



FCC RF Test Report

APPLICANT : ASUSTeK COMPUTER INC.
EQUIPMENT : ASUS Phone
BRAND NAME : ASUS
MODEL NAME : ASUS_Z012DC
FCC ID : MSQZ012DC
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. 01, 2016 and testing was completed on Jun. 05, 2016. 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.

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Approved by: Jones Tsai / Manager

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FCC ID : MSQZ012DC

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG640143A	Rev. 01	Initial issue of report	Jun. 16, 2016



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	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+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Conducted Emission	< 43+10log10(P[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		



Report Section	FCC Rule	Description	Limit	Result	Remark
4.4	§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	-
4.5	§2.1053 §22.917(a) §24.238(a) §27.53(h)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 22.63 dB at 2472.000 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.

Jiangsu high tech Zone of Suzhou City, Ma Wan Road, No. 288

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	ASUS Phone
Brand Name	ASUS
Model Name	ASUS_Z012DC
FCC ID	MSQZ012DC
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v4.0 EDR/LE
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	GSM/GPRS/EDGE: 850: 824.2 MHz ~ 848.8 MHz 1900: 1850.2 MHz ~ 1909.8MHz WCDMA: Band V: 826.4 MHz ~ 846.6 MHz Band II: 1852.4 MHz ~ 1907.6 MHz Band IV: 1712.4 MHz ~ 1752.6 MHz
Rx Frequency	GSM/GPRS/EDGE: 850: 869.2 MHz ~ 893.8 MHz 1900: 1930.2 MHz ~ 1989.8 MHz WCDMA: Band V: 871.4 MHz ~ 891.6 MHz Band II: 1932.4 MHz ~ 1987.6 MHz Band IV: 2112.4 MHz ~ 2152.6 MHz
Maximum Output Power to Antenna	GSM/GPRS/EDGE: 850: 32.50 dBm 1900: 29.59 dBm WCDMA: Band V: 23.22 dBm Band II: 22.48 dBm Band IV: 21.42 dBm
Antenna Type	PIFA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: 64QAM (Downlink) HSUPA: QPSK (Uplink)

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22	GSM850 GPRS class 8	GMSK	0.4909	0.0084 ppm	247KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.0536	0.0048 ppm	244KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0628	0.0120 ppm	4M13F9W
Part 24	GSM1900 GPRS class 8	GMSK	0.6637	0.0021 ppm	248KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.2280	0.0016 ppm	250KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.1452	0.0090 ppm	4M13F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.1578	0.0058 ppm	4M12F9W

1.7 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 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



1.8 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

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:

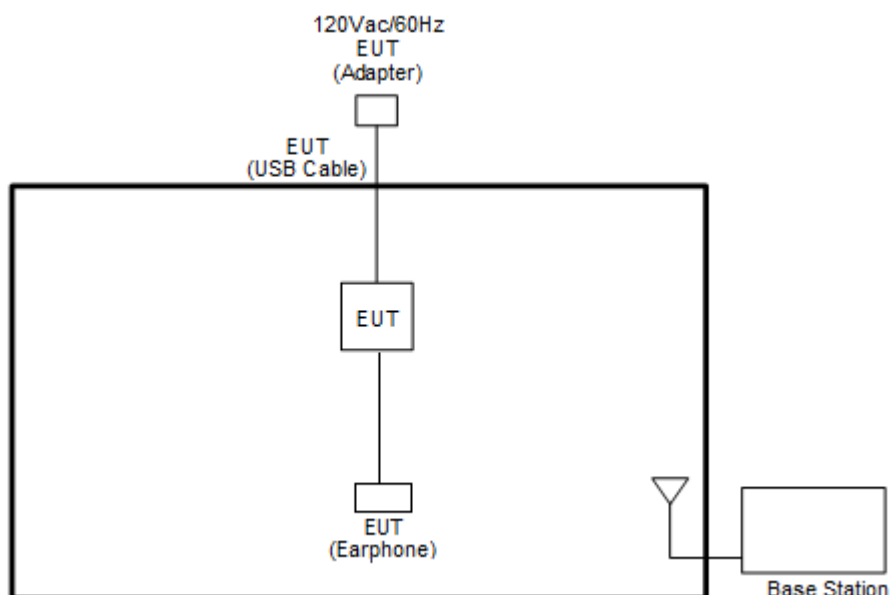
1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
2. 30 MHz to 18000 MHz for WCDMA Band IV.
3. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

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

2.4 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 4.2 dB and a 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

$$= 4.2 + 10 = 14.2 \text{ (dB)}$$

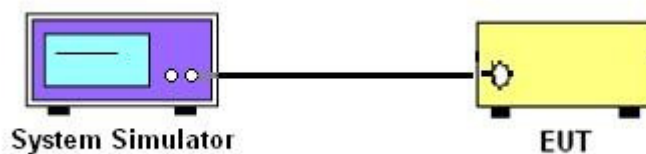
3 Conducted Test Result

3.1 Measuring Instruments

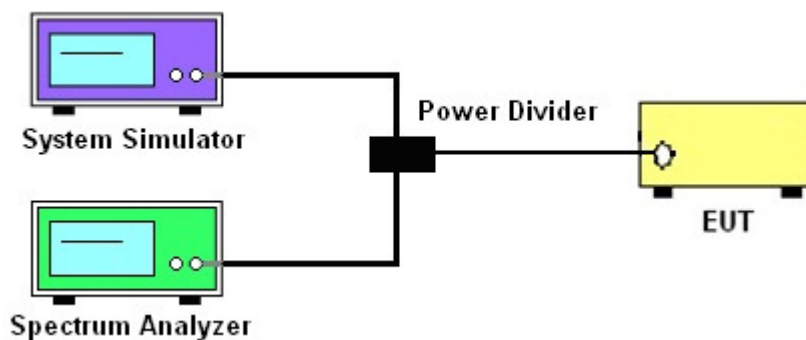
See list of measuring instruments of this test report.

3.2 Test Setup

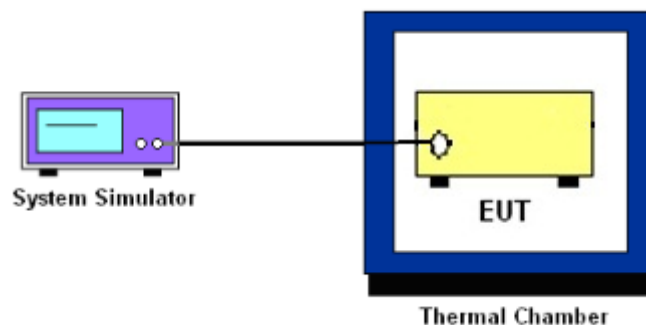
3.2.1 Conducted Output Power



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

3.4.1 Description of the Conducted Output Power

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.

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)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

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 $25\pm 5^{\circ}\text{C}$ 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.

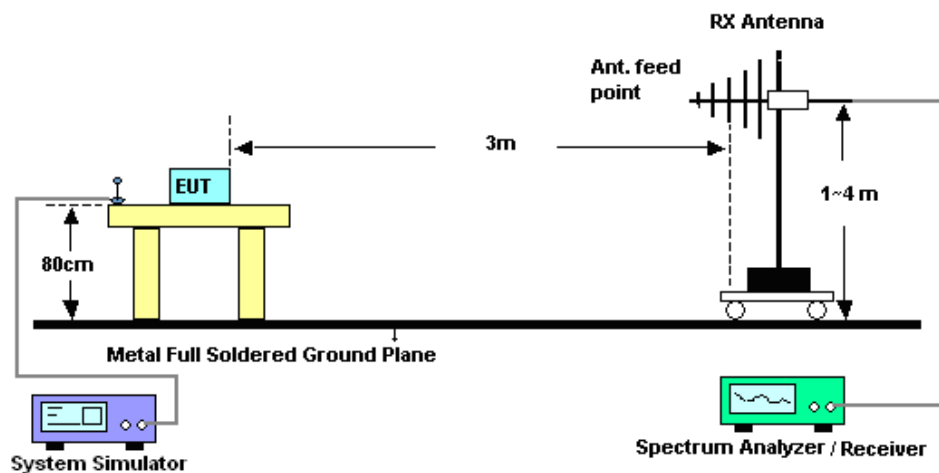
4 Radiated Test Items

4.1 Measuring Instruments

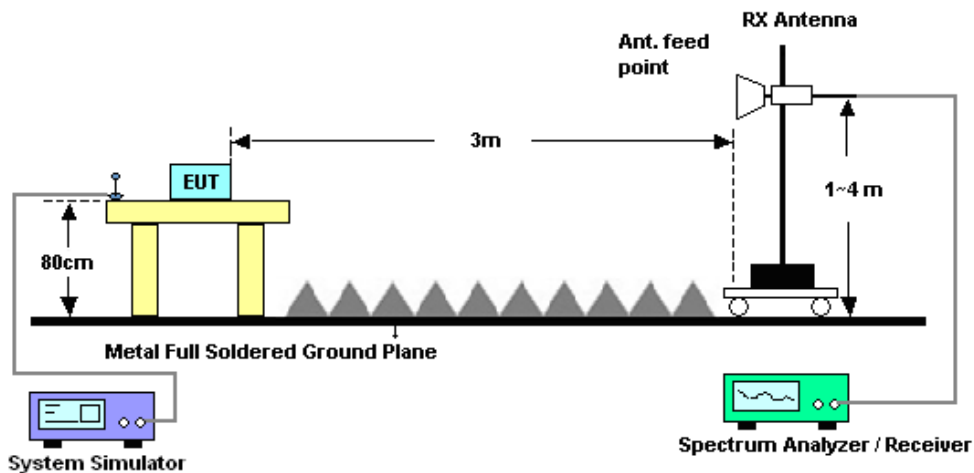
See list of measuring instruments of this test report.

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 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

4.4.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-D-2010, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band) and 1 Watts (AWS Band).

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-D-2010 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$. Take the record of the output power at substitution antenna.



	GSM/GPRS/EDGE	WCDMA/HSPA
SPAN	500kHz	10MHz
RBW	10kHz	100kHz
VBW	30kHz	300kHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

4.5 Field Strength of Spurious Radiation Measurement

4.5.1 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.

