



FCC RF Test Report

APPLICANT : VERTU Corporation Limited
EQUIPMENT : Cellular Telephone
BRAND NAME : VERTU
MODEL NAME : SIGNATURE TOUCH
TYPE NAME : VM-03
FCC ID : P7QVM-03
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 Jul. 02, 2015 and testing was completed on Aug. 07, 2015. 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-C-2004 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.



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	6
1.1 Applicant.....	6
1.2 Manufacturer	6
1.3 Product Feature of Equipment Under Test	6
1.4 Product Specification subjective to this standard	7
1.5 Modification of EUT	7
1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator	8
1.7 Testing Location	9
1.8 Applicable Standards	9
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	10
2.1 Test Mode.....	10
2.2 Connection Diagram of Test System	11
2.3 Support Unit used in test configuration	12
2.4 Measurement Results Explanation Example	12
3 CONDUCTED TEST RESULT	13
3.1 Measuring Instruments.....	13
3.2 Test Setup	13
3.3 Test Result of Conducted Test.....	13
3.4 Conducted Output Power	14
3.5 Peak-to-Average Ratio	15
3.6 99% Occupied Bandwidth and 26dB Bandwidth Measurement.....	16
3.7 Conducted Band Edge	17
3.8 Conducted Spurious Emission	18
3.9 Frequency Stability	19
4 RADIATED TEST ITEMS	20
4.1 Measuring Instruments.....	20
4.2 Test Setup	20
4.3 Test Result of Radiated Test.....	20
4.4 Effective Radiated Power and Effective Isotropic Radiated Power Measurement	21
4.5 Field Strength of Spurious Radiation Measurement	23
5 LIST OF MEASURING EQUIPMENT	24
6 UNCERTAINTY OF EVALUATION	25
APPENDIX A. TEST RESULTS OF CONDUCTED TEST	
APPENDIX B. TEST RESULTS OF RADIATED TEST	
APPENDIX C. TEST SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG570205A	Rev. 01	Initial issue of report	Aug. 26, 2015
FG570205A	Rev. 02	Revising Bluetooth version in section 1.3.	Sep. 07, 2015



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 34.10 dB at 7641.000 MHz



1 General Description

1.1 Applicant

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom

1.2 Manufacturer

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Cellular Telephone
Brand Name	VERTU
Model Name	SIGNATURE TOUCH
Type Name	VM-03
FCC ID	P7QVM-03
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v4.1 EDR/LE
EUT Stage	Identical Prototype

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 subjective to this standard

Product Specification subjective to this standard	
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: 32.78 dBm 1900: 29.69 dBm WCDMA: Band V: 23.10 dBm Band II: 23.48 dBm Band IV: 23.42 dBm
Antenna Type	Monopole+parasitic Antenna
Antenna Gain	Cellular Band: 0.50 dBi PCS Band: 0.50 dBi AWS Band: 0.50 dBi
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) 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	0.7145	0.0143 ppm	245KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.2042	0.0347 ppm	245KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0706	0.0155 ppm	4M16F9W
Part 24	GSM1900 GPRS class 8	GMSK	0.7499	0.0372 ppm	246KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.2449	0.0303 ppm	257KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.1349	0.0090 ppm	4M17F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.1315	0.0040 ppm	4M15F9W

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.	
	TH02-HY	03CH07-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-C-2004
- 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.

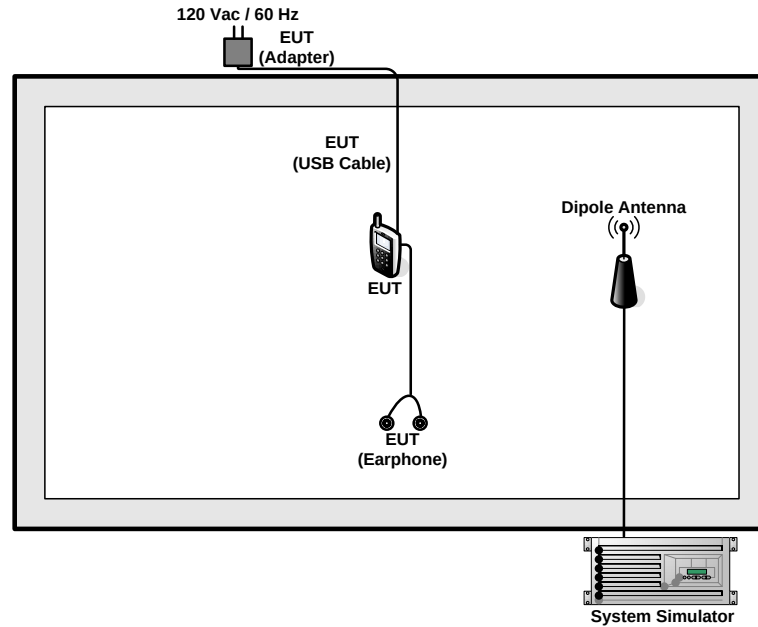
All modes and data rates and positions were investigated.

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

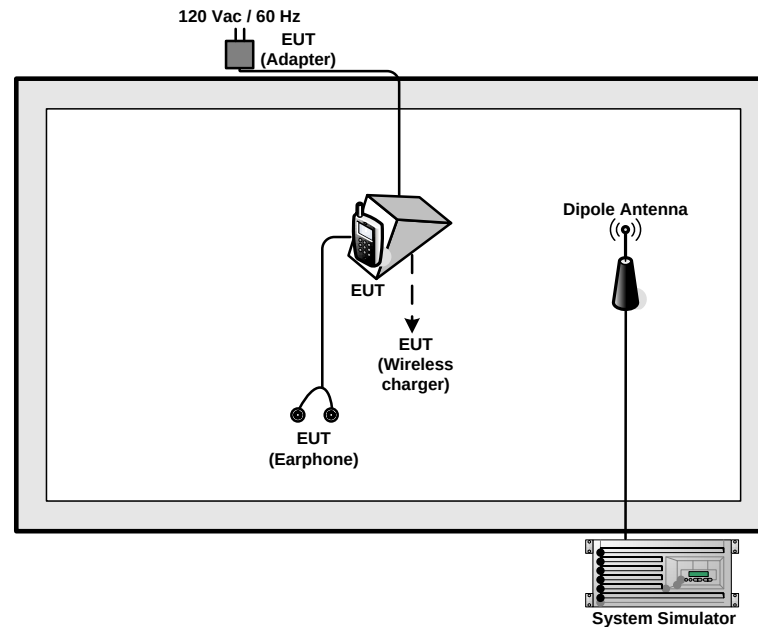
Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GPRS class 8 Link ■ EDGE class 8 Link	■ GPRS class 8 Link ■ EDGE class 8 Link
GSM 1900	■ GPRS class 8 Link ■ EDGE class 8 Link ■ GPRS class 8 Link with WPC	■ GPRS class 8 Link ■ EDGE class 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link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

2.2 Connection Diagram of Test System

<EUT with Adapter Mode>



<EUT with Wireless charger Mode>





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.	System Simulator	Anritsu	MT8820C	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 :

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

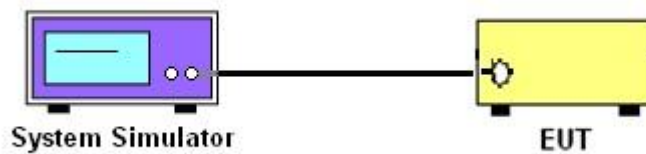
3 Conducted Test Result

3.1 Measuring Instruments

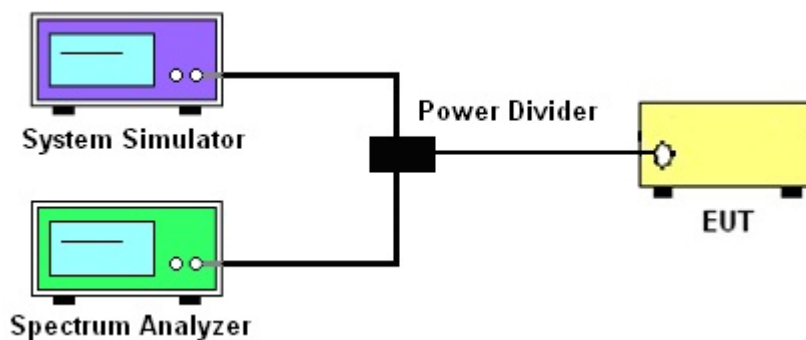
See list of measuring instruments of this test report.

3.2 Test Setup

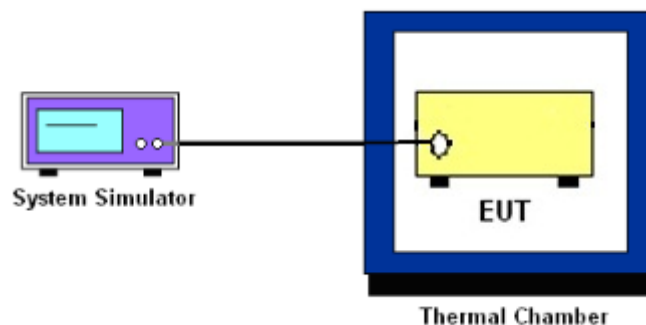
3.2.1 Conducted Output Power



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

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 99% 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 emission bandwidth is defined as the width of the signal between two points, located at the two sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

3.6.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 4.2.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold.
5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.

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.

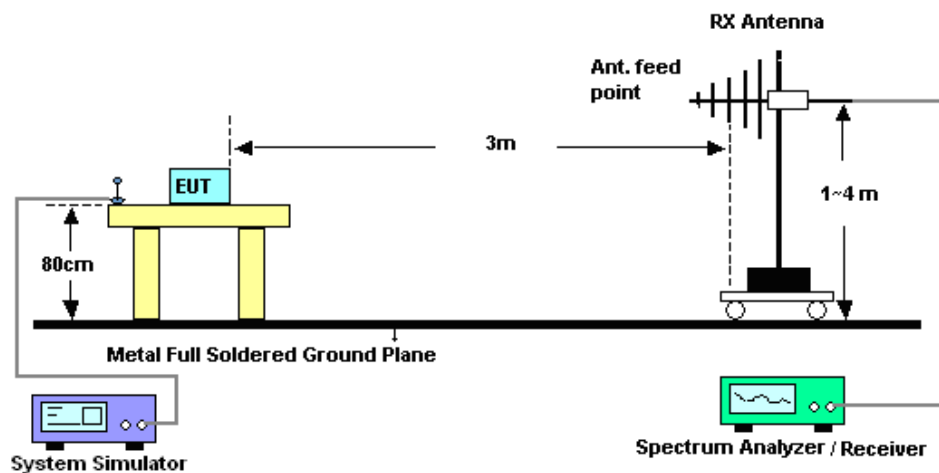
4 Radiated Test Items

4.1 Measuring Instruments

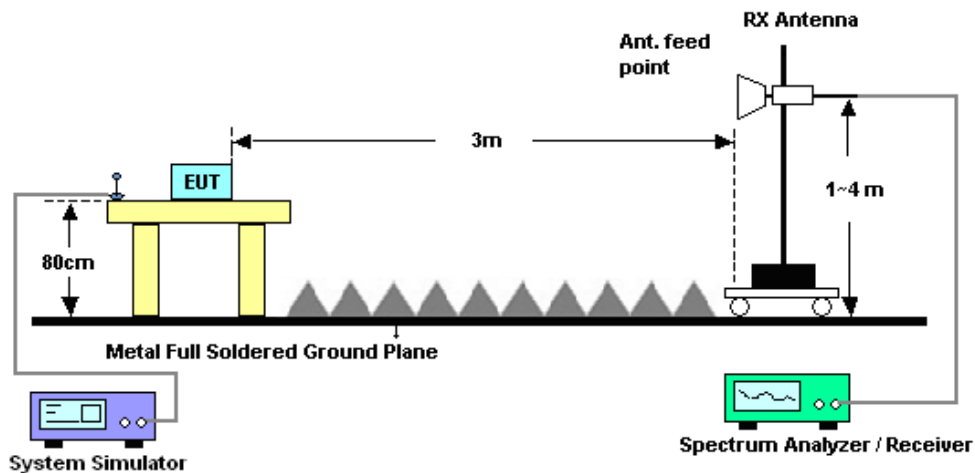
See list of measuring instruments of this test report.

