FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	10807, 11154
FCC ID	:	IHDT56WJ4
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 Mar. 08, 2017 and testing was completed on Apr. 14, 2017. We, Sporton International (KunShan) 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 (KunShan) INC., the test report shall not be reproduced except in full.

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APPENDIX A. TEST RESULTS OF CONDUCTED TEST

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APPENDIX C. TEST SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG730825-02A	Rev. 01	Initial issue of report	Apr. 26, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.5	§24.232(d)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.6	§2.1049 §22.917(b) §24.238(b) §27.53(g)	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Band Edge Measurement	< 43+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 22H	PASS	-
	§2.1055 §24.235 §27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a) §27.53(h)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 24.53 dB at 1672.000 MHz

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	10807, 11154
FCC ID	IHDT56WJ4
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/ WLAN2.4GHz 802.11b/g/n HT20/ WLAN5GHz 802.11a/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE Bluetooth v4.1 LE/ Bluetooth v4.2 LE
IMEI Code	Conducted: 355662080020710/355662080020728 for Sample 1 Radiation: 355662080018110/355662080018128 for Sample 1
HW Version	DVT1
SW Version	montana_userdebug 7.11 NPP26.56 1473 intcfg,test-keys
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 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: 32.98 dBm 1900: 30.01 dBm **WCDMA:** Band V: 23.05 dBm Band II: 23.81 dBm Band IV: 23.52 dBm
Antenna Type	PIFA Antenna
Antenna Gain	Cellular Band: -1.01 dBi PCS Band: 0.50 dBi AWS Band: -0.69 dBi
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: BPSK (Uplink) HSDPA/DC-HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink) HSPA+ : 16QAM (uplink is not supported) DC-HSDPA : 64QAM

1.5 Specification of Accessory

Specification of Accessory				
AC Adapter 1	**Brand Name**	Motorola(Salom)	**Model Name**	SC-22
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc or 9Vdc or 12Vdc, 3000mA or 1600mA or 1200mA		
AC Adapter 2	**Brand Name**	Motorola(chenyang)	**Model Name**	SC-22
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc or 9Vdc or 12Vdc, 3000mA or 1600mA or 1200mA		
AC Adapter 3	**Brand Name**	Motorola(LiteOn)	**Model Name**	SC-22
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc or 9Vdc or 12Vdc, 3000mA or 1600mA or 1200mA		
Battery 1	**Brand Name**	Motorola (ATL)	**Model Name**	SB18C15119
	Power Rating	3.8Vdc,3000mAh	**Type**	Li-ion
Battery 2	**Brand Name**	Motorola (sunwoda)	**Model Name**	SB18C15118
	Power Rating	3.8Vdc,3000mAh	**Type**	Li-ion
Earphone 1	**Brand Name**	Motorola(Lian chuang)	**Model Name**	SJYN1181B
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
Earphone 2	**Brand Name**	Motorola(Lianyun)	**Model Name**	TS500-03AMS01WHR-M
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
Earphone 3	**Brand Name**	Motorola(Tianzhi)	**Model Name**	TJ101817
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
USB Cable 1	**Brand Name**	Motorola(Liqi)	**Model Name**	L25W-051000100AL
	Signal Line Type	1.0 meter, shielded cable, without core		
USB Cable 2	**Brand Name**	Motorola(Fukangyuan)	**Model Name**	F25W-051000100A
	Signal Line Type	1.0 meter, shielded cable, without core		

1.6 Component List

Note: There are two types of EUT, the sample 1 (model name: 10807) is dual SIM slot and the sample 2(model name: 11154) is single SIM slot, the details refer the following table. According to the difference, we choose sample 1 to perform full test.

Component	Sample 1	Sample 2
CPU	Qualcomm MSM-8937-4-727NSP-TR-00-1-AA	Qualcomm MSM-8937-4-727NSP-TR-00-1-AA
TLCM	Tianma TL052VVMP09-00 TL052VVMP13-00	Mutto 1010-0502-00009 1010-0502-00010
Memory	Hynix H9TQ26ABJTACUR-KUM	Samsung KMQX10013M-B419
Front Camera	Sunny D5V16C-0JG	O-film L5695F70
Rear Camera	Sunny AL6S05S-0JG	Q-tech F3P3MBK
Battery	ATL SB18C15119	Sunwoda SB18C15118

1.7 Modification of EUT

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

1.8 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 22H	GSM850 GSM	GMSK	0.9594	0.0120 ppm	242KGXW
Part 22H	GSM850 EDGE class 8	8PSK	0.2249	0.0430 ppm	243KG7W
Part 22H	WCDMA Band V RMC 12.2Kbps	BPSK	0.0975	0.0215 ppm	4M13F9W
Part 24E	GSM1900 GSM	GMSK	1.1246	0.0074 ppm	244KGXW
Part 24E	GSM1900 EDGE class 8	8PSK	0.4989	0.0138 ppm	248KG7W
Part 24E	WCDMA Band II RMC 12.2Kbps	BPSK	0.2698	0.0090 ppm	4M13F9W
Part 27L	WCDMA Band IV RMC 12.2Kbps	BPSK	0.1919	0.0127 ppm	4M12F9W

1.9 Testing Location

Test Site	Sporton International (KunShan) INC.		
Test Site Location	No.3-2, Pingxiang Road, Kunshan Development Zone, Jiangsu, China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	**Sporton Site No.**		**FCC Registration No.**
	TH01-KS	03CH03-KS	306251

Note: The test site complies with ANSI C63.4 2014 requirement.

1.10 Applicable Standards

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

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

Remark:

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

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

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

Radiated emissions were investigated as following frequency range:

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

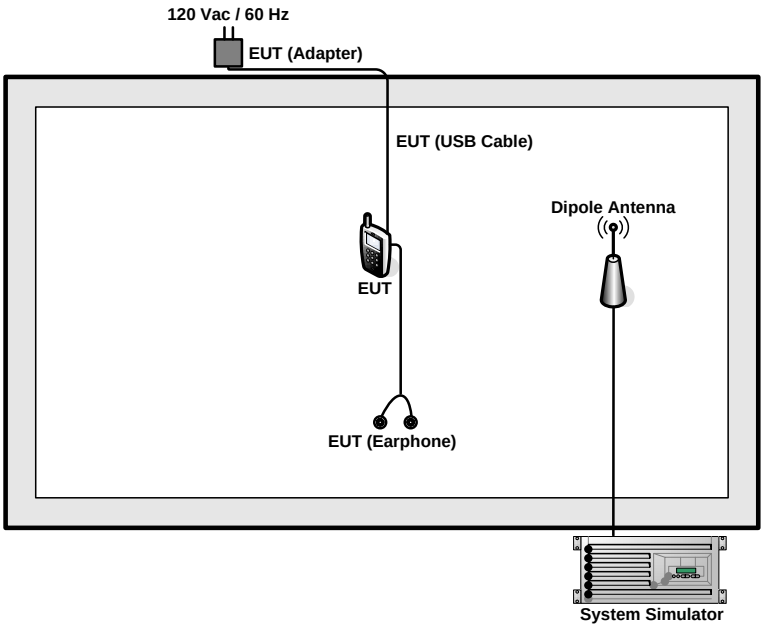
All modes and data rates and positions were investigated.

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

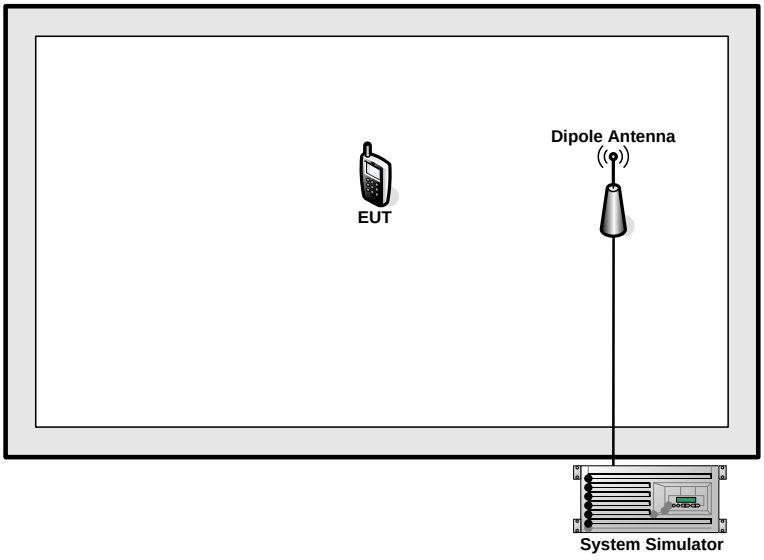
Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	■ GSM Link ■ EDGE class 8 Link	■ GSM Link ■ EDGE class 8 Link
GSM 1900	■ GSM Link ■ EDGE class 8 Link	■ GSM Link ■ EDGE class 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link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

2.2 Connection Diagram of Test System

For 22H



For 24E, 27L



2.3 Support Unit used in test configuration

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

2.4 Measurement Results Explanation Example

For all conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 4.4 dB and a 10dB attenuator.

Example :

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

= 4.4 + 10 = 14.4 (dB)

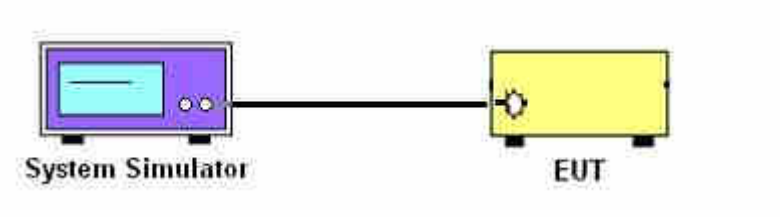
3 Conducted Test Result

3.1 Measuring Instruments

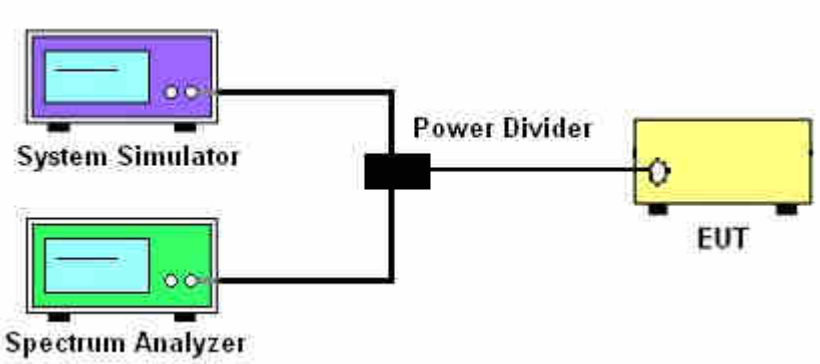
See list of measuring instruments of this test report.

3.2 Test Setup

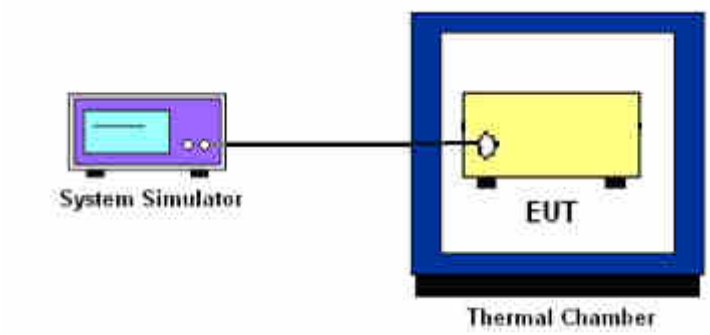
3.2.1 Conducted Output Power



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 and ERP/EIRP

3.4.1 Description of the Conducted Output Power and ERP/EIRP

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

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

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

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

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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

3.5.2 Test Procedures

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

Record the maximum PAPR level associated with a probability of 0.1%.

3.6 99% Occupied Bandwidth and 26dB Bandwidth Measurement

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

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

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

3.6.2 Test Procedures

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

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

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

3.7.2 Test Procedures

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

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 + 10log(P) dB below the transmitter power P(Watts)

= P(W) - [43 + 10log(P)] (dB)

= [30 + 10log(P)] (dBm) - [43 + 10log(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 ±0.00025% (±2.5ppm) of the center frequency.

3.9.2 Test Procedures for Temperature Variation

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

3.9.3 Test Procedures for Voltage Variation

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

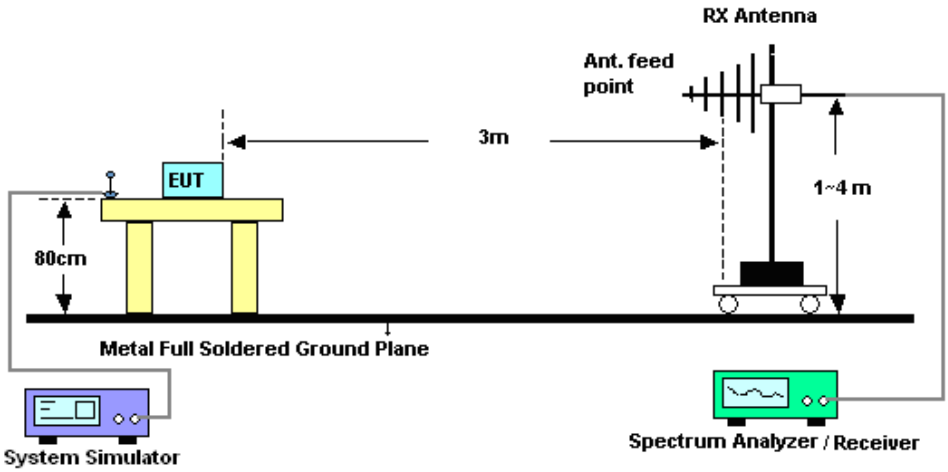
4 Radiated Test Items

4.1 Measuring Instruments

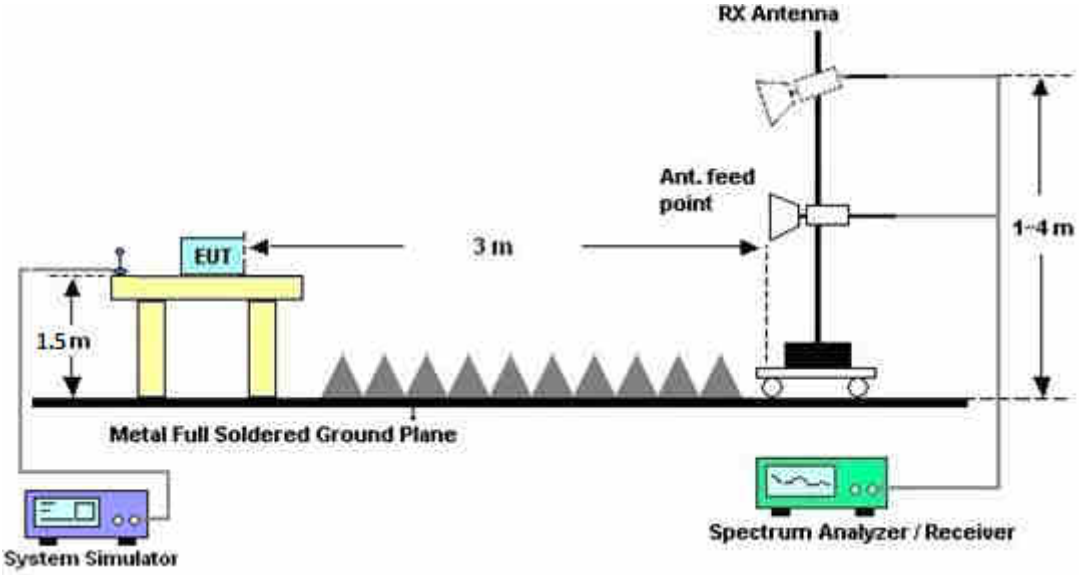
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

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

4.4.2 Test Procedures

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

    = P(W) - [43 + 10log(P)] (dB)

    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 09, 2016	Mar. 18, 2017	Aug. 08, 2017	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 13, 2016	Mar. 18, 2017	Oct. 12, 2017	Conducted (TH01-KS)
Radio communication	Anritsu	MT8820C	6201300652	2G/3G/LTE Band	Aug. 08, 2016	Mar. 18, 2017	Aug. 07, 2017	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 22, 2016	Mar. 19, 2017~ Apr. 14, 2017	Apr. 21, 2017	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 16, 2016	Mar. 19, 2017~ Apr. 14, 2017	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 16, 2016	Mar. 19, 2017~ Apr. 14, 2017	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 15, 2017	Mar. 19, 2017~ Apr. 14, 2017	Feb. 14, 2018	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	187289	9kHz~1GHz	Aug. 09, 2016	Mar. 19, 2017~ Apr. 14, 2017	Aug. 08, 2017	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 13, 2016	Mar. 19, 2017~ Apr. 14, 2017	Oct. 12, 2017	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Mar. 19, 2017~ Apr. 14, 2017	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Mar. 19, 2017~ Apr. 14, 2017	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Mar. 19, 2017~ Apr. 14, 2017	NCR	Radiation (03CH03-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (25 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.8dB**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.3dB**