4.5.2 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 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. 24, 2015	May 22, 2016 ~ Jun. 05, 2016	Jun. 23, 2016	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30℃ ~70℃	Nov. 20, 2015	May 22, 2016 ~ Jun. 05, 2016	Nov. 19, 2016	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL883644	Voltage:0~20V;Current:0~5A	Nov. 26, 2015	May 22, 2016 ~ Jun. 05, 2016	Nov. 25, 2016	Conducted (TH03-HY)
Base Station (Measure)	Rohde & Schwarz	CMU200	117995	GSM / GPRS / WCDMA / CDMA	Jul. 26, 2015	May 22, 2016 ~ Jun. 05, 2016	Jul. 25, 2016	Conducted (TH03-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	May 19, 2016 ~ May 20, 2016	Nov. 19, 2016	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Nov. 17, 2015	May 19, 2016 ~ May 20, 2016	Nov. 16, 2016	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 08, 2015	May 19, 2016 ~ May 20, 2016	Oct. 07, 2016	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 19, 2015	May 19, 2016 ~ May 20, 2016	Nov. 18, 2016	Radiation (03CH11-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1902247	1GHz~18GHz	Jul. 01, 2015	May 19, 2016 ~ May 20, 2016	Jun. 30, 2016	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Sep. 24, 2015	May 19, 2016 ~ May 20, 2016	Sep. 23, 2016	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	May 19, 2016 ~ May 20, 2016	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degree	N/A	May 19, 2016 ~ May 20, 2016	N/A	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	37059	30MHz~1GHz	Dec. 29, 2015	May 19, 2016 ~ May 20, 2016	Dec. 28, 2016	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1GHz ~ 18GHz	Nov. 02, 2015	May 19, 2016 ~ May 20, 2016	Nov. 01, 2016	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 02, 2015	May 19, 2016 ~ May 20, 2016	Nov. 01, 2016	Radiation (03CH11-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May 22, 2015	May 19, 2016 ~ May 20, 2016	May 21, 2016	Radiation (03CH11-HY)
Preamplifier	MITEQ	JS44-1800400 0-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	May 19, 2016 ~ May 20, 2016	Jun. 01, 2016	Radiation (03CH11-HY)



6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9
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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	32.38	32.45	32.48	29.58	29.55	29.41
GPRS class 8	32.41	32.50	32.47	29.59	29.56	29.43
GPRS class 10	32.34	32.49	32.40	29.43	29.46	29.32
EGPRS class 8	26.94	26.86	26.81	25.41	25.38	25.37
EGPRS class 10	26.73	26.65	26.63	25.34	25.31	25.30

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
RMC 12.2K	23.16	23.22	23.17	22.48	22.42	22.22	21.34	21.18	21.42
HSDPA Subtest-1	22.21	22.38	22.35	21.41	21.51	21.15	20.19	20.03	20.24
HSDPA Subtest-2	22.15	22.28	22.34	21.33	21.22	21.39	20.18	20.01	20.21
HSDPA Subtest-3	21.61	21.77	21.76	20.88	20.61	20.62	19.69	19.53	19.79
HSDPA Subtest-4	21.65	21.82	21.81	20.65	20.80	20.79	19.66	19.51	19.77
HSUPA Subtest-1	22.10	22.26	22.18	21.07	21.21	21.35	20.21	20.06	20.37
HSUPA Subtest-2	20.15	20.32	20.22	19.81	19.95	19.76	18.24	18.10	18.34
HSUPA Subtest-3	21.08	21.25	21.18	20.43	20.35	20.19	19.31	19.19	19.38
HSUPA Subtest-4	20.16	20.33	20.25	19.36	19.24	19.50	18.25	18.21	18.34
HSUPA Subtest-5	22.16	22.36	22.21	21.30	21.53	21.44	20.19	20.08	20.26

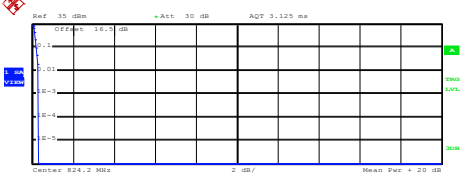
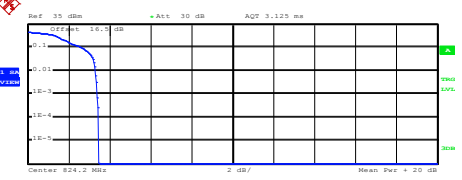
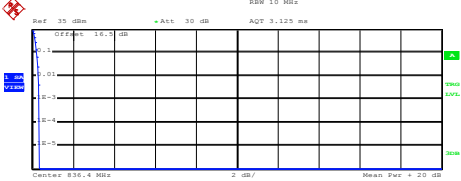
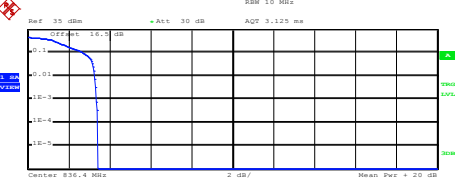
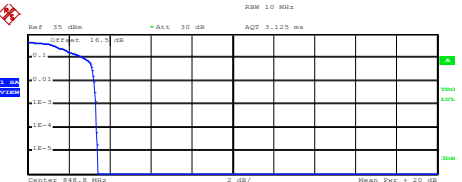


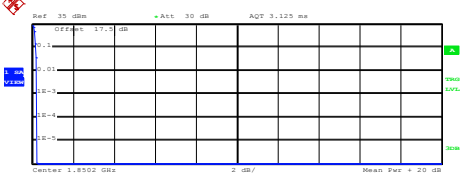
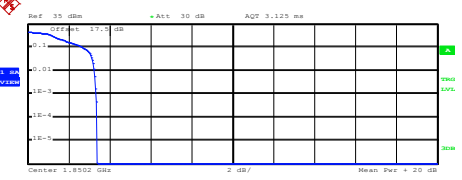
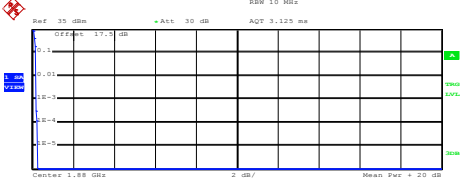
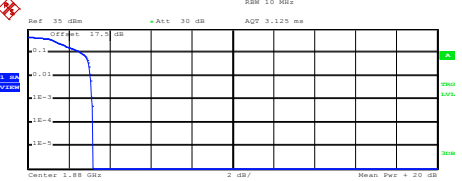
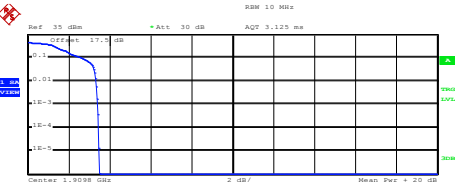
A1. GSM

Peak-to-Average Ratio

Mode	GSM850		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.32	3.40	PASS
Middle CH	0.36	3.36	
Highest CH	0.32	3.32	

Mode	GSM1900		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.24	3.36	PASS
Middle CH	0.20	3.12	
Highest CH	0.28	3.44	

GSM850 (GPRS class 8)	GSM850 (EDGE class 8)
Lowest Channel	Lowest Channel
 Center 824.2 MHz 2 dB/ Mean Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 32.04 dBm Peak 32.36 dBm Crest 0.32 dB 10 % 0.20 dB 1 % 0.32 dB .1 % 0.32 dB .01 % 0.32 dB Date: 22.MAY.2016 13:54:57	 Center 824.2 MHz 2 dB/ Mean Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.22 dBm Peak 29.68 dBm Crest 3.46 dB 10 % 2.64 dB 1 % 3.32 dB .1 % 3.40 dB .01 % 3.48 dB Date: 22.MAY.2016 14:16:46
Middle Channel	Middle Channel
 Center 835.4 MHz 2 dB/ Mean Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 31.61 dBm Peak 31.94 dBm Crest 0.33 dB 10 % 0.24 dB 1 % 0.32 dB .1 % 0.36 dB .01 % 0.36 dB Date: 22.MAY.2016 13:55:12	 Center 835.4 MHz 2 dB/ Mean Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.26 dBm Peak 29.68 dBm Crest 3.42 dB 10 % 2.72 dB 1 % 3.28 dB .1 % 3.36 dB .01 % 3.44 dB Date: 22.MAY.2016 14:17:04
Highest Channel	Highest Channel
 Center 848.8 MHz 2 dB/ Mean Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 32.18 dBm Peak 32.57 dBm Crest 0.39 dB 10 % 0.20 dB 1 % 0.32 dB .1 % 0.32 dB .01 % 0.40 dB Date: 22.MAY.2016 13:55:29	 Center 848.8 MHz 2 dB/ Mean Pwr + 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.69 dBm Peak 30.10 dBm Crest 3.41 dB 10 % 2.76 dB 1 % 3.24 dB .1 % 3.32 dB .01 % 3.36 dB Date: 22.MAY.2016 14:17:25

GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)
Lowest Channel	Lowest Channel
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.51 dBm Peak 29.75 dBm Crest 0.24 dB 10 % 0.16 dB 1 % 0.24 dB .1 % 0.24 dB .01 % 0.24 dB Date: 22.MAY.2016 14:44:22	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.08 dBm Peak 29.47 dBm Crest 3.39 dB 10 % 2.72 dB 1 % 3.24 dB .1 % 3.36 dB .01 % 3.40 dB Date: 22.MAY.2016 15:06:27
Middle Channel	Middle Channel
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.27 dBm Peak 29.54 dBm Crest 0.26 dB 10 % 0.16 dB 1 % 0.20 dB .1 % 0.20 dB .01 % 0.24 dB Date: 22.MAY.2016 14:44:40	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.01 dBm Peak 29.19 dBm Crest 3.18 dB 10 % 2.60 dB 1 % 3.04 dB .1 % 3.12 dB .01 % 3.20 dB Date: 22.MAY.2016 15:06:43
Highest Channel	Highest Channel
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.13 dBm Peak 29.40 dBm Crest 0.27 dB 10 % 0.20 dB 1 % 0.24 dB .1 % 0.28 dB .01 % 0.28 dB Date: 22.MAY.2016 14:44:59	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 25.43 dBm Peak 28.90 dBm Crest 3.47 dB 10 % 2.68 dB 1 % 3.32 dB .1 % 3.44 dB .01 % 3.48 dB Date: 22.MAY.2016 15:07:01

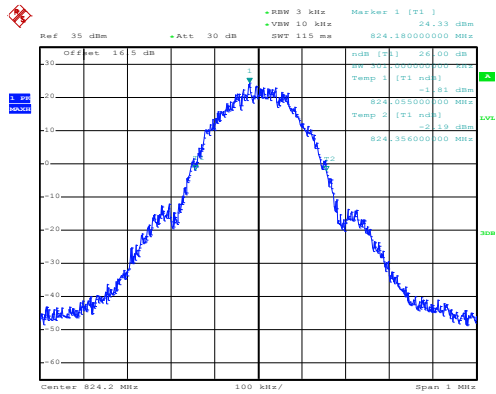
**26dB Bandwidth**

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.301	0.298
Middle CH	0.312	0.309
Highest CH	0.302	0.305

Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.315	0.301
Middle CH	0.294	0.303
Highest CH	0.313	0.296

GSM850 (GPRS class 8)

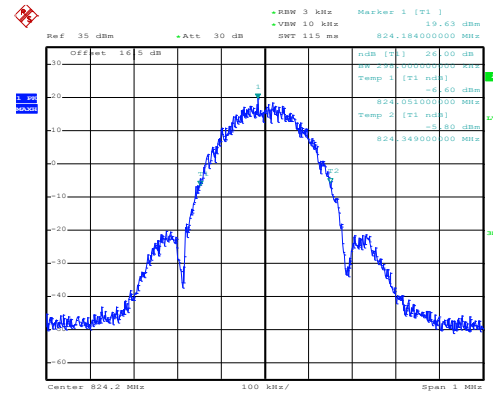
Lowest Channel



Date: 22.MAY.2016 13:45:09

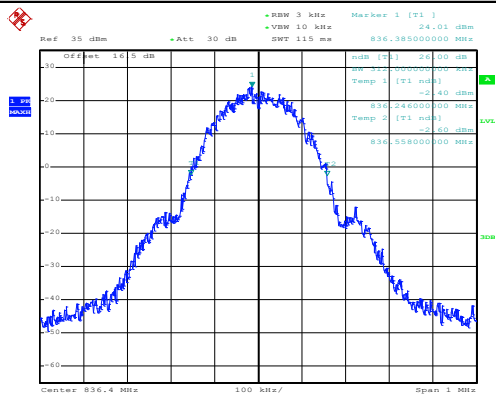
GSM850 (EDGE class 8)

