FCC RF Test Report

APPLICANT	:	ASUSTeK COMPUTER INC.
EQUIPMENT	:	ASUS Phone (Mobile Phone)
BRAND NAME	:	ASUS
MODEL NAME	:	ASUS_X00PD, ASUS_X00PS
FCC ID	:	MSQX00PS
STANDARD	:	FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)

The product testing was completed on Jan. 25, 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-603-E and has been in compliance with the applicable technical standards.

This report contains data that were produced under subcontract by Laboratory SPORTON INTERNATIONAL INC.

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.

James Huang

Approved by: James Huang / Manager

TESTING
NVLAP LAB CODE 600155-0

Sporton International (Kunshan) Inc.
No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China

TABLE OF CONTENTS

REVISION HISTORY **3**

SUMMARY OF TEST RESULT **4**

1 GENERAL DESCRIPTION **5**

1.1 Applicant 5
1.2 Manufacturer 5
1.3 Product Feature of Equipment Under Test 5
1.4 Product Specification of Equipment Under Test 6
1.5 Modification of EUT 6
1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator 7
1.7 Testing Location 8
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 11
2.4 Measurement Results Explanation Example 11

3 CONDUCTED TEST RESULT **12**

3.1 Measuring Instruments 12
3.2 Test Setup 12
3.3 Test Result of Conducted Test 12
3.4 Conducted Output Power and ERP/EIRP 13
3.5 Peak-to-Average Ratio 14
3.6 99% Occupied Bandwidth and 26dB Bandwidth Measurement 15
3.7 Conducted Band Edge 16
3.8 Conducted Spurious Emission 17
3.9 Frequency Stability 18

4 RADIATED TEST ITEMS **19**

4.1 Measuring Instruments 19
4.2 Test Setup 19
4.3 Test Result of Radiated Test 19
4.4 Field Strength of Spurious Radiation Measurement 20

5 LIST OF MEASURING EQUIPMENT **21**

6 UNCERTAINTY OF EVALUATION **22**

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
FG811101A	Rev. 01	Initial issue of report	Feb. 28, 2018

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	-
3.5	§24.232(d)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.6	§2.1049 §22.917(b) §24.238(b)	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a)	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		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 17.68 dB at 1696.00 MHz

1 General Description

1.1 Applicant

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

1.2 Manufacturer

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	ASUS Phone (Mobile Phone)
Brand Name	ASUS
Model Name	ASUS_X00PD, ASUS_X00PS
FCC ID	MSQX00PS
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+(16QAM uplink is not supported)/DC-HSDPA/LTE WLAN 2.4GHz 802.11b/g/n HT20/HT40 Bluetooth v3.0+EDR/ Bluetooth v4.0 LE
HW Version	W14MA1B1-2
SW Version	WW_Phone-14.00.1711.06-20171225
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
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
Maximum Output Power to Antenna	**GSM/GPRS/EDGE:** 850: 32.65 dBm 1900: 29.55 dBm **WCDMA:** Band V: 23.50 dBm Band II: 21.91 dBm
Antenna Type	PIFA Antenna
Antenna Gain	Cellular Band: -2.40 dBi PCS Band: 1.30 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 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 GSM	GMSK	0.6457	0.0299 ppm	242KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.1585	0.0502 ppm	244KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	BPSK	0.0785	0.0335 ppm	4M14F9W
Part 24	GSM1900 GSM	GMSK	1.2162	0.0138 ppm	243KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.4446	0.0245 ppm	248KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	BPSK	0.2094	0.0202 ppm	4M13F9W

1.7 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No is CN5013.

Test Site	Sporton International (Kunshan) Inc.	
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	TH01-KS	630927

SPORTON INTERNATIONAL INC. is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW0007 under the FCC-recognized accredited testing laboratories by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564 Wenha 3rd Rd. Guishan Dist. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	03CH11-HY	214511

Note:

1. The test site complies with ANSI C63.4 2014 requirement.
2. Test data subcontracted: radiated spurious emissions for section 4 of this report.

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)
- ANSI/TIA-603-E
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03
- 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 v03 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:

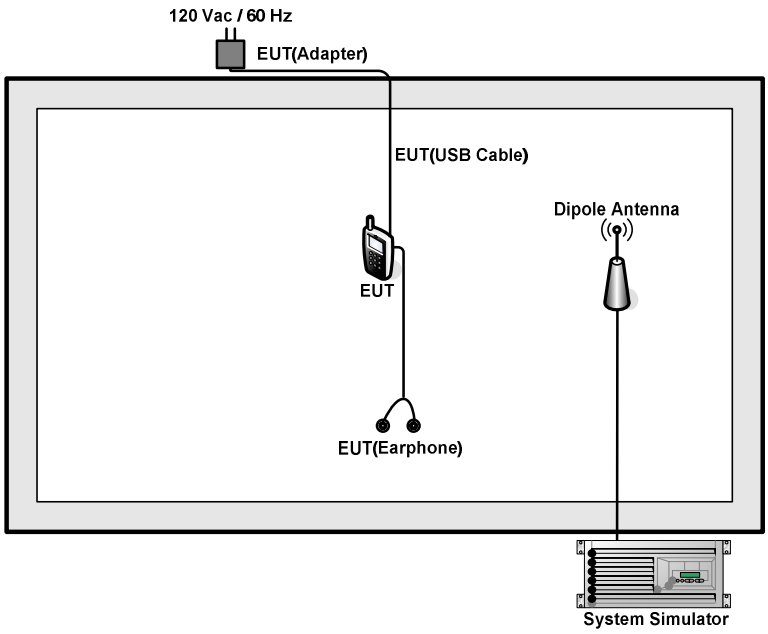
1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V.
2. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II.

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

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

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

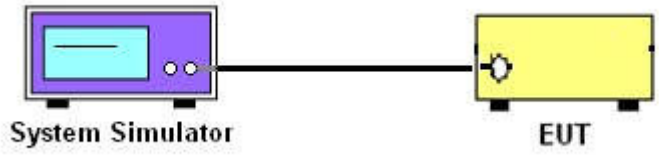
3 Conducted Test Result

3.1 Measuring Instruments

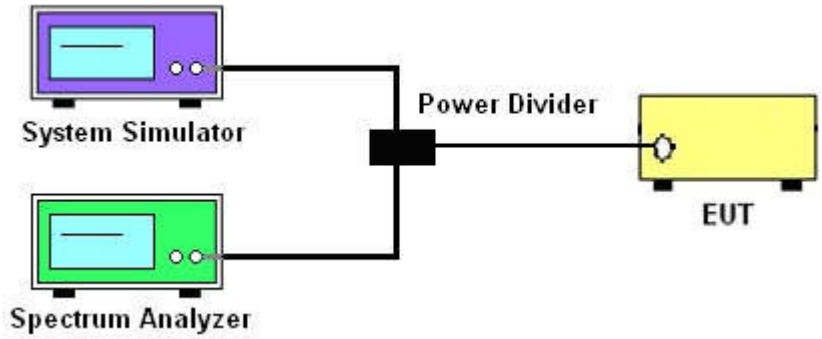
See list of measuring instruments of this test report.

3.2 Test Setup

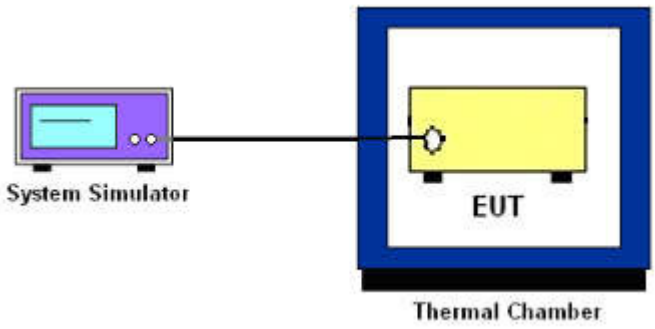
3.2.1 Conducted Output Power



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.

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 v03 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 v03 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 v03 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 v03 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 v03 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 v03 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.