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	32.56	32.60	32.98	29.88	30.01	29.91
GPRS class 8	32.55	32.58	32.97	29.83	29.94	29.98
GPRS class 10	30.34	30.42	30.49	26.68	26.91	26.92
GPRS class 11	28.54	28.53	28.64	24.94	25.09	25.06
GPRS class 12	27.15	27.25	27.37	23.55	23.76	23.29
EGPRS class 8	26.44	26.48	26.68	26.32	26.48	26.44
EGPRS class 10	24.47	24.46	24.57	23.78	23.85	23.76
EGPRS class 11	22.63	22.64	22.73	21.88	21.98	21.83
EGPRS class 12	21.17	21.28	21.48	20.46	20.67	20.49

Conducted Power (*Unit: dBm)									
Band	WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Channel	4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
AMR 12.2Kbps	22.89	23.00	23.02	23.55	23.60	23.80	23.51	23.44	23.45
RMC 12.2Kbps	22.90	23.05	23.02	23.56	23.61	23.81	23.52	23.45	23.47
HSDPA Subtest-1	22.05	22.10	22.11	22.63	22.66	22.86	22.59	22.49	22.55
HSDPA Subtest-2	22.08	22.12	22.14	22.68	22.69	22.88	22.54	22.52	22.54
HSDPA Subtest-3	21.61	21.57	21.57	22.15	22.17	22.33	21.91	21.97	22.00
HSDPA Subtest-4	21.41	21.40	21.43	22.17	22.18	22.36	21.92	21.97	21.99
DC-HSDPA Subtest-1	22.07	22.00	21.92	22.19	22.29	22.43	21.74	21.89	21.82
DC-HSDPA Subtest-2	22.08	21.89	21.96	22.01	22.27	22.43	21.84	22.01	21.92
DC-HSDPA Subtest-3	22.04	21.88	22.01	21.96	22.27	22.50	21.83	21.96	21.88
DC-HSDPA Subtest-4	22.02	21.85	21.98	22.00	22.23	22.55	21.86	21.98	21.88
HSUPA Subtest-1	21.30	21.35	21.40	21.80	21.86	22.01	21.77	21.75	21.76
HSUPA Subtest-2	20.58	20.62	20.70	21.20	21.23	21.43	21.11	21.10	21.05
HSUPA Subtest-3	20.72	20.80	20.81	21.32	21.36	21.47	21.12	21.11	21.09
HSUPA Subtest-4	21.55	21.60	21.64	21.99	22.00	22.20	22.00	21.92	21.93
HSUPA Subtest-5	20.55	20.60	20.68	21.00	21.01	21.20	20.89	20.85	20.80

ERP/EIRP

GSM850 (G_T - L_C= -1.01dB)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	32.56	32.60	32.98
Conducted Power (Watts)	1.8030	1.8197	1.9861
ERP(dBm)	29.40	29.44	29.82
ERP(Watts)	0.8710	0.8790	0.9594

EDGE850 (G_T - L_C= -1.01dB)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	26.44	26.48	26.68
Conducted Power (Watts)	0.4406	0.4446	0.4656
ERP(dBm)	23.28	23.32	23.52
ERP(Watts)	0.2128	0.2148	0.2249

GSM1900 (G_T - L_C= 0.50dB)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	29.88	30.01	29.91
Conducted Power (Watts)	0.9727	1.002	0.9795
EIRP(dBm)	30.38	30.51	30.41
EIRP(Watts)	1.0914	1.1246	1.0990

EDGE1900 (G_T - L_C= 0.50dB)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	26.32	26.48	26.44
Conducted Power (Watts)	0.4285	0.4446	0.4406
EIRP(dBm)	26.82	26.98	26.94
EIRP(Watts)	0.4808	0.4989	0.4943

WCDMA Band V (G_T - $L_{C=}$ -1.01dB)			
Channel	4132	4182	4233
	(Low)	(Mid)	(High)
Frequency (MHz)	826.4	836.4	846.6
Conducted Power (dBm)	22.90	23.05	23.02
Conducted Power (Watts)	0.1950	0.2018	0.2004
ERP(dBm)	19.74	19.89	19.86
ERP(Watts)	0.0942	0.0975	0.0968

WCDMA Band II (G_T - $L_{C=}$ 0.50dB)			
Channel	9262	9400	9538
	(Low)	(Mid)	(High)
Frequency (MHz)	1852.4	1880	1907.6
Conducted Power (dBm)	23.56	23.61	23.81
Conducted Power (Watts)	0.2270	0.2296	0.2404
EIRP(dBm)	24.06	24.11	24.31
EIRP(Watts)	0.2547	0.2576	0.2698

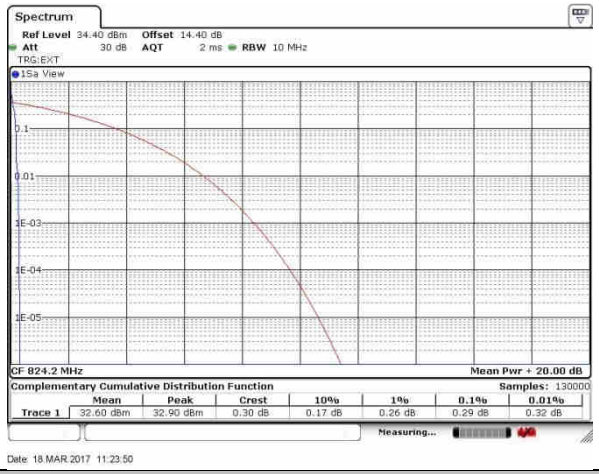
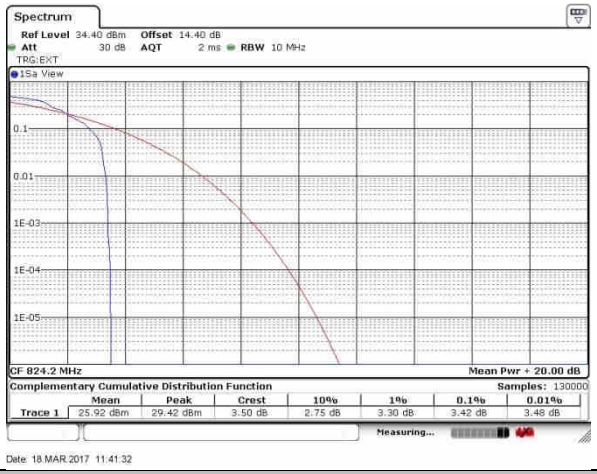
WCDMA Band IV (G_T - $L_{C=}$ -0.69dB)			
Channel	1312	1413	1513
	(Low)	(Mid)	(High)
Frequency (MHz)	1712.4	1732.6	1752.6
Conducted Power (dBm)	23.52	23.45	23.47
Conducted Power (Watts)	0.2249	0.2213	0.2223
EIRP(dBm)	22.83	22.76	22.78
EIRP(Watts)	0.1919	0.1888	0.1897

Peak-to-Average Ratio

Mode	GSM850(dB)		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.29	3.42	PASS
Middle CH	0.26	3.39	
Highest CH	0.26	3.48	

Mode	GSM1900(dB)		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.41	3.45	PASS
Middle CH	0.35	3.59	
Highest CH	0.26	3.39	

Mode	WCDMA Band V(dB)	WCDMA Band II(dB)	WCDMA Band IV(dB)	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	2.96	3.57	3.10	PASS
Middle CH	3.10	3.71	3.30	
Highest CH	3.01	3.74	3.10	

GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
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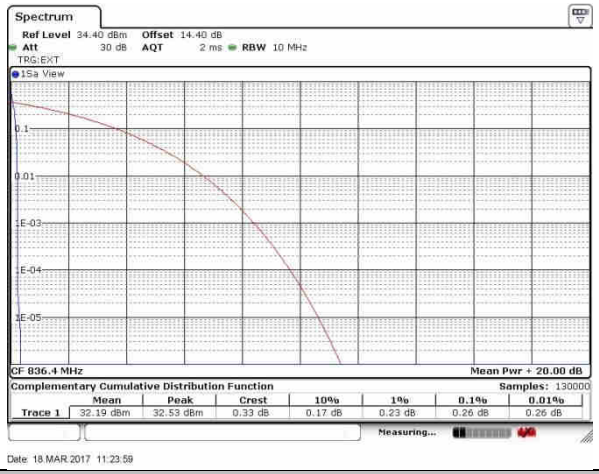	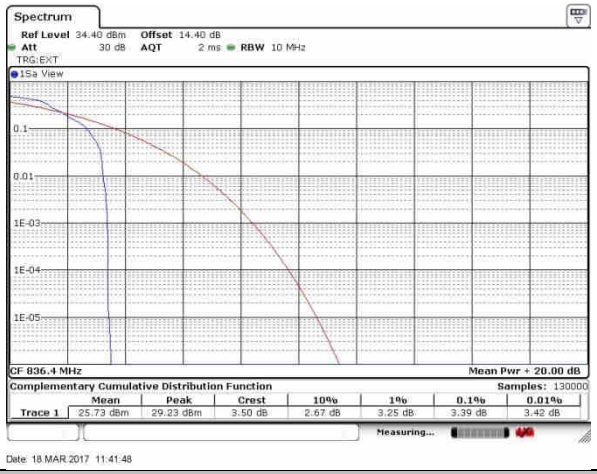
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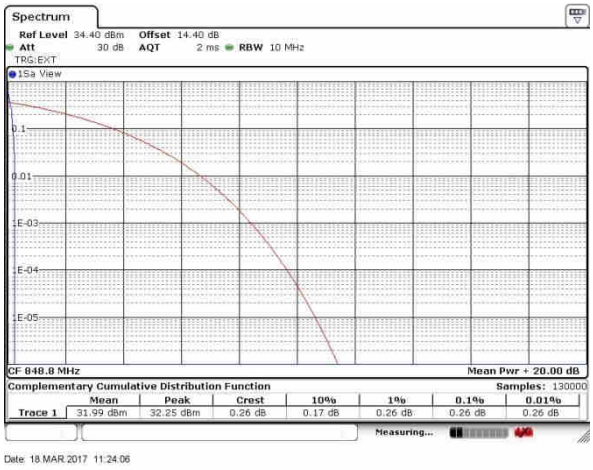
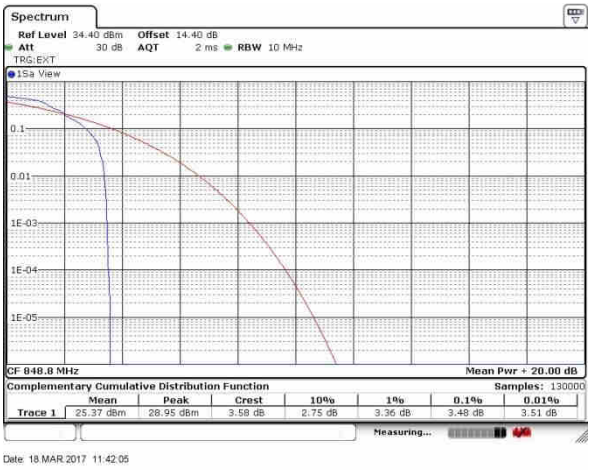
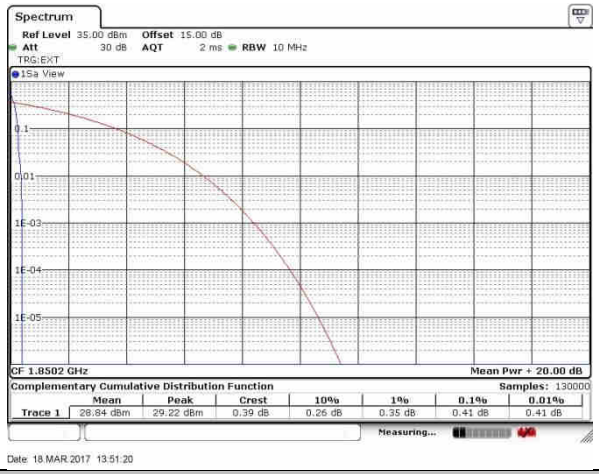
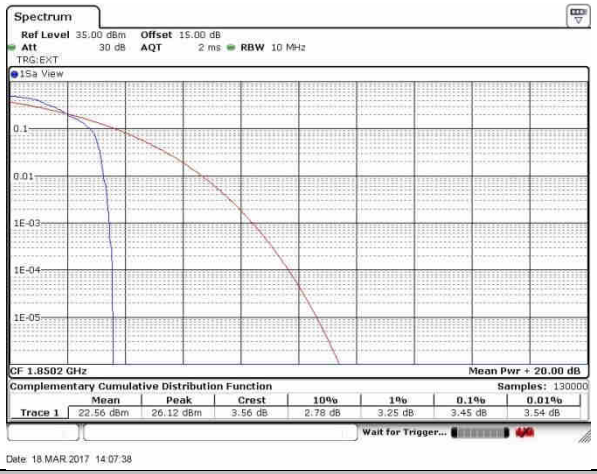
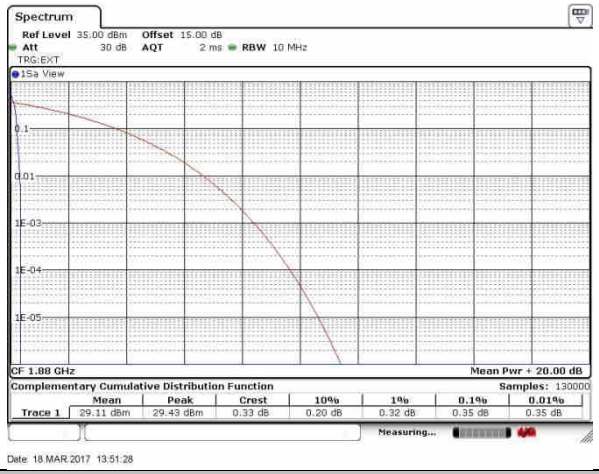
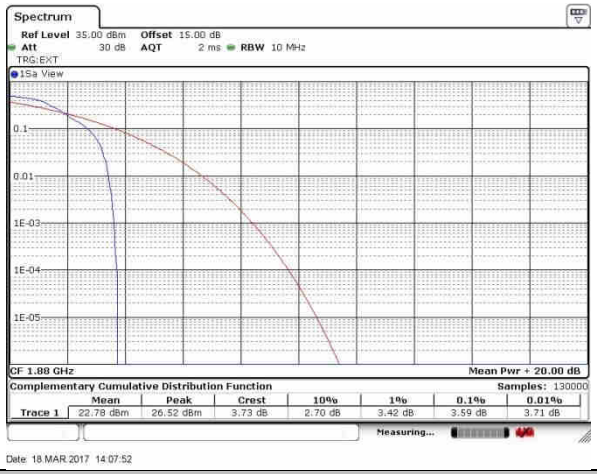
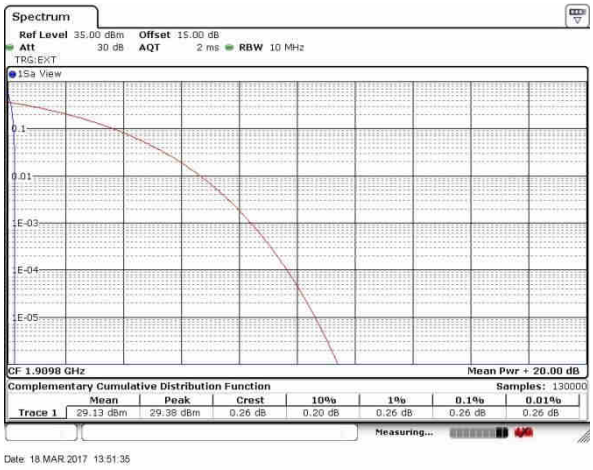
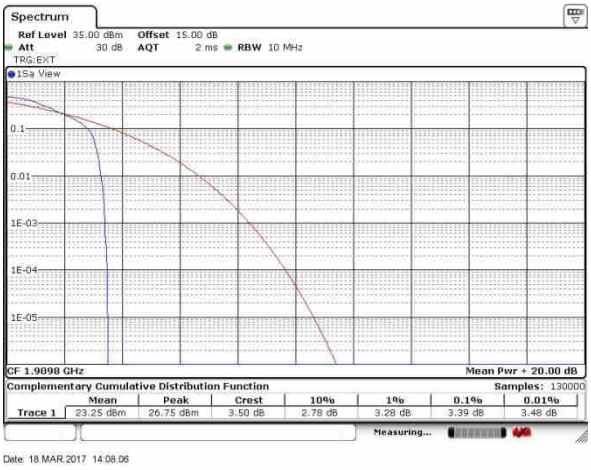
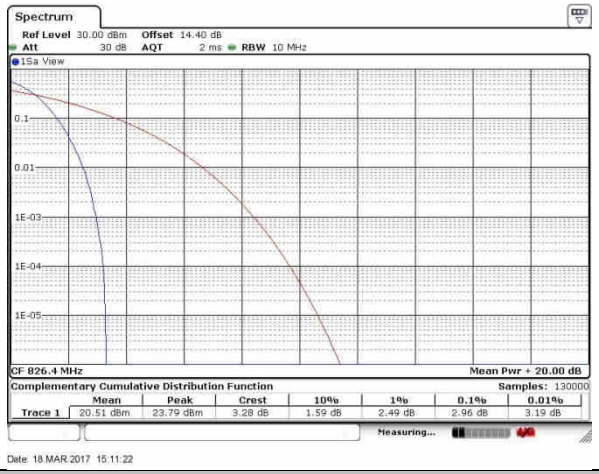
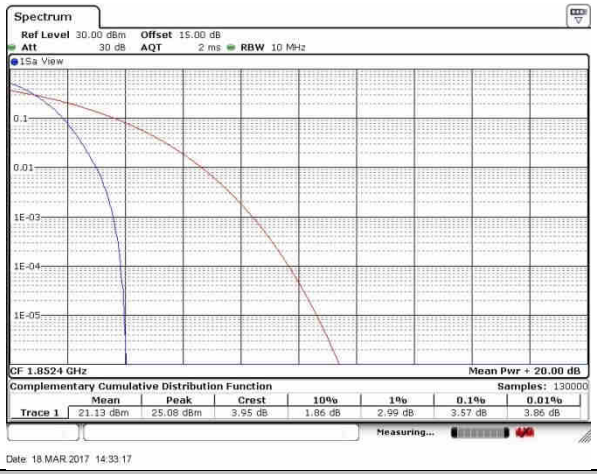
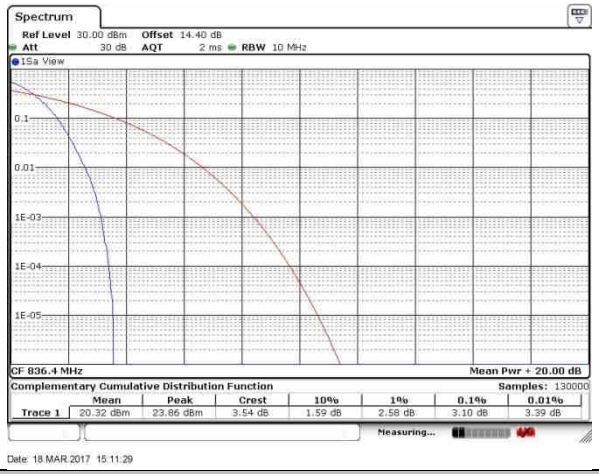
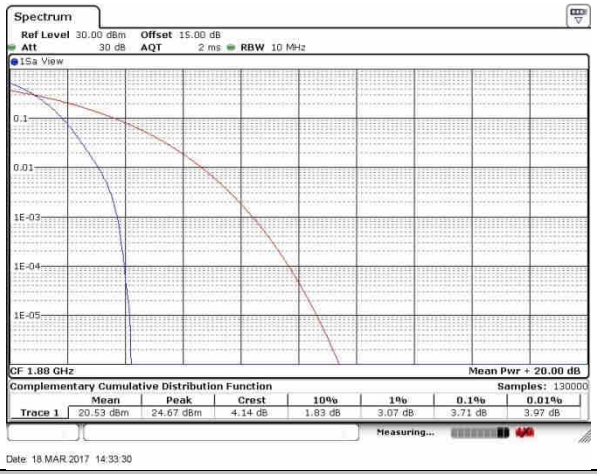
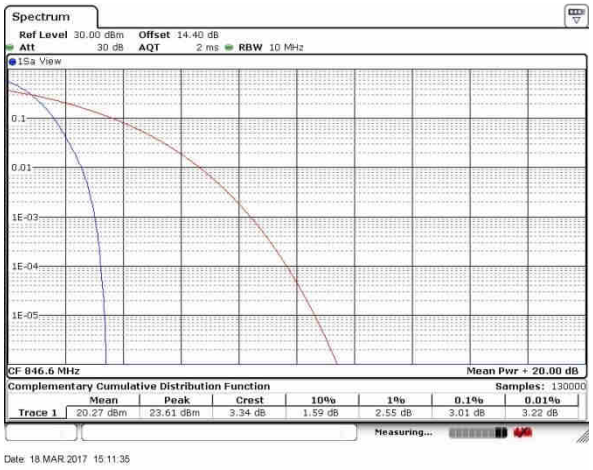
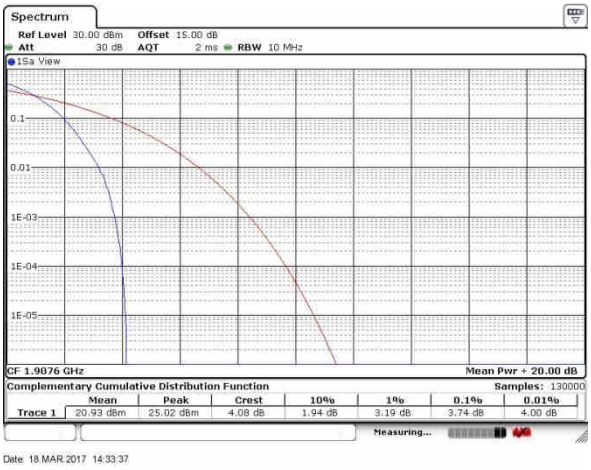
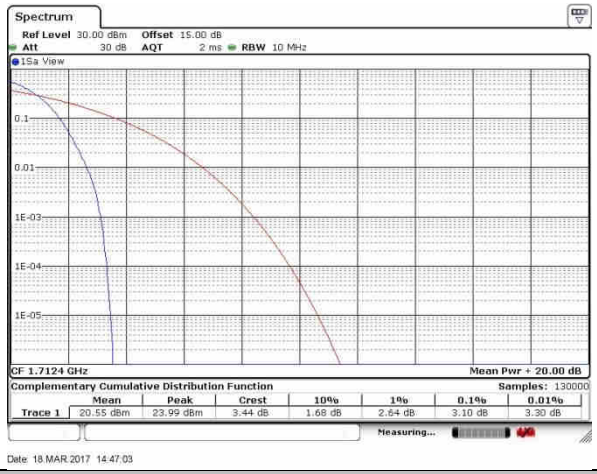
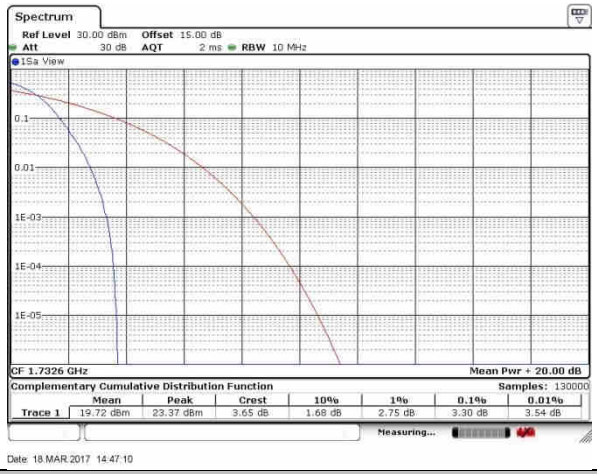
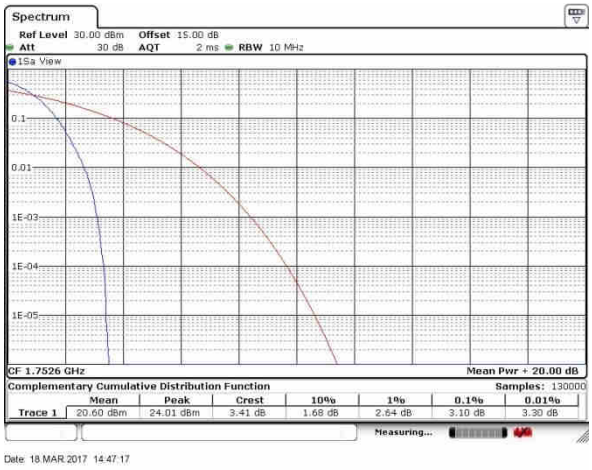
	