Lowest Channel



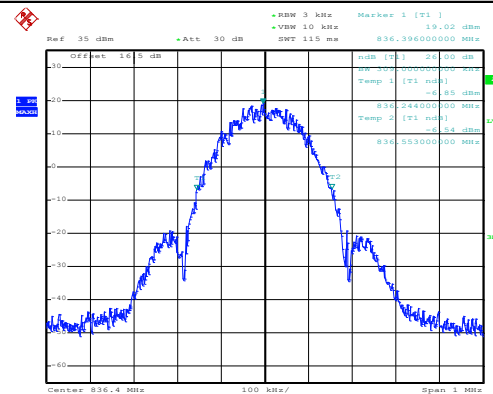
Date: 22.MAY.2016 14:06:52

Middle Channel



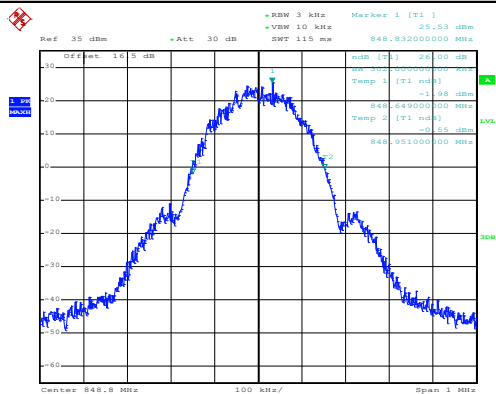
Date: 22.MAY.2016 13:45:44

Middle Channel



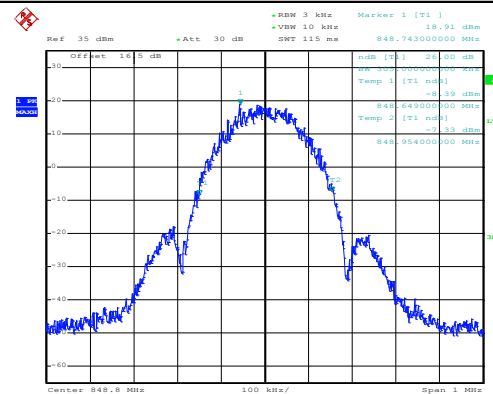
Date: 22.MAY.2016 14:07:33

Highest Channel



Date: 22.MAY.2016 13:46:18

Highest Channel

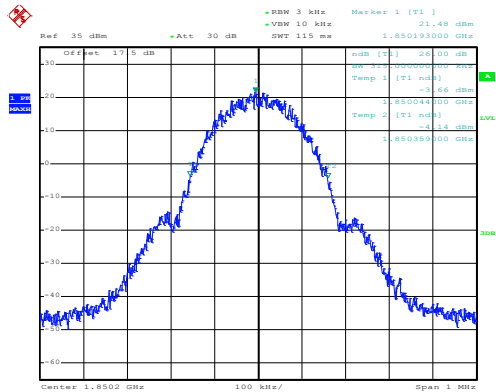


Date: 22.MAY.2016 14:08:10



GSM1900 (GPRS class 8)

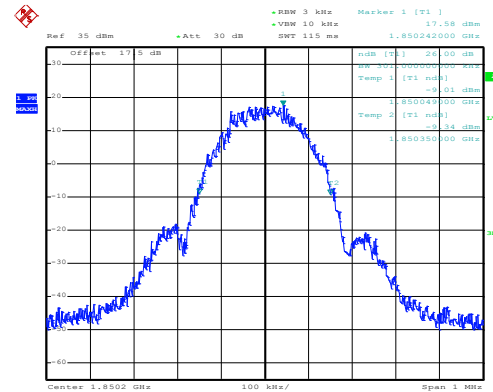
Lowest Channel



Date: 22.MAY.2016 14:34:21

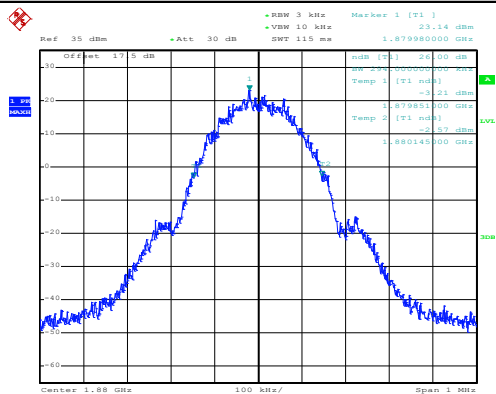
GSM1900 (EDGE class 8)

Lowest Channel



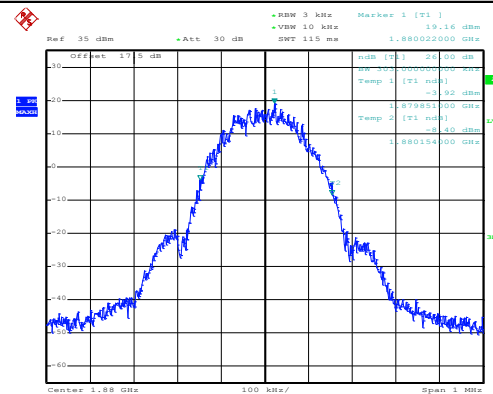
Date: 22.MAY.2016 14:59:08

Middle Channel



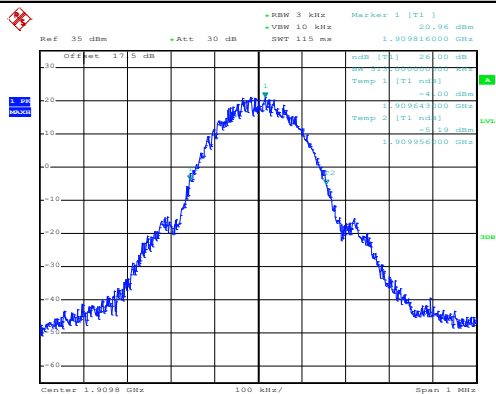
Date: 22.MAY.2016 14:34:56

Middle Channel



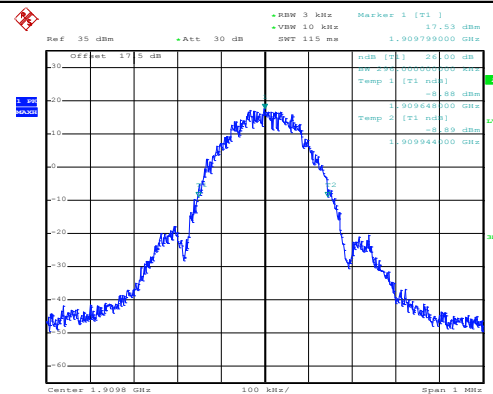
Date: 22.MAY.2016 14:59:52

Highest Channel



Date: 22.MAY.2016 14:35:30

Highest Channel

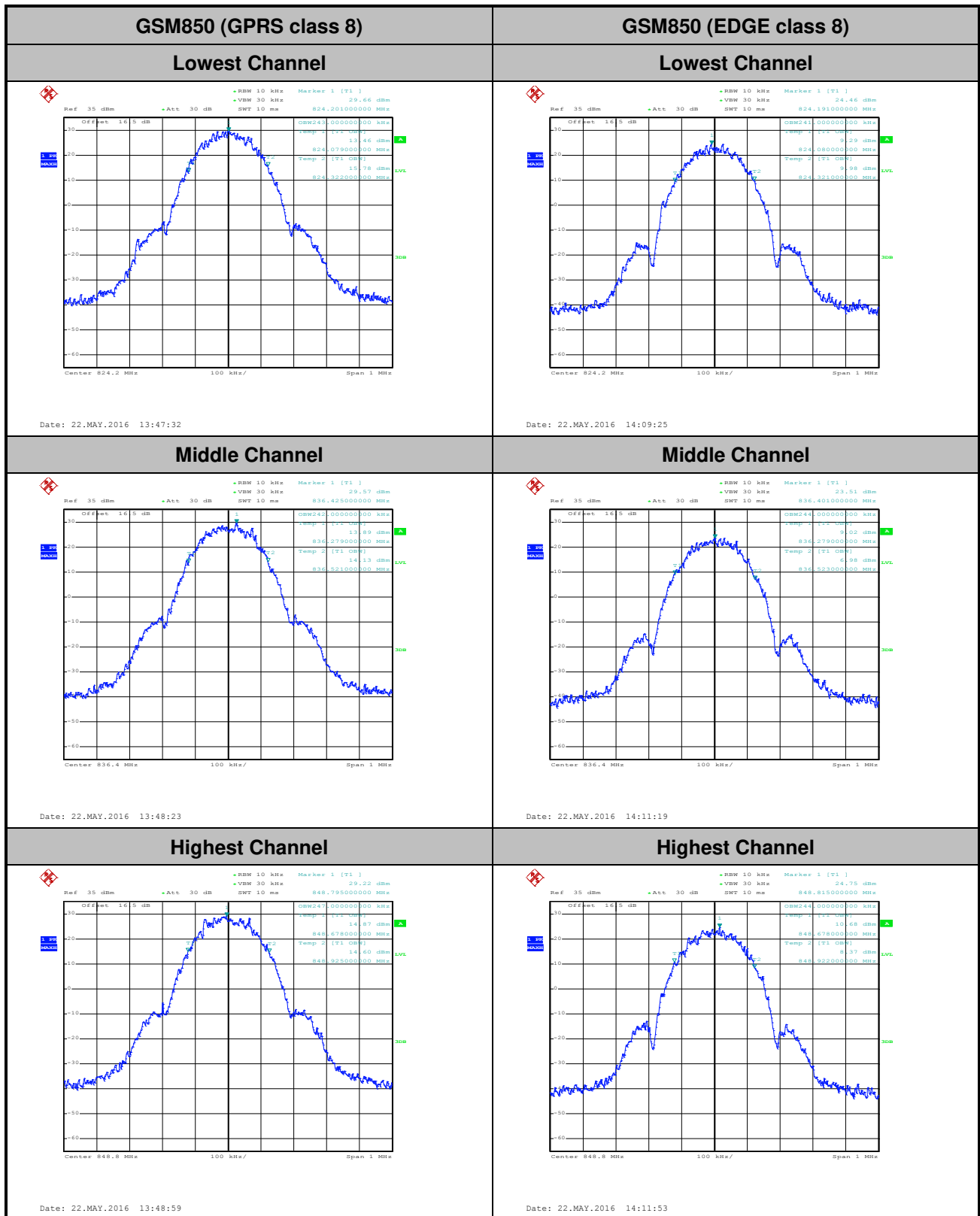


Date: 22.MAY.2016 15:00:31

**Occupied Bandwidth**

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.243	0.241
Middle CH	0.242	0.244
Highest CH	0.247	0.244

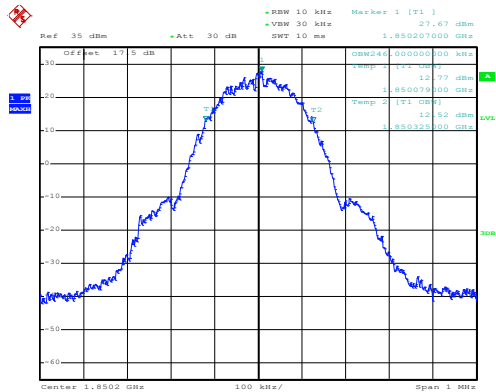
Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.246	0.243
Middle CH	0.248	0.242
Highest CH	0.245	0.250





GSM1900 (GPRS class 8)

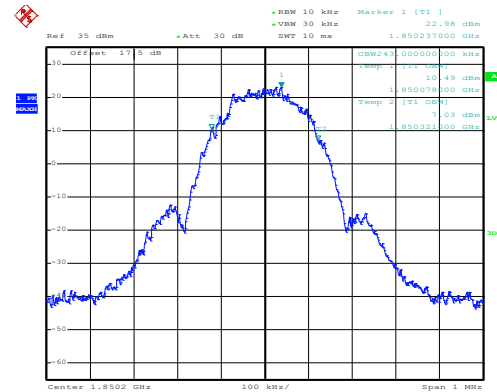
Lowest Channel



Date: 22.MAY.2016 14:36:31

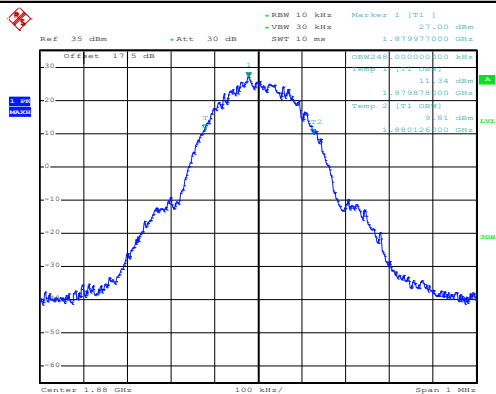
GSM1900 (EDGE class 8)

