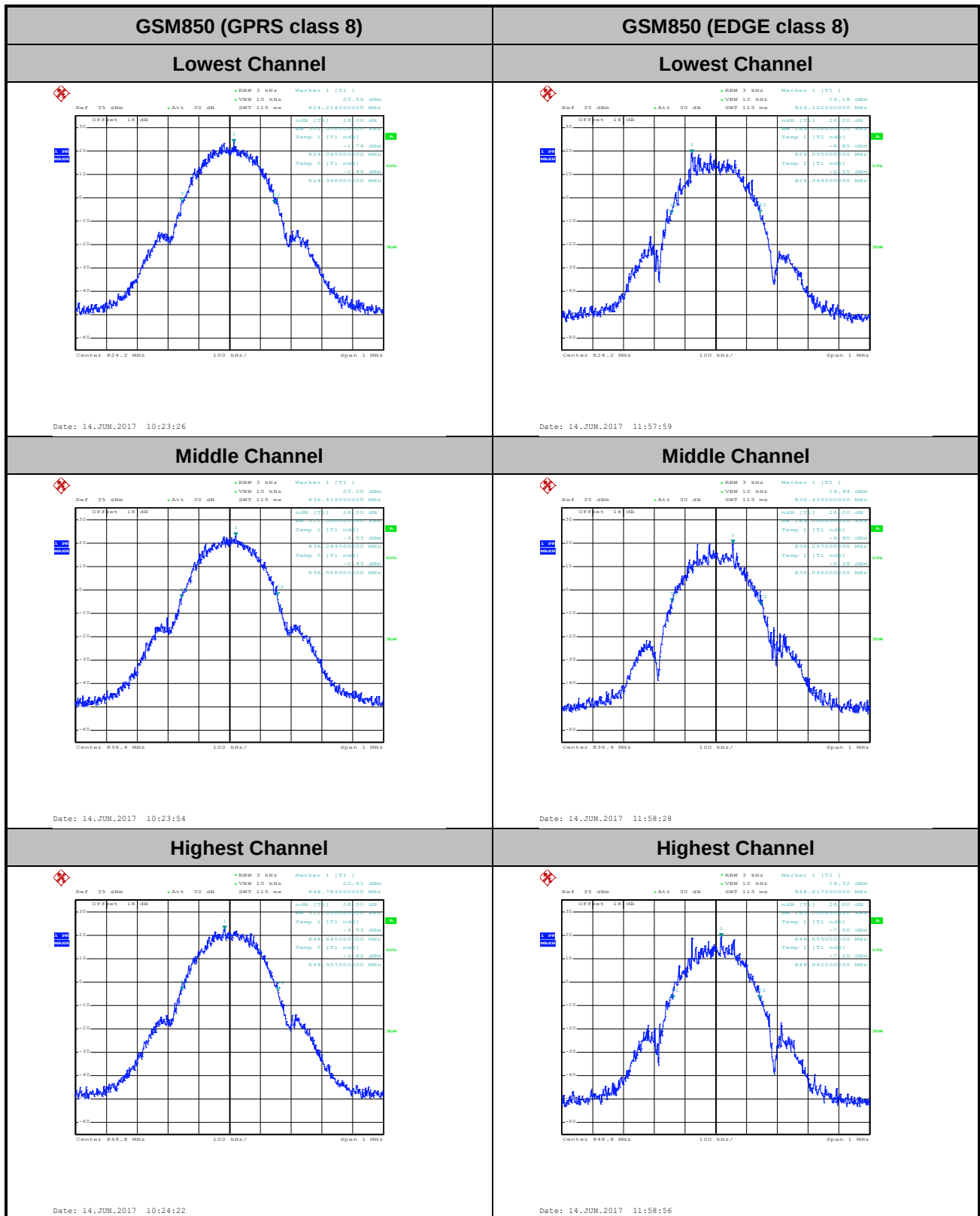
Date: 14.JUN.2017 10:12:41

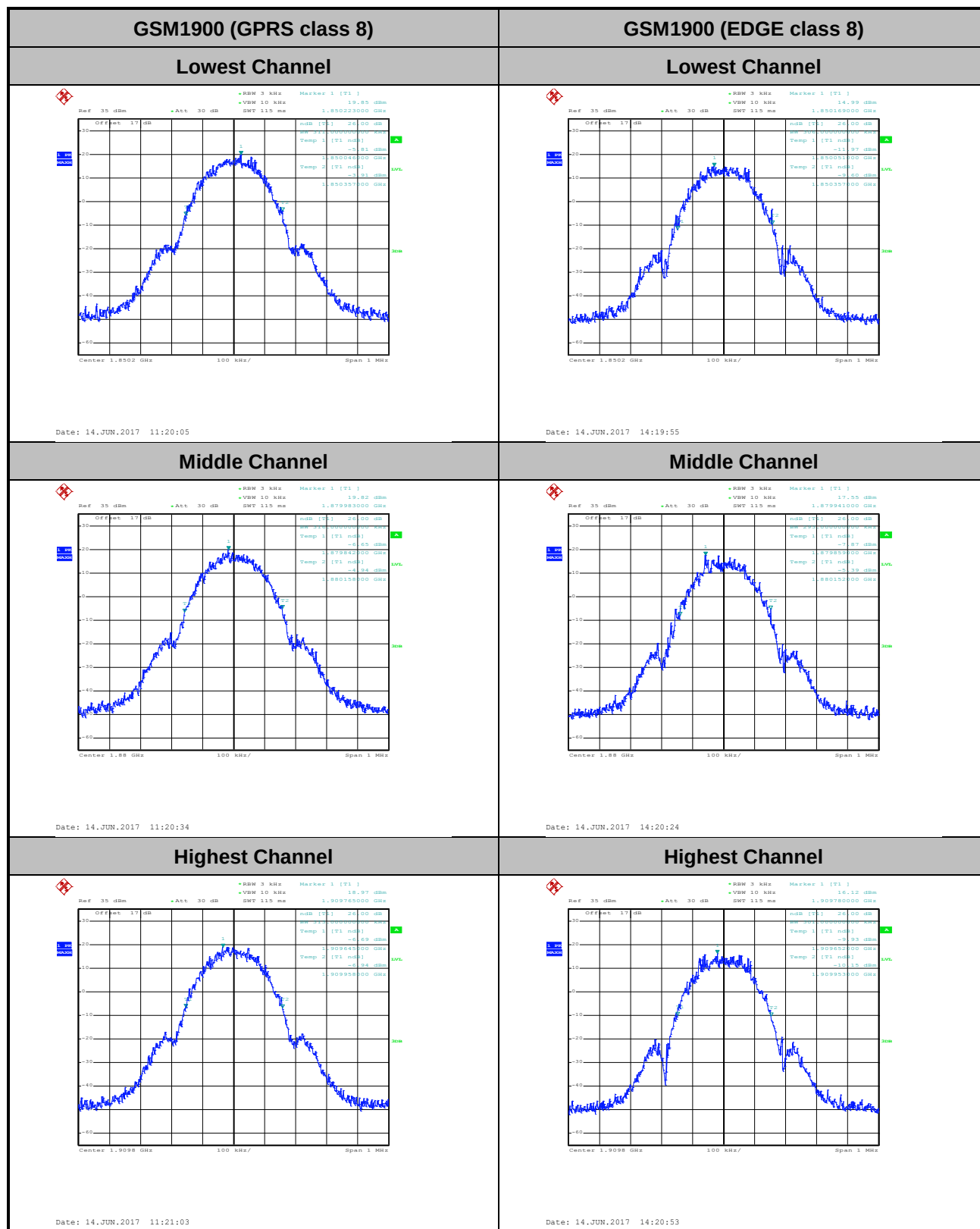
**26dB Bandwidth**

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.301	0.289
Middle CH	0.312	0.289
Highest CH	0.312	0.283

Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.311	0.306
Middle CH	0.316	0.293
Highest CH	0.313	0.301

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.70	4.68	4.73
Middle CH	4.72	4.69	4.70
Highest CH	4.67	4.68	4.71

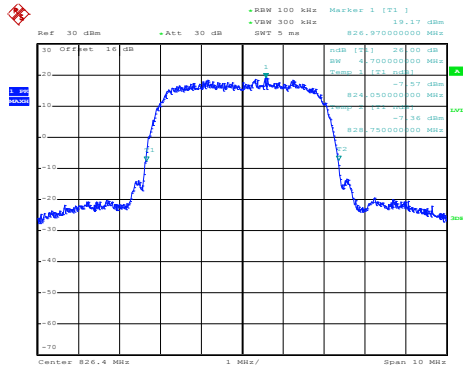






WCDMA Band V (RMC 12.2Kbps)

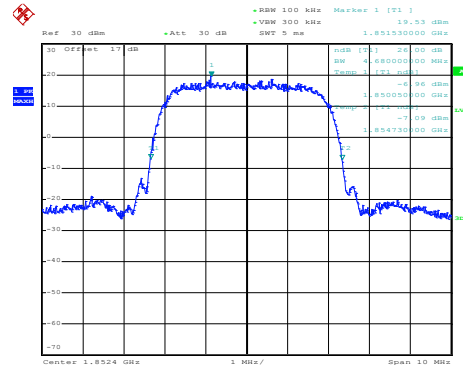
Lowest Channel



Date: 13.JUN.2017 11:49:46

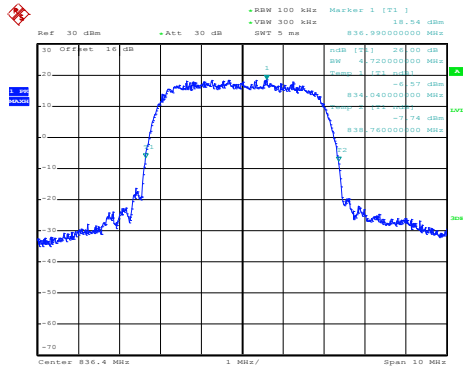
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