GSM1900 (GSM)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

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

26dB Bandwidth

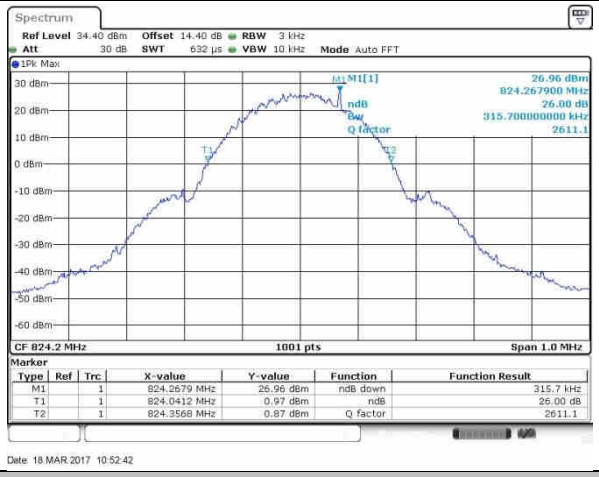
Mode	GSM850(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.316	0.315
Middle CH	0.312	0.312
Highest CH	0.313	0.313

Mode	GSM1900(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.314	0.314
Middle CH	0.314	0.313
Highest CH	0.314	0.304

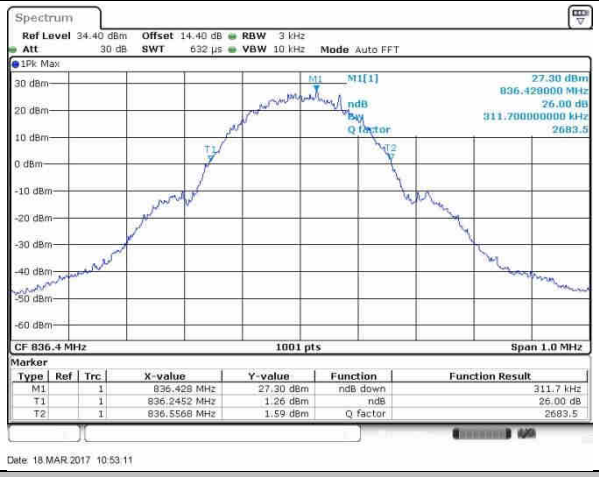
Mode	WCDMA Band V(MHz)	WCDMA Band II(MHz)	WCDMA Band IV(MHz)
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.72	4.69	4.71
Middle CH	4.72	4.70	4.72
Highest CH	4.75	4.68	4.72

GSM850 (GSM)

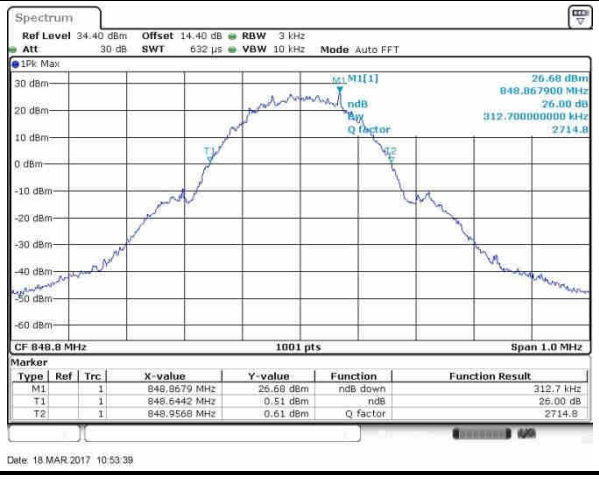
Lowest Channel



Middle Channel

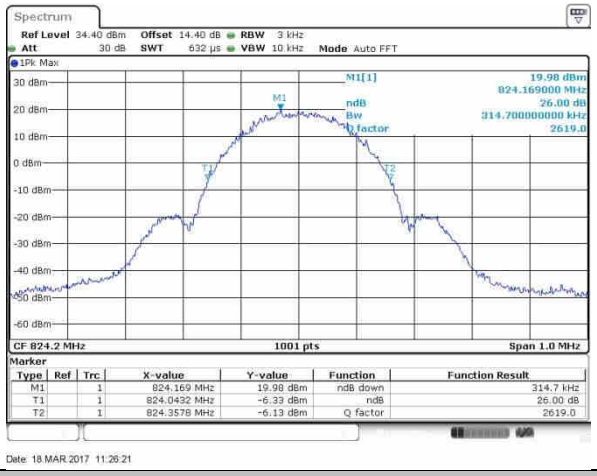


Highest Channel

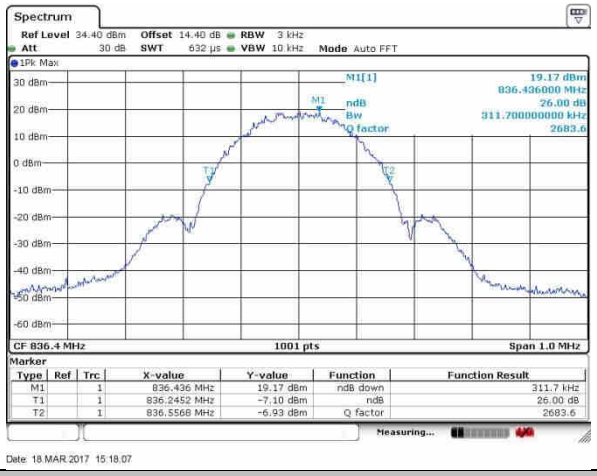


GSM850 (EDGE class 8)

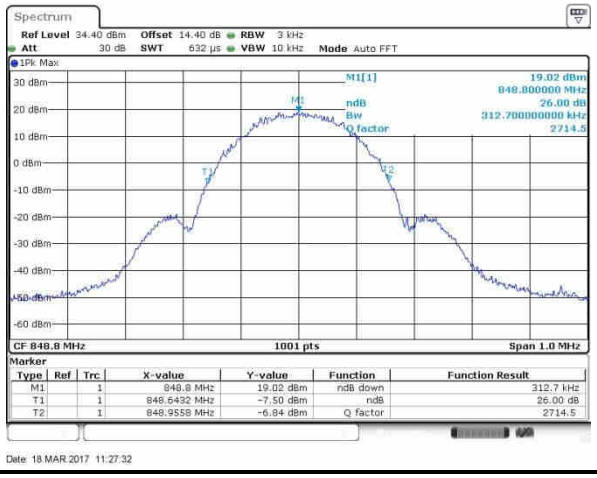
Lowest Channel

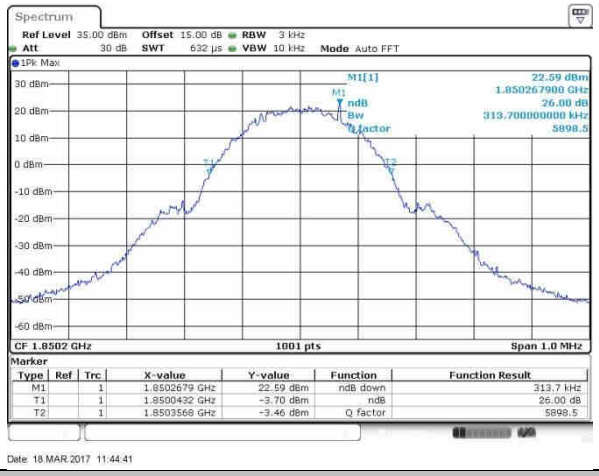
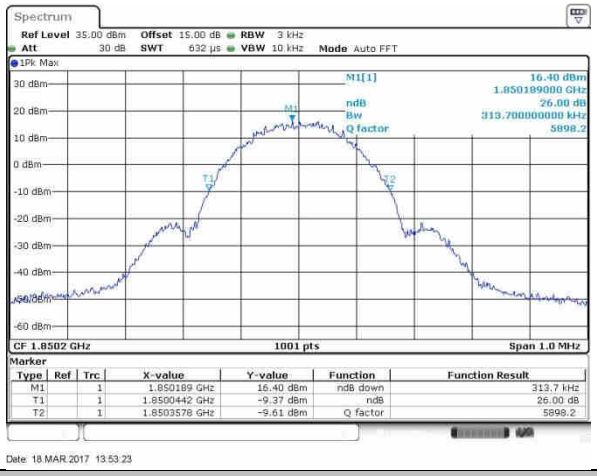
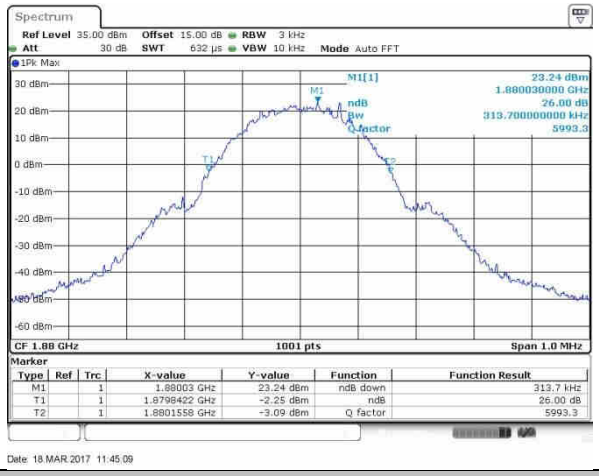
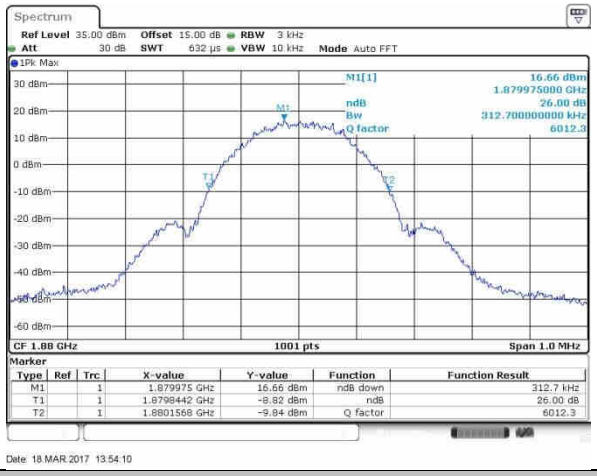
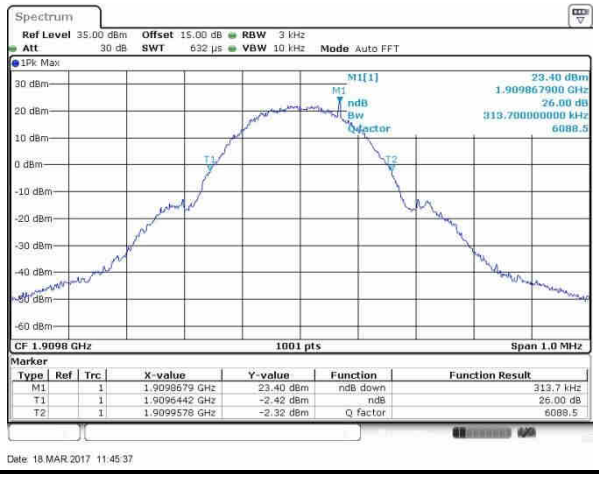
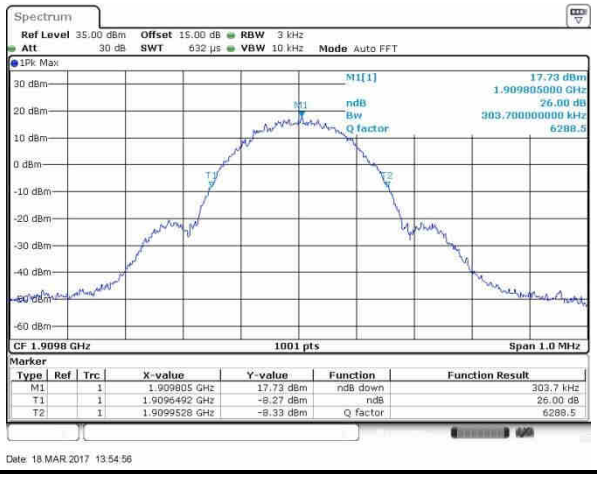