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-C-2004, 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-C-2004 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-C. 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-C-2004 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	Aug. 07, 2015	Jun. 23, 2016	Conducted (TH03-HY)
Base Station(Measu	Rohde & Schwarz	CMU200	117995	GSM / GPRS / WCDMA / CDMA	Jul. 26, 2015	Aug. 07, 2015	Jul. 25, 2016	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL883644	Voltage:0~20V;Current:0~5A	Dec. 01, 2014	Aug. 07, 2015	Nov. 30, 2015	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30°C~70°C	Dec. 01, 2014	Aug. 07, 2015	Nov. 30, 2015	Conducted (TH03-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1241	1GHz ~ 18GHz	Apr. 22, 2015	Aug. 01, 2015 ~ Aug. 05, 2015	Apr. 21, 2016	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	Aug. 01, 2015 ~ Aug. 05, 2015	Sep. 26, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2014	Aug. 01, 2015 ~ Aug. 05, 2015	Aug. 18, 2015	Radiation (03CH07-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 03, 2014	Aug. 01, 2015 ~ Aug. 05, 2015	Nov. 02, 2015	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1000MHz	Mar. 12, 2015	Aug. 01, 2015 ~ Aug. 05, 2015	Mar. 11, 2016	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 21, 2014	Aug. 01, 2015 ~ Aug. 05, 2015	Oct. 20, 2015	Radiation (03CH07-HY)
Signal Analyzer	Rohde & Schwarz	FSV 30	101749	10Hz~30GHz	Mar. 10, 2015	Aug. 01, 2015 ~ Aug. 05, 2015	Mar. 09, 2016	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Aug. 01, 2015 ~ Aug. 05, 2015	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF780208368	Control Ant Mast	N/A	Aug. 01, 2015 ~ Aug. 05, 2015	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Aug. 01, 2015 ~ Aug. 05, 2015	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 degree	N/A	Aug. 01, 2015 ~ Aug. 05, 2015	N/A	Radiation (03CH07-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May 22, 2015	Aug. 01, 2015 ~ Aug. 05, 2015	May 21, 2016	Radiation (03CH07-HY)



6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.50
--	------



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	32.47	32.52	32.74	29.58	29.68	29.47
GPRS class 8	32.52	32.57	32.78	29.60	29.69	29.48
GPRS class 10	29.68	29.67	29.63	27.35	27.30	27.25
GPRS class 11	27.97	27.94	27.92	25.27	25.12	25.49
GPRS class 12	27.27	27.24	27.13	24.18	24.11	24.05
EGPRS class 8	26.79	26.82	26.84	25.08	25.24	25.26
EGPRS class 10	26.51	26.54	26.59	24.98	25.02	25.05
EGPRS class 11	26.08	26.09	26.14	24.65	24.75	24.80
EGPRS class 12	25.64	25.68	25.77	24.39	24.45	24.50

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	22.91	23.07	23.10	23.24	23.48	23.47	23.09	23.24	23.42
HSDPA Subtest-1	21.77	21.64	21.65	22.04	22.05	22.39	21.85	22.15	22.12
HSDPA Subtest-2	21.75	21.62	21.63	22.07	22.25	22.40	21.88	22.18	22.15
HSDPA Subtest-3	21.25	21.17	21.19	21.55	21.74	21.91	21.36	21.68	21.65
HSDPA Subtest-4	21.23	21.16	21.17	21.55	21.71	21.91	21.36	21.68	21.67
HSUPA Subtest-1	21.08	21.20	21.31	21.79	22.01	22.10	21.62	21.75	21.85
HSUPA Subtest-2	20.61	20.74	20.82	21.11	21.34	21.48	20.95	21.15	21.25
HSUPA Subtest-3	20.22	20.29	20.43	20.73	20.91	21.03	20.54	20.76	20.72
HSUPA Subtest-4	20.55	20.61	20.68	21.00	21.42	21.48	20.79	21.36	21.44
HSUPA Subtest-5	21.60	21.80	21.80	22.10	22.35	22.40	22.00	22.20	22.30



A1. GSM

Peak-to-Average Ratio

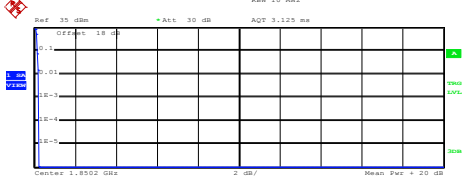
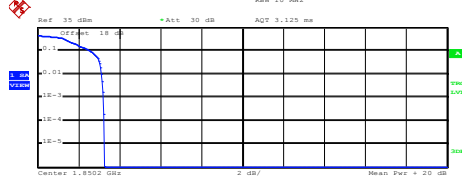
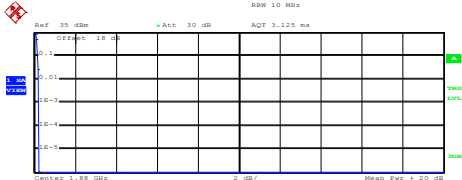
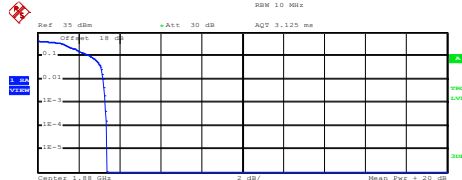
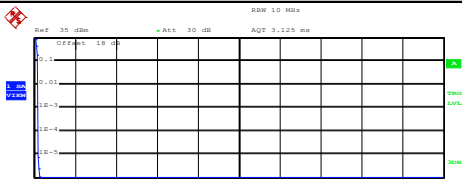
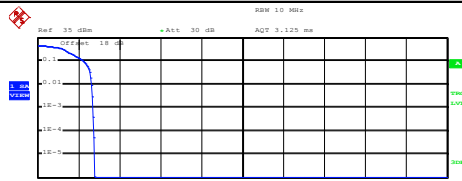
Mode	GSM850		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.24	3.16	PASS
Middle CH	0.24	3.24	
Highest CH	0.32	3.04	

Mode	GSM1900		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.24	3.24	PASS
Middle CH	0.24	3.32	
Highest CH	0.20	2.72	



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/ Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 32.41 dBm Peak 32.71 dBm Crest 0.30 dB 10 % 0.20 dB 1 % 0.24 dB .1 % 0.24 dB .01 % 0.32 dB Date: 7.AUG.2015 15:59:31		Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 824.2 MHz, 2 dB/ Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.21 dBm Peak 29.40 dBm Crest 3.19 dB 10 % 2.56 dB 1 % 3.08 dB .1 % 3.16 dB .01 % 3.20 dB Date: 7.AUG.2015 16:08:35	
Middle Channel		Middle Channel	
Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 835.4 MHz, 2 dB/ Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 32.58 dBm Peak 32.85 dBm Crest 0.27 dB 10 % 0.16 dB 1 % 0.20 dB .1 % 0.24 dB .01 % 0.28 dB Date: 7.AUG.2015 15:59:43		Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 835.4 MHz, 2 dB/ Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 26.37 dBm Peak 29.68 dBm Crest 3.31 dB 10 % 2.64 dB 1 % 3.16 dB .1 % 3.24 dB .01 % 3.28 dB Date: 7.AUG.2015 16:08:47	
Highest Channel		Highest Channel	
Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 849.8 MHz, 2 dB/ Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 32.76 dBm Peak 33.07 dBm Crest 0.31 dB 10 % 0.24 dB 1 % 0.28 dB .1 % 0.32 dB .01 % 0.32 dB Date: 7.AUG.2015 15:59:55		Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms, RSW: 10 MHz, Center: 849.8 MHz, 2 dB/ Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 27.34 dBm Peak 30.45 dBm Crest 3.12 dB 10 % 2.52 dB 1 % 2.96 dB .1 % 3.04 dB .01 % 3.08 dB Date: 7.AUG.2015 16:09:00	