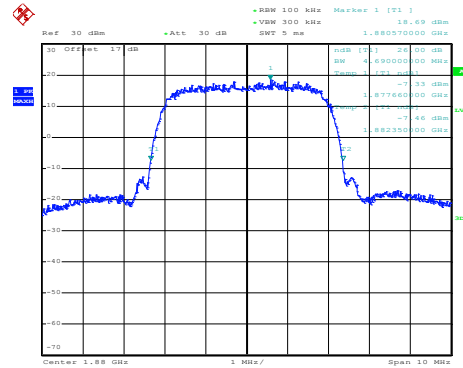
Date: 14.JUN.2017 09:37:52

Middle Channel



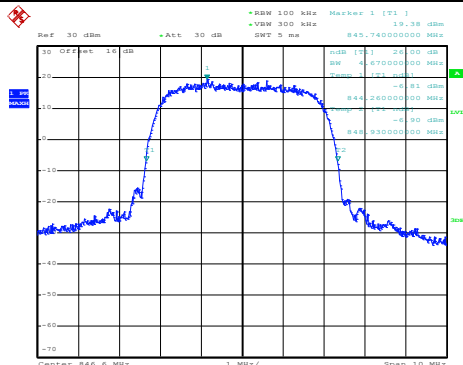
Date: 13.JUN.2017 11:50:14

Middle Channel



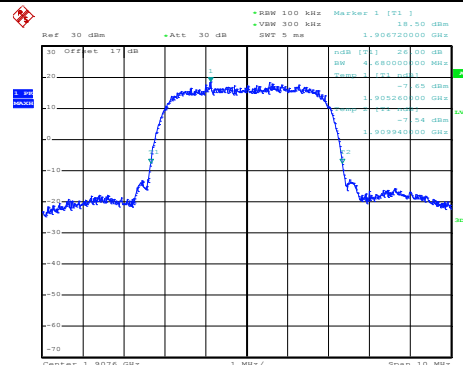
Date: 14.JUN.2017 09:38:20

Highest Channel



Date: 13.JUN.2017 11:50:42

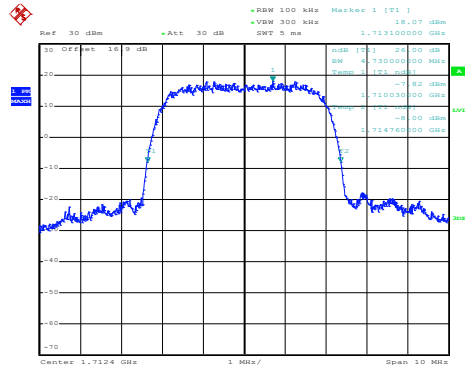
Highest Channel



Date: 14.JUN.2017 09:38:47

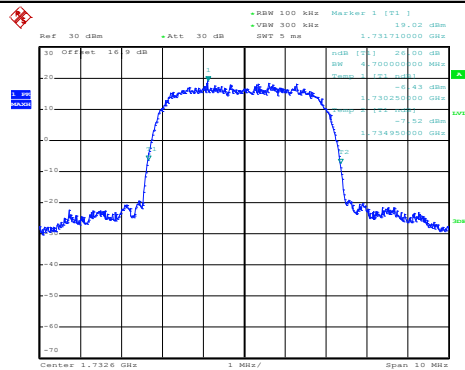
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



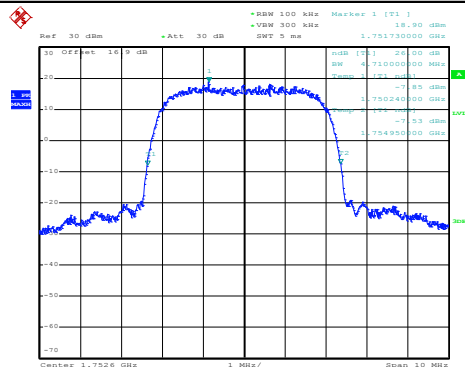
Date: 14.JUN.2017 10:02:51

Middle Channel



Date: 14.JUN.2017 10:03:19

Highest Channel



Date: 14.JUN.2017 10:03:47

**Occupied Bandwidth**

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.246	0.235
Middle CH	0.244	0.243
Highest CH	0.248	0.241

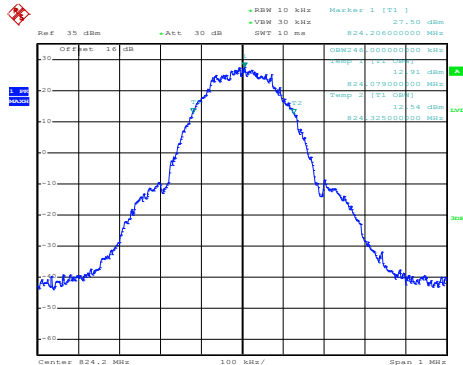
Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.244	0.238
Middle CH	0.244	0.236
Highest CH	0.244	0.247

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.13	4.12	4.13
Middle CH	4.13	4.12	4.13
Highest CH	4.11	4.13	4.13



GSM850 (GPRS class 8)

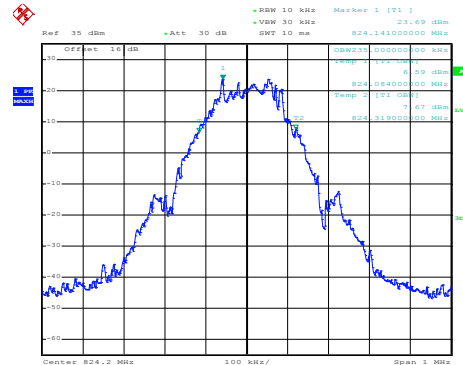
Lowest Channel



Date: 14.JUN.2017 10:28:25

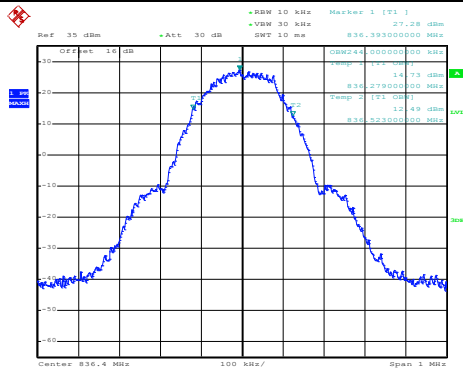
GSM850 (EDGE class 8)