Middle Channel



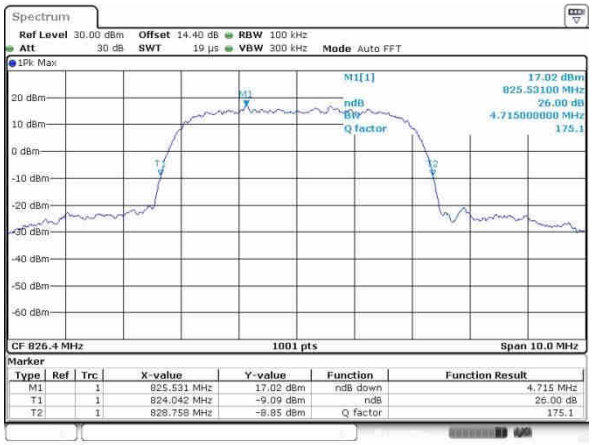
Highest Channel



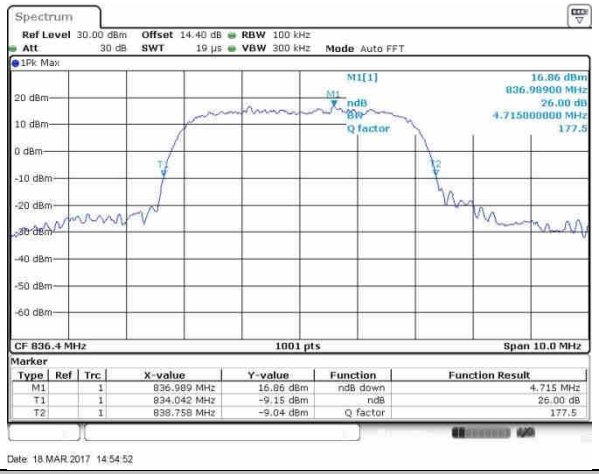
GSM1900 (GSM)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

WCDMA Band V (RMC 12.2Kbps)

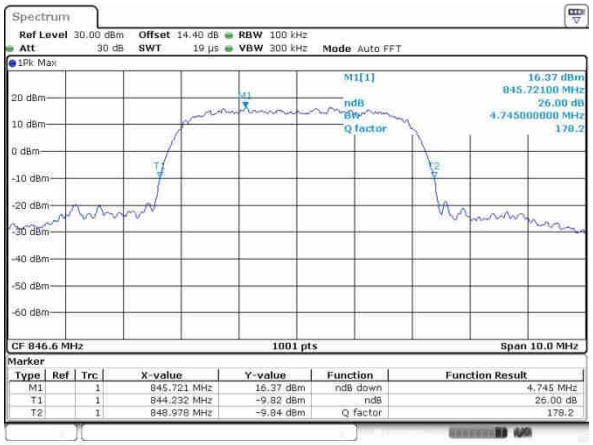
Lowest Channel



Middle Channel

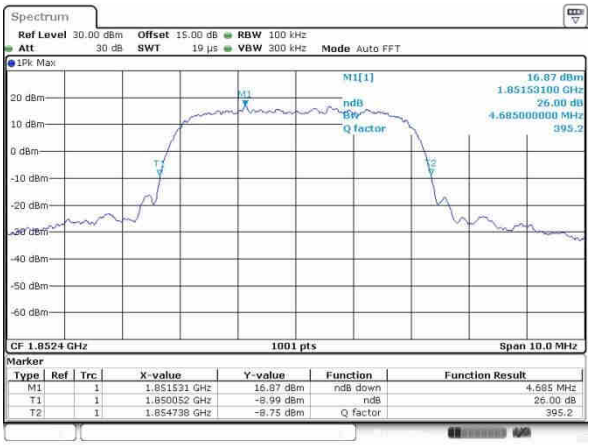


Highest Channel

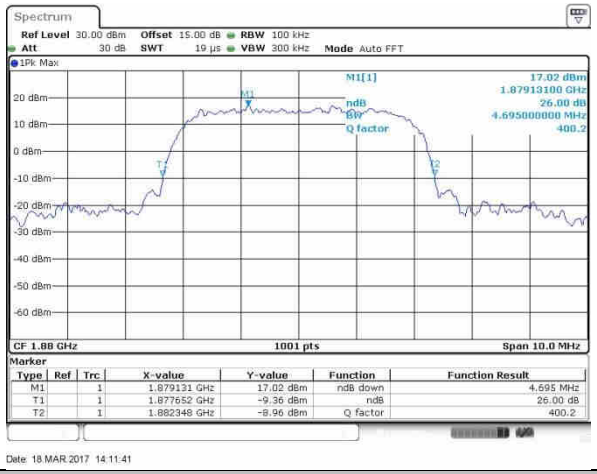


WCDMA Band II (RMC 12.2Kbps)

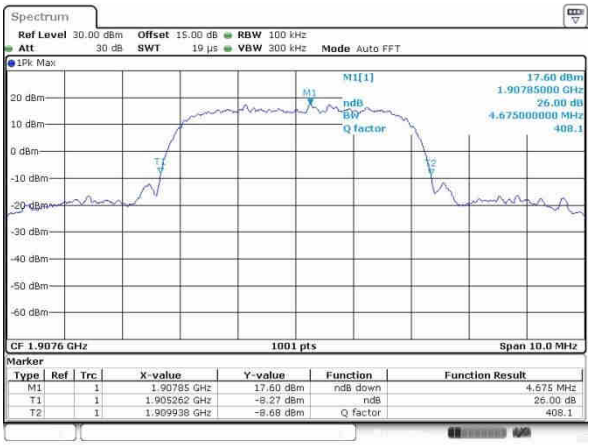
Lowest Channel



Middle Channel

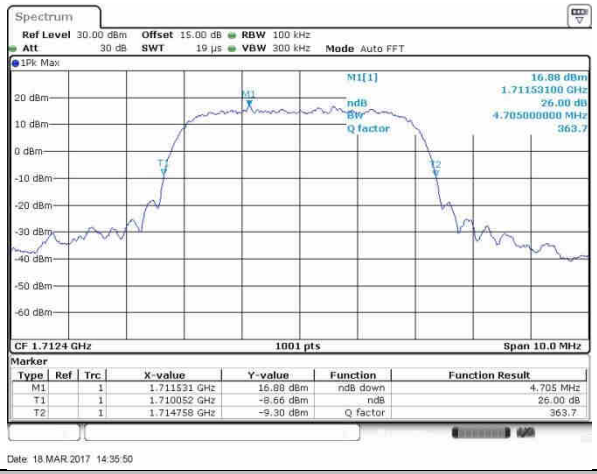


Highest Channel

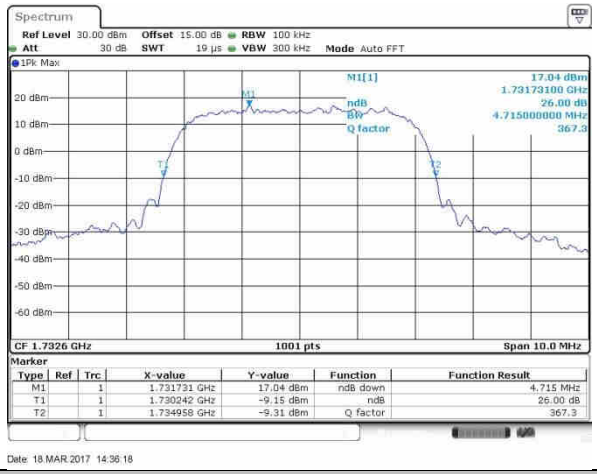


WCDMA Band IV (RMC 12.2Kbps)

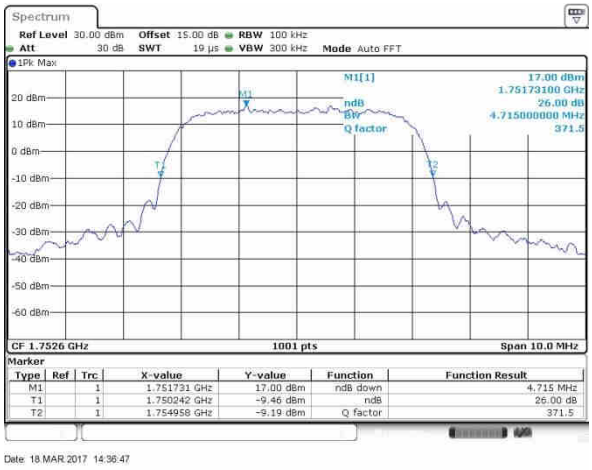
Lowest Channel



Middle Channel



Highest Channel

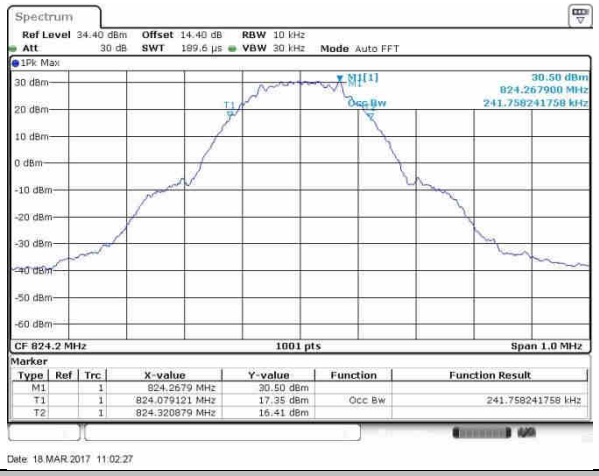
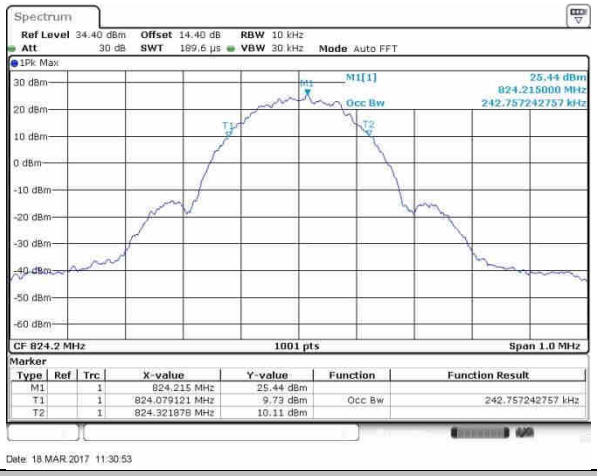
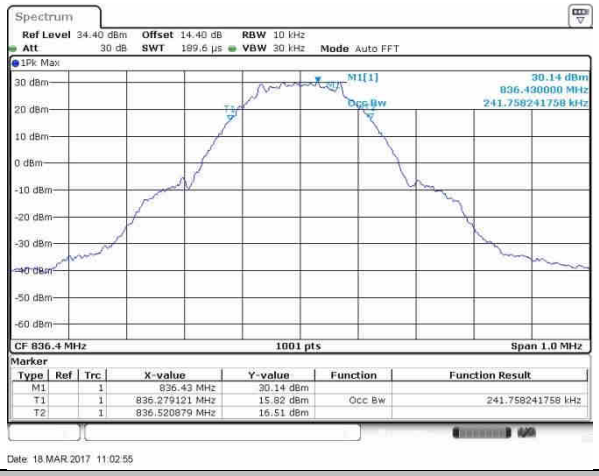
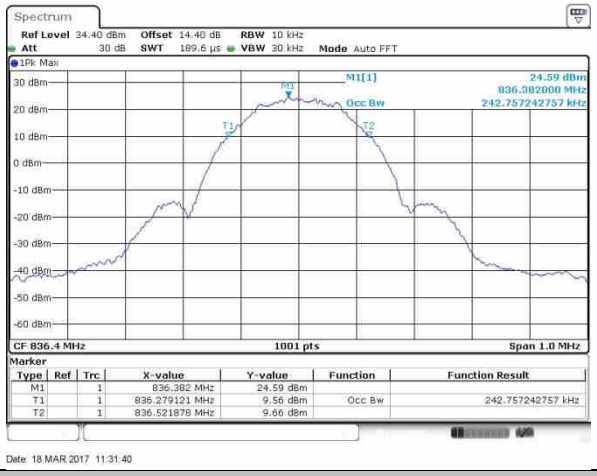
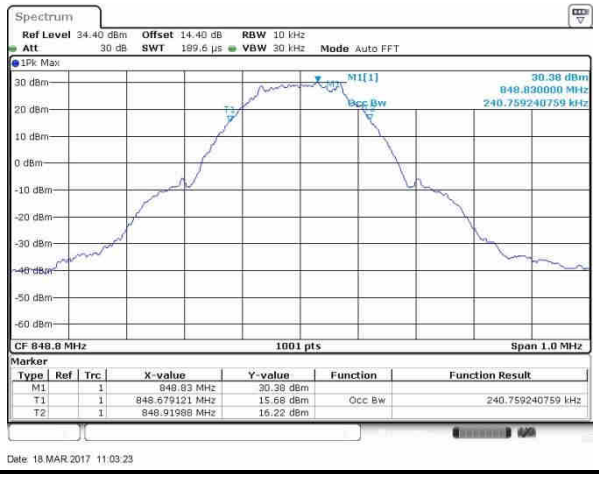
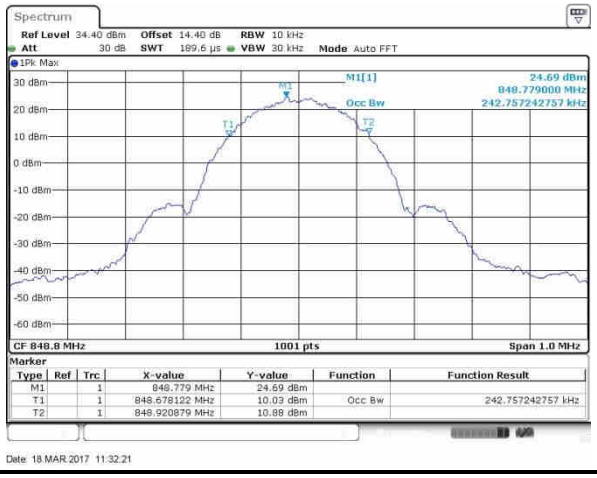