Lowest Channel



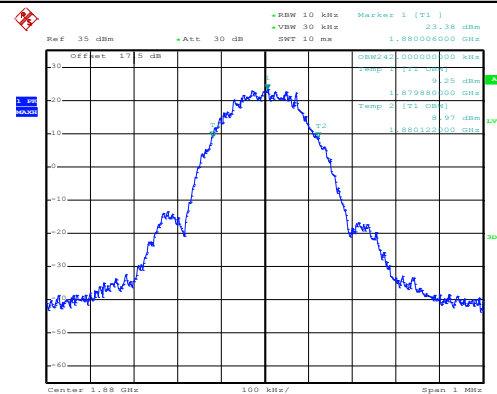
Date: 22.MAY.2016 15:01:41

Middle Channel



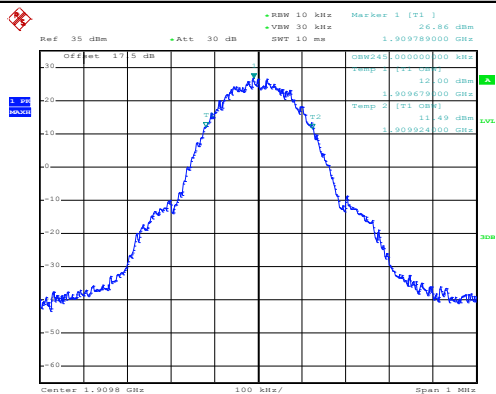
Date: 22.MAY.2016 14:37:08

Middle Channel



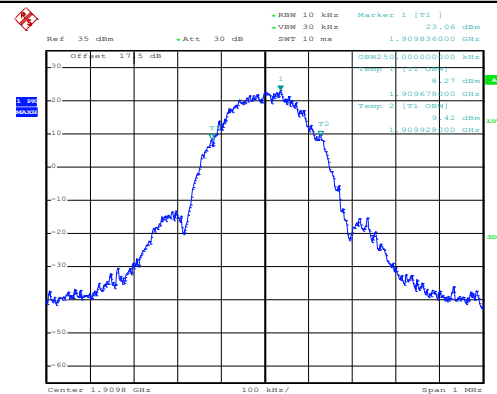
Date: 22.MAY.2016 15:02:15

Highest Channel



Date: 22.MAY.2016 14:37:47

Highest Channel



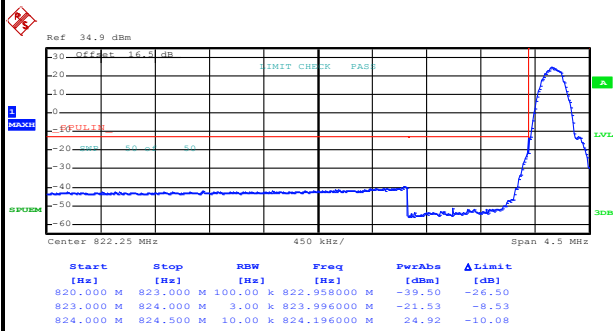
Date: 22.MAY.2016 15:02:50



Conducted Band Edge

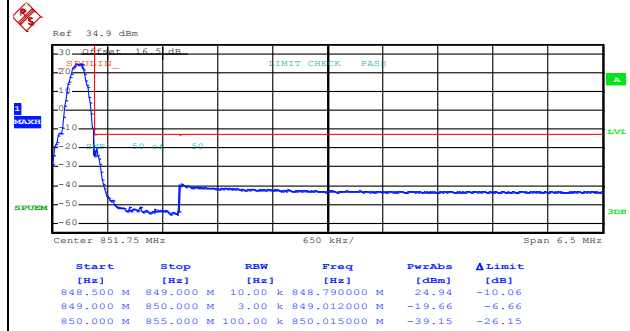
GSM850 (GPRS class 8)

Lowest Band Edge



Date: 22.MAY.2016 13:57:07

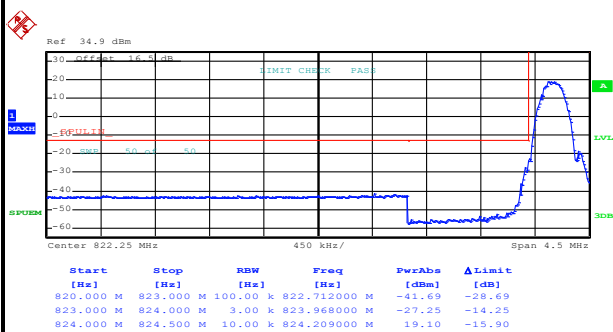
Highest Band Edge



Date: 22.MAY.2016 13:59:26

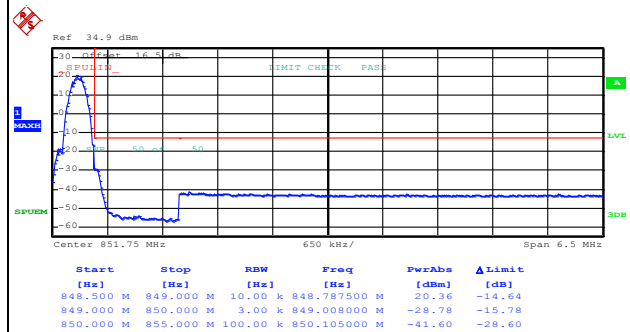
GSM850 (EDGE class 8)

Lowest Band Edge



Date: 22.MAY.2016 14:19:10

Highest Band Edge

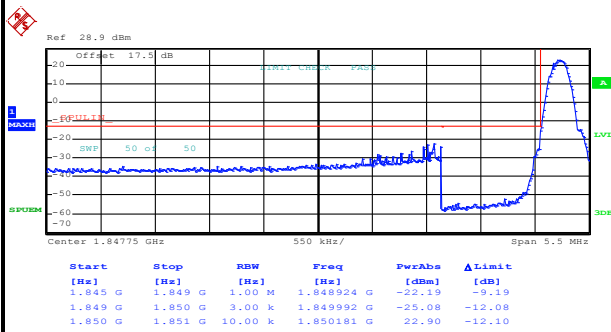


Date: 22.MAY.2016 14:22:21



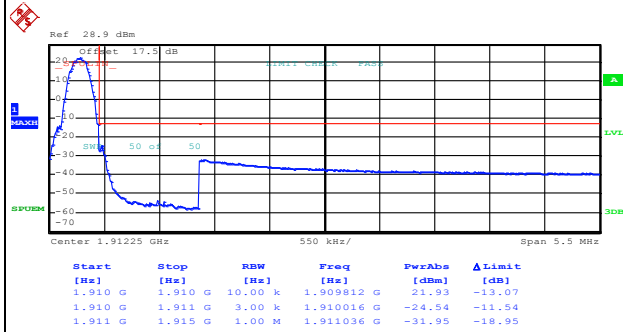
GSM1900 (GPRS class 8)

Lowest Band Edge



Date: 22.MAY.2016 14:51:54

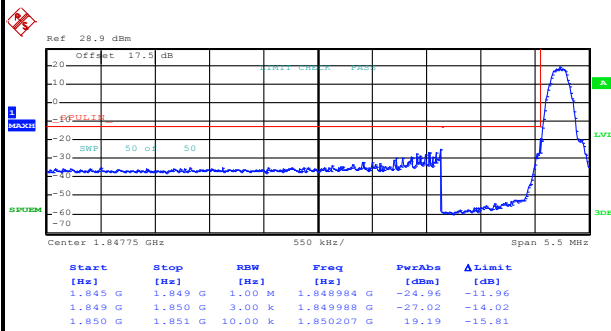
Highest Band Edge



Date: 22.MAY.2016 14:53:28

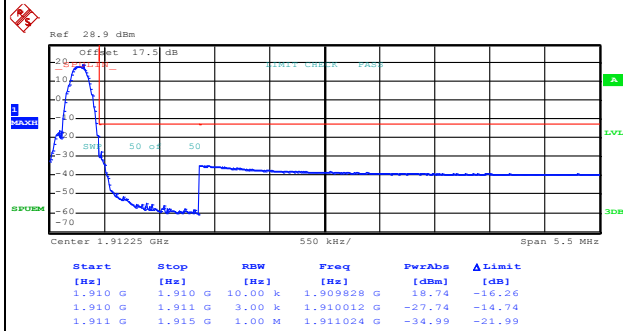
GSM1900 (EDGE class 8)

Lowest Band Edge



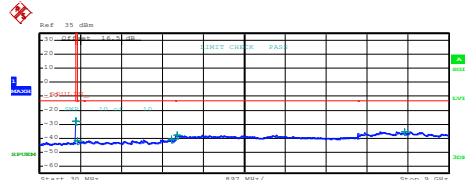
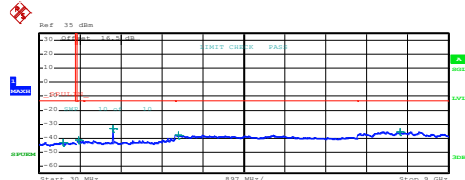
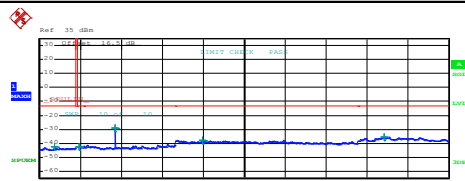
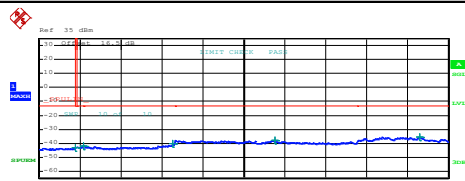
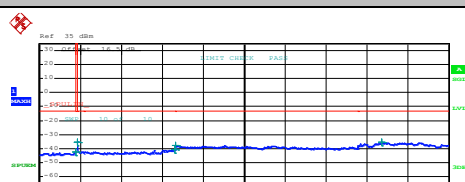
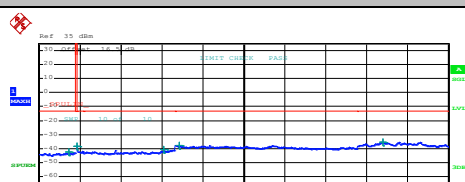
Date: 22.MAY.2016 15:08:41