Lowest Channel



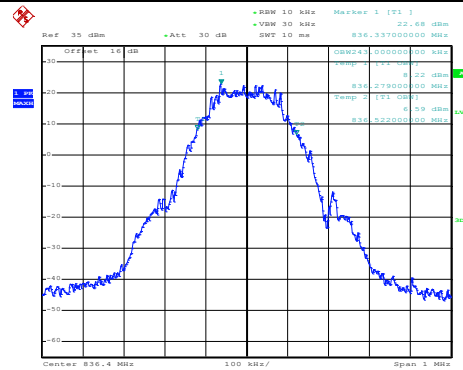
Date: 14.JUN.2017 11:59:31

Middle Channel



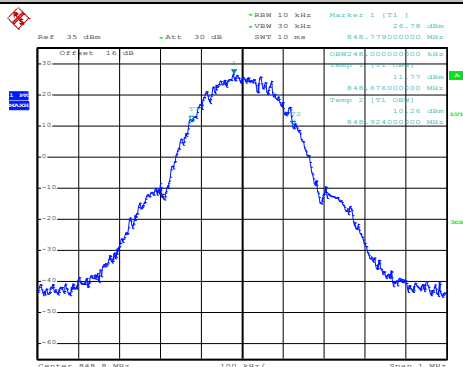
Date: 14.JUN.2017 10:28:53

Middle Channel



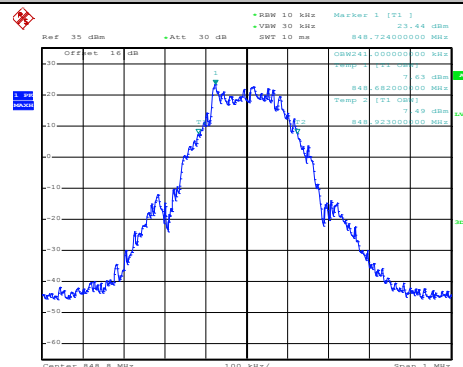
Date: 14.JUN.2017 12:00:00

Highest Channel

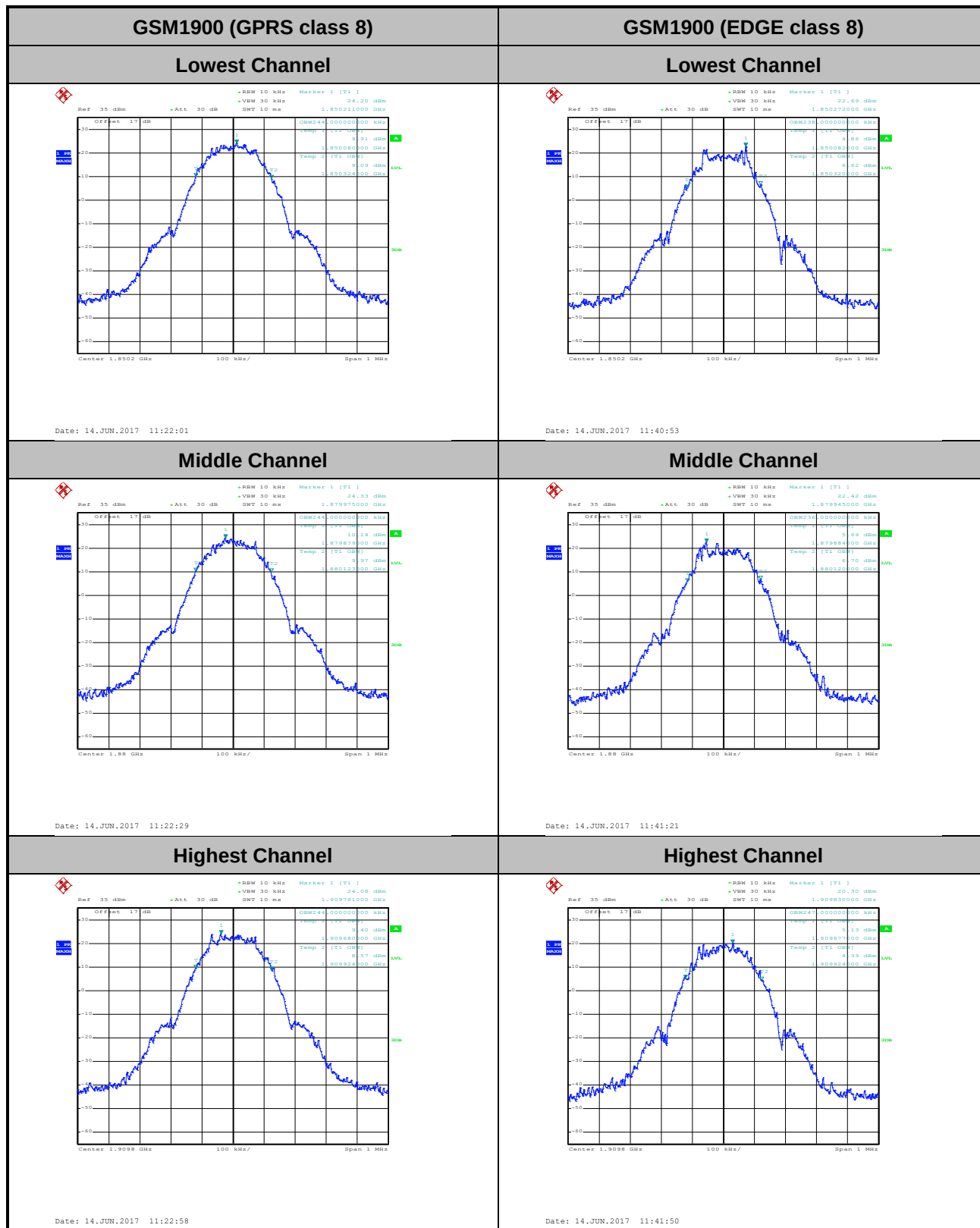


Date: 14.JUN.2017 10:29:22

Highest Channel



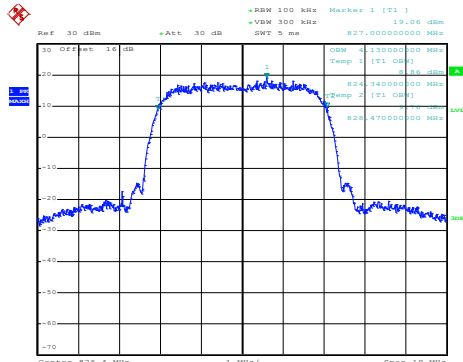
Date: 14.JUN.2017 12:00:29





WCDMA Band V (RMC 12.2Kbps)

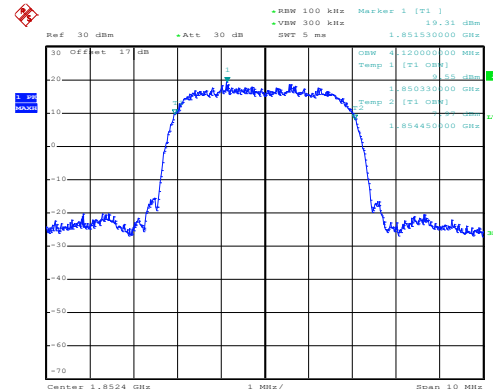
Lowest Channel



Date: 13.JUN.2017 11:52:48

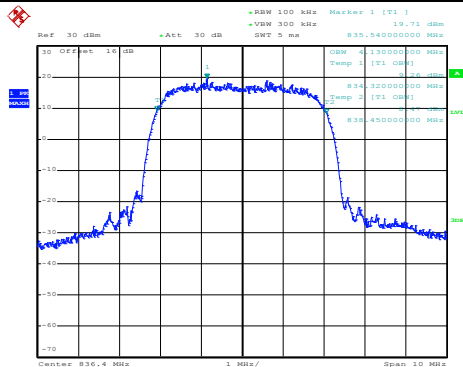
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



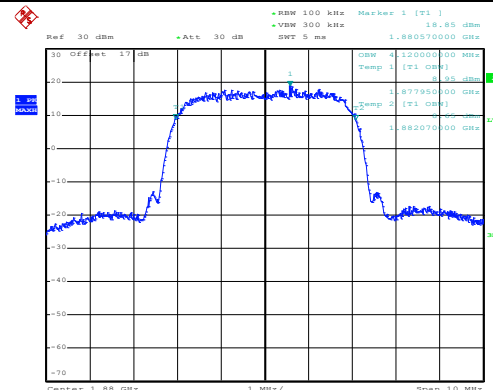
Date: 14.JUN.2017 09:44:47

Middle Channel



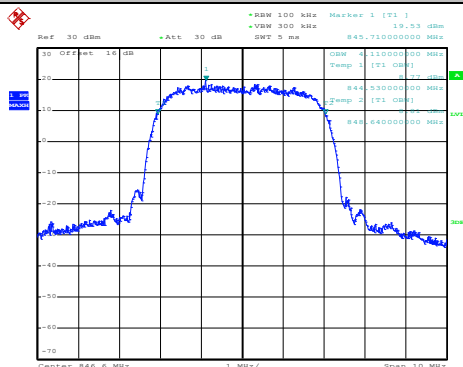
Date: 13.JUN.2017 11:53:17

Middle Channel



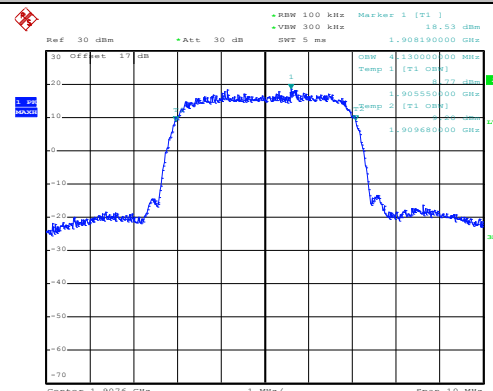
Date: 14.JUN.2017 09:45:15

Highest Channel



Date: 13.JUN.2017 11:53:45

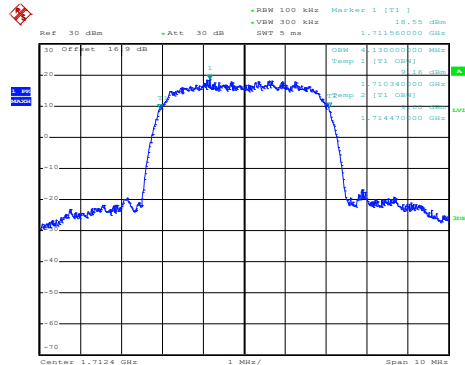
Highest Channel



Date: 14.JUN.2017 09:45:44

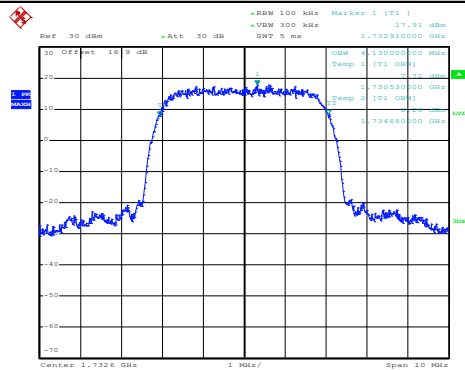
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



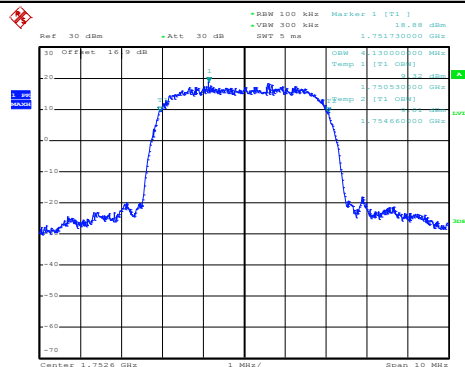
Date: 14.JUN.2017 10:01:19

Middle Channel



Date: 14.JUN.2017 10:01:47

Highest Channel



Date: 14.JUN.2017 10:02:15

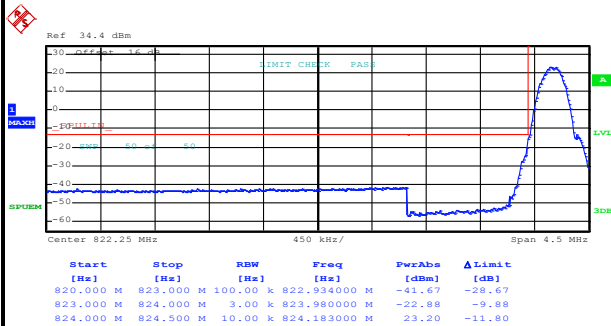


Conducted Band Edge



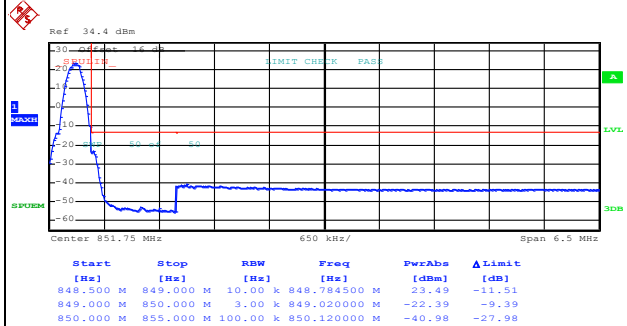
GSM850 (GPRS class 8)