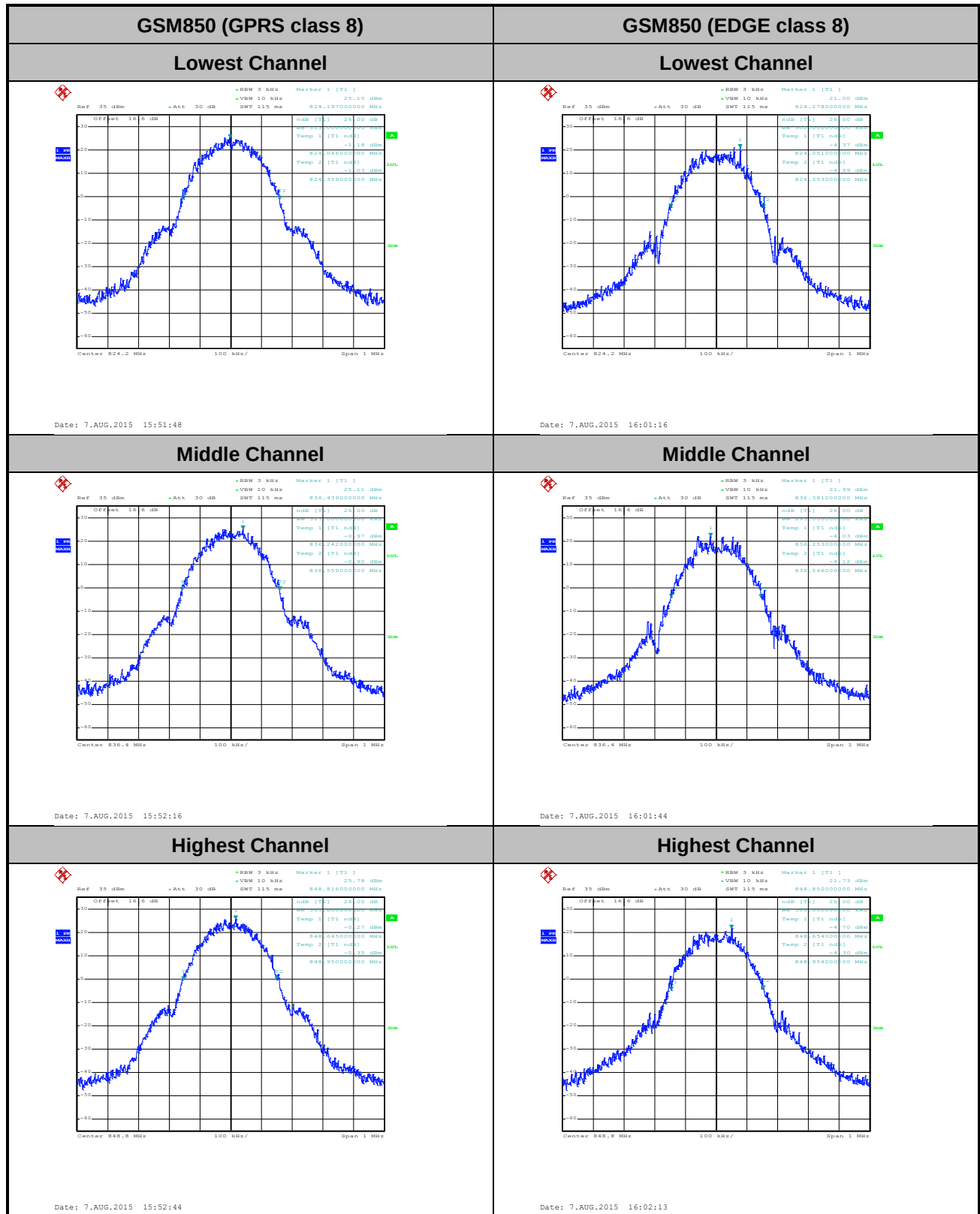


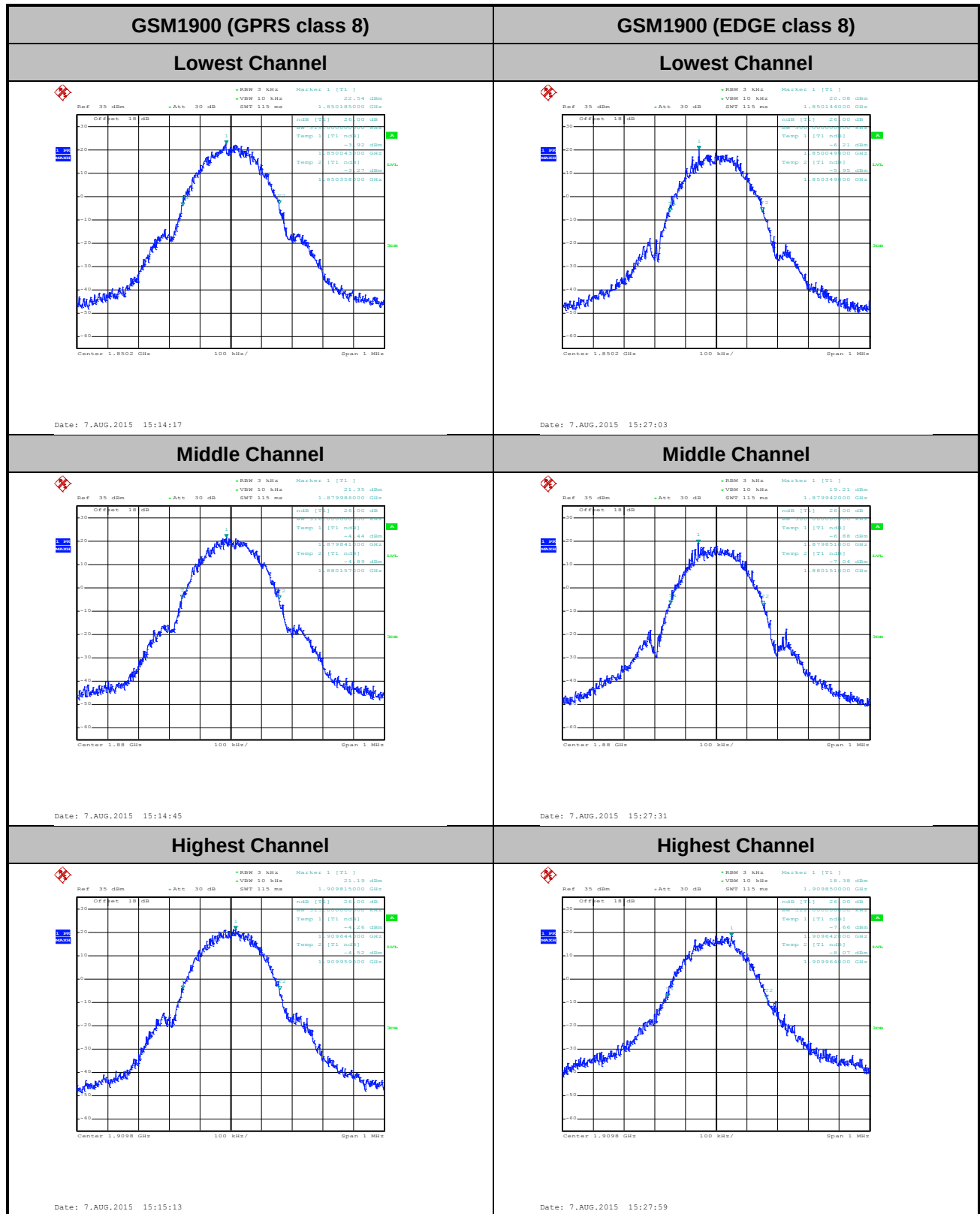
GSM1900 (GPRS class 8)		GSM1900 (EDGE class 8)	
Lowest Channel		Lowest Channel	
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.59 dBm Peak 29.82 dBm Crest 0.23 dB 10 % 0.16 dB 1 % 0.20 dB .1 % 0.24 dB .01 % 0.24 dB Date: 7.AUG.2015 15:24:58		 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 25.52 dBm Peak 28.76 dBm Crest 3.24 dB 10 % 2.60 dB 1 % 3.12 dB .1 % 3.24 dB .01 % 3.28 dB Date: 7.AUG.2015 15:34:45	
Middle Channel		Middle Channel	
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 28.74 dBm Peak 28.97 dBm Crest 0.24 dB 10 % 0.16 dB 1 % 0.24 dB .1 % 0.24 dB .01 % 0.24 dB Date: 7.AUG.2015 15:25:11		 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 24.39 dBm Peak 27.77 dBm Crest 3.39 dB 10 % 2.60 dB 1 % 3.20 dB .1 % 3.32 dB .01 % 3.36 dB Date: 7.AUG.2015 15:34:57	
Highest Channel		Highest Channel	
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 29.07 dBm Peak 29.33 dBm Crest 0.26 dB 10 % 0.16 dB 1 % 0.20 dB .1 % 0.20 dB .01 % 0.20 dB Date: 7.AUG.2015 15:25:25		 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 25.58 dBm Peak 28.34 dBm Crest 2.76 dB 10 % 2.24 dB 1 % 2.64 dB .1 % 2.72 dB .01 % 2.76 dB Date: 7.AUG.2015 15:35:10	

**26dB Bandwidth**

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.313	0.302
Middle CH	0.317	0.293
Highest CH	0.305	0.300

Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.315	0.300
Middle CH	0.316	0.300
Highest CH	0.315	0.322

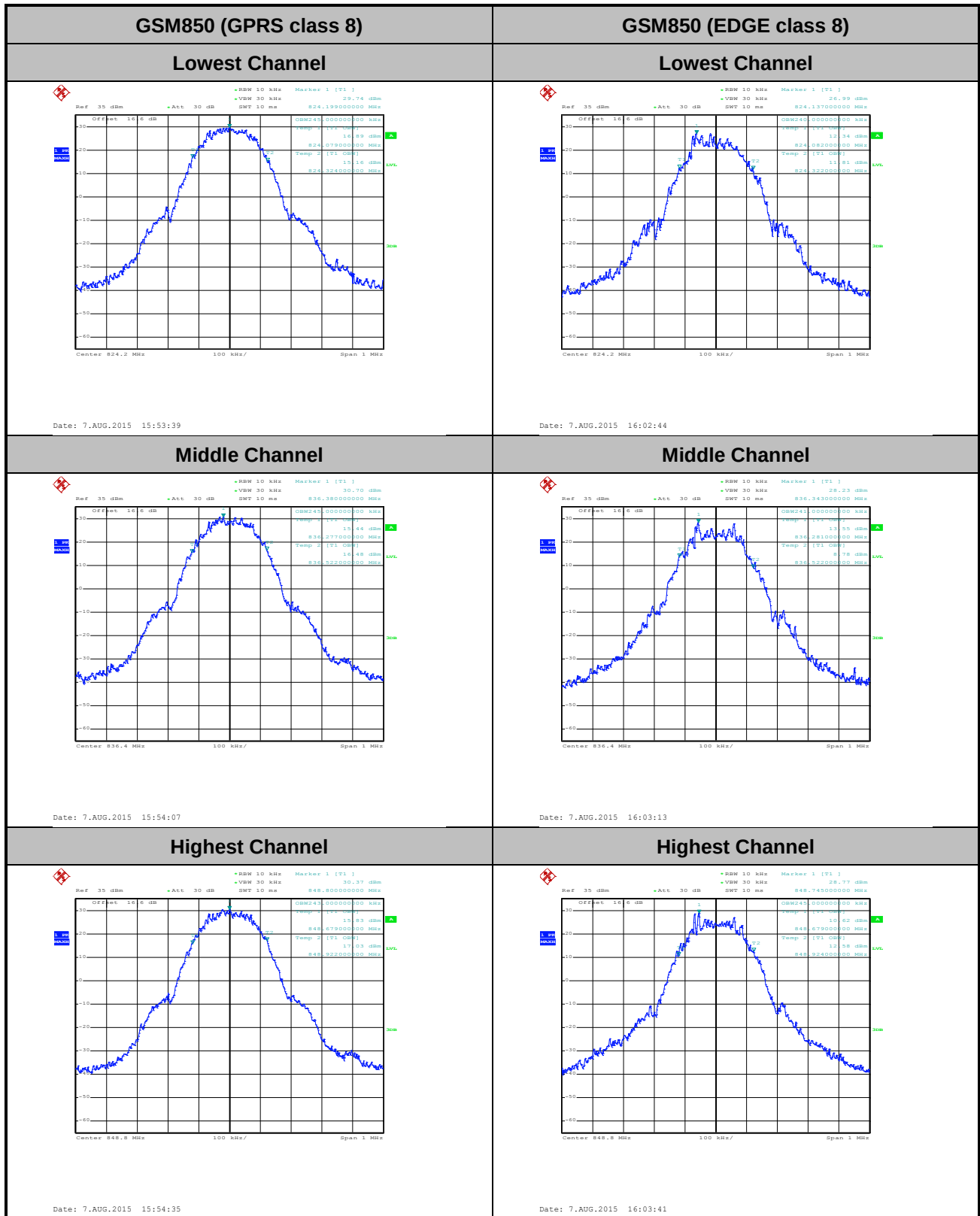


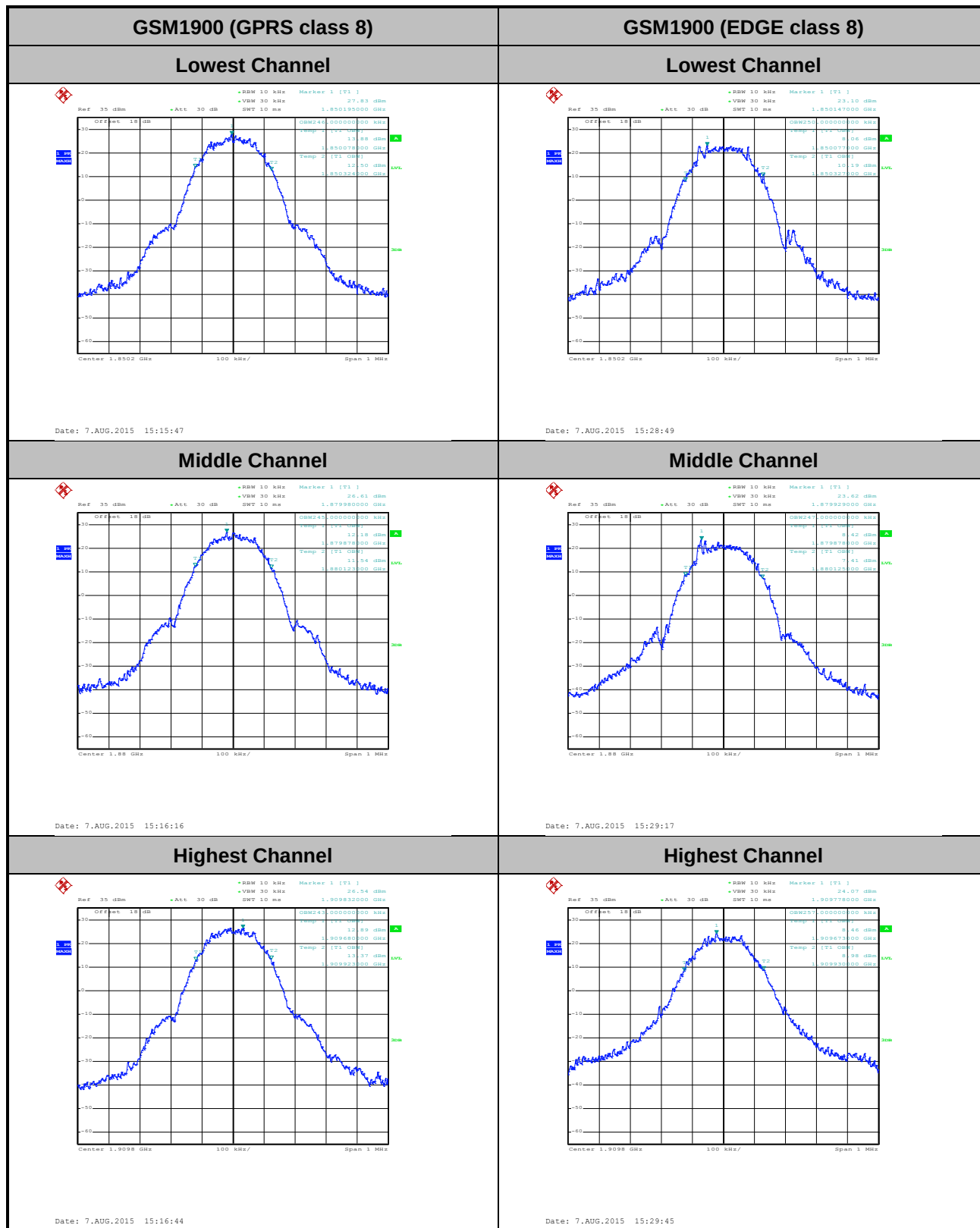


**Occupied Bandwidth**

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.245	0.240
Middle CH	0.245	0.241
Highest CH	0.243	0.245

Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.246	0.250
Middle CH	0.245	0.247
Highest CH	0.243	0.257





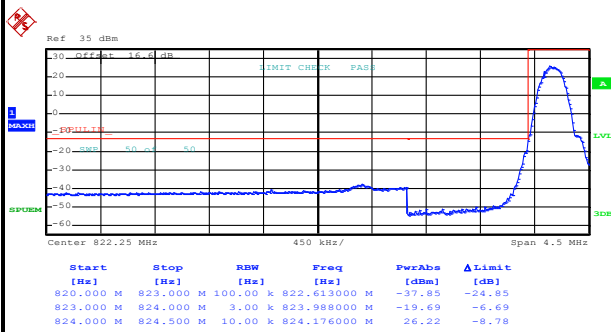


Conducted Band Edge



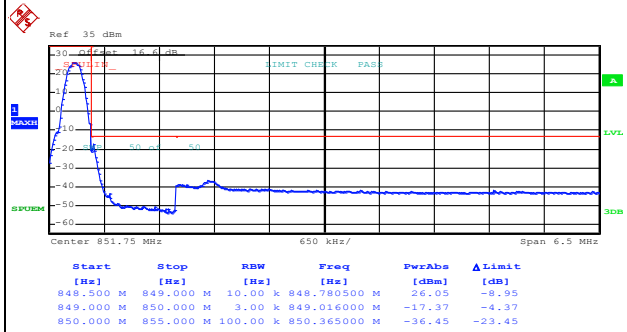
GSM850 (GPRS class 8)

Lowest Band Edge



Date: 7.AUG.2015 15:56:07

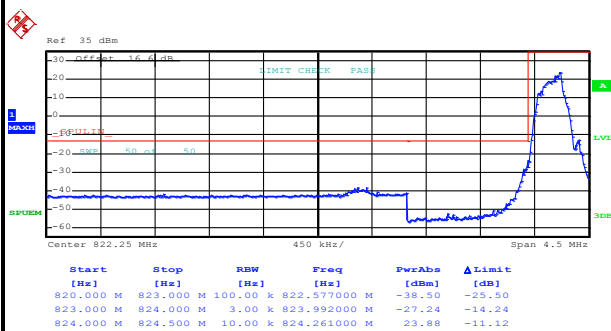
Highest Band Edge



Date: 7.AUG.2015 15:57:34

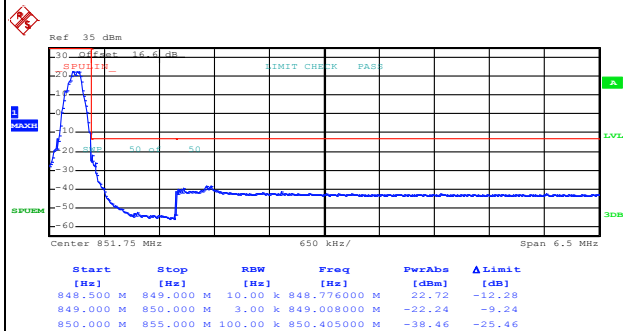
GSM850 (EDGE class 8)

Lowest Band Edge



Date: 7.AUG.2015 16:05:10

Highest Band Edge

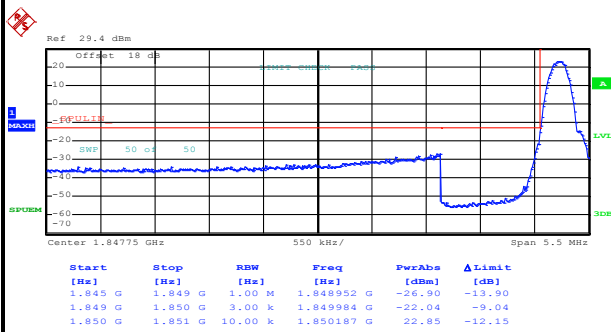


Date: 7.AUG.2015 16:06:38



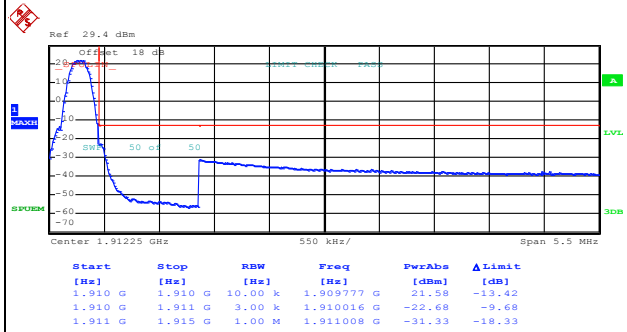
GSM1900 (GPRS class 8)

Lowest Band Edge



Date: 7.AUG.2015 15:19:12

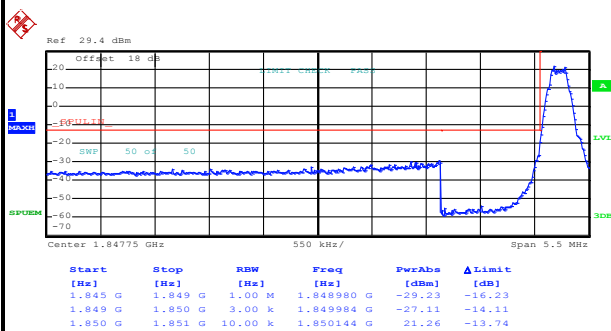
Highest Band Edge



Date: 7.AUG.2015 15:20:40

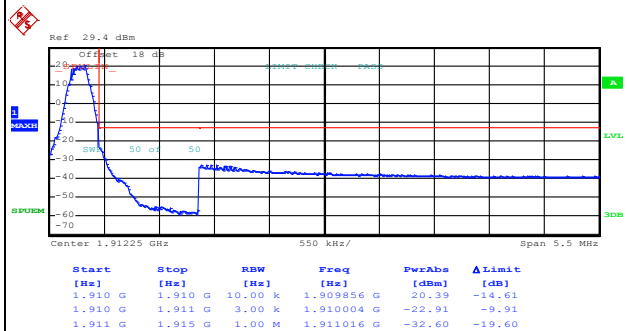
GSM1900 (EDGE class 8)