Highest Band Edge



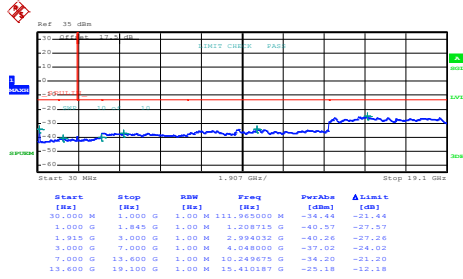
Date: 22.MAY.2016 15:10:37

Conducted Spurious Emission

GSM850 (GPRS class 8)		GSM850 (EDGE class 8)																																																																									
Lowest Channel		Lowest Channel																																																																									
 Ref: 35 dBm Start 30 MHz Stop 9 GHz <table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RBW [Hz]</th><th>Freq [Hz]</th><th>PerAbs [dBm]</th><th>ΔLimit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>820.000 M</td><td>1.00 M</td><td>819.802500 M</td><td>-27.64</td><td>-14.44</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>857.501250 M</td><td>-42.14</td><td>-29.14</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>2.921500 G</td><td>-40.88</td><td>-27.88</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.038000 G</td><td>-37.52</td><td>-24.52</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>8.033500 G</td><td>-35.63</td><td>-22.63</td></tr></tbody></table>		Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PerAbs [dBm]	ΔLimit [dB]	30.000 M	820.000 M	1.00 M	819.802500 M	-27.64	-14.44	855.000 M	1.000 G	1.00 M	857.501250 M	-42.14	-29.14	1.000 G	3.000 G	1.00 M	2.921500 G	-40.88	-27.88	3.000 G	7.000 G	1.00 M	3.038000 G	-37.52	-24.52	7.000 G	9.000 G	1.00 M	8.033500 G	-35.63	-22.63	 Ref: 35 dBm Start 30 MHz Stop 9 GHz <table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RBW [Hz]</th><th>Freq [Hz]</th><th>PerAbs [dBm]</th><th>ΔLimit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>820.000 M</td><td>1.00 M</td><td>819.802500 M</td><td>-27.64</td><td>-14.44</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>857.501250 M</td><td>-42.14</td><td>-29.14</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>2.921500 G</td><td>-40.88</td><td>-27.88</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.038000 G</td><td>-37.58</td><td>-24.58</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>8.049500 G</td><td>-35.51</td><td>-22.51</td></tr></tbody></table>		Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PerAbs [dBm]	ΔLimit [dB]	30.000 M	820.000 M	1.00 M	819.802500 M	-27.64	-14.44	855.000 M	1.000 G	1.00 M	857.501250 M	-42.14	-29.14	1.000 G	3.000 G	1.00 M	2.921500 G	-40.88	-27.88	3.000 G	7.000 G	1.00 M	3.038000 G	-37.58	-24.58	7.000 G	9.000 G	1.00 M	8.049500 G	-35.51	-22.51
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3.000 G	7.000 G	1.00 M	3.038000 G	-37.58	-24.58																																																																						
7.000 G	9.000 G	1.00 M	8.049500 G	-35.51	-22.51																																																																						
Date: 22.MAY.2016 13:50:42		Date: 22.MAY.2016 14:13:40																																																																									
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 Ref: 35 dBm Start 30 MHz Stop 9 GHz <table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RBW [Hz]</th><th>Freq [Hz]</th><th>PerAbs [dBm]</th><th>ΔLimit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>820.000 M</td><td>1.00 M</td><td>355.292500 M</td><td>-42.59</td><td>-29.59</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>884.761250 M</td><td>-42.45</td><td>-29.45</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>1.673000 G</td><td>-29.12</td><td>-16.12</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.609000 G</td><td>-37.90</td><td>-24.90</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>7.383500 G</td><td>-35.36</td><td>-22.36</td></tr></tbody></table>		Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PerAbs [dBm]	ΔLimit [dB]	30.000 M	820.000 M	1.00 M	355.292500 M	-42.59	-29.59	855.000 M	1.000 G	1.00 M	884.761250 M	-42.45	-29.45	1.000 G	3.000 G	1.00 M	1.673000 G	-29.12	-16.12	3.000 G	7.000 G	1.00 M	3.609000 G	-37.90	-24.90	7.000 G	9.000 G	1.00 M	7.383500 G	-35.36	-22.36	 Ref: 35 dBm Start 30 MHz Stop 9 GHz <table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RBW [Hz]</th><th>Freq [Hz]</th><th>PerAbs [dBm]</th><th>ΔLimit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>820.000 M</td><td>1.00 M</td><td>355.292500 M</td><td>-42.59</td><td>-29.59</td></tr><tr><td>855.000 M</td><td>1.000 G</td><td>1.00 M</td><td>884.761250 M</td><td>-42.45</td><td>-29.45</td></tr><tr><td>1.000 G</td><td>3.000 G</td><td>1.00 M</td><td>1.673000 G</td><td>-29.12</td><td>-16.12</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.609000 G</td><td>-37.88</td><td>-24.88</td></tr><tr><td>7.000 G</td><td>9.000 G</td><td>1.00 M</td><td>8.368500 G</td><td>-35.67</td><td>-22.67</td></tr></tbody></table>		Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PerAbs [dBm]	ΔLimit [dB]	30.000 M	820.000 M	1.00 M	355.292500 M	-42.59	-29.59	855.000 M	1.000 G	1.00 M	884.761250 M	-42.45	-29.45	1.000 G	3.000 G	1.00 M	1.673000 G	-29.12	-16.12	3.000 G	7.000 G	1.00 M	3.609000 G	-37.88	-24.88	7.000 G	9.000 G	1.00 M	8.368500 G	-35.67	-22.67
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Date: 22.MAY.2016 13:52:05		Date: 22.MAY.2016 14:15:03																																																																									
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GSM1900 (GPRS class 8)

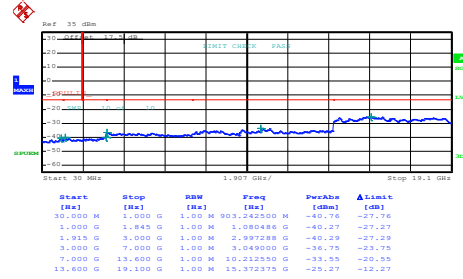
Lowest Channel



Date: 22.MAY.2016 14:40:26

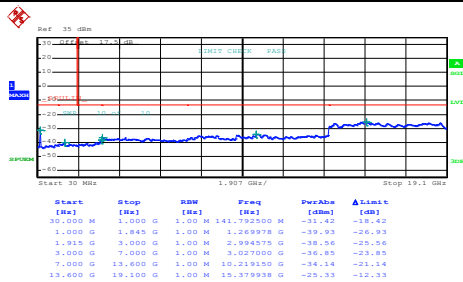
GSM1900 (EDGE class 8)

Lowest Channel



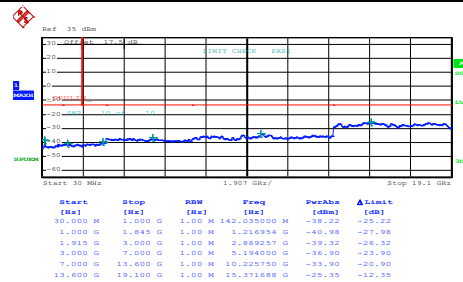
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Middle Channel



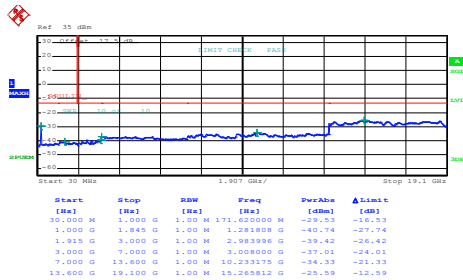
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Middle Channel



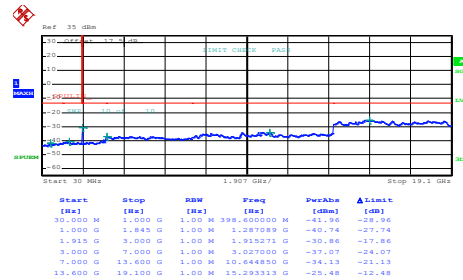
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Highest Channel



Date: 22.MAY.2016 14:43:42

Highest Channel



Date: 22.MAY.2016 15:05:53

Frequency Stability

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

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

Note:

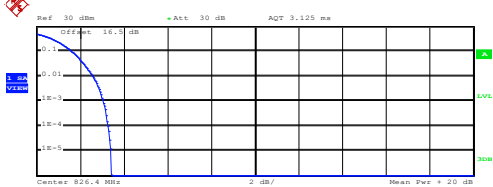
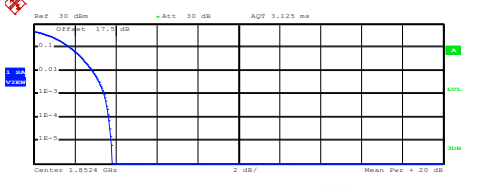
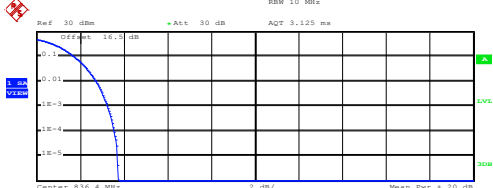
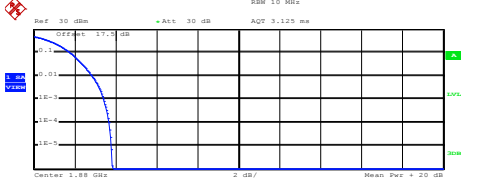
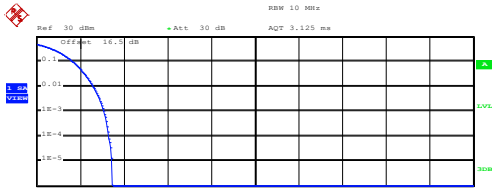
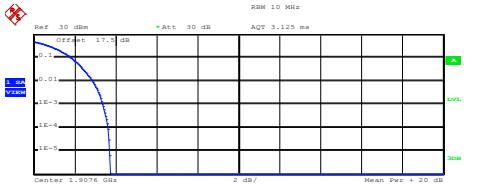
1. Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.35 V
2. The frequency fundamental emissions stay within the authorized frequency block.

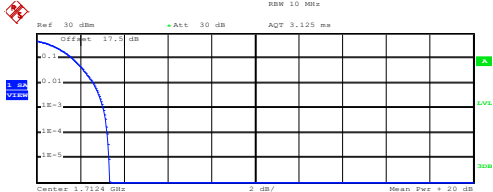
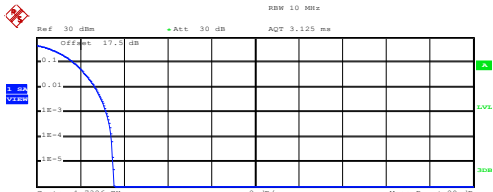
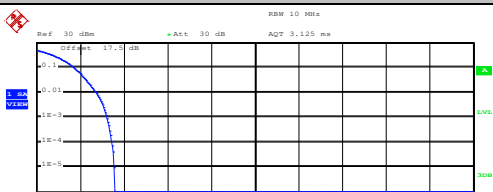


A2. WCDMA

Peak-to-Average Ratio

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	3.08	3.44	3.04	PASS
Middle CH	3.24	3.40	3.20	
Highest CH	3.08	3.36	3.24	

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 Mean 20.90 dBm Peak 24.33 dBm Crest 3.42 dB 10 % 1.64 dB 1 % 2.60 dB .1 % 3.08 dB .01 % 3.28 dB Date: 22.MAY.2016 17:04:32	 Center 1.8524 GHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 19.92 dBm Peak 23.76 dBm Crest 3.84 dB 10 % 1.80 dB 1 % 2.84 dB .1 % 3.44 dB .01 % 3.68 dB Date: 22.MAY.2016 15:47:32
Middle Channel	Middle Channel
 Center 836.4 MHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 20.82 dBm Peak 24.54 dBm Crest 3.72 dB 10 % 1.72 dB 1 % 2.72 dB .1 % 3.24 dB .01 % 3.56 dB Date: 22.MAY.2016 17:04:42	 Center 1.85 GHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 20.13 dBm Peak 23.97 dBm Crest 3.84 dB 10 % 1.80 dB 1 % 2.84 dB .1 % 3.40 dB .01 % 3.68 dB Date: 22.MAY.2016 15:47:41
Highest Channel	Highest Channel
 Center 846.4 MHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 21.08 dBm Peak 24.54 dBm Crest 3.46 dB 10 % 1.68 dB 1 % 2.60 dB .1 % 3.08 dB .01 % 3.32 dB Date: 22.MAY.2016 17:04:51	 Center 1.9076 GHz Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 20.07 dBm Peak 23.83 dBm Crest 3.76 dB 10 % 1.84 dB 1 % 2.88 dB .1 % 3.36 dB .01 % 3.64 dB Date: 22.MAY.2016 15:47:50