Lowest Band Edge



Date: 14.JUN.2017 10:30:53

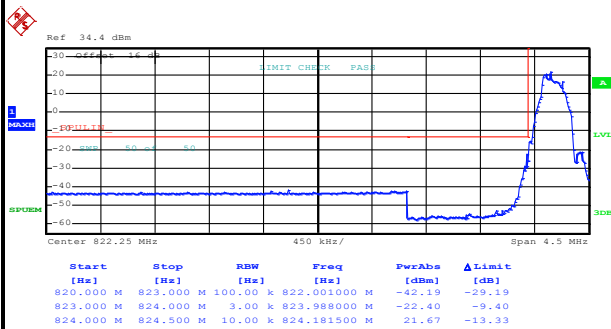
Highest Band Edge



Date: 14.JUN.2017 10:32:20

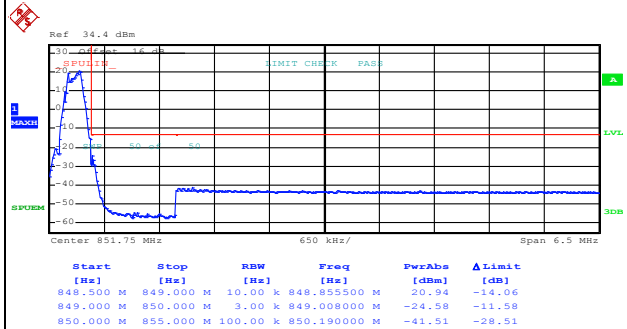
GSM850 (EDGE class 8)

Lowest Band Edge



Date: 14.JUN.2017 13:44:46

Highest Band Edge

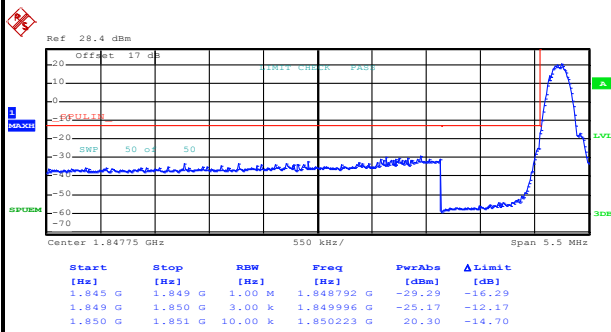


Date: 14.JUN.2017 13:46:13



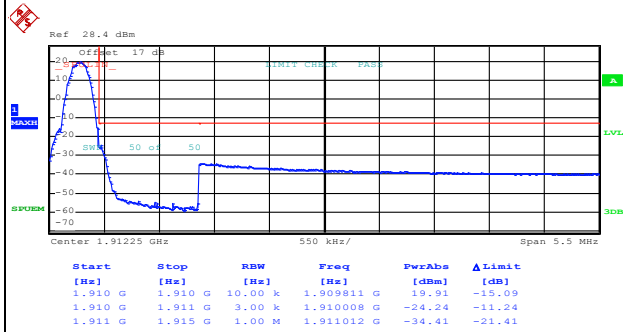
GSM1900 (GPRS class 8)

Lowest Band Edge



Date: 14.JUN.2017 11:25:07

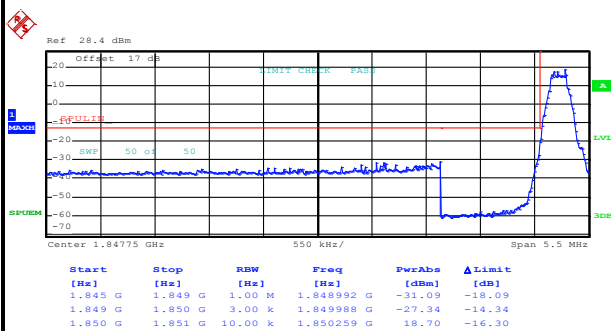
Highest Band Edge



Date: 14.JUN.2017 11:26:35

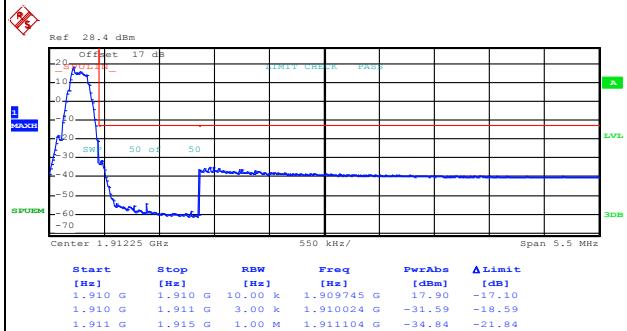
GSM1900 (EDGE class 8)

Lowest Band Edge



Date: 14.JUN.2017 11:43:17

Highest Band Edge

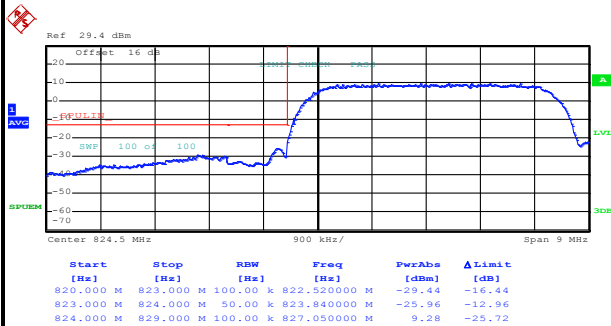


Date: 14.JUN.2017 11:44:45



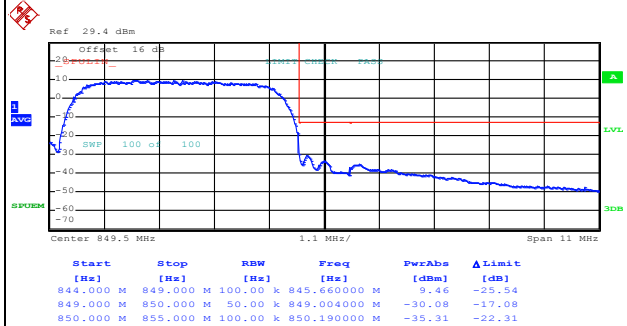
WCDMA Band V (RMC 12.2Kbps)

Lowest Band Edge



Date: 13.JUN.2017 11:56:29

Highest Band Edge

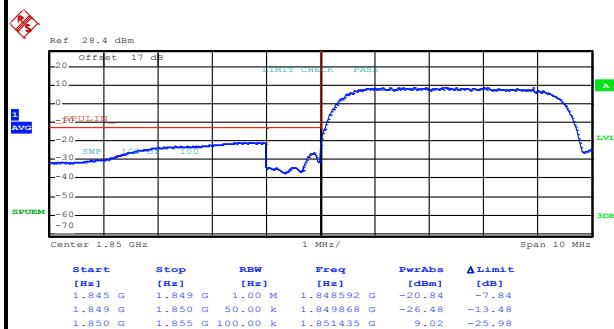


Date: 13.JUN.2017 11:59:11



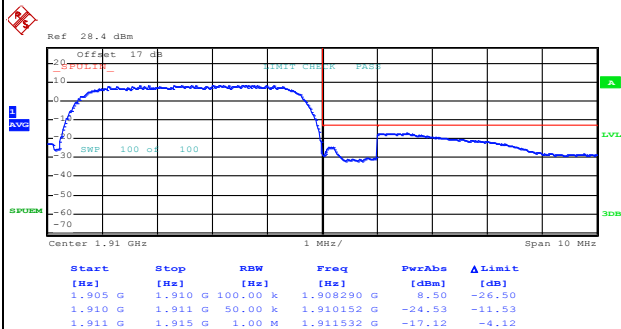
WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge



Date: 14.JUN.2017 09:41:30

Highest Band Edge

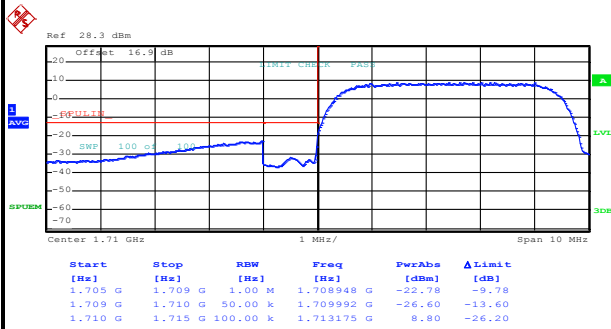


Date: 14.JUN.2017 09:44:12



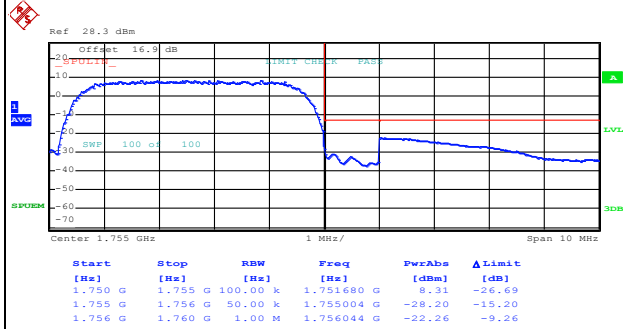
WCDMA Band IV (RMC 12.2Kbps)

Lowest Band Edge



Date: 14.JUN.2017 10:06:36

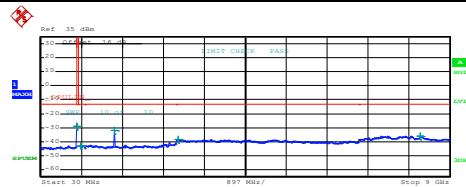
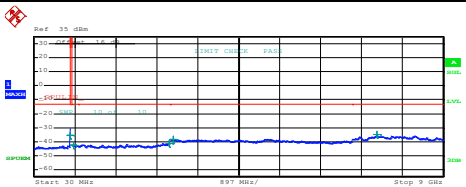
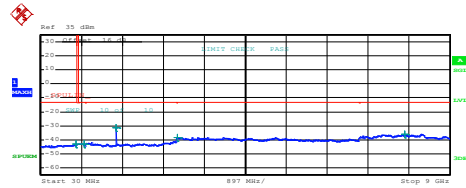
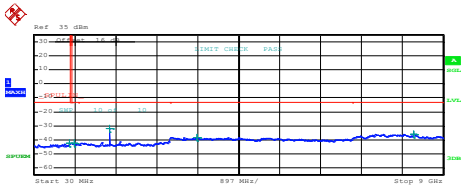
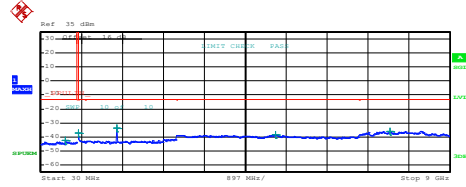
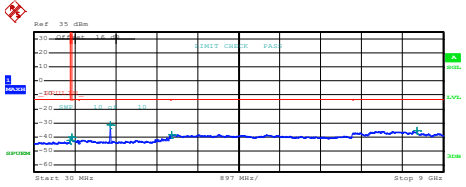
Highest Band Edge