Lowest Band Edge



Date: 7.AUG.2015 15:31:18

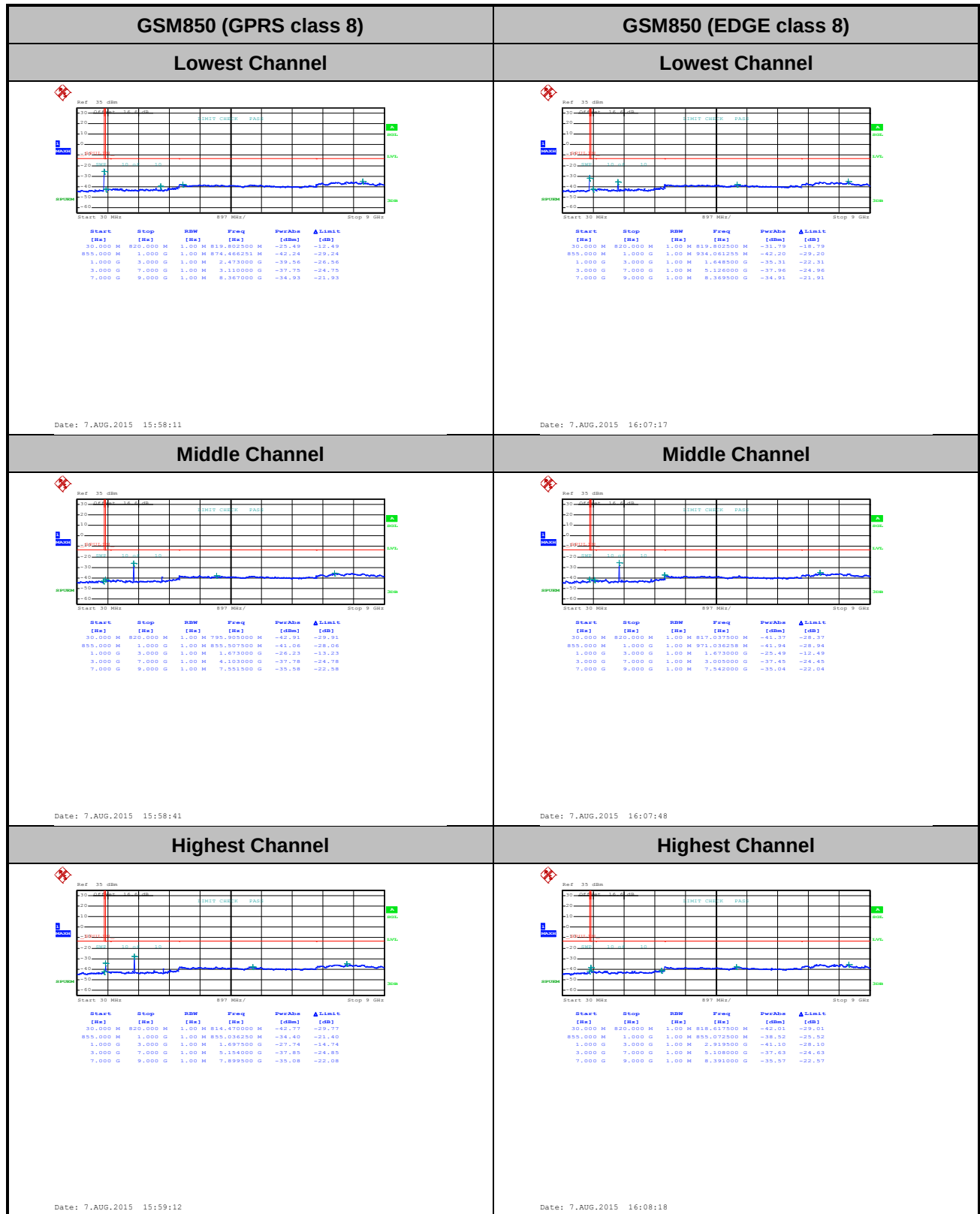
Highest Band Edge

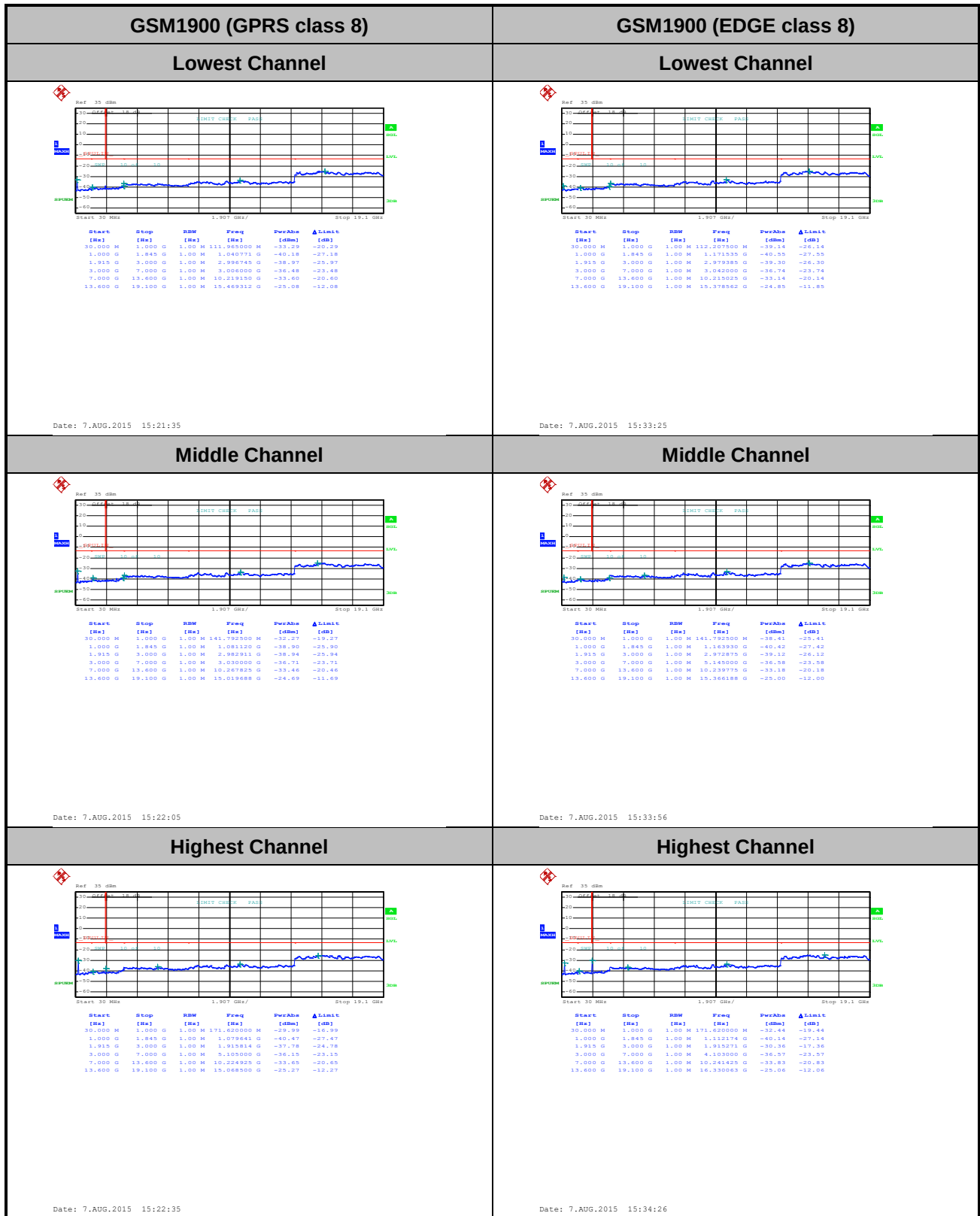


Date: 7.AUG.2015 15:32:46



Conducted Spurious Emission





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	0.0012	0.0036	PASS
40	Normal Voltage	0.0036	0.0060	
30	Normal Voltage	0.0084	0.0084	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0036	0.0347	
0	Normal Voltage	0.0048	0.0048	
-10	Normal Voltage	0.0024	0.0024	
-20	Normal Voltage	0.0060	0.0012	
-30	Normal Voltage	0.0143	0.0072	
20	Maximum Voltage	0.0120	0.0036	
20	Normal Voltage	0.0072	0.0012	
20	Battery End Point	0.0048	0.0024	

Note:

1. Normal Voltage = 4.0V. ; Battery End Point (BEP) = 3.5 V. ; Maximum Voltage =4.5 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	0.0080	0.0106	PASS
40	Normal Voltage	0.0053	0.0101	
30	Normal Voltage	0.0016	0.0032	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0032	0.0303	
0	Normal Voltage	0.0372	0.0059	
-10	Normal Voltage	0.0064	0.0021	
-20	Normal Voltage	0.0074	0.0037	
-30	Normal Voltage	0.0048	0.0000	
20	Maximum Voltage	0.0005	0.0016	
20	Normal Voltage	0.0011	0.0005	
20	Battery End Point	0.0016	0.0032	

Note:

1. Normal Voltage = 4.0V. ; Battery End Point (BEP) = 3.5 V. ; Maximum Voltage =4.5 V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

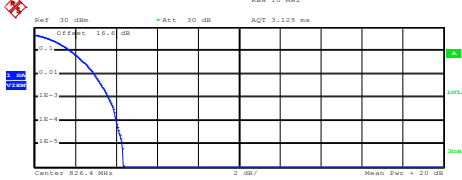
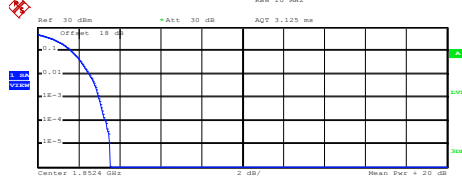
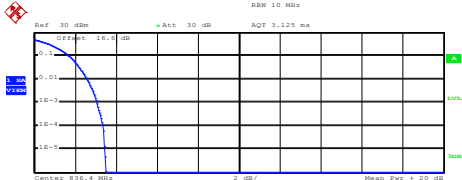
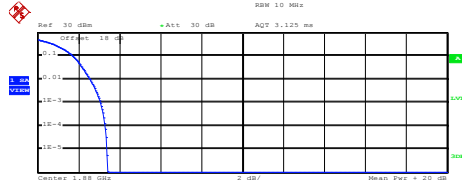
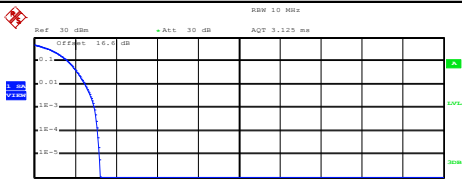
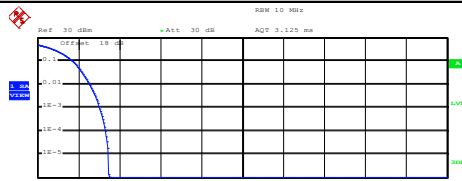


A2. WCDMA

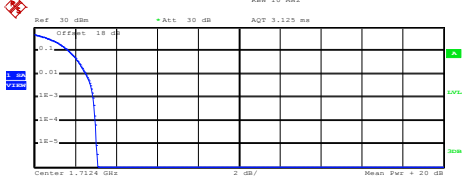
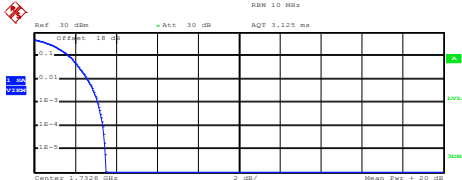
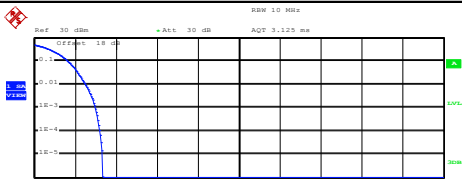
Peak-to-Average Ratio

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	3.60	3.00	2.88	PASS
Middle CH	3.08	3.08	3.12	
Highest CH	2.96	3.04	3.00	



WCDMA Band V (RMC 12.2Kbps)		WCDMA Band II (RMC 12.2Kbps)	
Lowest Channel		Lowest Channel	
 Center 826.4 MHz Ref 30 dBm Att 30 dB AQT 3.125 ms Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 18.98 dBm Peak 23.34 dBm Crest 4.36 dB 10 % 1.80 dB 1 % 2.92 dB .1 % 3.60 dB .01 % 4.00 dB Date: 7.AUG.2015 15:48:09		 Center 1.8524 GHz Ref 30 dBm Att 30 dB AQT 3.125 ms Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 20.29 dBm Peak 23.83 dBm Crest 3.54 dB 10 % 1.64 dB 1 % 2.52 dB .1 % 3.00 dB .01 % 3.32 dB Date: 7.AUG.2015 15:09:38	
Middle Channel		Middle Channel	
 Center 830.4 MHz Ref 30 dBm Att 30 dB AQT 3.125 ms Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 19.97 dBm Peak 23.48 dBm Crest 3.51 dB 10 % 1.72 dB 1 % 2.60 dB .1 % 3.08 dB .01 % 3.36 dB Date: 7.AUG.2015 15:48:18		 Center 1.85 GHz Ref 30 dBm Att 30 dB AQT 3.125 ms Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 20.85 dBm Peak 24.26 dBm Crest 3.40 dB 10 % 1.72 dB 1 % 2.56 dB .1 % 3.08 dB .01 % 3.32 dB Date: 7.AUG.2015 15:09:46	
Highest Channel		Highest Channel	
 Center 846.6 MHz Ref 30 dBm Att 30 dB AQT 3.125 ms Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 20.03 dBm Peak 23.27 dBm Crest 3.24 dB 10 % 1.64 dB 1 % 2.48 dB .1 % 2.96 dB .01 % 3.08 dB Date: 7.AUG.2015 15:48:26		 Center 1.9076 GHz Ref 30 dBm Att 30 dB AQT 3.125 ms Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 20.14 dBm Peak 23.62 dBm Crest 3.48 dB 10 % 1.72 dB 1 % 2.56 dB .1 % 3.04 dB .01 % 3.32 dB Date: 7.AUG.2015 15:09:55	



WCDMA Band IV (RMC 12.2Kbps)									
Lowest Channel									
 Ref: 30 dBm +Att: 30 dB AQT: 3.125 ms Center: 1.7124 GHz 2 dB/ Mean Pwr: 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 21.37 dBm Peak: 24.47 dBm Crest: 3.10 dB <table><tr><td>10 %</td><td>1.68 dB</td></tr><tr><td>1 %</td><td>2.52 dB</td></tr><tr><td>.1 %</td><td>2.88 dB</td></tr><tr><td>.01 %</td><td>3.00 dB</td></tr></table> Date: 7.AUG.2015 15:00:12	10 %	1.68 dB	1 %	2.52 dB	.1 %	2.88 dB	.01 %	3.00 dB	
10 %	1.68 dB								
1 %	2.52 dB								
.1 %	2.88 dB								
.01 %	3.00 dB								
Middle Channel									
 Ref: 30 dBm +Att: 30 dB AQT: 3.125 ms Center: 1.7326 GHz 2 dB/ Mean Pwr: 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 20.81 dBm Peak: 24.33 dBm Crest: 3.52 dB <table><tr><td>10 %</td><td>1.72 dB</td></tr><tr><td>1 %</td><td>2.60 dB</td></tr><tr><td>.1 %</td><td>3.12 dB</td></tr><tr><td>.01 %</td><td>3.36 dB</td></tr></table> Date: 7.AUG.2015 15:00:22	10 %	1.72 dB	1 %	2.60 dB	.1 %	3.12 dB	.01 %	3.36 dB	
10 %	1.72 dB								
1 %	2.60 dB								
.1 %	3.12 dB								
.01 %	3.36 dB								
Highest Channel									
 Ref: 30 dBm +Att: 30 dB AQT: 3.125 ms Center: 1.7526 GHz 2 dB/ Mean Pwr: 20 dB Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 20.41 dBm Peak: 23.76 dBm Crest: 3.35 dB <table><tr><td>10 %</td><td>1.64 dB</td></tr><tr><td>1 %</td><td>2.52 dB</td></tr><tr><td>.1 %</td><td>3.00 dB</td></tr><tr><td>.01 %</td><td>3.20 dB</td></tr></table> Date: 7.AUG.2015 15:00:30	10 %	1.64 dB	1 %	2.52 dB	.1 %	3.00 dB	.01 %	3.20 dB	
10 %	1.64 dB								
1 %	2.52 dB								
.1 %	3.00 dB								
.01 %	3.20 dB								