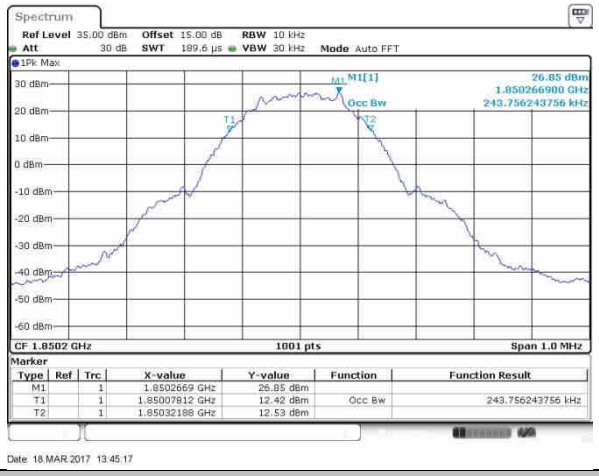
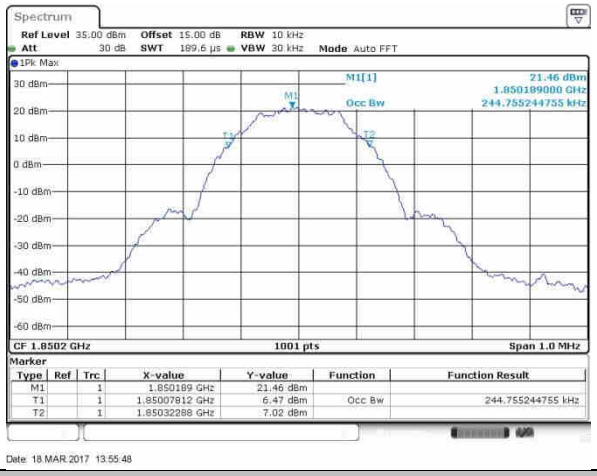
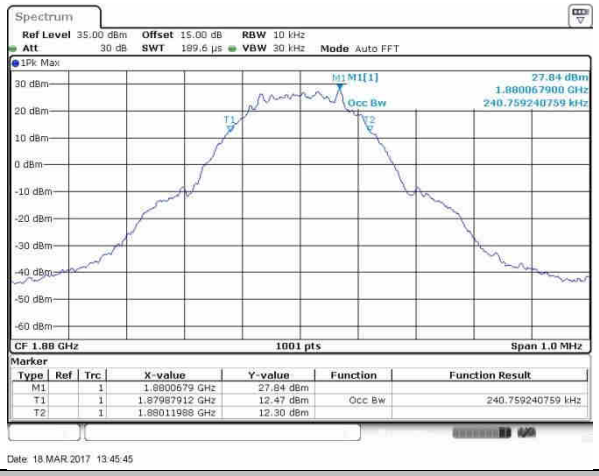
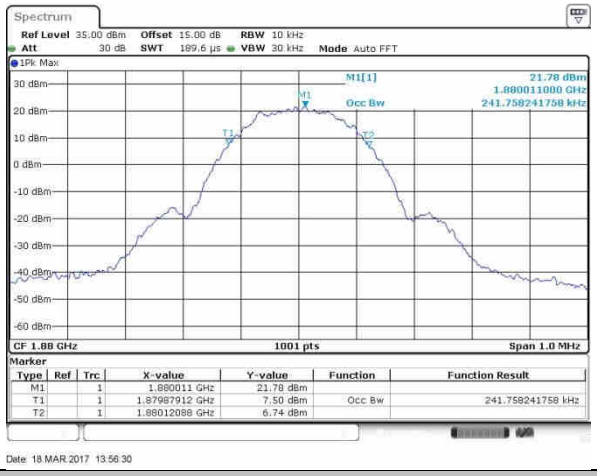
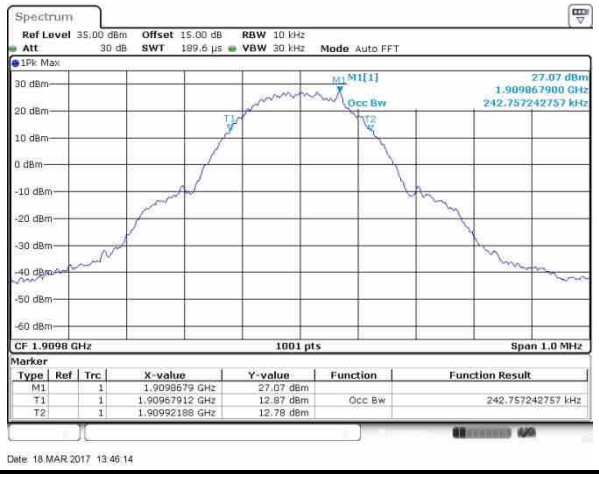
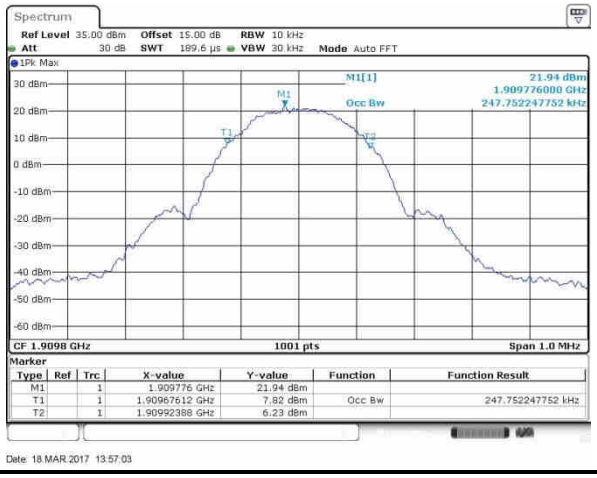
Occupied Bandwidth

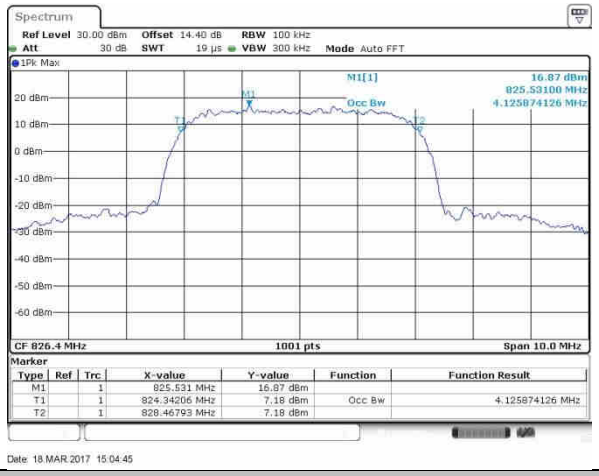
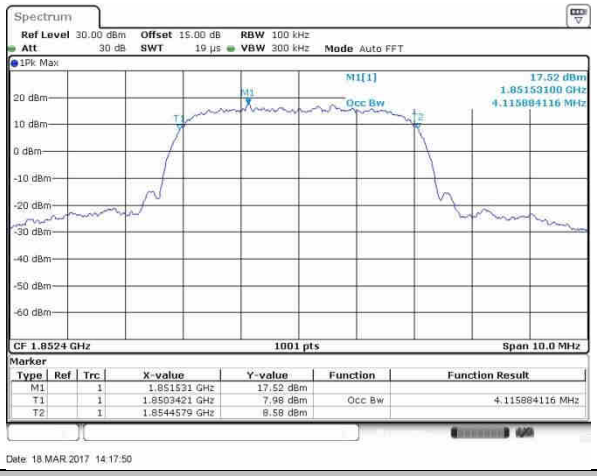
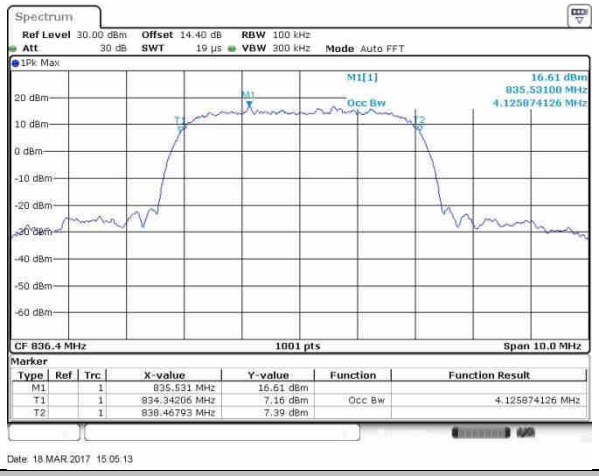
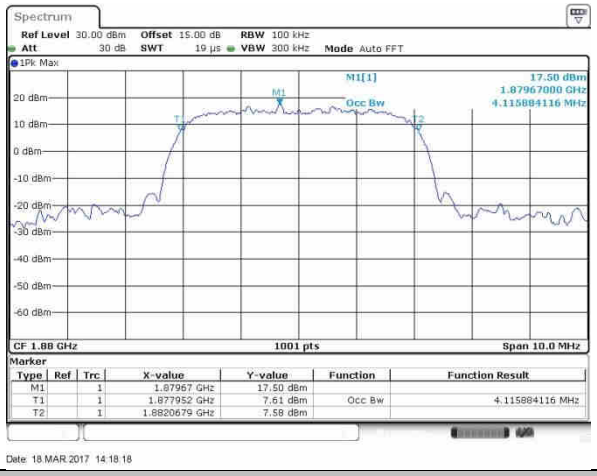
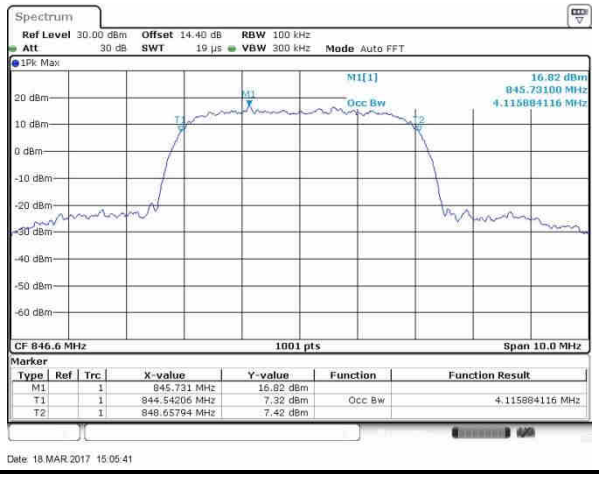
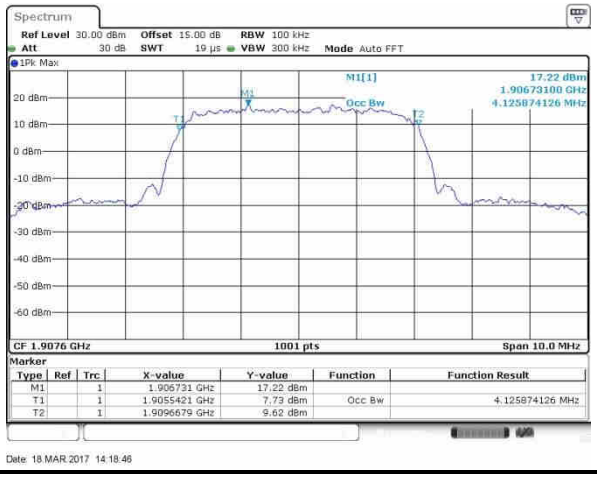
Mode	GSM850(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.242	0.243
Middle CH	0.242	0.243
Highest CH	0.241	0.243

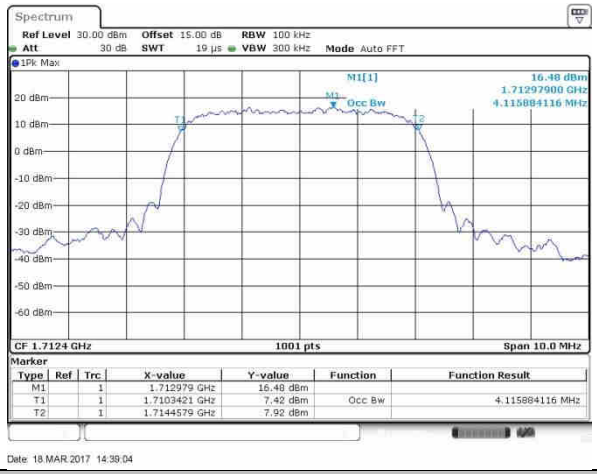
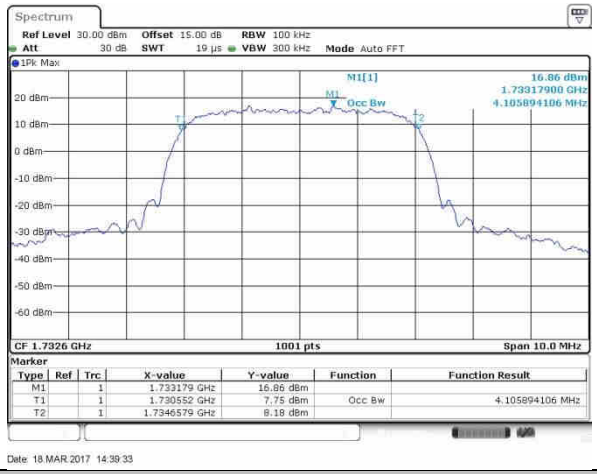
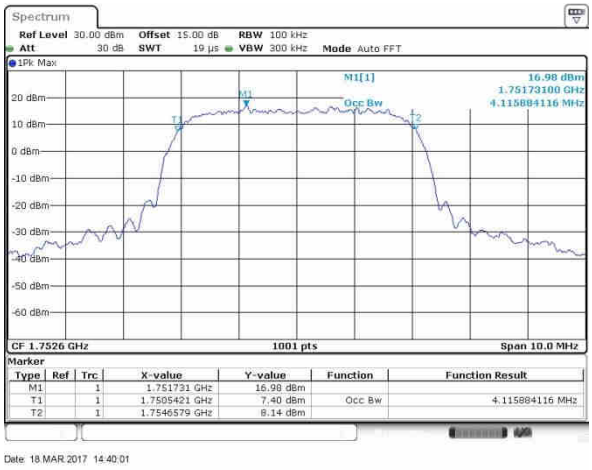
Mode	GSM1900(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.244	0.245
Middle CH	0.241	0.242
Highest CH	0.243	0.248

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

GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

GSM1900 (GSM)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

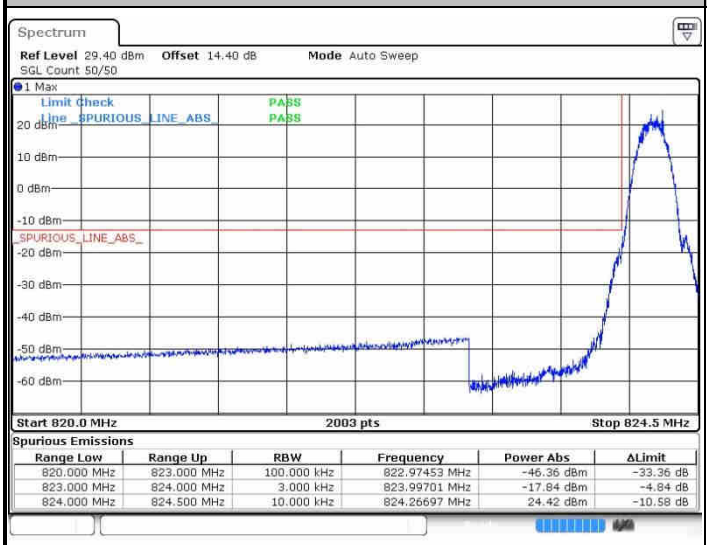
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

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

Conducted Band Edge

GSM850 (GSM)

Lowest Band Edge

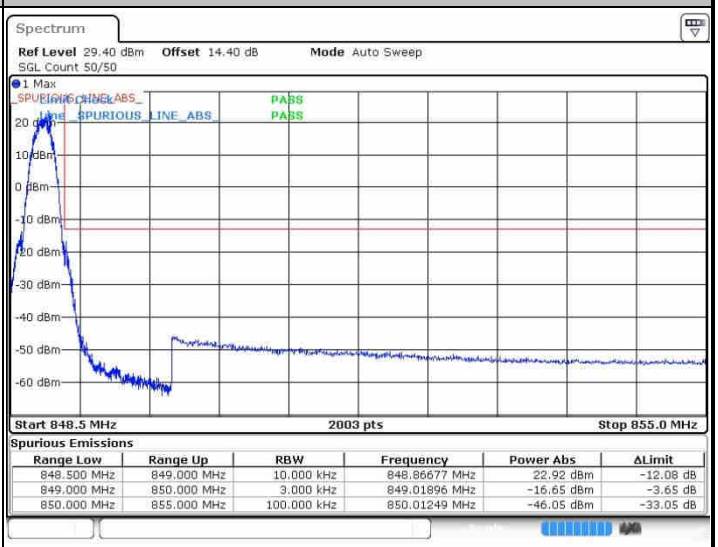


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.97453 MHz	-46.36 dBm	-33.36 dB
823.000 MHz	824.000 MHz	3.000 kHz	823.99701 MHz	-17.84 dBm	-4.84 dB
824.000 MHz	824.500 MHz	10.000 kHz	824.26697 MHz	24.42 dBm	-10.58 dB

Date: 18.MAR.2017 11:05:32

Highest Band Edge



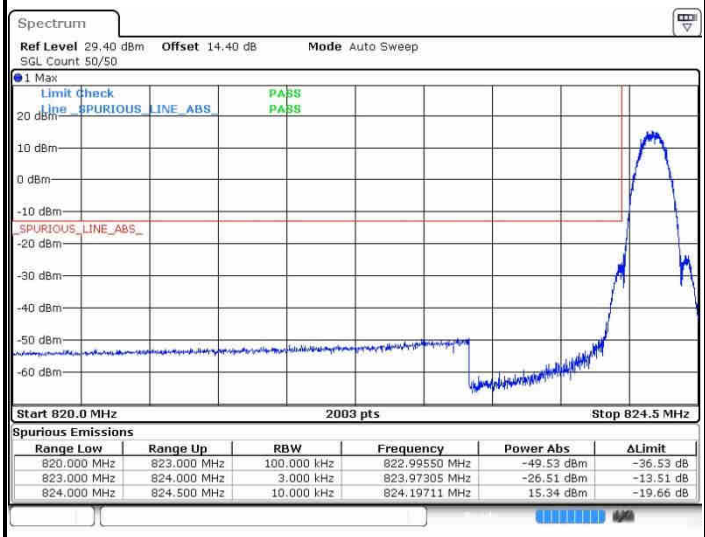
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
848.500 MHz	849.000 MHz	10.000 kHz	848.86677 MHz	22.92 dBm	-12.08 dB
849.000 MHz	850.000 MHz	3.000 kHz	849.01896 MHz	-16.65 dBm	-3.65 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.01249 MHz	-46.05 dBm	-33.05 dB