Date: 14.JUN.2017 10:09:17



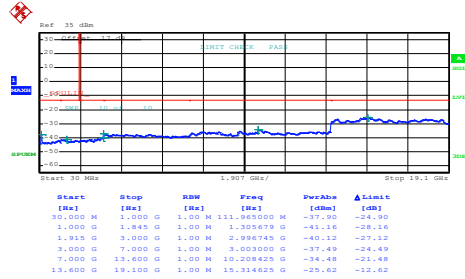
Conducted Spurious Emission

GSM850 (GPRS class 8)		GSM850 (EDGE class 8)																																																																																					
Lowest Channel		Lowest Channel																																																																																					
<table><tr><th>Start</th><th>Stop</th><th>RBW</th><th>Freq</th><th>PerAbn</th><th>ΔLimit</th></tr><tr><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[dBm]</th><th>[dB]</th></tr><tr><td>30.000 M</td><td>825.000 M</td><td>1.00 M</td><td>819.802500 M</td><td>-28.77</td><td>-15.77</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>901.110003 M</td><td>-42.81</td><td>-29.81</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>1.648500 G</td><td>-32.17</td><td>-29.17</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.046000 G</td><td>-38.43</td><td>-25.43</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>8.353000 G</td><td>-35.85</td><td>-22.85</td></tr></table> Date: 14.JUN.2017 10:33:40		Start	Stop	RBW	Freq	PerAbn	ΔLimit	[Hz]	[Hz]	[Hz]	[Hz]	[dBm]	[dB]	30.000 M	825.000 M	1.00 M	819.802500 M	-28.77	-15.77	855.000 M	1.000 G	1.00 M	901.110003 M	-42.81	-29.81	1.000 G	3.000 G	1.00 M	1.648500 G	-32.17	-29.17	3.000 G	7.000 G	1.00 M	3.046000 G	-38.43	-25.43	7.000 G	9.000 G	1.00 M	8.353000 G	-35.85	-22.85	<table><tr><th>Start</th><th>Stop</th><th>RBW</th><th>Freq</th><th>PerAbn</th><th>ΔLimit</th></tr><tr><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[dBm]</th><th>[dB]</th></tr><tr><td>30.000 M</td><td>825.000 M</td><td>1.00 M</td><td>819.802500 M</td><td>-35.44</td><td>-22.44</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>901.648753 M</td><td>-42.72</td><td>-29.72</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>2.996500 G</td><td>-41.13</td><td>-28.13</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.076000 G</td><td>-38.46</td><td>-25.46</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>7.546000 G</td><td>-34.92</td><td>-21.92</td></tr></table> Date: 14.JUN.2017 13:48:01		Start	Stop	RBW	Freq	PerAbn	ΔLimit	[Hz]	[Hz]	[Hz]	[Hz]	[dBm]	[dB]	30.000 M	825.000 M	1.00 M	819.802500 M	-35.44	-22.44	855.000 M	1.000 G	1.00 M	901.648753 M	-42.72	-29.72	1.000 G	3.000 G	1.00 M	2.996500 G	-41.13	-28.13	3.000 G	7.000 G	1.00 M	3.076000 G	-38.46	-25.46	7.000 G	9.000 G	1.00 M	7.546000 G	-34.92	-21.92
Start	Stop	RBW	Freq	PerAbn	ΔLimit																																																																																		
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7.000 G	9.000 G	1.00 M	7.546000 G	-34.92	-21.92																																																																																		
Middle Channel		Middle Channel																																																																																					
<table><tr><th>Start</th><th>Stop</th><th>RBW</th><th>Freq</th><th>PerAbn</th><th>ΔLimit</th></tr><tr><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[dBm]</th><th>[dB]</th></tr><tr><td>30.000 M</td><td>825.000 M</td><td>1.00 M</td><td>810.322500 M</td><td>-42.93</td><td>-29.93</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>978.393009 M</td><td>-42.82</td><td>-29.82</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>1.673000 G</td><td>-31.17</td><td>-18.17</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.029000 G</td><td>-38.21</td><td>-25.21</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>8.018000 G</td><td>-38.10</td><td>-23.10</td></tr></table> Date: 14.JUN.2017 10:34:26		Start	Stop	RBW	Freq	PerAbn	ΔLimit	[Hz]	[Hz]	[Hz]	[Hz]	[dBm]	[dB]	30.000 M	825.000 M	1.00 M	810.322500 M	-42.93	-29.93	855.000 M	1.000 G	1.00 M	978.393009 M	-42.82	-29.82	1.000 G	3.000 G	1.00 M	1.673000 G	-31.17	-18.17	3.000 G	7.000 G	1.00 M	3.029000 G	-38.21	-25.21	7.000 G	9.000 G	1.00 M	8.018000 G	-38.10	-23.10	<table><tr><th>Start</th><th>Stop</th><th>RBW</th><th>Freq</th><th>PerAbn</th><th>ΔLimit</th></tr><tr><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[dBm]</th><th>[dB]</th></tr><tr><td>30.000 M</td><td>825.000 M</td><td>1.00 M</td><td>803.015000 M</td><td>-42.70</td><td>-29.70</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>917.168754 M</td><td>-42.87</td><td>-29.87</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>1.673000 G</td><td>-31.87</td><td>-18.87</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.603000 G</td><td>-38.20</td><td>-25.20</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>8.357500 G</td><td>-35.85</td><td>-22.85</td></tr></table> Date: 14.JUN.2017 13:48:47		Start	Stop	RBW	Freq	PerAbn	ΔLimit	[Hz]	[Hz]	[Hz]	[Hz]	[dBm]	[dB]	30.000 M	825.000 M	1.00 M	803.015000 M	-42.70	-29.70	855.000 M	1.000 G	1.00 M	917.168754 M	-42.87	-29.87	1.000 G	3.000 G	1.00 M	1.673000 G	-31.87	-18.87	3.000 G	7.000 G	1.00 M	3.603000 G	-38.20	-25.20	7.000 G	9.000 G	1.00 M	8.357500 G	-35.85	-22.85
Start	Stop	RBW	Freq	PerAbn	ΔLimit																																																																																		
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1.000 G	3.000 G	1.00 M	1.673000 G	-31.17	-18.17																																																																																		
3.000 G	7.000 G	1.00 M	3.029000 G	-38.21	-25.21																																																																																		
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Highest Channel		Highest Channel																																																																																					
<table><tr><th>Start</th><th>Stop</th><th>RBW</th><th>Freq</th><th>PerAbn</th><th>ΔLimit</th></tr><tr><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[dBm]</th><th>[dB]</th></tr><tr><td>30.000 M</td><td>825.000 M</td><td>1.00 M</td><td>815.495000 M</td><td>-42.28</td><td>-29.28</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>855.036250 M</td><td>-37.08</td><td>-24.08</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>1.697500 G</td><td>-33.83</td><td>-20.83</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>5.173000 G</td><td>-38.60</td><td>-25.60</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>7.683000 G</td><td>-35.84</td><td>-22.84</td></tr></table> Date: 14.JUN.2017 10:35:12		Start	Stop	RBW	Freq	PerAbn	ΔLimit	[Hz]	[Hz]	[Hz]	[Hz]	[dBm]	[dB]	30.000 M	825.000 M	1.00 M	815.495000 M	-42.28	-29.28	855.000 M	1.000 G	1.00 M	855.036250 M	-37.08	-24.08	1.000 G	3.000 G	1.00 M	1.697500 G	-33.83	-20.83	3.000 G	7.000 G	1.00 M	5.173000 G	-38.60	-25.60	7.000 G	9.000 G	1.00 M	7.683000 G	-35.84	-22.84	<table><tr><th>Start</th><th>Stop</th><th>RBW</th><th>Freq</th><th>PerAbn</th><th>ΔLimit</th></tr><tr><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[Hz]</th><th>[dBm]</th><th>[dB]</th></tr><tr><td>30.000 M</td><td>825.000 M</td><td>1.00 M</td><td>815.265000 M</td><td>-42.68</td><td>-29.68</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>855.036250 M</td><td>-40.25</td><td>-27.25</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>1.697500 G</td><td>-31.44</td><td>-18.44</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.041000 G</td><td>-38.26</td><td>-25.26</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>8.428000 G</td><td>-35.50</td><td>-22.50</td></tr></table> Date: 14.JUN.2017 13:49:33		Start	Stop	RBW	Freq	PerAbn	ΔLimit	[Hz]	[Hz]	[Hz]	[Hz]	[dBm]	[dB]	30.000 M	825.000 M	1.00 M	815.265000 M	-42.68	-29.68	855.000 M	1.000 G	1.00 M	855.036250 M	-40.25	-27.25	1.000 G	3.000 G	1.00 M	1.697500 G	-31.44	-18.44	3.000 G	7.000 G	1.00 M	3.041000 G	-38.26	-25.26	7.000 G	9.000 G	1.00 M	8.428000 G	-35.50	-22.50
Start	Stop	RBW	Freq	PerAbn	ΔLimit																																																																																		
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7.000 G	9.000 G	1.00 M	8.428000 G	-35.50	-22.50																																																																																		



GSM1900 (GPRS class 8)