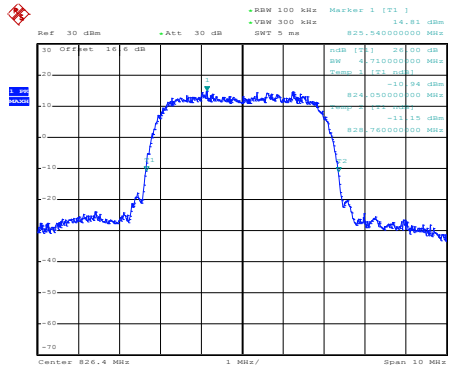
26dB Bandwidth

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.71	4.72	4.73
Middle CH	4.74	4.74	4.72
Highest CH	4.73	4.72	4.72



WCDMA Band V (RMC 12.2Kbps)

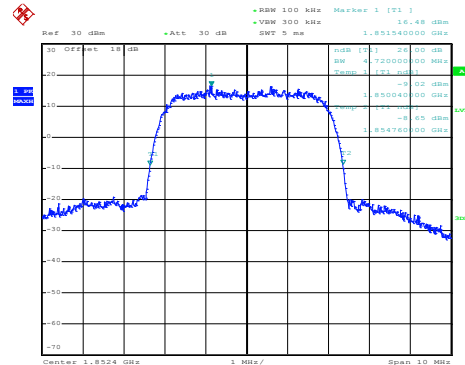
Lowest Channel



Date: 7.AUG.2015 15:40:41

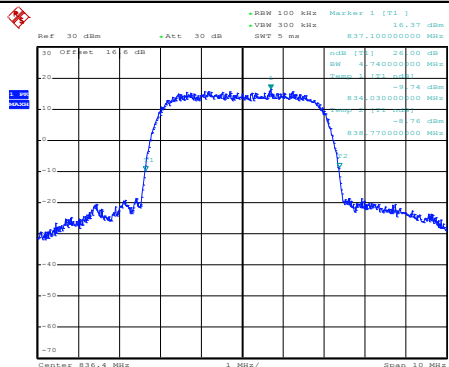
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



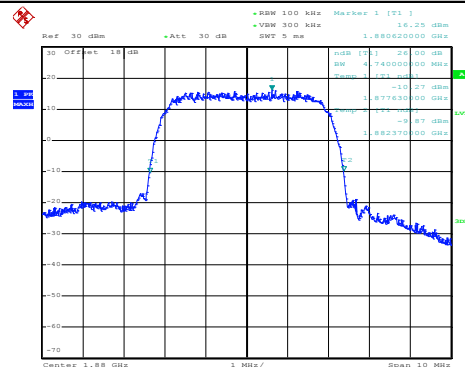
Date: 7.AUG.2015 15:01:36

Middle Channel



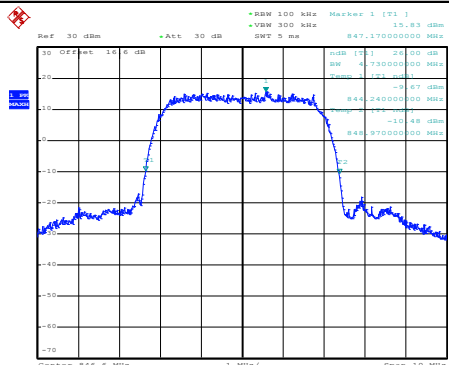
Date: 7.AUG.2015 15:41:09

Middle Channel



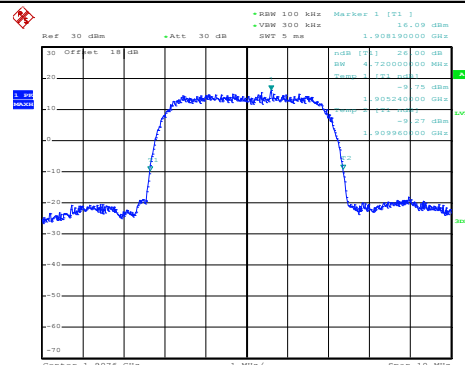
Date: 7.AUG.2015 15:02:04

Highest Channel



Date: 7.AUG.2015 15:41:36

Highest Channel

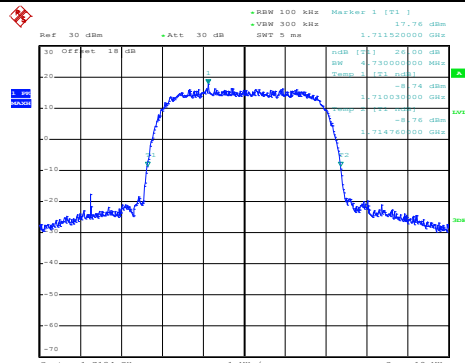


Date: 7.AUG.2015 15:02:32



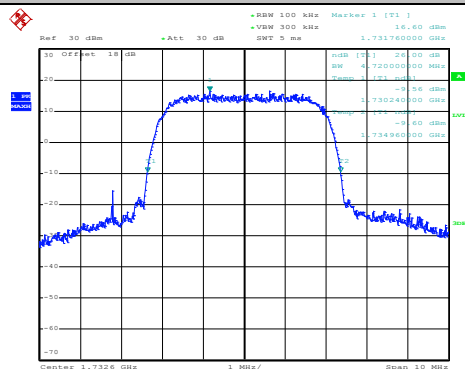
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



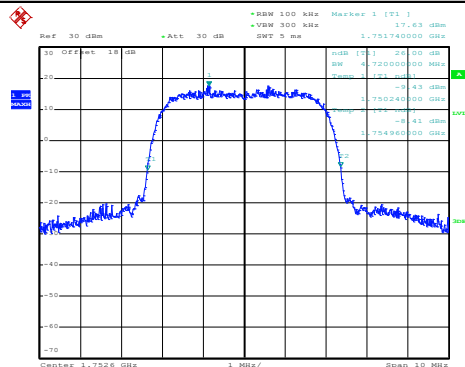
Date: 7.AUG.2015 14:52:32

Middle Channel



Date: 7.AUG.2015 14:53:00

Highest Channel

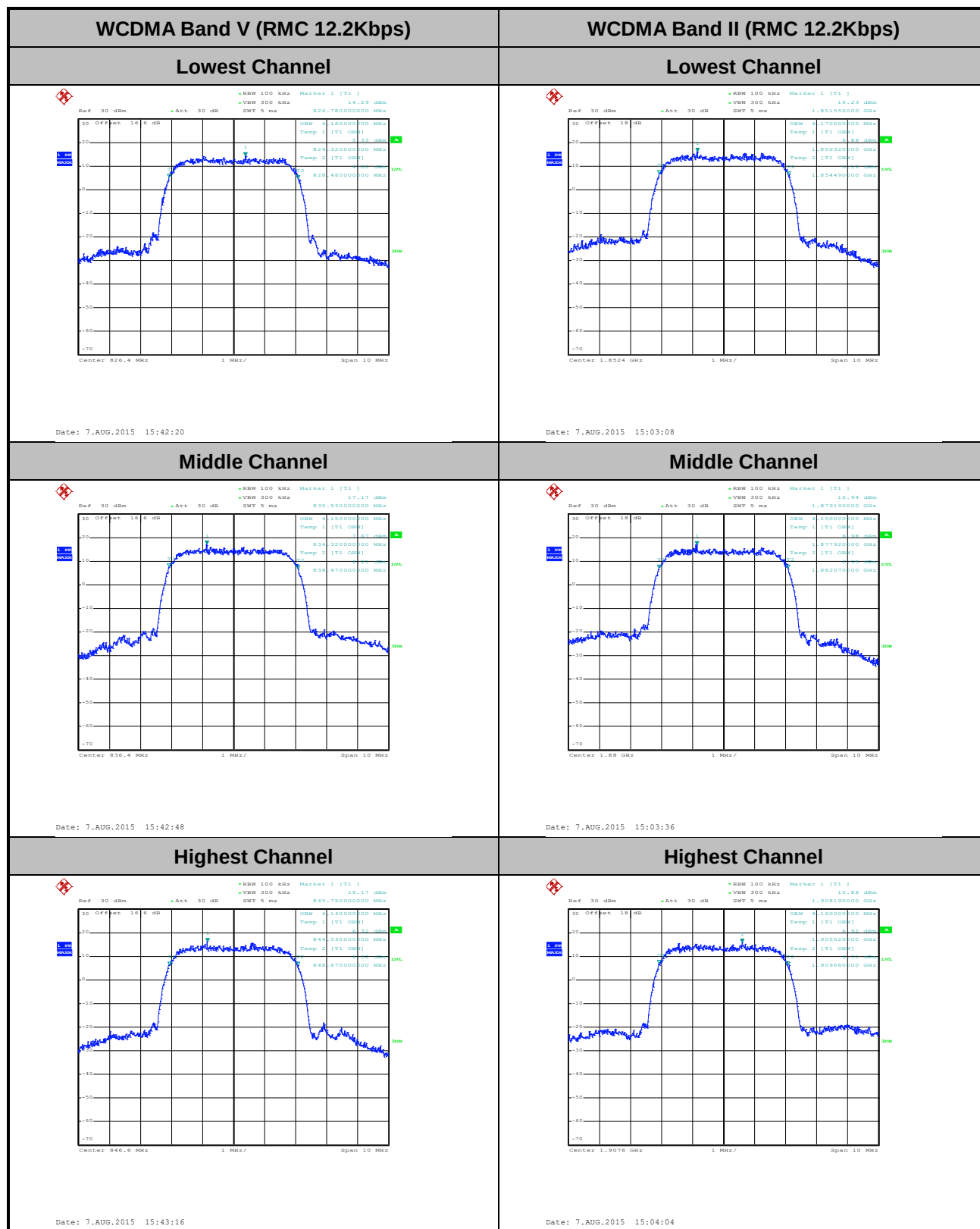


Date: 7.AUG.2015 14:53:28



Occupied Bandwidth

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.16	4.17	4.15
Middle CH	4.15	4.15	4.14
Highest CH	4.14	4.16	4.15





WCDMA Band IV (RMC 12.2Kbps)	
Lowest Channel	
Middle Channel	
Highest Channel	

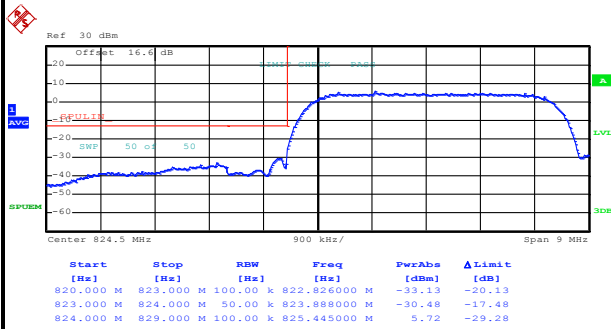


Conducted Band Edge



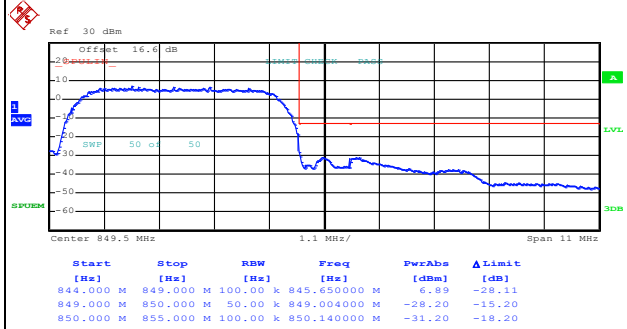
WCDMA Band V (RMC 12.2Kbps)