Date: 18.MAR.2017 11:06:59

GSM850 (EDGE class 8)

Lowest Band Edge

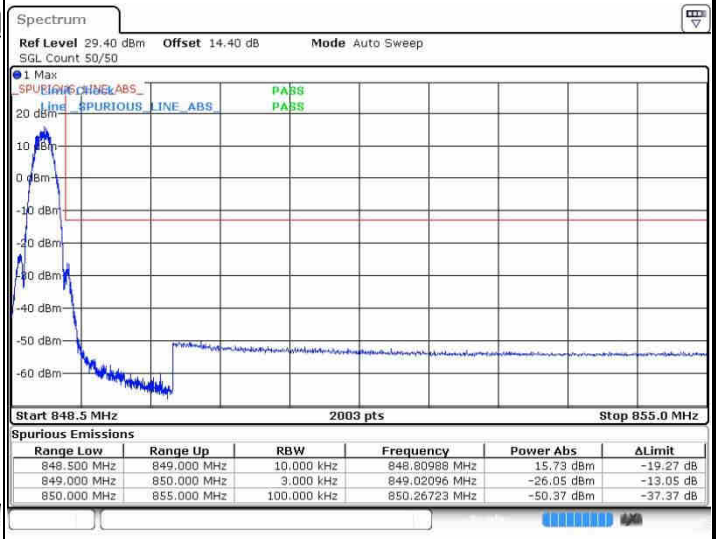


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.99550 MHz	-49.53 dBm	-36.53 dB
823.000 MHz	824.000 MHz	3.000 kHz	823.97305 MHz	-26.51 dBm	-13.51 dB
824.000 MHz	824.500 MHz	10.000 kHz	824.19711 MHz	15.34 dBm	-19.66 dB

Date: 18.MAR.2017 11:33:55

Highest Band Edge



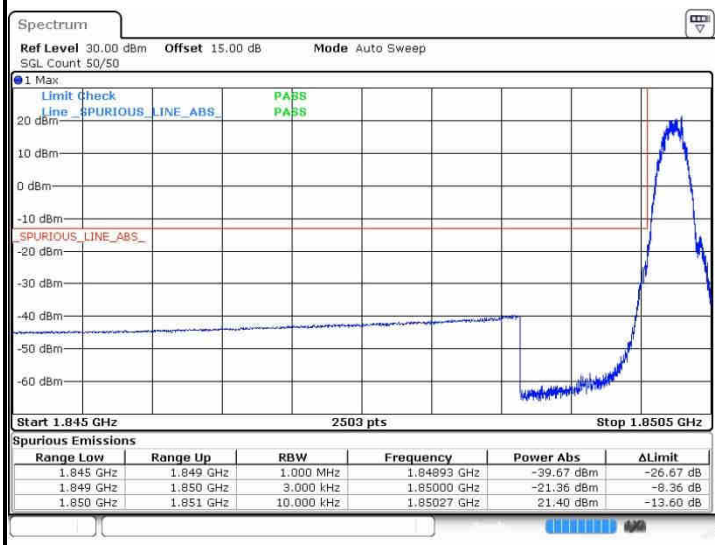
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
848.500 MHz	849.000 MHz	10.000 kHz	848.80988 MHz	15.73 dBm	-19.27 dB
849.000 MHz	850.000 MHz	3.000 kHz	849.02096 MHz	-26.05 dBm	-13.05 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.26723 MHz	-50.37 dBm	-37.37 dB

Date: 18.MAR.2017 11:35:47

GSM1900 (GSM)

Lowest Band Edge

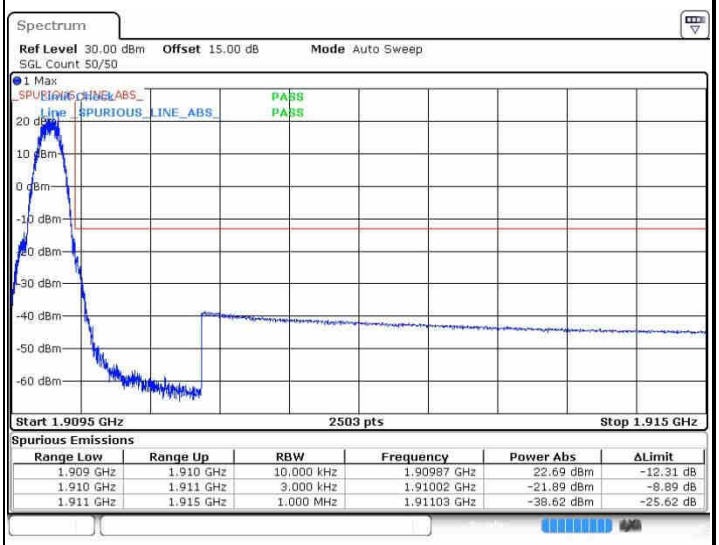


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84893 GHz	-39.67 dBm	-26.67 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.85000 GHz	-21.36 dBm	-8.36 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85027 GHz	21.40 dBm	-13.60 dB

Date: 18.MAR.2017 11:49:06

Highest Band Edge



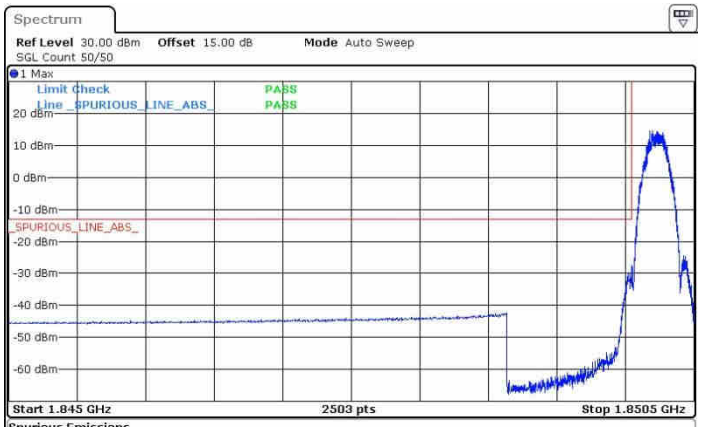
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90987 GHz	22.69 dBm	-12.31 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91002 GHz	-21.89 dBm	-8.89 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91103 GHz	-38.62 dBm	-25.62 dB

Date: 18.MAR.2017 11:50:32

GSM1900 (EDGE class 8)

Lowest Band Edge

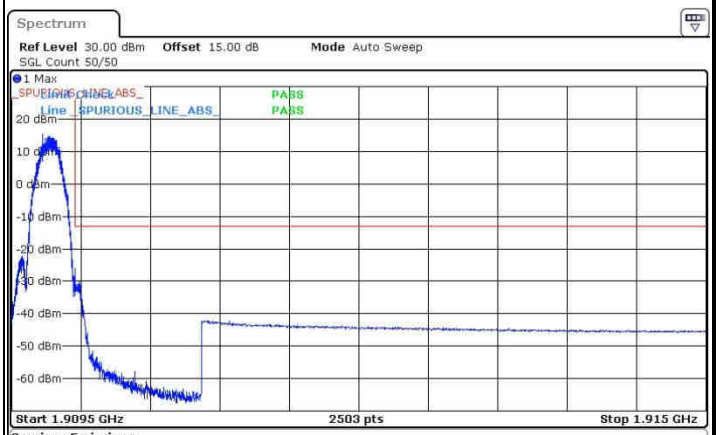


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84900 GHz	-42.40 dBm	-29.40 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.84999 GHz	-29.86 dBm	-16.86 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85014 GHz	14.46 dBm	-20.54 dB

Date: 18.MAR.2017 14:01:00

Highest Band Edge



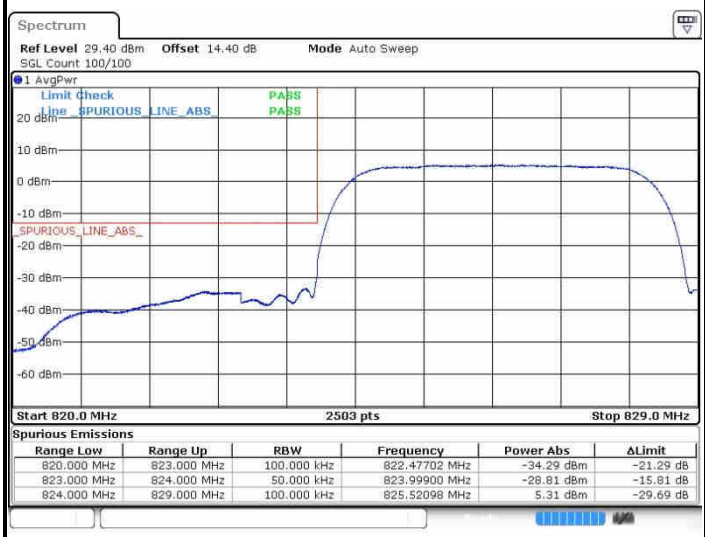
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90974 GHz	15.26 dBm	-19.74 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91004 GHz	-29.78 dBm	-16.78 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91105 GHz	-42.10 dBm	-29.10 dB

Date: 18.MAR.2017 14:02:33

WCDMA Band V (RMC 12.2Kbps)

Lowest Band Edge

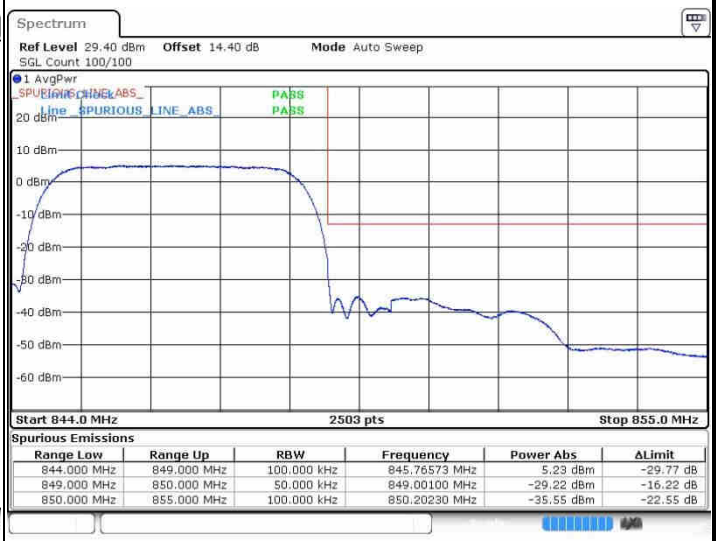


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.47702 MHz	-34.29 dBm	-21.29 dB
823.000 MHz	824.000 MHz	50.000 kHz	823.99900 MHz	-28.81 dBm	-15.81 dB
824.000 MHz	829.000 MHz	100.000 kHz	825.52098 MHz	5.31 dBm	-29.69 dB

Date: 18.MAR.2017 15:01:33

Highest Band Edge



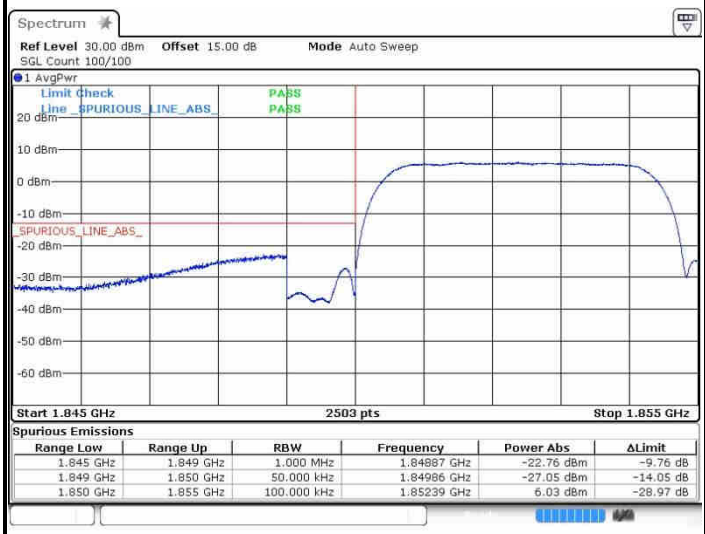
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
844.000 MHz	849.000 MHz	100.000 kHz	845.76573 MHz	5.23 dBm	-29.77 dB
849.000 MHz	850.000 MHz	50.000 kHz	849.00100 MHz	-29.22 dBm	-16.22 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.20230 MHz	-35.55 dBm	-22.55 dB

Date: 18.MAR.2017 15:04:14

WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge

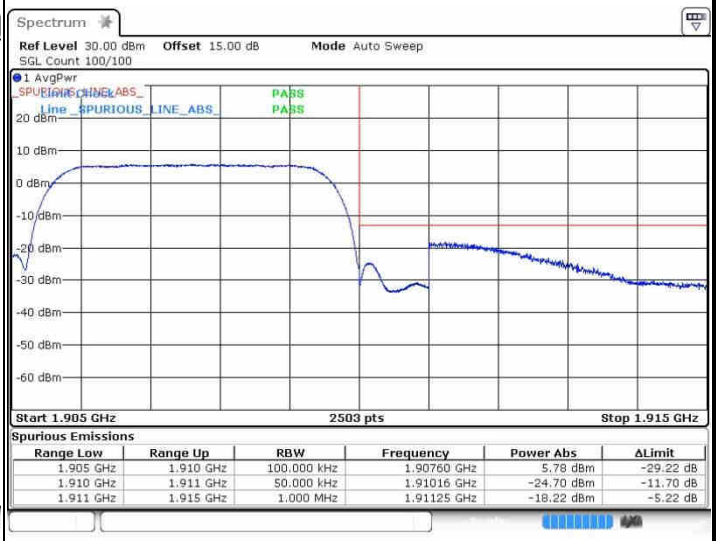


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84887 GHz	-22.76 dBm	-9.76 dB
1.849 GHz	1.850 GHz	50.000 kHz	1.84986 GHz	-27.05 dBm	-14.05 dB
1.850 GHz	1.855 GHz	100.000 kHz	1.85239 GHz	6.03 dBm	-28.97 dB

Date: 18.MAR.2017 14:21:33

Highest Band Edge

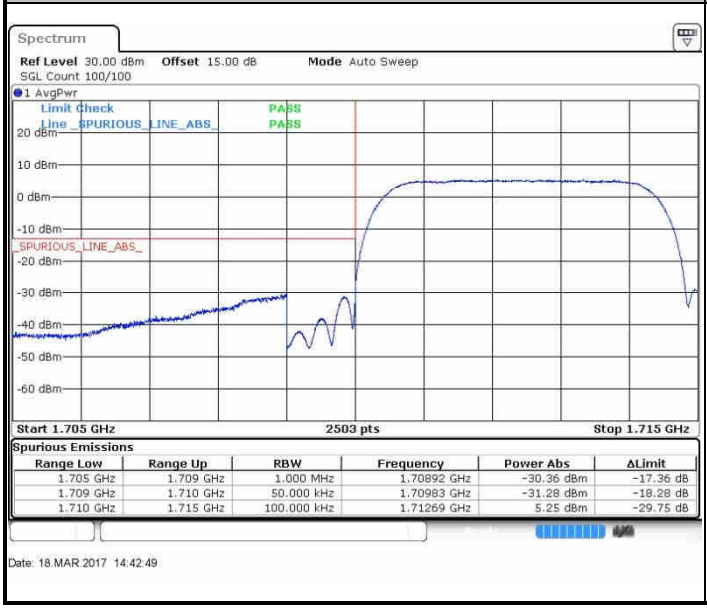


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.905 GHz	1.910 GHz	100.000 kHz	1.90760 GHz	5.78 dBm	-29.22 dB
1.910 GHz	1.911 GHz	50.000 kHz	1.91016 GHz	-24.70 dBm	-11.70 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91125 GHz	-18.22 dBm	-5.22 dB

Date: 18.MAR.2017 14:24:14

WCDMA Band IV (RMC 12.2Kbps)	
Lowest Band Edge	**Highest Band Edge**



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.705 GHz	1.709 GHz	1.000 MHz	1.70892 GHz	-30.36 dBm	-17.36 dB
1.709 GHz	1.710 GHz	50.000 kHz	1.70983 GHz	-31.28 dBm	-18.28 dB
1.710 GHz	1.715 GHz	100.000 kHz	1.71269 GHz	5.25 dBm	-29.75 dB