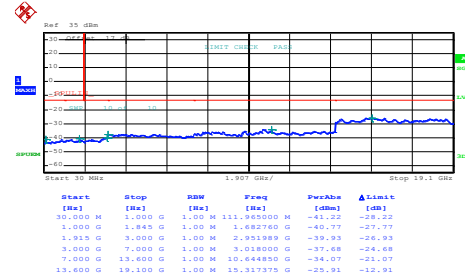
Lowest Channel



Date: 14.JUN.2017 11:28:44

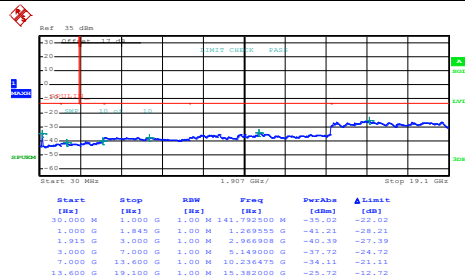
GSM1900 (EDGE class 8)

Lowest Channel



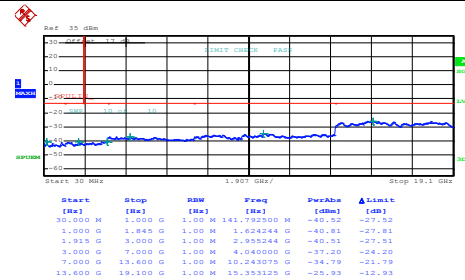
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Middle Channel



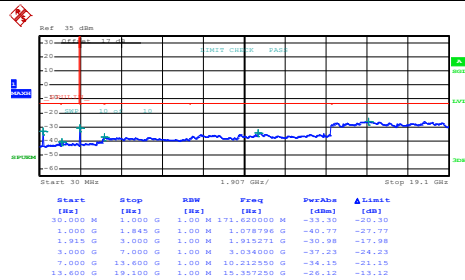
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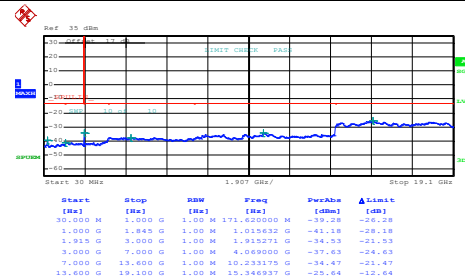
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Highest Channel



Date: 14.JUN.2017 11:30:16

Highest Channel

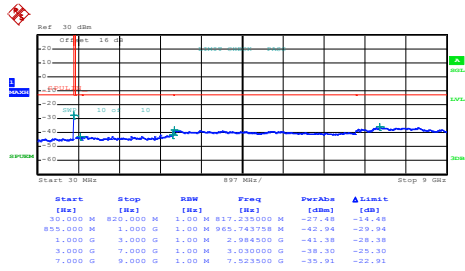


Date: 14.JUN.2017 11:47:19



WCDMA Band V (RMC 12.2Kbps)

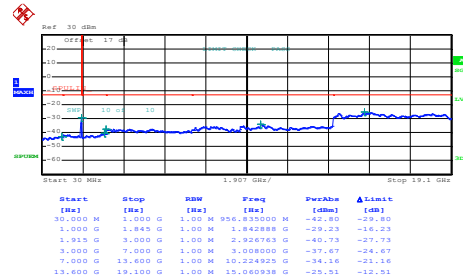
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Date: 13.JUN.2017 12:00:49

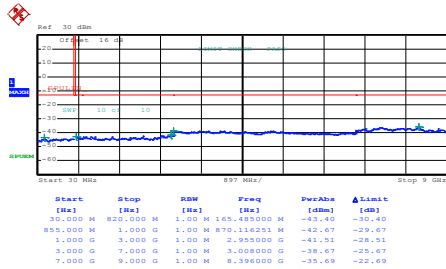
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Lowest Channel



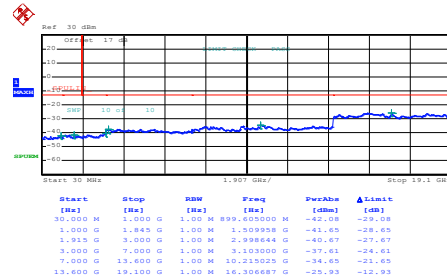
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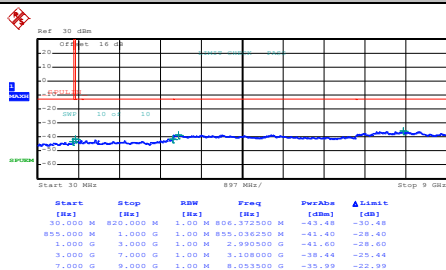
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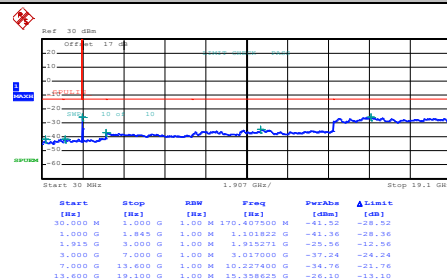
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Highest Channel



Date: 13.JUN.2017 12:02:20

Highest Channel

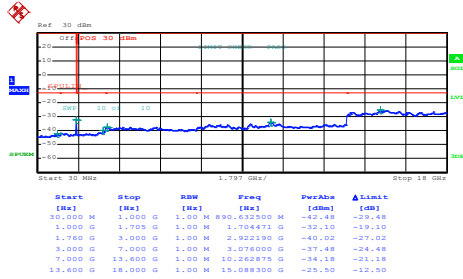


Date: 14.JUN.2017 09:48:10



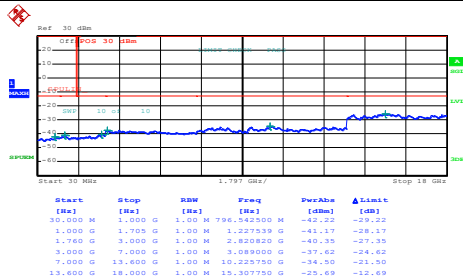
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



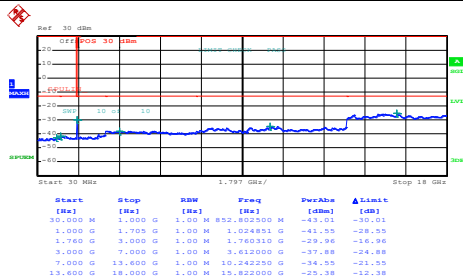
Date: 14.JUN.2017 10:10:24

Middle Channel



Date: 14.JUN.2017 10:11:10

Highest Channel



Date: 14.JUN.2017 10:11:56

**Frequency Stability**

Test Conditions	Middle Channel	GSM850 (GPRS class 8)	GSM850 (EDGE class 8)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0000	0.0060	PASS
40	Normal Voltage	0.0036	0.0084	
30	Normal Voltage	0.0048	0.0060	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0012	0.0024	
0	Normal Voltage	0.0060	0.0000	
-10	Normal Voltage	0.0060	0.0072	
-20	Normal Voltage	0.0012	0.0155	
-30	Normal Voltage	0.0036	0.0084	
20	Maximum Voltage	0.0012	0.0072	
20	Normal Voltage	0.0000	0.0084	
20	Battery End Point	0.0012	0.0072	

Note:

1. Normal Voltage = 3.85V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Test Conditions	Middle Channel	GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0011	0.0021	PASS
40	Normal Voltage	0.0000	0.0016	
30	Normal Voltage	0.0005	0.0005	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0005	0.0032	
0	Normal Voltage	0.0027	0.0043	
-10	Normal Voltage	0.0005	0.0053	
-20	Normal Voltage	0.0016	0.0069	
-30	Normal Voltage	0.0027	0.0064	
20	Maximum Voltage	0.0005	0.0059	
20	Normal Voltage	0.0027	0.0048	
20	Battery End Point	0.0016	0.0043	

Note:

1. Normal Voltage = 3.85V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2Kbps)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0012	PASS
40	Normal Voltage	0.0024	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0060	
0	Normal Voltage	0.0048	
-10	Normal Voltage	0.0012	
-20	Normal Voltage	0.0000	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0012	
20	Normal Voltage	0.0036	
20	Battery End Point	0.0060	

Note:

1. Normal Voltage = 3.85V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0016	PASS
40	Normal Voltage	0.0027	
30	Normal Voltage	0.0016	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0005	
0	Normal Voltage	0.0011	
-10	Normal Voltage	0.0021	
-20	Normal Voltage	0.0027	
-30	Normal Voltage	0.0005	
20	Maximum Voltage	0.0021	
20	Normal Voltage	0.0011	
20	Battery End Point	0.0000	

Note:

1. Normal Voltage = 3.85V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Test Conditions	Middle Channel	WCDMA Band IV (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0058	PASS
40	Normal Voltage	0.0017	
30	Normal Voltage	0.0006	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0035	
0	Normal Voltage	0.0029	
-10	Normal Voltage	0.0023	
-20	Normal Voltage	0.0000	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0012	
20	Normal Voltage	0.0006	
20	Battery End Point	0.0000	

Note:

1. Normal Voltage = 3.85V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

For Up Antenna (SIM1)