WCDMA Band IV (RMC 12.2Kbps)	
Lowest Channel	
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 19.73 dBm Peak 23.06 dBm Crest 3.33 dB 10 % 1.64 dB 1 % 2.60 dB .1 % 3.04 dB .01 % 3.24 dB Date: 22.MAY.2016 16:23:52	
Middle Channel	
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 19.17 dBm Peak 22.70 dBm Crest 3.53 dB 10 % 1.68 dB 1 % 2.68 dB .1 % 3.20 dB .01 % 3.44 dB Date: 22.MAY.2016 16:24:02	
Highest Channel	
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 19.91 dBm Peak 23.48 dBm Crest 3.57 dB 10 % 1.72 dB 1 % 2.72 dB .1 % 3.24 dB .01 % 3.44 dB Date: 22.MAY.2016 16:24:11	

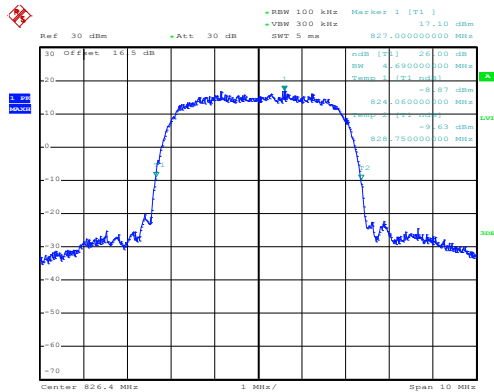
**26dB Bandwidth**

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



WCDMA Band V (RMC 12.2Kbps)

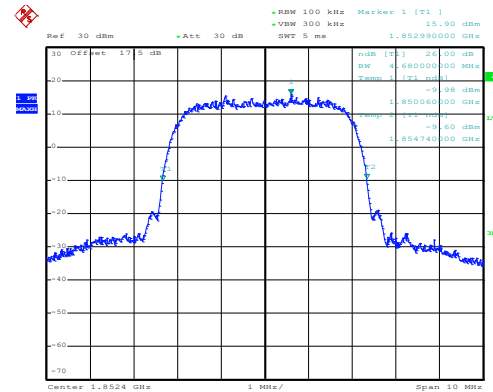
Lowest Channel



Date: 22.MAY.2016 16:58:58

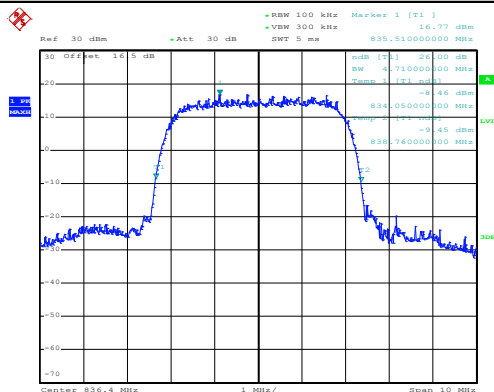
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



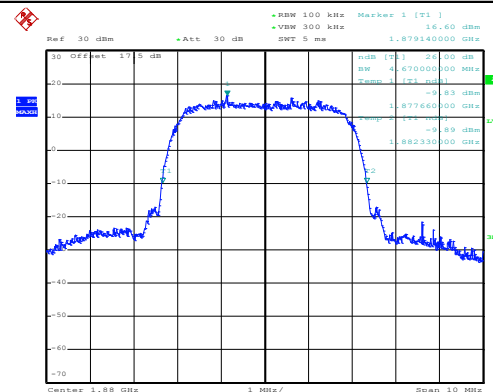
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Middle Channel



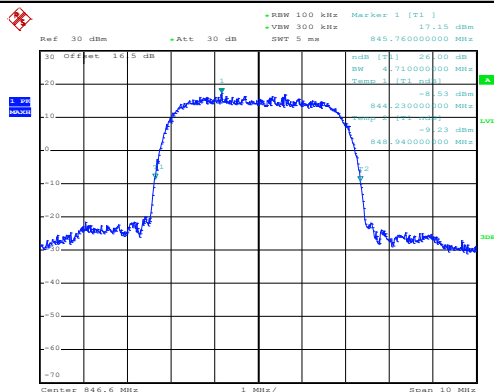
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Middle Channel



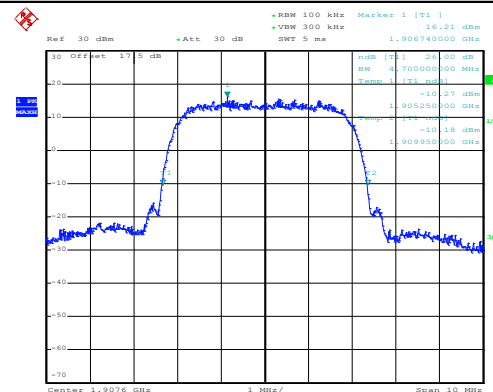
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Highest Channel



Date: 22.MAY.2016 16:59:55

Highest Channel

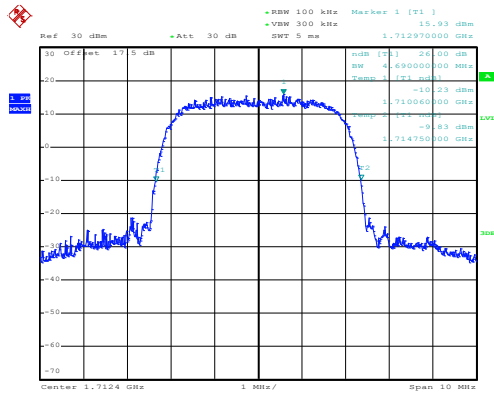


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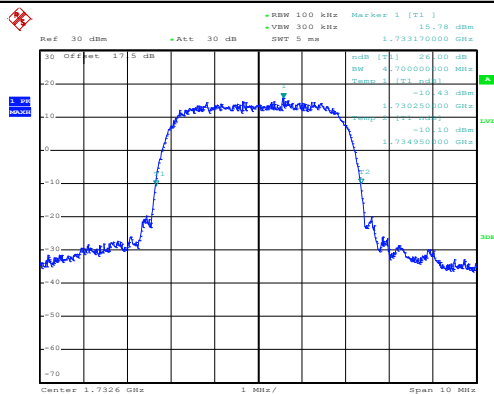
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



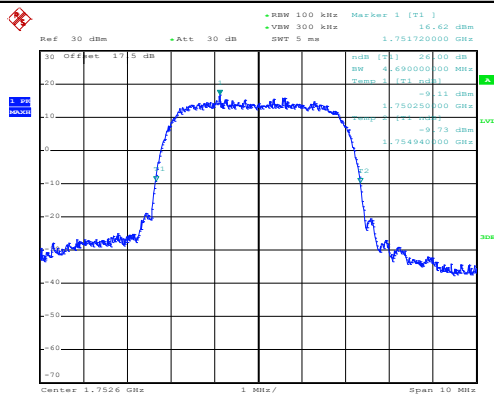
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Middle Channel



Date: 22.MAY.2016 16:21:14

Highest Channel



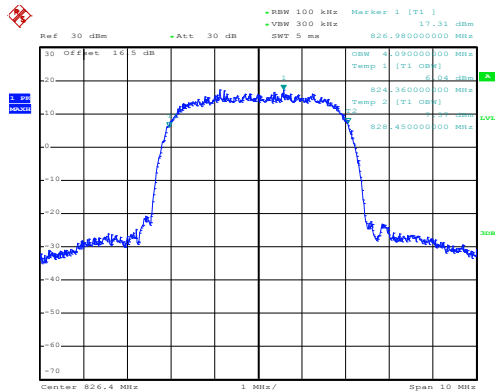
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**Occupied Bandwidth**

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.09	4.11	4.12
Middle CH	4.13	4.13	4.12
Highest CH	4.12	4.13	4.12

WCDMA Band V (RMC 12.2Kbps)

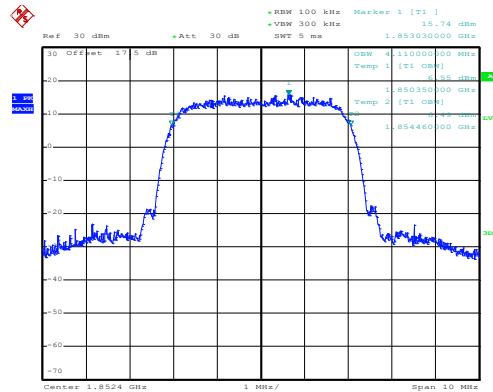
Lowest Channel



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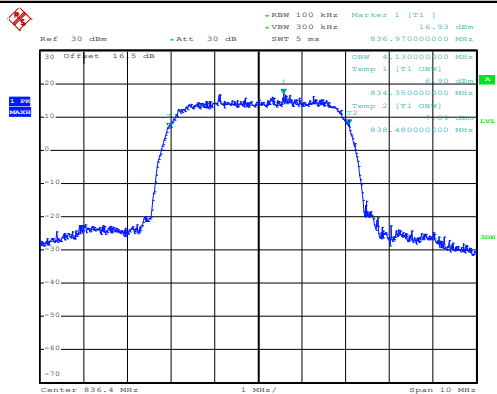
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



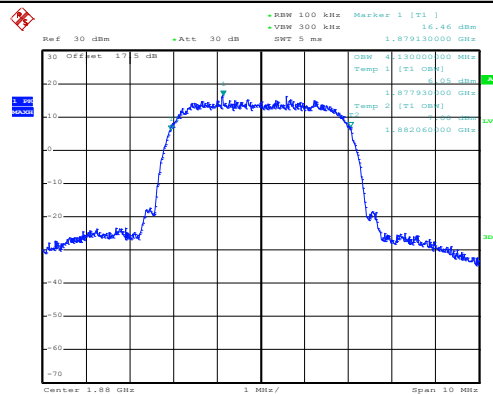
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Middle Channel



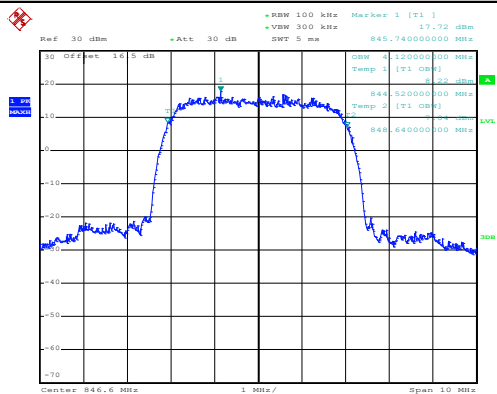
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Middle Channel



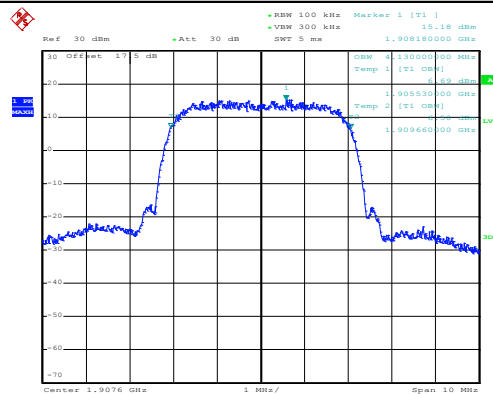
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Highest Channel