Date: 18.MAR.2017 14:42:49

Spurious Emissions

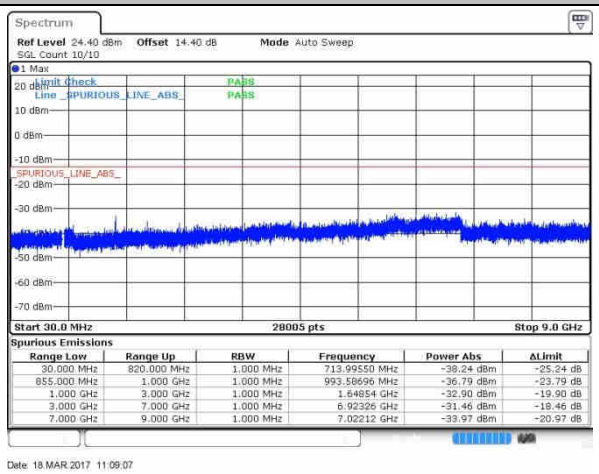
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.750 GHz	1.755 GHz	100.000 kHz	1.75350 GHz	5.50 dBm	-29.50 dB
1.755 GHz	1.756 GHz	50.000 kHz	1.75500 GHz	-31.48 dBm	-18.48 dB
1.756 GHz	1.760 GHz	1.000 MHz	1.75603 GHz	-30.07 dBm	-17.07 dB

Date: 18.MAR.2017 14:45:31

Conducted Spurious Emission

GSM850 (GSM)

Lowest Channel

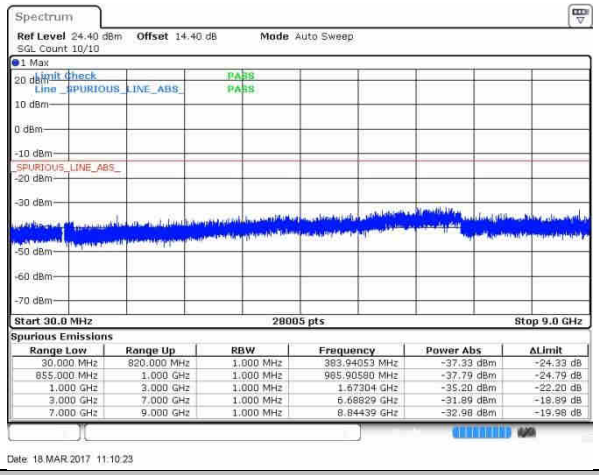


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	713.99550 MHz	-38.24 dBm	-25.24 dB
855.000 MHz	1.000 GHz	1.000 MHz	993.58696 MHz	-36.79 dBm	-23.79 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.64854 GHz	-32.90 dBm	-19.90 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.92326 GHz	-31.46 dBm	-18.46 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.02212 GHz	-33.97 dBm	-20.97 dB

Date: 18.MAR.2017 11:09:07

Middle Channel

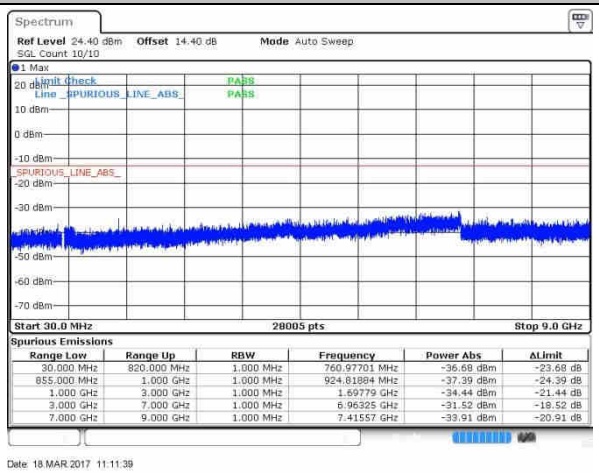


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	383.94053 MHz	-37.33 dBm	-24.33 dB
855.000 MHz	1.000 GHz	1.000 MHz	985.90580 MHz	-37.79 dBm	-24.79 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.67304 GHz	-35.20 dBm	-22.20 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.68829 GHz	-31.89 dBm	-18.89 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.84439 GHz	-32.98 dBm	-19.98 dB

Date: 18.MAR.2017 11:10:23

Highest Channel



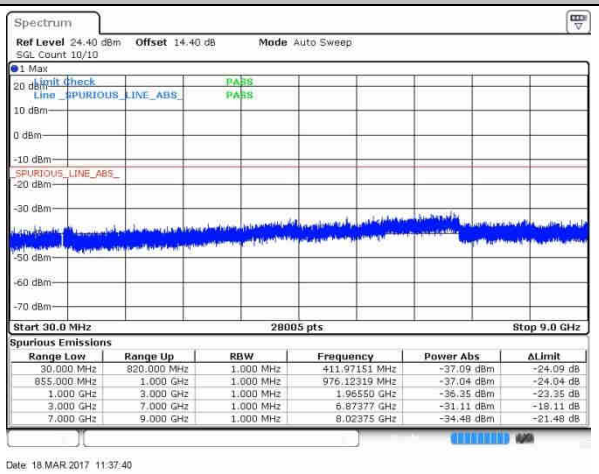
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	760.97701 MHz	-36.68 dBm	-23.68 dB
855.000 MHz	1.000 GHz	1.000 MHz	924.81884 MHz	-37.39 dBm	-24.39 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.69779 GHz	-34.44 dBm	-21.44 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.96325 GHz	-31.52 dBm	-18.52 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.41557 GHz	-33.91 dBm	-20.91 dB

Date: 18.MAR.2017 11:11:39

GSM850 (EDGE class 8)

Lowest Channel

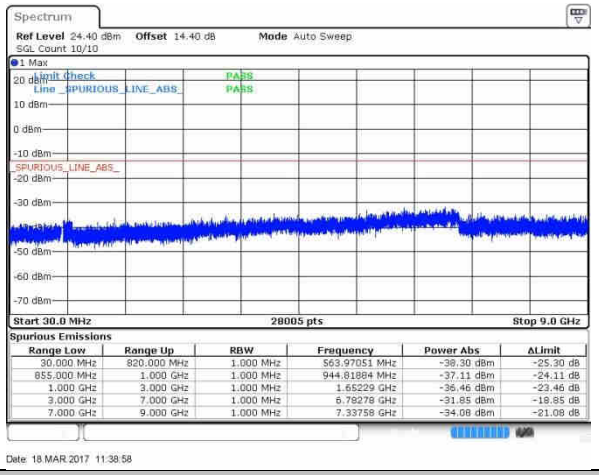


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	411.97151 MHz	-37.09 dBm	-24.09 dB
855.000 MHz	1.000 GHz	1.000 MHz	976.12319 MHz	-37.04 dBm	-24.04 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.96550 GHz	-36.35 dBm	-23.35 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.87377 GHz	-31.11 dBm	-18.11 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.02375 GHz	-34.48 dBm	-21.48 dB

Date: 18.MAR.2017 11:37:40

Middle Channel

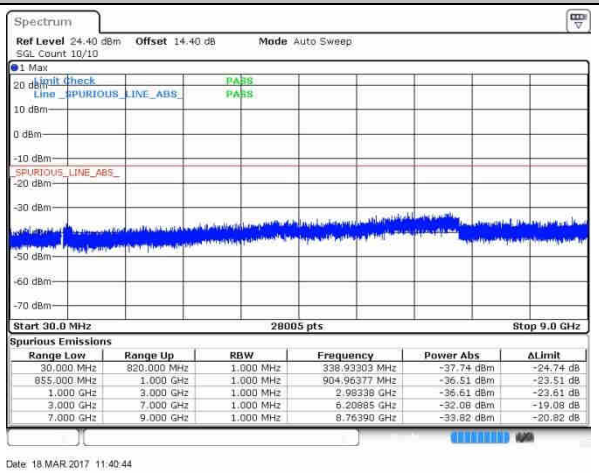


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	563.97051 MHz	-38.30 dBm	-25.30 dB
855.000 MHz	1.000 GHz	1.000 MHz	944.81884 MHz	-37.11 dBm	-24.11 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.65229 GHz	-36.46 dBm	-23.46 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.78278 GHz	-31.85 dBm	-18.85 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.33758 GHz	-34.08 dBm	-21.08 dB

Date: 18.MAR.2017 11:38:58

Highest Channel



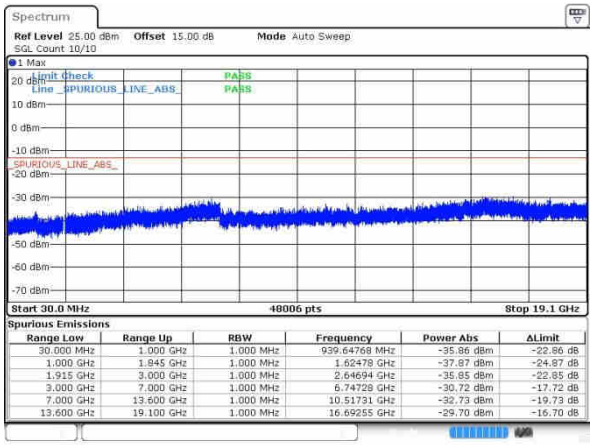
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	338.93303 MHz	-37.74 dBm	-24.74 dB
855.000 MHz	1.000 GHz	1.000 MHz	904.96377 MHz	-36.51 dBm	-23.51 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.98338 GHz	-36.61 dBm	-23.61 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.20885 GHz	-32.08 dBm	-19.08 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.76390 GHz	-33.82 dBm	-20.82 dB

Date: 18.MAR.2017 11:40:44

GSM1900 (GSM)

Lowest Channel

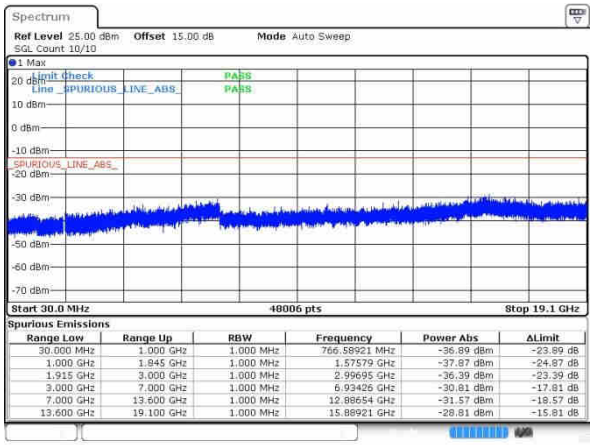


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	939.64768 MHz	-35.86 dBm	-22.86 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.62478 GHz	-37.87 dBm	-24.87 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.64694 GHz	-35.85 dBm	-22.85 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.74728 GHz	-30.72 dBm	-17.72 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.51731 GHz	-32.73 dBm	-19.73 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.69255 GHz	-29.70 dBm	-16.70 dB

Date: 18.MAR.2017 13:47:49

Middle Channel

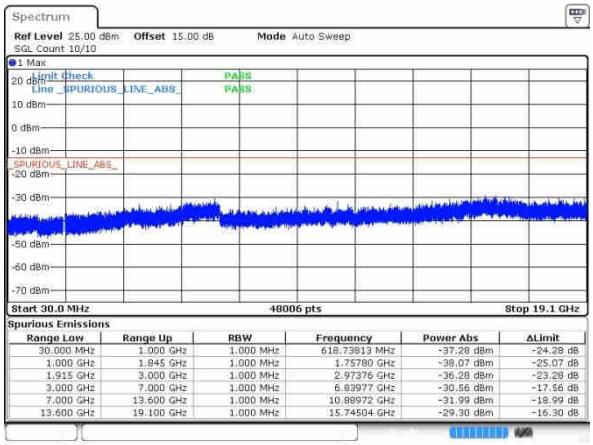


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	766.58921 MHz	-36.89 dBm	-23.89 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.57579 GHz	-37.87 dBm	-24.87 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.99695 GHz	-36.39 dBm	-23.39 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.93426 GHz	-30.81 dBm	-17.81 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.88654 GHz	-31.57 dBm	-18.57 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.88921 GHz	-28.81 dBm	-15.81 dB

Date: 18.MAR.2017 13:49:06

Highest Channel



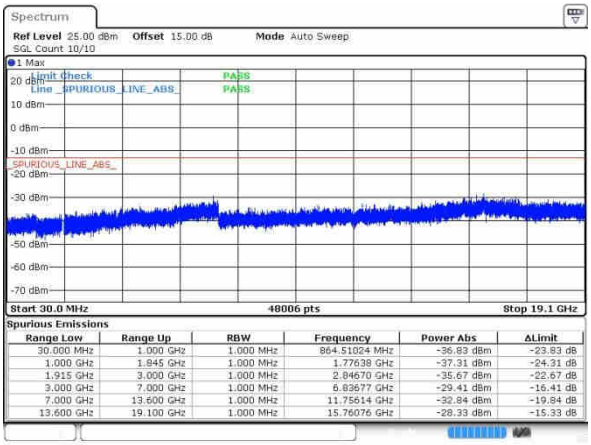
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	618.73813 MHz	-37.28 dBm	-24.28 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.75780 GHz	-38.07 dBm	-25.07 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.97376 GHz	-36.28 dBm	-23.28 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.83977 GHz	-30.56 dBm	-17.56 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.88972 GHz	-31.99 dBm	-18.99 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.74504 GHz	-29.30 dBm	-16.30 dB

Date: 18.MAR.2017 13:50:22

GSM1900 (EDGE class 8)

Lowest Channel

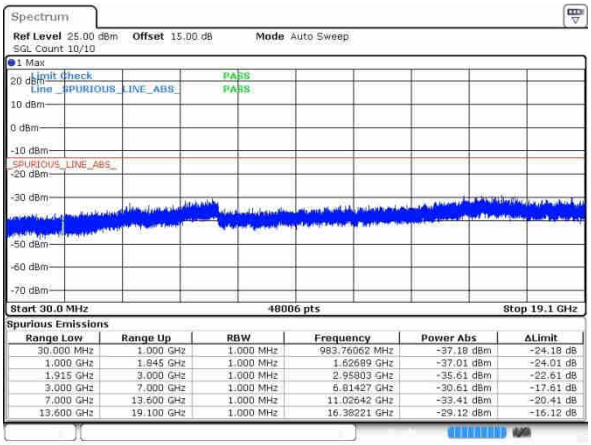


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	864.51024 MHz	-36.83 dBm	-23.83 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.77638 GHz	-37.31 dBm	-24.31 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.84670 GHz	-35.67 dBm	-22.67 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.83677 GHz	-29.41 dBm	-16.41 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.75614 GHz	-32.84 dBm	-19.84 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.76076 GHz	-28.33 dBm	-15.33 dB

Date: 18.MAR.2017 14:03:57

Middle Channel

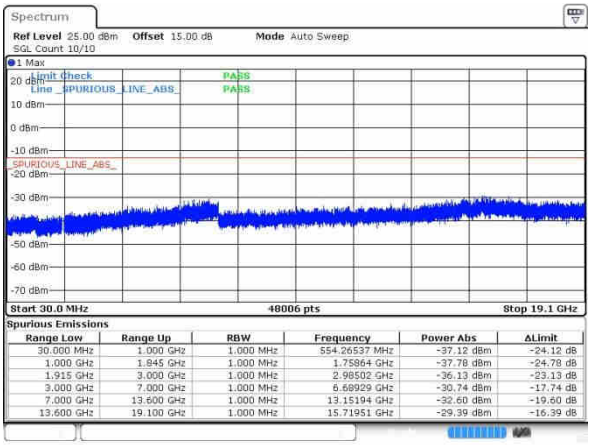


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	983.76062 MHz	-37.18 dBm	-24.18 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.62689 GHz	-37.01 dBm	-24.01 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.95803 GHz	-35.61 dBm	-22.61 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.81427 GHz	-30.61 dBm	-17.61 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.02642 GHz	-33.41 dBm	-20.41 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.38221 GHz	-29.12 dBm	-16.12 dB

Date: 18.MAR.2017 14:05:28

Highest Channel



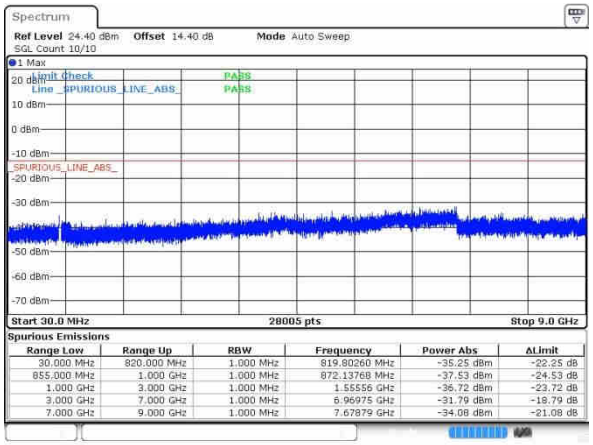
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	554.26537 MHz	-37.12 dBm	-24.12 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.75864 GHz	-37.78 dBm	-24.78 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.98502 GHz	-36.13 dBm	-23.13 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.68929 GHz	-30.74 dBm	-17.74 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.15194 GHz	-32.60 dBm	-19.60 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.71951 GHz	-29.39 dBm	-16.39 dB

Date: 18.MAR.2017 14:06:47

WCDMA Band V (RMC 12.2Kbps)