GSM850 (GPRS class 8)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-51.08	-13	-38.08	-61.73	-57.36	0.41	8.83	H
	2472	-33.82	-13	-20.82	-48.87	-41.93	0.51	10.76	H
	3296	-52.36	-13	-39.36	-68.61	-61.39	0.59	11.77	H
	4120	-56.64	-13	-43.64	-75.46	-65.97	0.68	12.15	H
	1648	-52.58	-13	-39.58	-63.22	-58.86	0.41	8.83	V
	2472	-35.25	-13	-22.25	-49.72	-43.36	0.51	10.76	V
	3296	-56.13	-13	-43.13	-72.81	-65.16	0.59	11.77	V
	4120	-55.45	-13	-42.45	-74.91	-64.78	0.68	12.15	V
Middle	1672	-50.90	-13	-37.90	-61.67	-57.26	0.41	8.92	H
	2512	-38.46	-13	-25.46	-53.49	-46.60	0.51	10.80	H
	3344	-55.25	-13	-42.25	-71.42	-64.44	0.60	11.94	H
	1672	-49.91	-13	-36.91	-60.7	-56.27	0.41	8.92	V
	2512	-39.39	-13	-26.39	-53.75	-47.53	0.51	10.80	V
	3344	-56.29	-13	-43.29	-72.87	-65.48	0.60	11.94	V
Highest	1696	-53.31	-13	-40.31	-64.14	-59.75	0.41	9.01	H
	2544	-33.86	-13	-20.86	-48.88	-41.99	0.51	10.79	H
	3392	-57.85	-13	-44.85	-73.94	-67.21	0.60	12.11	H
	1696	-55.77	-13	-42.77	-66.64	-62.21	0.41	9.01	V
	2544	-33.12	-13	-20.12	-47.52	-41.25	0.51	10.79	V
	3392	-56.69	-13	-43.69	-73.18	-66.05	0.60	12.11	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GSM850 (EDGE class 8)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-61.06	-13	-48.06	-71.71	-67.34	0.41	8.83	H
	2472	-47.54	-13	-34.54	-62.59	-55.65	0.51	10.76	H
	3296	-59.61	-13	-46.61	-75.86	-68.64	0.59	11.77	H
	1648	-61.44	-13	-48.44	-72.08	-67.72	0.41	8.83	V
	2472	-51.86	-13	-38.86	-66.33	-59.97	0.51	10.76	V
	3296	-59.43	-13	-46.43	-76.11	-68.46	0.59	11.77	V
Middle	1672	-61.16	-13	-48.16	-71.93	-67.52	0.41	8.92	H
	2512	-53.38	-13	-40.38	-68.41	-61.52	0.51	10.80	H
	3345	-60.02	-13	-47.02	-76.19	-69.22	0.60	11.94	H
	1672	-61.35	-13	-48.35	-72.14	-67.71	0.41	8.92	V
	2512	-52.73	-13	-39.73	-67.09	-60.87	0.51	10.80	V
	3345	-59.46	-13	-46.46	-76.04	-68.66	0.60	11.94	V
Highest	1696	-60.74	-13	-47.74	-71.57	-67.18	0.41	9.01	H
	2544	-53.50	-13	-40.50	-68.52	-61.63	0.51	10.79	H
	3395	-59.73	-13	-46.73	-75.82	-69.10	0.60	12.12	H
	1696	-61.05	-13	-48.05	-71.92	-67.49	0.41	9.01	V
	2544	-54.87	-13	-41.87	-69.27	-63.00	0.51	10.79	V
	3395	-59.39	-13	-46.39	-75.88	-68.76	0.60	12.12	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA Band V(RMC 12.2Kbps)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1652	-63.61	-13	-50.61	-74.34	-69.90	0.41	8.85	H
	2479	-60.57	-13	-47.57	-75.62	-68.68	0.51	10.77	H
	3305	-59.98	-13	-46.98	-76.19	-69.04	0.59	11.80	H
	1652	-63.40	-13	-50.40	-74.08	-69.69	0.41	8.85	V
	2479	-61.00	-13	-48.00	-75.47	-69.11	0.51	10.77	V
	3305	-59.40	-13	-46.40	-76.03	-68.46	0.59	11.80	V
Middle	1672	-63.37	-13	-50.37	-74.14	-69.73	0.41	8.92	H
	2509	-60.60	-13	-47.60	-75.63	-68.74	0.51	10.80	H
	3345	-59.85	-13	-46.85	-76.02	-69.05	0.60	11.94	H
	1672	-63.27	-13	-50.27	-74.06	-69.63	0.41	8.92	V
	2509	-61.43	-13	-48.43	-75.79	-69.57	0.51	10.80	V
	3345	-59.45	-13	-46.45	-76.03	-68.65	0.60	11.94	V
Highest	1696	-63.36	-13	-50.36	-74.19	-69.80	0.41	9.01	H
	2539	-60.35	-13	-47.35	-75.37	-68.48	0.51	10.79	H
	3386	-60.11	-13	-47.11	-76.23	-69.45	0.60	12.09	H
	1696	-63.45	-13	-50.45	-74.32	-69.89	0.41	9.01	V
	2539	-61.09	-13	-48.09	-75.49	-69.22	0.51	10.79	V
	3386	-59.67	-13	-46.67	-76.19	-69.01	0.60	12.09	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



For Down Antenna (SIM1)