Date: 22.MAY.2016 17:03:20

Highest Channel

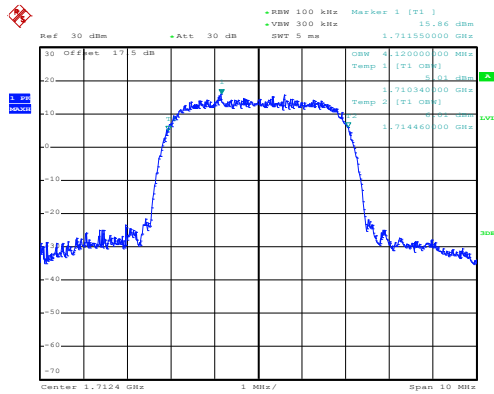


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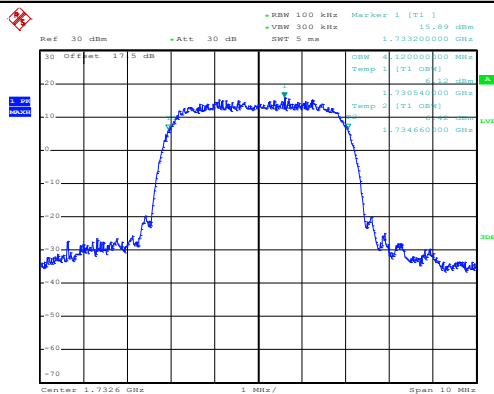
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



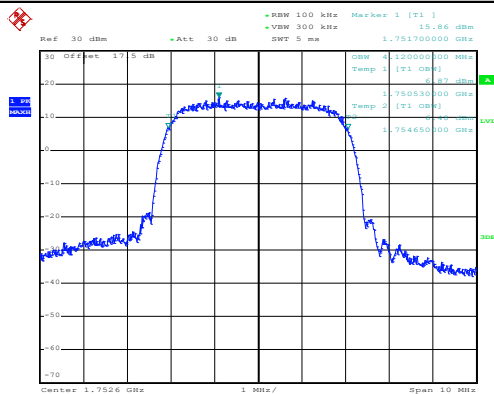
Date: 22.MAY.2016 16:22:34

Middle Channel



Date: 22.MAY.2016 16:23:02

Highest Channel



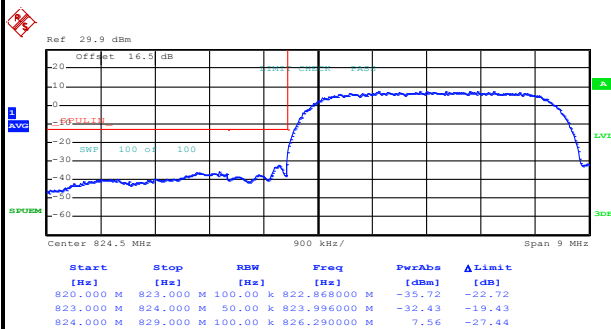
Date: 22.MAY.2016 16:23:30



Conducted Band Edge

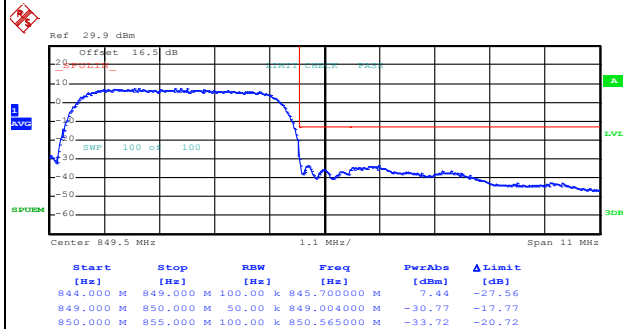
WCDMA Band V (RMC 12.2Kbps)

Lowest Band Edge



Date: 22.MAY.2016 17:15:27

Highest Band Edge

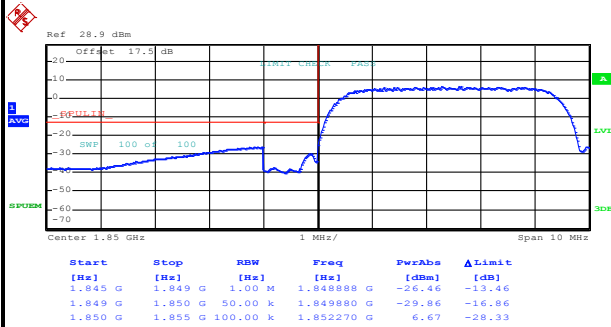


Date: 22.MAY.2016 17:18:10



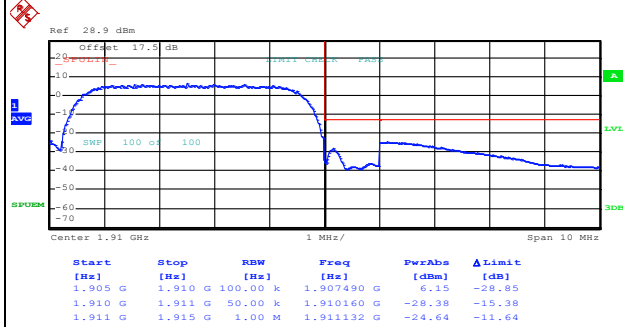
WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge



Date: 22.MAY.2016 15:50:45

Highest Band Edge

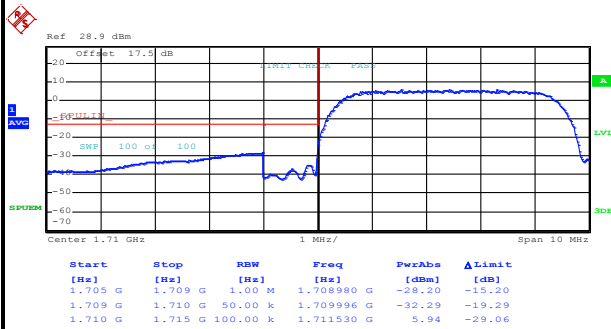


Date: 22.MAY.2016 15:53:28



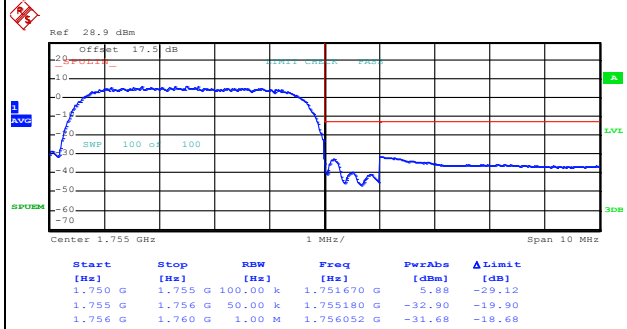
WCDMA Band IV (RMC 12.2Kbps)

Lowest Band Edge



Date: 22.MAY.2016 16:30:46

Highest Band Edge

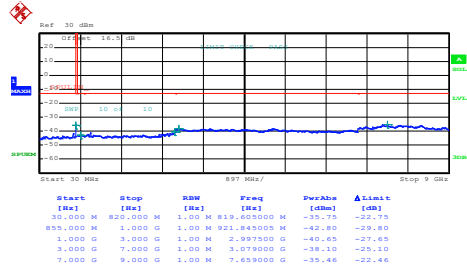


Date: 22.MAY.2016 16:33:29

Conducted Spurious Emission

WCDMA Band V (RMC 12.2Kbps)

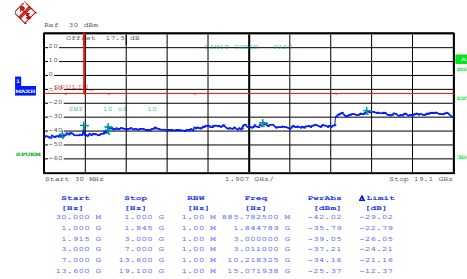
Lowest Channel



Date: 22.MAY.2016 17:10:55

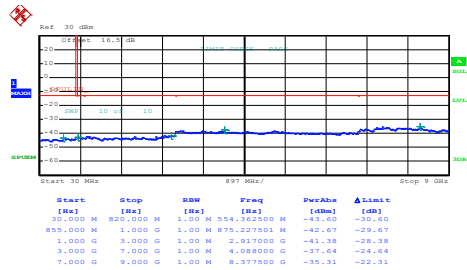
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



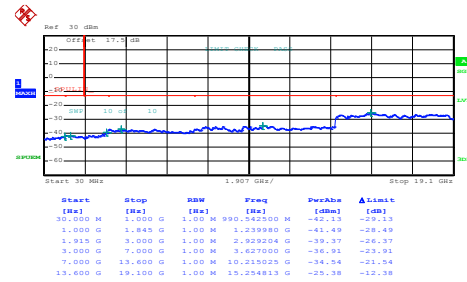
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Middle Channel



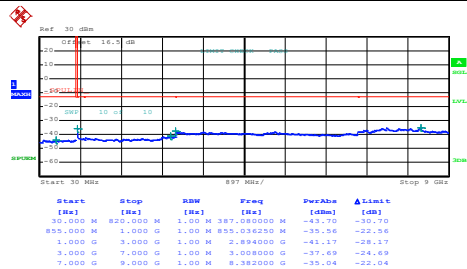
Date: 22.MAY.2016 17:11:40

Middle Channel



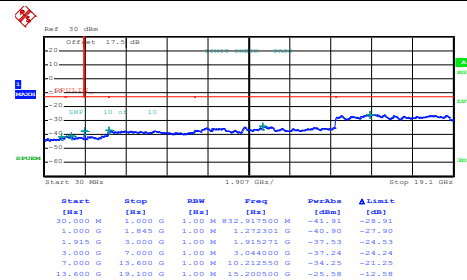
Date: 22.MAY.2016 15:46:07

Highest Channel



Date: 22.MAY.2016 17:12:26

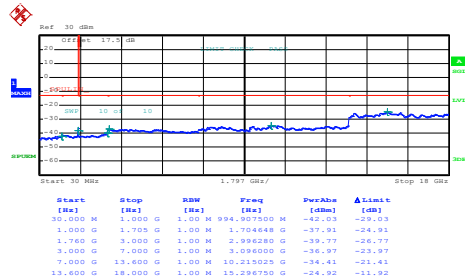
Highest Channel



Date: 22.MAY.2016 15:46:52

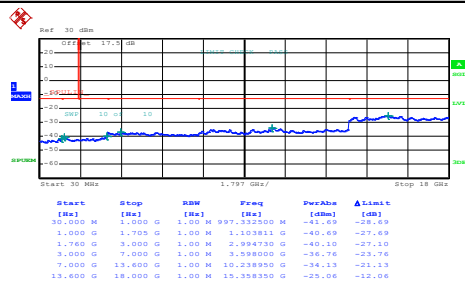
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



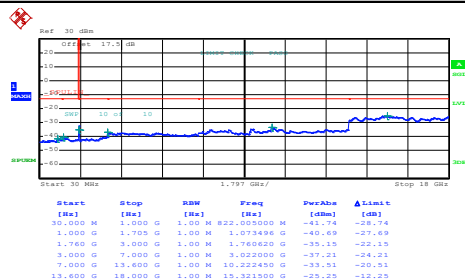
Date: 22.MAY.2016 16:25:20

Middle Channel



Date: 22.MAY.2016 16:26:06

Highest Channel



Date: 22.MAY.2016 16:26:52

Frequency Stability

Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2Kbps)	Limit
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	2.5ppm
50	Normal Voltage	0.0048	PASS
40	Normal Voltage	0.0012	
30	Normal Voltage	0.0120	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0108	
0	Normal Voltage	0.0036	
-10	Normal Voltage	0.0024	
-20	Normal Voltage	0.0108	
-30	Normal Voltage	0.0120	
20	Maximum Voltage	0.0012	
20	Normal Voltage	0.0120	
20	Battery End Point	0.0108	

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Note 2.
50	Normal Voltage	0.0005	PASS
40	Normal Voltage	0.0090	
30	Normal Voltage	0.0080	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0016	
0	Normal Voltage	0.0011	
-10	Normal Voltage	0.0000	
-20	Normal Voltage	0.0005	
-30	Normal Voltage	0.0005	
20	Maximum Voltage	0.0011	
20	Normal Voltage	0.0005	
20	Battery End Point	0.0000	

Note:

1. Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.35 V
2. The frequency fundamental emissions stay within the authorized frequency block.