Lowest Band Edge



Date: 7.AUG.2015 15:44:54

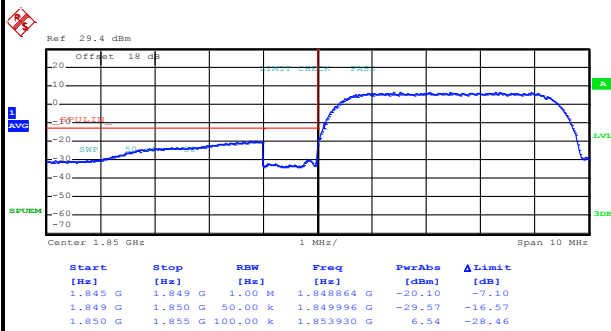
Highest Band Edge



Date: 7.AUG.2015 15:46:21

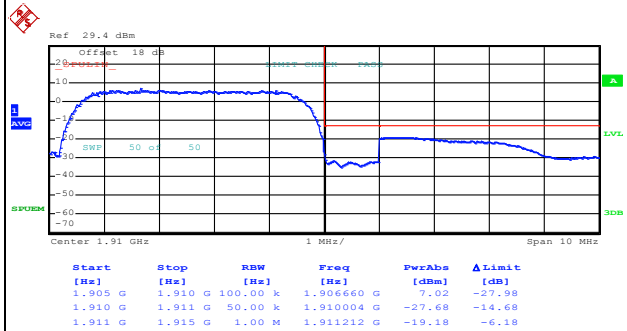
WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge



Date: 7.AUG.2015 15:05:35

Highest Band Edge

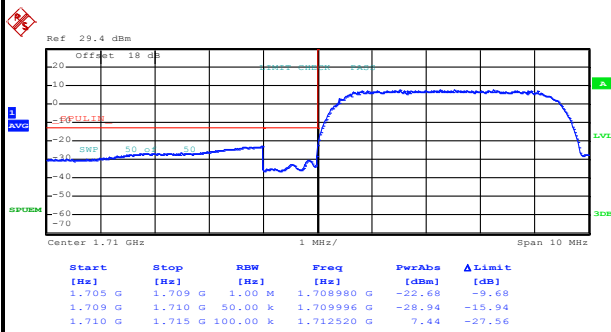


Date: 7.AUG.2015 15:07:01



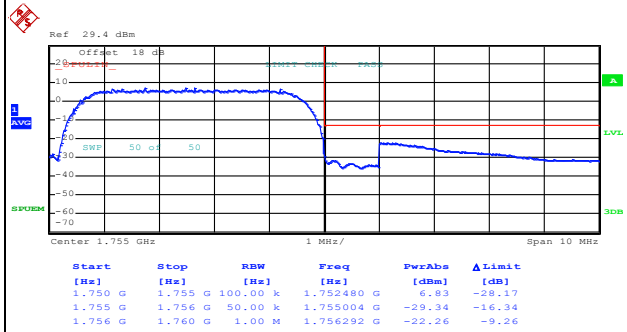
WCDMA Band IV (RMC 12.2Kbps)

Lowest Band Edge



Date: 7.AUG.2015 14:56:35

Highest Band Edge



Date: 7.AUG.2015 14:58:02

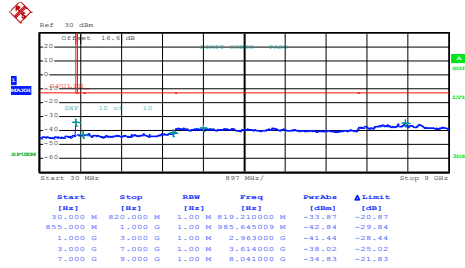


Conducted Spurious Emission



WCDMA Band V (RMC 12.2Kbps)

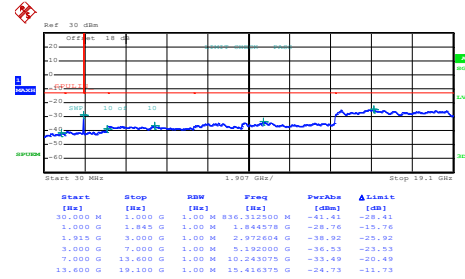
Lowest Channel



Date: 7.AUG.2015 15:46:56

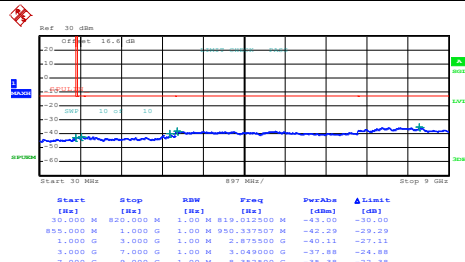
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



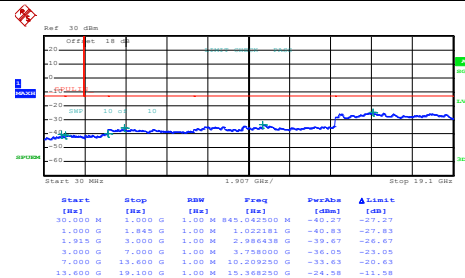
Date: 7.AUG.2015 15:08:03

Middle Channel



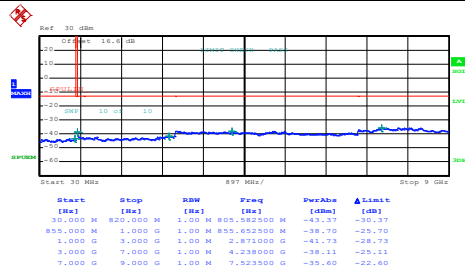
Date: 7.AUG.2015 15:47:26

Middle Channel



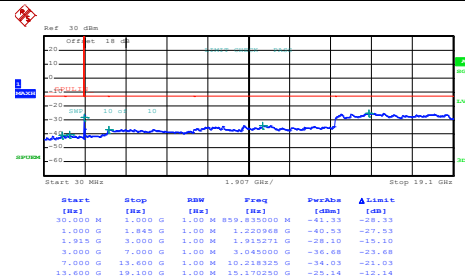
Date: 7.AUG.2015 15:08:33

Highest Channel



Date: 7.AUG.2015 15:47:56

Highest Channel

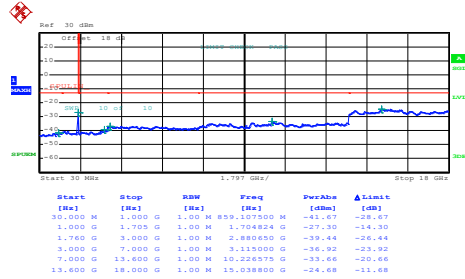


Date: 7.AUG.2015 15:09:02



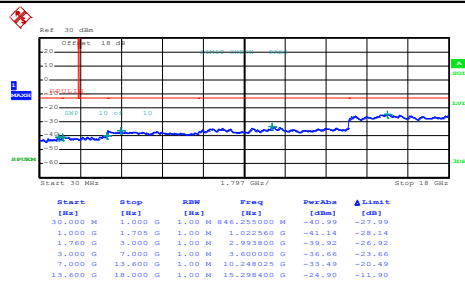
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



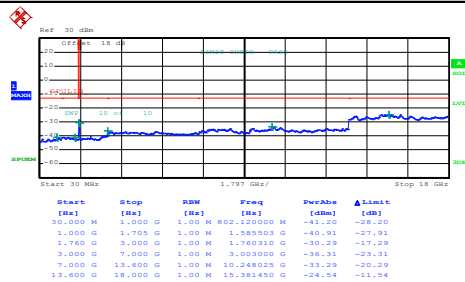
Date: 7.AUG.2015 14:58:58

Middle Channel



Date: 7.AUG.2015 14:59:28

Highest Channel



Date: 7.AUG.2015 14:59:58

Frequency Stability

Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2Kbps)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0096	PASS
40	Normal Voltage	0.0120	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0036	
0	Normal Voltage	0.0143	
-10	Normal Voltage	0.0012	
-20	Normal Voltage	0.0108	
-30	Normal Voltage	0.0024	
20	Maximum Voltage	0.0048	
20	Normal Voltage	0.0132	
20	Battery End Point	0.0155	

Note:

1. Normal Voltage = 4.0V. ; Battery End Point (BEP) = 3.5 V. ; Maximum Voltage =4.5 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	0.0016	
30	Normal Voltage	0.0021	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0011	
0	Normal Voltage	0.0021	
-10	Normal Voltage	0.0011	
-20	Normal Voltage	0.0069	
-30	Normal Voltage	0.0090	
20	Maximum Voltage	0.0005	
20	Normal Voltage	0.0005	
20	Battery End Point	0.0027	

Note:

1. Normal Voltage = 4.0V. ; Battery End Point (BEP) = 3.5 V. ; Maximum Voltage =4.5 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	0.0006	PASS
40	Normal Voltage	0.0012	
30	Normal Voltage	0.0006	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0017	
0	Normal Voltage	0.0017	
-10	Normal Voltage	0.0012	
-20	Normal Voltage	0.0006	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0023	
20	Normal Voltage	0.0040	
20	Battery End Point	0.0029	

Note:

1. Normal Voltage = 4.0V. ; Battery End Point (BEP) = 3.5 V. ; Maximum Voltage =4.5 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

ERP/EIRP

Channel	Mode	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	GSM850 GPRS class 8	28.54	0.7145	19.49	0.0889
Middle		28.37	0.6871	20.12	0.1028
Highest		28.10	0.6457	20.09	0.1021
Lowest	GSM850 EDGE class 8	21.71	0.1483	12.40	0.0174
Middle		22.61	0.1824	13.56	0.0227
Highest		23.10	0.2042	14.83	0.0304
Lowest	WCDMA Band V RMC 12.2Kbps	18.43	0.0697	9.44	0.0088
Middle		18.49	0.0706	10.08	0.0102
Highest		18.38	0.0689	10.37	0.0109
Limit	ERP < 7W	Result		PASS	



Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	GSM1900 GPRS class 8	28.75	0.7499	27.10	0.5129
Middle		28.67	0.7362	27.01	0.5023
0.520Highest		28.40	0.6918	27.16	0.5200
Lowest	GSM1900 EDGE class 8	23.89	0.2449	22.63	0.1832
Middle		23.83	0.2415	21.60	0.1445
Highest		23.30	0.2138	22.35	0.1718
Lowest	WCDMA Band II RMC 12.2Kbps	21.30	0.1349	19.79	0.0953
Middle		21.27	0.1340	19.64	0.0920
Highest		21.02	0.1265	16.64	0.0920
Limit	EIRP < 2W	Result		PASS	

Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	WCDMA Band IV RMC 12.2Kbps	20.52	0.1127	18.49	0.0706
Middle		20.65	0.1161	18.48	0.0705
Highest		21.19	0.1315	19.13	0.0818
Limit	EIRP < 1W	Result		PASS	