Lowest Channel

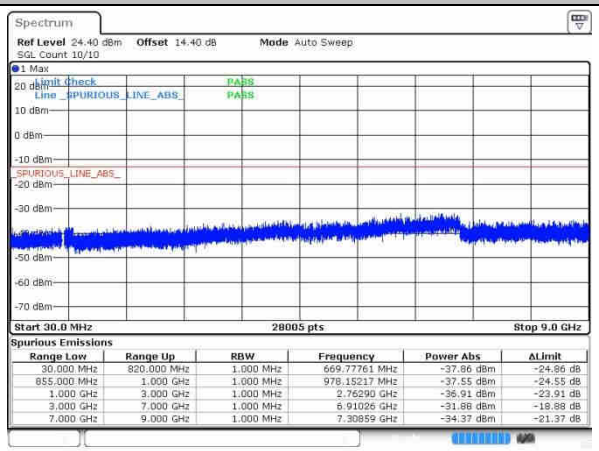


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	819.80260 MHz	-35.25 dBm	-22.25 dB
855.000 MHz	1.000 GHz	1.000 MHz	872.13768 MHz	-37.53 dBm	-24.53 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.55556 GHz	-36.72 dBm	-23.72 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.96975 GHz	-31.79 dBm	-18.79 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.67879 GHz	-34.08 dBm	-21.08 dB

Date: 18.MAR.2017 15:08:16

Middle Channel

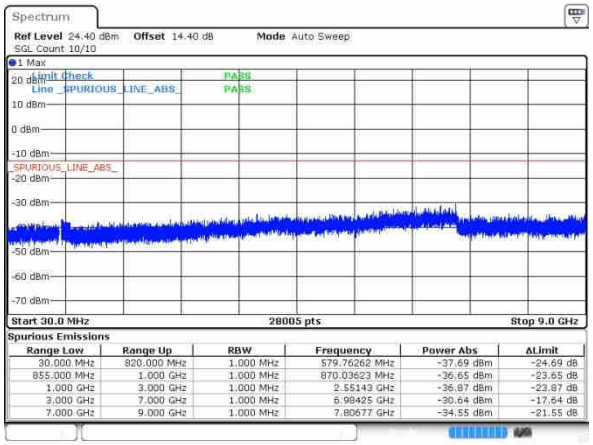


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	669.77761 MHz	-37.86 dBm	-24.86 dB
855.000 MHz	1.000 GHz	1.000 MHz	978.15217 MHz	-37.55 dBm	-24.55 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.76290 GHz	-36.91 dBm	-23.91 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.91026 GHz	-31.88 dBm	-18.88 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.30859 GHz	-34.37 dBm	-21.37 dB

Date: 18.MAR.2017 15:09:32

Highest Channel



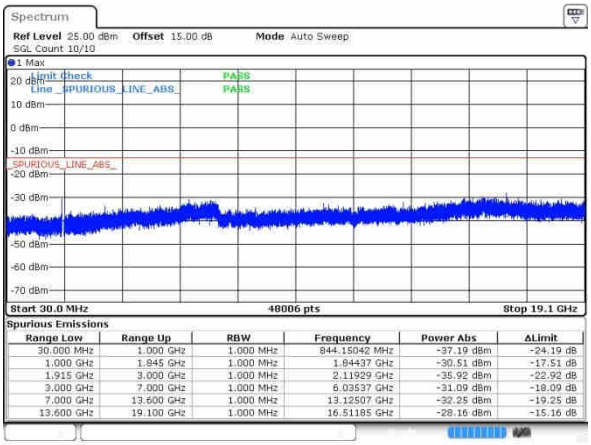
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	579.76262 MHz	-37.69 dBm	-24.69 dB
855.000 MHz	1.000 GHz	1.000 MHz	870.03623 MHz	-36.65 dBm	-23.65 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.55143 GHz	-36.87 dBm	-23.87 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98425 GHz	-30.64 dBm	-17.64 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.80677 GHz	-34.55 dBm	-21.55 dB

Date: 18.MAR.2017 15:10:48

WCDMA Band II (RMC 12.2Kbps)

Lowest Channel

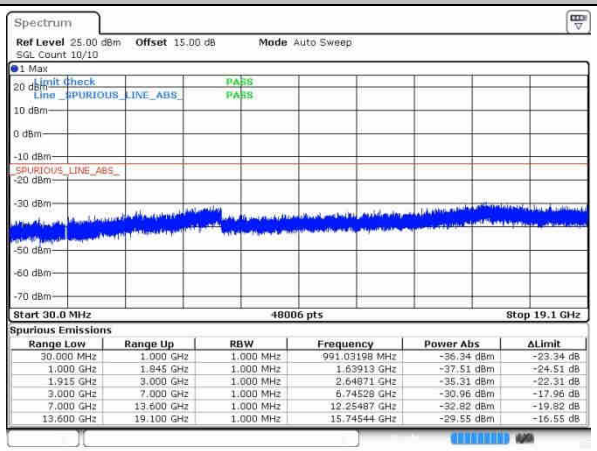


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	844.15042 MHz	-37.19 dBm	-24.19 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.84437 GHz	-30.51 dBm	-17.51 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.11929 GHz	-35.92 dBm	-22.92 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.03537 GHz	-31.09 dBm	-18.09 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.12507 GHz	-32.25 dBm	-19.25 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.51185 GHz	-28.16 dBm	-15.16 dB

Date: 18.MAR.2017 14:30:11

Middle Channel

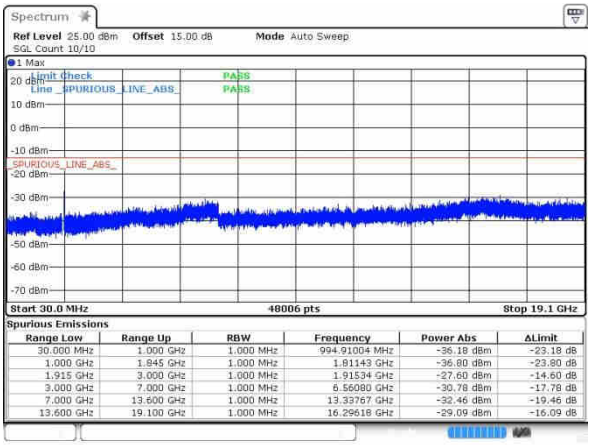


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	991.03198 MHz	-36.34 dBm	-23.34 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.63913 GHz	-37.51 dBm	-24.51 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.64871 GHz	-35.31 dBm	-22.31 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.74528 GHz	-30.96 dBm	-17.96 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.25487 GHz	-32.82 dBm	-19.82 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.74544 GHz	-29.55 dBm	-16.55 dB

Date: 18.MAR.2017 14:31:28

Highest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	994.91004 MHz	-36.18 dBm	-23.18 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.81143 GHz	-36.80 dBm	-23.80 dB
1.915 GHz	3.000 GHz	1.000 MHz	1.91534 GHz	-27.60 dBm	-14.60 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.56080 GHz	-30.78 dBm	-17.78 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.33767 GHz	-32.46 dBm	-19.46 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.29618 GHz	-29.09 dBm	-16.09 dB

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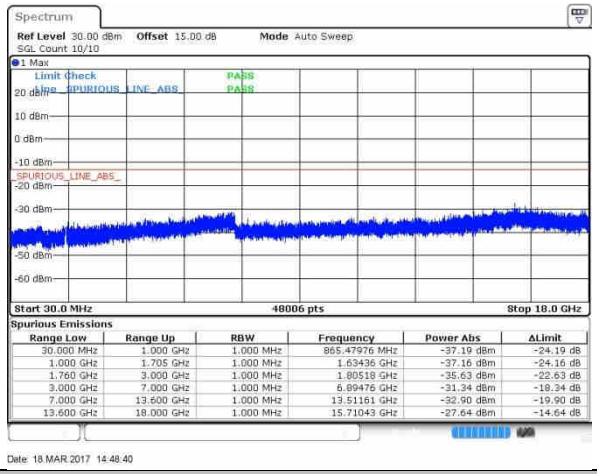
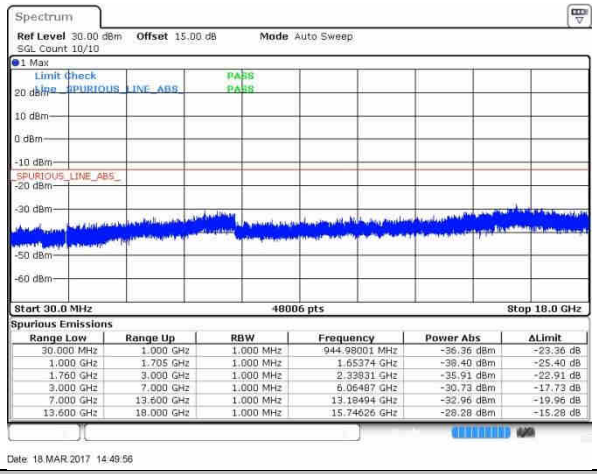
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



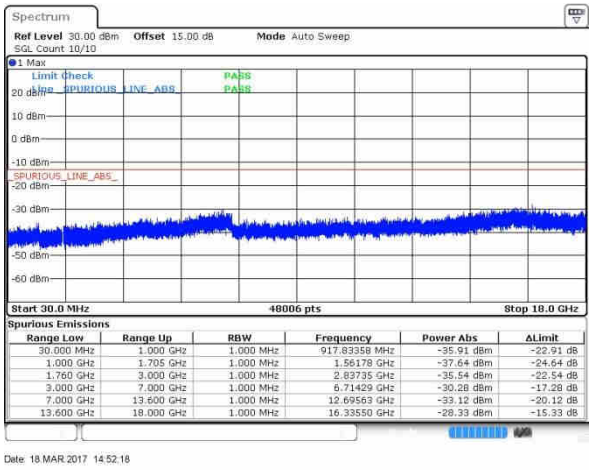
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	865.47976 MHz	-37.19 dBm	-24.19 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.63436 GHz	-37.16 dBm	-24.16 dB
1.760 GHz	3.000 GHz	1.000 MHz	1.80518 GHz	-35.63 dBm	-22.63 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.89476 GHz	-31.34 dBm	-18.34 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.51161 GHz	-32.90 dBm	-19.90 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.71043 GHz	-27.64 dBm	-14.64 dB

Middle Channel



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	944.98001 MHz	-36.36 dBm	-23.36 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.65374 GHz	-38.40 dBm	-25.40 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.33831 GHz	-35.91 dBm	-22.91 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.06487 GHz	-30.73 dBm	-17.73 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.18494 GHz	-32.96 dBm	-19.96 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.74626 GHz	-28.28 dBm	-15.28 dB

Highest Channel



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	917.83358 MHz	-35.91 dBm	-22.91 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.56178 GHz	-37.64 dBm	-24.64 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.83735 GHz	-35.54 dBm	-22.54 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.71429 GHz	-30.28 dBm	-17.28 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.69563 GHz	-33.12 dBm	-20.12 dB
13.600 GHz	18.000 GHz	1.000 MHz	16.33550 GHz	-28.33 dBm	-15.33 dB

Frequency Stability

Test Conditions	Middle Channel	GSM850 (GSM)	GSM850 (EDGE class 8)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0048	0.0084	PASS
40	Normal Voltage	0.0012	0.0060	
30	Normal Voltage	0.0012	0.0048	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0084	0.0096	
0	Normal Voltage	0.0060	0.0132	
-10	Normal Voltage	0.0036	0.0227	
-20	Normal Voltage	0.0108	0.0155	
-30	Normal Voltage	0.0120	0.0430	
20	Maximum Voltage	0.0072	0.0239	
20	Normal Voltage	0.0096	0.0132	
20	Battery End Point	0.0024	0.0179	

Note: Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.6 V.；Maximum Voltage =4.4 V

Test Conditions	Middle Channel	GSM1900 (GSM)	GSM1900 (EDGE class 8)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0005	0.0080	PASS
40	Normal Voltage	0.0048	0.0085	
30	Normal Voltage	0.0027	0.0106	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0032	0.0074	
0	Normal Voltage	0.0048	0.0005	
-10	Normal Voltage	0.0011	0.0101	
-20	Normal Voltage	0.0011	0.0011	
-30	Normal Voltage	0.0021	0.0090	
20	Maximum Voltage	0.0074	0.0112	
20	Normal Voltage	0.0037	0.0096	
20	Battery End Point	0.0016	0.0138	

Note:

1. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.6 V.；Maximum Voltage =4.4 V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2Kbps)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0072	PASS
40	Normal Voltage	0.0024	
30	Normal Voltage	0.0048	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0084	
0	Normal Voltage	0.0132	
-10	Normal Voltage	0.0143	
-20	Normal Voltage	0.0215	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0084	
20	Normal Voltage	0.0048	
20	Battery End Point	0.0143	

Note: Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.6 V.；Maximum Voltage =4.4

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0037	PASS
40	Normal Voltage	0.0043	
30	Normal Voltage	0.0027	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0005	
0	Normal Voltage	0.0016	
-10	Normal Voltage	0.0005	
-20	Normal Voltage	0.0021	
-30	Normal Voltage	0.0074	
20	Maximum Voltage	0.0090	
20	Normal Voltage	0.0048	
20	Battery End Point	0.0011	

Note:

1. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.6 V.；Maximum Voltage =4.4 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	0.0081	PASS
40	Normal Voltage	0.0069	
30	Normal Voltage	0.0121	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0058	
0	Normal Voltage	0.0092	
-10	Normal Voltage	0.0081	
-20	Normal Voltage	0.0063	
-30	Normal Voltage	0.0035	
20	Maximum Voltage	0.0058	
20	Normal Voltage	0.0052	
20	Battery End Point	0.0127	

Note:

1. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.6 V.；Maximum Voltage =4.4V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

GSM850 (GSM)									
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	-39.78	-13	-26.78	-40.93	-41.64	1.19	5.20	H
	2508	-61.03	-13	-48.03	-64.02	-63.25	1.53	5.90	H
	3345	-67.33	-13	-54.33	-71.28	-70.12	1.76	6.70	H
	1672	-37.66	-13	-24.66	-38.57	-39.52	1.19	5.20	V
	2508	-60.39	-13	-47.39	-62.37	-62.61	1.53	5.90	V
	3345	-67.12	-13	-54.12	-70.44	-69.91	1.76	6.70	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)
Middle	1672	-37.53	-13	-24.53	-38.85	-39.39	1.19	5.20	H
	2508	-60.16	-13	-47.16	-63.15	-62.38	1.53	5.90	H
	3345	-66.43	-13	-53.43	-70.38	-69.22	1.76	6.70	H
	1672	-37.97	-13	-24.97	-38.89	-39.83	1.19	5.20	V
	2508	-61.01	-13	-48.01	-62.99	-63.23	1.53	5.90	V
	3345	-67.71	-13	-54.71	-71.03	-70.50	1.76	6.70	V

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

GSM1900 (GSM)									
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)
Middle	3760	-70.11	-13	-57.11	-73.62	-75.10	1.88	6.87	H
	5640	-66.77	-13	-53.77	-74.96	-74.07	2.38	9.68	H
	7518	-63.28	-13	-50.28	-75.31	-72.35	2.74	11.81	H
	3760	-69.51	-13	-56.51	-73.3	-74.50	1.88	6.87	V
	5640	-66.53	-13	-53.53	-75.1	-73.83	2.38	9.68	V
	7518	-63.71	-13	-50.71	-74.42	-72.78	2.74	11.81	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)
Middle	3760	-70.28	-13	-57.28	-73.79	-75.27	1.88	6.87	H
	5640	-66.57	-13	-53.57	-74.76	-73.87	2.38	9.68	H
	7520	-63.25	-13	-50.25	-75.28	-72.32	2.74	11.81	H
	3760	-69.99	-13	-56.99	-73.78	-74.98	1.88	6.87	V
	5640	-65.70	-13	-52.70	-74.27	-73.00	2.38	9.68	V
	7520	-64.41	-13	-51.41	-75.12	-73.48	2.74	11.81	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	-59.50	-13	-46.50	-58.13	-61.36	1.19	5.20	H
	2509.2	-60.94	-13	-47.94	-63.93	-63.16	1.53	5.90	H
	3345	-67.04	-13	-54.04	-70.99	-69.83	1.76	6.70	H
	1672	-58.89	-13	-45.89	-56.85	-60.75	1.19	5.20	V
	2510	-61.08	-13	-48.08	-63.06	-63.30	1.53	5.90	V
	3345	-67.74	-13	-54.74	-71.06	-70.53	1.76	6.70	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)
Middle	3760	-70.29	-13	-57.29	-73.80	-75.28	1.88	6.87	H
	5640	-66.62	-13	-53.62	-74.81	-73.92	2.38	9.68	H
	7520	-63.07	-13	-50.07	-75.10	-72.14	2.74	11.81	H
	3760	-69.97	-13	-56.97	-73.76	-74.96	1.88	6.87	V
	5640	-65.53	-13	-52.53	-74.1	-72.83	2.38	9.68	V
	7520	-64.94	-13	-51.94	-75.65	-74.01	2.74	11.81	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)
Middle	3465	-63.97	-13	-50.97	-70.76	-68.86	1.81	6.70	H
	5199	-59.85	-13	-46.85	-72.53	-66.75	2.23	9.13	H
	6930	-59.55	-13	-46.55	-74.73	-67.61	2.60	10.66	H
	3465	-66.80	-13	-53.80	-72	-71.69	1.81	6.70	V
	5199	-59.43	-13	-46.43	-72.98	-66.33	2.23	9.13	V
	6930	-58.39	-13	-45.39	-73.44	-66.45	2.6	10.66	V

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