Test Conditions	Middle Channel	WCDMA Band IV (RMC 12.2Kbps)	Limit
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Note 2. Result
50	Normal Voltage	0.0012	PASS
40	Normal Voltage	0.0023	
30	Normal Voltage	0.0017	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0052	
0	Normal Voltage	0.0012	
-10	Normal Voltage	0.0006	
-20	Normal Voltage	0.0058	
-30	Normal Voltage	0.0006	
20	Maximum Voltage	0.0017	
20	Normal Voltage	0.0012	
20	Battery End Point	0.0006	

Note:

1. Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.35 V
2. The frequency fundamental emissions stay within the authorized frequency block.



Appendix B. Test Results of Radiated Test

ERP/EIRP

<EUT with SIM 1>

Channel	Mode	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	GSM850 GPRS class 8	18.05	0.0638	23.01	0.2000
Middle		17.99	0.0630	22.19	0.1656
Highest		17.82	0.0605	22.02	0.1592
Lowest	GSM850 EDGE class 8	12.35	0.0172	17.29	0.0536
Middle		12.17	0.0165	16.33	0.0430
Highest		12.27	0.0169	16.06	0.0404
Lowest	WCDMA Band V RMC 12.2Kbps	10.25	0.0106	15.65	0.0367
Middle		10.70	0.0117	15.51	0.0356
Highest		10.68	0.0117	14.58	0.0287
Limit	ERP < 7W	Result		PASS	

Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	GSM1900 GPRS class 8	25.48	0.3532	26.92	0.4920
Middle		24.65	0.2917	26.89	0.4887
Highest		21.43	0.1390	27.23	0.5284
Lowest	GSM1900 EDGE class 8	20.86	0.1219	22.51	0.1782
Middle		19.72	0.0938	23.16	0.2070
Highest		17.37	0.0546	23.58	0.2280
Lowest	WCDMA Band II RMC 12.2Kbps	19.10	0.0813	20.49	0.1119
Middle		18.33	0.0681	21.16	0.1306
Highest		16.16	0.0413	21.62	0.1452
Limit	EIRP < 2W	Result		PASS	



Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	WCDMA Band IV RMC 12.2Kbps	18.81	0.0760	21.40	0.1380
Middle		19.84	0.0964	21.98	0.1578
Highest		19.23	0.0838	21.72	0.1486
Limit	EIRP < 1W	Result		PASS	



<EUT with SIM 2>

Channel	Mode	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	GSM850 GPRS class 8	19.47	0.0885	26.33	0.4295
Middle		21.17	0.1309	26.91	0.4909
Highest		21.80	0.1514	26.63	0.4603
Lowest	GSM850 EDGE class 8	11.52	0.0142	16.80	0.0479
Middle		11.32	0.0136	16.17	0.0414
Highest		11.94	0.0156	15.67	0.0369
Lowest	WCDMA Band V RMC 12.2Kbps	10.87	0.0122	17.42	0.0552
Middle		12.12	0.0163	17.52	0.0565
Highest		13.07	0.0203	17.98	0.0628
Limit	ERP < 7W	Result		PASS	

Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	GSM1900 GPRS class 8	26.56	0.4529	28.22	0.6637
Middle		26.32	0.4285	27.47	0.5585
Highest		25.59	0.3622	27.96	0.6252
Lowest	GSM1900 EDGE class 8	14.89	0.0308	22.18	0.1652
Middle		19.80	0.0955	22.89	0.1945
Highest		17.32	0.0540	23.01	0.2000
Lowest	WCDMA Band II RMC 12.2Kbps	15.67	0.0369	18.07	0.0641
Middle		16.96	0.0497	18.24	0.0667
Highest		16.40	0.0437	18.80	0.0759
Limit	EIRP < 2W	Result		PASS	

Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	WCDMA Band IV RMC 12.2Kbps	16.17	0.0414	19.57	0.0906
Middle		16.47	0.0444	19.45	0.0881
Highest		16.86	0.0485	19.93	0.0984
Limit	EIRP < 1W	Result		PASS	

**Radiated Spurious Emission**

<EUT with SIM 1>

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	-51.88	-13	-38.88	-31.82	-53.64	0.98	4.89	H
	2472	-35.63	-13	-22.63	-18.8	-37.51	1.28	5.32	H
	3296	-67.65	-13	-54.65	-53.84	-71.06	1.54	7.10	H
	1648	-53.50	-13	-40.50	-34.58	-55.26	0.98	4.89	V
	2472	-38.31	-13	-25.31	-22.35	-40.19	1.28	5.32	V
	3296	-67.72	-13	-54.72	-54.51	-71.13	1.54	7.10	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	-50.88	-13	-37.88	-30.68	-52.64	0.98	4.89	H
	2472	-51.27	-13	-38.27	-35.36	-53.15	1.28	5.32	H
	3296	-62.60	-13	-49.60	-49.68	-66.01	1.54	7.10	H
	1648	-51.68	-13	-38.68	-31.81	-53.44	0.98	4.89	V
	2472	-47.69	-13	-34.69	-31.32	-49.57	1.28	5.32	V
	3296	-61.90	-13	-48.90	-48.2	-65.31	1.54	7.10	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	3702	-59.53	-13	-46.53	-47.55	-66.1	1.67	8.24	H
	5551	-49.73	-13	-36.73	-44.89	-56.8	2.65	9.72	H
	7404	-60.35	-13	-47.35	-59.84	-69.5	2.46	11.61	H
	3702	-64.93	-13	-51.93	-52.76	-71.5	1.67	8.24	V
	5550	-58.43	-13	-45.43	-52.7	-65.5	2.65	9.72	V
	7404	-59.05	-13	-46.05	-57.99	-68.2	2.46	11.61	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)
Highest	3822	-67.02	-13	-54.02	-55.71	-73.7	1.71	8.39	H
	5730	-63.57	-13	-50.57	-58.98	-70.6	2.76	9.79	H
	7639	-61.30	-13	-48.30	-61.34	-70.8	2.38	11.88	H
	3822	-66.42	-13	-53.42	-54.72	-73.1	1.71	8.39	V
	5730	-63.07	-13	-50.07	-57.63	-70.1	2.76	9.79	V
	7639	-61.40	-13	-48.40	-60.9	-70.9	2.38	11.88	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)
Middle	1672	-57.44	-13	-44.44	-38	-59.12	0.99	4.82	H
	2512	-56.34	-13	-43.34	-40.13	-58.31	1.29	5.41	H
	3344	-62.51	-13	-49.51	-49.45	-66.12	1.56	7.31	H
	1672	-62.34	-13	-49.34	-43.12	-64.02	0.99	4.82	V
	2512	-55.46	-13	-42.46	-39.76	-57.43	1.29	5.41	V
	3344	-62.84	-13	-49.84	-49.79	-66.45	1.56	7.31	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	3705	-67.92	-13	-54.92	-55.63	-74.5	1.67	8.25	H
	5557	-63.74	-13	-50.74	-59.02	-70.8	2.66	9.72	H
	7410	-61.04	-13	-48.04	-60.42	-70.2	2.46	11.62	H
	3705	-67.22	-13	-54.22	-55.13	-73.8	1.67	8.25	V
	5557	-64.34	-13	-51.34	-58.86	-71.4	2.66	9.72	V
	7410	-61.34	-13	-48.34	-60.03	-70.5	2.46	11.62	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	3426	-58.10	-13	-45.10	-45.15	-64.19	1.58	7.67	H
	5136	-61.08	-13	-48.08	-55.23	-68.36	2.42	9.70	H
	6852	-61.86	-13	-48.86	-60.38	-69.84	2.64	10.62	H
	3426	-61.08	-13	-48.08	-48.05	-67.17	1.58	7.67	V
	5136	-62.77	-13	-49.77	-55.81	-70.05	2.42	9.70	V
	6852	-61.97	-13	-48.97	-60	-69.95	2.64	10.62	V

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



<EUT with SIM 2>

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	-53.89	-13	-40.89	-34.38	-55.65	0.98	4.89	H
	2472	-45.54	-13	-32.54	-29.27	-47.42	1.28	5.32	H
	3296	-63.15	-13	-50.15	-50.02	-66.56	1.54	7.10	H
	1648	-49.22	-13	-36.22	-29.72	-50.98	0.98	4.89	V
	2472	-39.45	-13	-26.45	-23.85	-41.33	1.28	5.32	V
	3296	-61.45	-13	-48.45	-48.61	-64.86	1.54	7.10	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	-60.89	-13	-47.89	-41.2	-62.65	0.98	4.89	H
	2472	-56.78	-13	-43.78	-40.58	-58.66	1.28	5.32	H
	3296	-63.35	-13	-50.35	-50.09	-66.76	1.54	7.10	H
	1648	-56.69	-13	-43.69	-37.44	-58.45	0.98	4.89	V
	2472	-54.66	-13	-41.66	-38.86	-56.54	1.28	5.32	V
	3296	-60.91	-13	-47.91	-47.71	-64.32	1.54	7.10	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)
Middle	1672	-64.22	-13	-51.22	-44.73	-65.9	0.99	4.82	H
	2512	-56.35	-13	-43.35	-40.31	-58.32	1.29	5.41	H
	3344	-62.75	-13	-49.75	-50.67	-66.36	1.56	7.31	H
	1672	-62.20	-13	-49.20	-42.91	-63.88	0.99	4.82	V
	2512	-56.35	-13	-43.35	-40.96	-58.32	1.29	5.41	V
	3344	-63.25	-13	-50.25	-50.03	-66.86	1.56	7.31	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	3702	-61.63	-13	-48.63	-49.75	-68.2	1.67	8.24	H
	5551	-56.03	-13	-43.03	-51.52	-63.1	2.65	9.72	H
	7404	-56.05	-13	-43.05	-55.69	-65.2	2.46	11.61	H
	3702	-58.93	-13	-45.93	-47.03	-65.5	1.67	8.24	V
	5550	-54.63	-13	-41.63	-48.76	-61.7	2.65	9.72	V
	7404	-59.05	-13	-46.05	-57.95	-68.2	2.46	11.61	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)
Highest	3822	-66.82	-13	-53.82	-55.55	-73.5	1.71	8.39	H
	5730	-63.07	-13	-50.07	-58.65	-70.1	2.76	9.79	H
	7639	-61.20	-13	-48.20	-61.14	-70.7	2.38	11.88	H
	3822	-67.22	-13	-54.22	-55.41	-73.9	1.71	8.39	V
	5730	-64.67	-13	-51.67	-59.36	-71.7	2.76	9.79	V
	7639	-61.70	-13	-48.70	-61.07	-71.2	2.38	11.88	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	3705	-67.22	-13	-54.22	-55.3	-73.8	1.67	8.25	H
	5557	-63.64	-13	-50.64	-59.27	-70.7	2.66	9.72	H
	7410	-60.74	-13	-47.74	-59.93	-69.9	2.46	11.62	H
	3705	-66.92	-13	-53.92	-54.99	-73.5	1.67	8.25	V
	5557	-64.54	-13	-51.54	-59.06	-71.6	2.66	9.72	V
	7410	-61.54	-13	-48.54	-60.41	-70.7	2.46	11.62	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	3426	-64.19	-13	-51.19	-51.18	-70.28	1.58	7.67	H
	5136	-63.02	-13	-50.02	-57.17	-70.3	2.42	9.70	H
	6852	-61.54	-13	-48.54	-60.06	-69.52	2.64	10.62	H
	3426	-64.93	-13	-51.93	-51.9	-71.02	1.58	7.67	V
	5136	-64.21	-13	-51.21	-57.25	-71.49	2.42	9.70	V
	6852	-62.22	-13	-49.22	-60.25	-70.2	2.64	10.62	V

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