**Radiated Spurious Emission**

<EUT with AC Adapter>

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	-60.74	-13	-47.74	-71.02	-62.5	0.98	4.89	H
	2472	-53.02	-13	-40.02	-68.87	-54.9	1.28	5.32	H
	3296	-60.09	-13	-47.09	-77.39	-63.5	1.54	7.10	H
	1648	-61.74	-13	-48.74	-73.21	-63.5	0.98	4.89	V
	2472	-56.62	-13	-43.62	-74.17	-58.5	1.28	5.32	V
	3296	-58.49	-13	-45.49	-76.99	-61.9	1.54	7.10	V
Middle	1672	-61.22	-13	-48.22	-72.22	-62.9	0.99	4.82	H
	2512	-54.53	-13	-41.53	-70.67	-56.5	1.29	5.41	H
	3345	-59.89	-13	-46.89	-77.25	-63.5	1.56	7.32	H
	1672	-63.12	-13	-50.12	-74.41	-64.8	0.99	4.82	V
	2512	-53.23	-13	-40.23	-70.6	-55.2	1.29	5.41	V
	3345	-58.89	-13	-45.89	-77.33	-62.5	1.56	7.32	V
Highest	1696	-62.20	-13	-49.20	-73.72	-63.8	1.00	4.75	H
	2546	-55.22	-13	-42.22	-71.09	-57.2	1.31	5.44	H
	3395	-60.08	-13	-47.08	-77.59	-63.9	1.57	7.54	H
	1696	-58.90	-13	-45.90	-71.13	-60.5	1.00	4.75	V
	2546	-56.92	-13	-43.92	-75.08	-58.9	1.31	5.44	V
	3395	-59.08	-13	-46.08	-77.46	-62.9	1.57	7.54	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	-60.04	-13	-47.04	-70.32	-61.8	0.98	4.89	H
	2472	-55.32	-13	-42.32	-71.19	-57.2	1.28	5.32	H
	3296	-60.09	-13	-47.09	-77.38	-63.5	1.54	7.10	H
	1648	-62.44	-13	-49.44	-74.01	-64.2	0.98	4.89	V
	2472	-57.02	-13	-44.02	-73.56	-58.9	1.28	5.32	V
	3296	-59.09	-13	-46.09	-77.39	-62.5	1.54	7.10	V
Middle	1672	-63.82	-13	-50.82	-74.35	-65.5	0.99	4.82	H
	2512	-53.23	-13	-40.23	-69.33	-55.2	1.29	5.41	H
	3345	-59.89	-13	-46.89	-77.37	-63.5	1.56	7.32	H
	1672	-63.52	-13	-50.52	-75.06	-65.2	0.99	4.82	V
	2512	-54.93	-13	-41.93	-72.95	-56.9	1.29	5.41	V
	3345	-59.19	-13	-46.19	-77.54	-62.8	1.56	7.32	V
Highest	1696	-59.80	-13	-46.80	-70.98	-61.4	1.00	4.75	H
	2544	-53.12	-13	-40.12	-69.31	-55.1	1.30	5.44	H
	3395	-60.08	-13	-47.08	-77.49	-63.9	1.57	7.54	H
	1696	-63.70	-13	-50.70	-75.29	-65.3	1.00	4.75	V
	2544	-56.82	-13	-43.82	-74.43	-58.8	1.30	5.44	V
	3395	-59.08	-13	-46.08	-77.79	-62.9	1.57	7.54	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	-59.33	-13	-46.33	-77.96	-65.9	1.67	8.24	H
	5550	-54.13	-13	-41.13	-78.84	-61.2	2.65	9.72	H
	7403	-50.05	-13	-37.05	-76.14	-59.2	2.46	11.61	H
	3700	-57.93	-13	-44.93	-77.71	-64.5	1.67	8.24	V
	5550	-53.13	-13	-40.13	-78.93	-60.2	2.65	9.72	V
	7400	-50.06	-13	-37.06	-78.29	-59.2	2.46	11.60	V
Middle	3763	-58.57	-13	-45.57	-77.92	-65.2	1.69	8.32	H
	5640	-54.15	-13	-41.15	-78.86	-61.2	2.71	9.76	H
	7520	-49.11	-13	-36.11	-75.45	-58.5	2.42	11.81	H
	3763	-57.17	-13	-44.17	-77.6	-63.8	1.69	8.32	V
	5640	-53.15	-13	-40.15	-78.85	-60.2	2.71	9.76	V
	7522	-49.81	-13	-36.81	-78.33	-59.2	2.42	11.81	V
Highest	3819	-56.22	-13	-43.22	-76.15	-62.9	1.70	8.38	H
	5729	-54.47	-13	-41.47	-78.91	-61.5	2.76	9.79	H
	7641	-47.70	-13	-34.70	-74.41	-57.2	2.38	11.88	H
	3819	-56.22	-13	-43.22	-76.72	-62.9	1.70	8.38	V
	5729	-53.87	-13	-40.87	-78.92	-60.9	2.76	9.79	V
	7639	-48.60	-13	-35.60	-77.21	-58.1	2.38	11.88	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	-59.53	-13	-46.53	-78.07	-66.1	1.67	8.24	H
	5550	-55.03	-13	-42.03	-78.9	-62.1	2.65	9.72	H
	7403	-50.35	-13	-37.35	-75.99	-59.5	2.46	11.61	H
	3700	-58.63	-13	-45.63	-78.26	-65.2	1.67	8.24	V
	5550	-53.33	-13	-40.33	-78.86	-60.4	2.65	9.72	V
	7400	-51.36	-13	-38.36	-78.93	-60.5	2.46	11.60	V
Middle	3763	-58.87	-13	-45.87	-78.07	-65.5	1.69	8.32	H
	5640	-54.45	-13	-41.45	-78.62	-61.5	2.71	9.76	H
	7522	-47.81	-13	-34.81	-74.17	-57.2	2.42	11.81	H
	3763	-57.57	-13	-44.57	-77.79	-64.2	1.69	8.32	V
	5640	-53.05	-13	-40.05	-78.56	-60.1	2.71	9.76	V
	7522	-47.81	-13	-34.81	-76.49	-57.2	2.42	11.81	V
Highest	3819	-57.12	-13	-44.12	-77.3	-63.8	1.70	8.38	H
	5729	-54.17	-13	-41.17	-78.85	-61.2	2.76	9.79	H
	7641	-47.70	-13	-34.70	-75.06	-57.2	2.38	11.88	H
	3819	-54.82	-13	-41.82	-75.43	-61.5	1.70	8.38	V
	5729	-54.17	-13	-41.17	-78.98	-61.2	2.76	9.79	V
	7641	-49.00	-13	-36.00	-77.5	-58.5	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)
Lowest	1656	-64.37	-13	-51.37	-75.13	-66.1	0.98	4.86	H
	2479	-60.40	-13	-47.40	-76.33	-62.3	1.28	5.34	H
	3305	-60.45	-13	-47.45	-77.48	-63.9	1.54	7.14	H
	1656	-64.37	-13	-51.37	-75.76	-66.1	0.98	4.86	V
	2479	-59.20	-13	-46.20	-76.43	-61.1	1.28	5.34	V
	3305	-58.75	-13	-45.75	-77.4	-62.2	1.54	7.14	V
Middle	1672	-64.52	-13	-51.52	-75.24	-66.2	0.99	4.82	H
	2509	-60.34	-13	-47.34	-76.82	-62.3	1.29	5.41	H
	3345	-59.89	-13	-46.89	-77.4	-63.5	1.56	7.32	H
	1672	-64.42	-13	-51.42	-75.87	-66.1	0.99	4.82	V
	2509	-59.24	-13	-46.24	-76.71	-61.2	1.29	5.41	V
	3345	-58.59	-13	-45.59	-77.3	-62.2	1.56	7.32	V
Highest	1696	-64.50	-13	-51.50	-75.66	-66.1	1.00	4.75	H
	2539	-60.52	-13	-47.52	-76.96	-62.5	1.30	5.43	H
	3386	-59.72	-13	-46.72	-77.31	-63.5	1.57	7.50	H
	1696	-64.60	-13	-51.60	-76.14	-66.2	1.00	4.75	V
	2539	-59.12	-13	-46.12	-76.88	-61.1	1.30	5.43	V
	3386	-59.02	-13	-46.02	-77.32	-62.8	1.57	7.50	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	3700	-51.93	-13	-38.93	-70.21	-58.5	1.67	8.24	H
	5557	-54.14	-13	-41.14	-78.71	-61.2	2.66	9.72	H
	7403	-49.75	-13	-36.75	-76.2	-58.9	2.46	11.61	H
	3700	-50.93	-13	-37.93	-70.71	-57.5	1.67	8.24	V
	5557	-53.44	-13	-40.44	-79	-60.5	2.66	9.72	V
	7409	-49.74	-13	-36.74	-77.72	-58.9	2.46	11.62	V
Middle	3763	-50.87	-13	-37.87	-70.14	-57.5	1.69	8.32	H
	5640	-54.45	-13	-41.45	-78.77	-61.5	2.71	9.76	H
	7520	-50.81	-13	-37.81	-77.8	-60.2	2.42	11.81	H
	3763	-50.87	-13	-37.87	-71.27	-57.5	1.69	8.32	V
	5640	-53.15	-13	-40.15	-78.89	-60.2	2.71	9.76	V
	7520	-50.11	-13	-37.11	-78.41	-59.5	2.42	11.81	V
Highest	3819	-48.92	-13	-35.92	-69.85	-55.6	1.70	8.38	H
	5722	-53.66	-13	-40.66	-78.69	-60.7	2.75	9.79	H
	7627	-49.61	-13	-36.61	-77.34	-59.1	2.39	11.88	H
	3819	-49.22	-13	-36.22	-70.41	-55.9	1.70	8.38	V
	5722	-53.36	-13	-40.36	-78.87	-60.4	2.75	9.79	V
	7630	-49.31	-13	-36.31	-78.62	-58.8	2.39	11.88	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	3420	-56.43	-13	-43.43	-74.71	-62.5	1.58	7.65	H
	5137	-55.42	-13	-42.42	-79.01	-62.7	2.42	9.70	H
	6850	-51.62	-13	-38.62	-78.34	-59.6	2.64	10.62	H
	3420	-51.63	-13	-38.63	-70.85	-57.7	1.58	7.65	V
	5137	-54.12	-13	-41.12	-78.78	-61.4	2.42	9.70	V
	6850	-50.02	-13	-37.02	-77.7	-58	2.64	10.62	V
Middle	3462	-56.64	-13	-43.64	-74.19	-62.88	1.59	7.83	H
	5198	-55.46	-13	-42.46	-78.74	-62.71	2.45	9.70	H
	6927	-52.47	-13	-39.47	-78.52	-60.57	2.61	10.71	H
	3462	-51.42	-13	-38.42	-70.41	-57.66	1.59	7.83	V
	5198	-54.63	-13	-41.63	-79.03	-61.88	2.45	9.70	V
	6927	-50.78	-13	-37.78	-78.05	-58.88	2.61	10.71	V
Highest	3504	-55.26	-13	-42.26	-72.98	-61.66	1.61	8.00	H
	5258	-54.52	-13	-41.52	-78.59	-61.73	2.49	9.70	H
	7010	-52.43	-13	-39.43	-78.41	-60.66	2.59	10.82	H
	3504	-50.02	-13	-37.02	-69.14	-56.42	1.61	8.00	V
	5258	-53.85	-13	-40.85	-78.83	-61.06	2.49	9.70	V
	7010	-51.43	-13	-38.43	-78.51	-59.66	2.59	10.82	V

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

**<EUT with WPC Charger>****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)
Highest	3819	-57.42	-13	-44.42	-78.3	-64.1	1.70	8.38	H
	5729	-54.47	-13	-41.47	-78.97	-61.5	2.76	9.79	H
	7639	-51.40	-13	-38.40	-79.11	-60.9	2.38	11.88	H
	3819	-56.72	-13	-43.72	-78.1	-63.4	1.70	8.38	V
	5729	-53.57	-13	-40.57	-79.23	-60.6	2.76	9.79	V
	7641	-47.10	-13	-34.10	-75.92	-56.6	2.38	11.88	V

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	3700	-55.23	-13	-42.23	-74.62	-61.8	1.67	8.24	H
	5557	-54.24	-13	-41.24	-78.89	-61.3	2.66	9.72	H
	7410	-52.54	-13	-39.54	-79.08	-61.7	2.46	11.62	H
	3700	-51.63	-13	-38.63	-71.81	-58.2	1.67	8.24	V
	5557	-53.64	-13	-40.64	-79.2	-60.7	2.66	9.72	V
	7410	-50.44	-13	-37.44	-78.58	-59.6	2.46	11.62	V

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