GSM850 (GPRS class 8)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648.4	-37.85	-13	-24.85	-43.22	-42.22	2.88	9.40	H
	2472.6	-54.50	-13	-41.50	-60.56	-60.45	2.5	10.60	H
	3296.8	-65.06	-13	-52.06	-73.06	-70.88	4.63	12.60	H
	1648.4	-38.65	-13	-25.65	-43.68	-43.02	2.88	9.40	V
	2472.6	-57.41	-13	-44.41	-63.36	-63.36	2.50	10.60	V
	3296.8	-65.94	-13	-52.94	-73.97	-71.76	4.63	12.60	V
Middle	1672.8	-51.40	-13	-38.40	-54.49	-55.77	2.88	9.40	H
	2509.2	-60.60	-13	-47.60	-66.66	-66.55	2.5	10.60	H
	3345.6	-64.60	-13	-51.60	-72.60	-70.42	4.63	12.60	H
	1672.8	-45.74	-13	-32.74	-50.07	-50.11	2.88	9.40	V
	2509.2	-56.06	-13	-43.06	-62.01	-62.01	2.50	10.60	V
	3345.6	-63.57	-13	-50.57	-71.60	-69.39	4.63	12.60	V
Highest	1697.6	-45.79	-13	-32.79	-50.15	-50.16	2.88	9.40	H
	2546.4	-69.62	-13	-56.62	-75.68	-75.57	2.5	10.60	H
	3395.2	-64.25	-13	-51.25	-72.25	-70.07	4.63	12.60	H
	1697.6	-45.77	-13	-32.77	-50.10	-50.14	2.88	9.40	V
	2546.4	-68.15	-13	-55.15	-74.10	-74.10	2.50	10.60	V
	3395.2	-68.26	-13	-55.26	-76.29	-74.08	4.63	12.60	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GSM850 (EDGE class 8)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1649.4	-63.03	-13	-50.03	-64.74	-67.40	2.88	9.40	H
	2474.1	-70.06	-13	-57.06	-76.12	-76.01	2.5	10.60	H
	3298.8	-68.21	-13	-55.21	-76.21	-74.03	4.63	12.60	H
	1649.4	-64.12	-13	-51.12	-65.96	-68.49	2.88	9.40	V
	2474.1	-69.95	-13	-56.95	-75.90	-75.90	2.50	10.60	V
	3298.8	-68.48	-13	-55.48	-76.51	-74.30	4.63	12.60	V
Middle	1673.04	-65.74	-13	-52.74	-67.45	-70.11	2.88	9.40	H
	2509.56	-69.58	-13	-56.58	-75.64	-75.53	2.5	10.60	H
	3346.08	-68.44	-13	-55.44	-76.44	-74.26	4.63	12.60	H
	1673.04	-66.07	-13	-53.07	-67.91	-70.44	2.88	9.40	V
	2509.56	-70.12	-13	-57.12	-76.07	-76.07	2.50	10.60	V
	3346.08	-68.42	-13	-55.42	-76.45	-74.24	4.63	12.60	V
Highest	1696.62	-61.49	-13	-48.49	-63.20	-65.86	2.88	9.40	H
	2544.93	-69.26	-13	-56.26	-75.32	-75.21	2.5	10.60	H
	3393.24	-68.68	-13	-55.68	-76.68	-74.50	4.63	12.60	H
	1696.62	-64.94	-13	-51.94	-66.78	-69.31	2.88	9.40	V
	2544.93	-67.61	-13	-54.61	-73.56	-73.56	2.50	10.60	V
	3393.24	-68.64	-13	-55.64	-76.67	-74.46	4.63	12.60	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GSM1900 (GPRS class 8)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700.4	-59.42	-13	-46.42	-73.04	-67.00	5.02	12.60	H
	5550.6	-50.43	-13	-37.43	-67.03	-56.23	7.3	13.10	H
	7400.8	-58.35	-13	-45.35	-78.33	-61.92	7.73	11.30	H
	3700.4	-54.27	-13	-41.27	-68.6	-61.85	5.02	12.6	V
	5550.6	-55.45	-13	-42.45	-71.98	-61.25	7.3	13.1	V
	7400.8	-58.69	-13	-45.69	-78.33	-62.26	7.73	11.3	V
Middle	3760	-51.14	-13	-38.14	-64.76	-58.72	5.02	12.60	H
	5640	-50.30	-13	-37.30	-66.90	-56.10	7.3	13.10	H
	7520	-59.22	-13	-46.22	-79.20	-62.79	7.73	11.30	H
	3760	-51.54	-13	-38.54	-65.87	-59.12	5.02	12.6	V
	5640	-48.74	-13	-35.74	-65.27	-54.54	7.3	13.1	V
	7520	-59.44	-13	-46.44	-79.08	-63.01	7.73	11.3	V
Highest	3819.6	-52.68	-13	-39.68	-66.30	-60.26	5.02	12.60	H
	5729.4	-52.02	-13	-39.02	-68.62	-57.82	7.3	13.10	H
	7639.2	-57.84	-13	-44.84	-77.82	-61.41	7.73	11.30	H
	3819.6	-51.78	-13	-38.78	-66.11	-59.36	5.02	12.6	V
	5729.4	-50.75	-13	-37.75	-67.28	-56.55	7.3	13.1	V
	7639.2	-58.22	-13	-45.22	-77.86	-61.79	7.73	11.3	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GSM1900 (EDGE class 8)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700.4	-59.97	-13	-46.97	-73.59	-67.55	5.02	12.60	H
	5550.6	-60.51	-13	-47.51	-77.11	-66.31	7.3	13.10	H
	7400.8	-58.70	-13	-45.70	-78.68	-62.27	7.73	11.30	H
	3700.4	-61.37	-13	-48.37	-75.7	-68.95	5.02	12.6	V
	5550.6	-59.90	-13	-46.90	-76.43	-65.70	7.3	13.1	V
	7400.8	-58.69	-13	-45.69	-78.33	-62.26	7.73	11.3	V
Middle	3760	-59.88	-13	-46.88	-73.50	-67.46	5.02	12.60	H
	5640	-59.90	-13	-46.90	-76.50	-65.70	7.3	13.10	H
	7520	-58.97	-13	-45.97	-78.95	-62.54	7.73	11.30	H
	3760	-58.17	-13	-45.17	-72.5	-65.75	5.02	12.6	V
	5640	-53.87	-13	-40.87	-70.4	-59.67	7.3	13.1	V
	7520	-59.44	-13	-46.44	-79.08	-63.01	7.73	11.3	V
Highest	3819.6	-57.99	-13	-44.99	-71.61	-65.57	5.02	12.60	H
	5729.4	-60.09	-13	-47.09	-76.69	-65.89	7.3	13.10	H
	7639.2	-58.21	-13	-45.21	-78.19	-61.78	7.73	11.30	H
	3819.6	-61.95	-13	-48.95	-76.28	-69.53	5.02	12.6	V
	5729.4	-61.88	-13	-48.88	-78.41	-67.68	7.3	13.1	V
	7639.2	-58.41	-13	-45.41	-78.05	-61.98	7.73	11.3	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA Band V(RMC 12.2Kbps)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1652.8	-70.93	-13	-57.93	-72.64	-75.30	2.88	9.40	H
	2479.2	-69.76	-13	-56.76	-75.82	-75.71	2.5	10.60	H
	3305.6	-68.30	-13	-55.30	-76.30	-74.12	4.63	12.60	H
	1652.8	-71.34	-13	-58.34	-73.18	-75.71	2.88	9.40	V
	2479.2	-70.01	-13	-57.01	-75.96	-75.96	2.50	10.60	V
	3305.6	-68.38	-13	-55.38	-76.41	-74.20	4.63	12.60	V
Middle	1672.8	-72.35	-13	-59.35	-74.06	-76.72	2.88	9.40	H
	2509.2	-69.88	-13	-56.88	-75.94	-75.83	2.5	10.60	H
	3345.6	-68.29	-13	-55.29	-76.29	-74.11	4.63	12.60	H
	1672.8	-72.27	-13	-59.27	-74.11	-76.64	2.88	9.40	V
	2509.2	-70.02	-13	-57.02	-75.97	-75.97	2.50	10.60	V
	3345.6	-68.19	-13	-55.19	-76.22	-74.01	4.63	12.60	V
Highest	1693.2	-71.50	-13	-58.50	-73.21	-75.87	2.88	9.40	H
	2539.8	-69.85	-13	-56.85	-75.91	-75.80	2.5	10.60	H
	3386.4	-68.30	-13	-55.30	-76.30	-74.12	4.63	12.60	H
	1693.2	-72.15	-13	-59.15	-73.99	-76.52	2.88	9.40	V
	2539.8	-69.71	-13	-56.71	-75.66	-75.66	2.50	10.60	V
	3386.4	-68.53	-13	-55.53	-76.56	-74.35	4.63	12.60	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA Band II(RMC 12.2Kbps)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3704.8	-63.03	-13	-50.03	-76.65	-70.61	5.02	12.60	H
	5557.2	-61.65	-13	-48.65	-78.25	-67.45	7.3	13.10	H
	7409.6	-58.44	-13	-45.44	-78.42	-62.01	7.73	11.30	H
	3704.8	-62.17	-13	-49.17	-76.5	-69.75	5.02	12.6	V
	5557.2	-61.82	-13	-48.82	-78.35	-67.62	7.3	13.1	V
	7409.6	-58.88	-13	-45.88	-78.52	-62.45	7.73	11.3	V
Middle	3760	-62.70	-13	-49.70	-76.32	-70.28	5.02	12.60	H
	5640	-61.82	-13	-48.82	-78.42	-67.62	7.3	13.10	H
	7520	-58.44	-13	-45.44	-78.42	-62.01	7.73	11.30	H
	3760	-61.75	-13	-48.75	-76.08	-69.33	5.02	12.6	V
	5640	-61.64	-13	-48.64	-78.17	-67.44	7.3	13.1	V
	7520	-58.60	-13	-45.60	-78.24	-62.17	7.73	11.3	V
Highest	3815.2	-62.57	-13	-49.57	-76.19	-70.15	5.02	12.60	H
	5722.8	-61.93	-13	-48.93	-78.53	-67.73	7.3	13.10	H
	7630.4	-58.48	-13	-45.48	-78.46	-62.05	7.73	11.30	H
	3815.2	-60.99	-13	-47.99	-75.32	-68.57	5.02	12.6	V
	5722.8	-61.90	-13	-48.90	-78.43	-67.70	7.3	13.1	V
	7630.4	-58.62	-13	-45.62	-78.26	-62.19	7.73	11.3	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA Band IV(RMC 12.2Kbps)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3424.2	-60.39	-13	-47.39	-74.09	-68.36	4.63	12.60	H
	5137.2	-58.63	-13	-45.63	-76.56	-65.08	6.25	12.70	H
	6849.6	-58.35	-13	-45.35	-77.97	-63.12	8.23	13.00	H
	3424.2	-61.30	-13	-48.30	-72.71	-69.27	4.63	12.6	V
	5137.2	-62.68	-13	-49.68	-76.29	-69.13	6.25	12.7	V
	6849.6	-58.79	-13	-45.79	-77.91	-63.56	8.23	13	V
Middle	3465.2	-59.36	-13	-46.36	-73.06	-67.33	4.63	12.60	H
	5197.8	-57.76	-13	-44.76	-75.69	-64.21	6.25	12.70	H
	6930.4	-57.77	-13	-44.77	-77.39	-62.54	8.23	13.00	H
	3465.2	-61.52	-13	-48.52	-72.93	-69.49	4.63	12.6	V
	5197.8	-62.43	-13	-49.43	-76.04	-68.88	6.25	12.7	V
	6930.4	-58.27	-13	-45.27	-77.39	-63.04	8.23	13	V
Highest	3505.2	-61.23	-13	-48.23	-74.93	-69.20	4.63	12.60	H
	5257.8	-58.92	-13	-45.92	-76.85	-65.37	6.25	12.70	H
	7010.4	-58.61	-13	-45.61	-78.23	-63.38	8.23	13.00	H
	3505.2	-62.12	-13	-49.12	-73.53	-70.09	4.63	12.6	V
	5257.8	-63.06	-13	-50.06	-76.67	-69.51	6.25	12.7	V
	7010.4	-58.77	-13	-45.77	-77.89	-63.54	8.23	13	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



For Down Antenna (SIM2)

GSM850 (GPRS class 8)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648.4	-44.01	-13	-31.01	-48.53	-48.38	2.88	9.40	H
	2472.6	-59.27	-13	-46.27	-65.33	-65.22	2.5	10.60	H
	3296.8	-63.44	-13	-50.44	-71.44	-69.26	4.63	12.60	H
	4121	-63.78	-13	-50.78	-75.86	-69.21	5.02	12.60	H
	1648.4	-47.84	-13	-34.84	-51.73	-52.21	2.88	9.40	V
	2472.6	-61.06	-13	-48.06	-67.01	-67.01	2.50	10.60	V
	3296.8	-66.74	-13	-53.74	-74.77	-72.56	4.63	12.60	V
	4121	-61.58	-13	-48.58	-73.54	-67.01	5.02	12.60	V
Middle	1672	-48.49	-13	-35.49	-52.34	-52.86	2.88	9.40	H
	2510	-43.21	-13	-30.21	-52.69	-49.16	2.5	10.60	H
	3346	-66.96	-13	-53.96	-74.96	-72.78	4.63	12.60	H
	1672	-46.34	-13	-33.34	-50.50	-50.71	2.88	9.40	V
	2510	-54.86	-13	-41.86	-60.81	-60.81	2.50	10.60	V
	3346	-65.79	-13	-52.79	-73.82	-71.61	4.63	12.60	V
Highest	1697.6	-46.72	-13	-33.72	-51.01	-51.09	2.88	9.40	H
	2546.4	-42.03	-13	-29.03	-51.74	-47.98	2.5	10.60	H
	3395.2	-64.68	-13	-51.68	-72.68	-70.50	4.63	12.60	H
	1697.6	-47.18	-13	-34.18	-51.03	-51.55	2.88	9.40	V
	2546.4	-39.76	-13	-26.76	-49.85	-45.71	2.50	10.60	V
	3395.2	-66.20	-13	-53.20	-74.23	-72.02	4.63	12.60	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GSM1900 (GPRS class 8)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700.4	-51.38	-13	-38.38	-65.00	-58.96	5.02	12.60	H
	5550.6	-54.20	-13	-41.20	-70.80	-60.00	7.3	13.10	H
	7400.8	-58.48	-13	-45.48	-78.46	-62.05	7.73	11.30	H
	3700.4	-54.89	-13	-41.89	-69.22	-62.47	5.02	12.6	V
	5550.6	-50.19	-13	-37.19	-66.72	-55.99	7.3	13.1	V
	7400.8	-59.04	-13	-46.04	-78.68	-62.61	7.73	11.3	V
Middle	3760	-51.33	-13	-38.33	-64.95	-58.91	5.02	12.60	H
	5640	-47.23	-13	-34.23	-63.83	-53.03	7.3	13.10	H
	7520	-58.73	-13	-45.73	-78.71	-62.30	7.73	11.30	H
	3760	-48.83	-13	-35.83	-63.16	-56.41	5.02	12.6	V
	5640	-51.38	-13	-38.38	-67.91	-57.18	7.3	13.1	V
	7520	-58.98	-13	-45.98	-78.62	-62.55	7.73	11.3	V
Highest	3819.6	-52.65	-13	-39.65	-66.27	-60.23	5.02	12.60	H
	5729.4	-61.97	-13	-48.97	-78.57	-67.77	7.3	13.10	H
	7639.2	-58.30	-13	-45.30	-78.28	-61.87	7.73	11.30	H
	3819.6	-50.17	-13	-37.17	-64.5	-57.75	5.02	12.6	V
	5729.4	-61.22	-13	-48.22	-77.75	-67.02	7.3	13.1	V
	7639.2	-58.64	-13	-45.64	-78.28	-62.21	7.73	11.3	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.