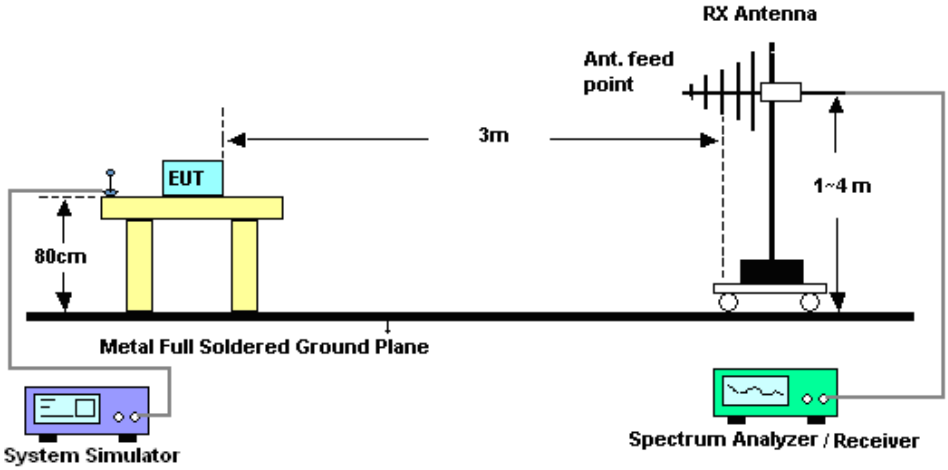
4 Radiated Test Items

4.1 Measuring Instruments

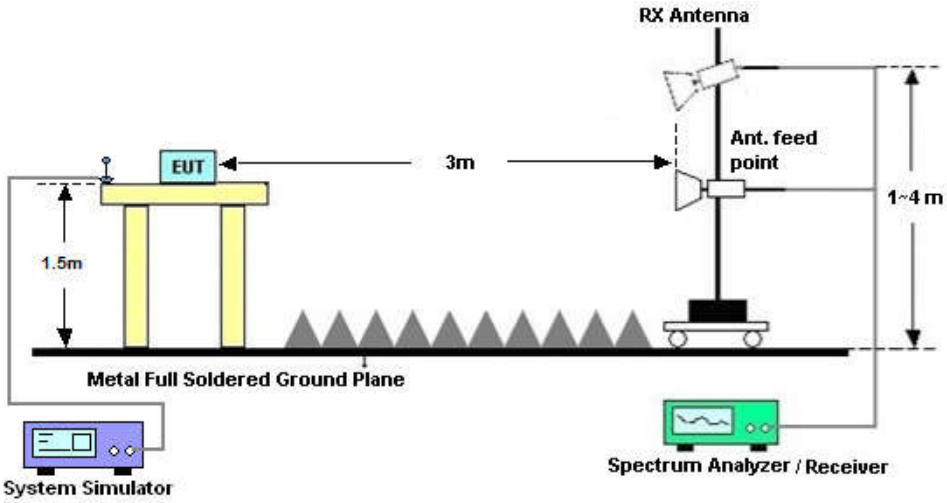
See list of measuring instruments of this test report.

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 v03 Section 5.8 and ANSI/TIA-603-E 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. 08, 2017	Jan. 10, 2018	Aug. 07, 2018	Conducted (TH01-KS)
Radio communication analyzer	Anritsu	MT8820C	6201300652	2G/3G/LTE_ full band	Aug. 08, 2017	Jan. 10, 2018	Aug. 07, 2018	Conducted (TH01-KS)
Thermal Chamber	Hongzhan	LP-150U	HZ014011440	-40~+150°C 20%~95%RH	Apr. 18, 2017	Jan. 10, 2018	Apr. 17, 2018	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A(MXE)	MY57290111	3Hz~26.5GHz	Nov. 02, 2017	Jan. 24, 2018~ Jan. 25, 2018	Nov. 01, 2018	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 19, 2017	Jan. 24, 2018~ Jan. 25, 2018	Oct. 18, 2018	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Jan. 24, 2018~ Jan. 25, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May 22, 2017	Jan. 24, 2018~ Jan. 25, 2018	May 21, 2018	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 10, 2016	Jan. 24, 2018~ Jan. 25, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N06 02	30MHz~1GHz	Oct. 14, 2017	Jan. 24, 2018~ Jan. 25, 2018	Oct. 13, 2018	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 16, 2017	Jan. 24, 2018~ Jan. 25, 2018	Oct. 15, 2018	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz- 40GHz	Apr. 27, 2017	Jan. 24, 2018~ Jan. 25, 2018	Apr. 26, 2018	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-108 0-1200-1500-6	SN2	1.2G High Pass	Sep. 18, 2017	Jan. 24, 2018~ Jan. 25, 2018	Sep. 17, 2018	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	NCR	Jan. 24, 2018~ Jan. 25, 2018	NCR	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	NCR	Jan. 24, 2018~ Jan. 25, 2018	NCR	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	NCR	Jan. 24, 2018~ Jan. 25, 2018	NCR	Radiation (03CH11-HY)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.4 dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.7 dB

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.0 dB

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	32.60	32.62	32.65	29.55	29.33	29.40
GPRS class 8	32.58	32.61	32.62	29.54	29.31	29.39
GPRS class 10	31.99	32.12	32.08	28.71	28.82	28.92
GPRS class 11	30.02	30.16	30.25	27.49	27.68	27.67
GPRS class 12	27.76	27.89	28.00	25.79	25.78	25.89
EGPRS class 8	26.55	26.47	26.50	25.18	25.09	25.17
EGPRS class 10	25.69	25.67	25.72	25.00	24.97	25.01
EGPRS class 11	23.38	23.30	23.40	23.21	23.28	23.17
EGPRS class 12	21.93	21.85	21.75	21.91	22.00	22.02

Conducted Power (*Unit: dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6
AMR 12.2K	23.47	23.48	23.32	21.88	21.89	21.68
RMC 12.2K	23.49	23.50	23.34	21.90	21.91	21.70
HSDPA Subtest-1	21.98	21.97	22.12	20.39	20.39	20.13
HSDPA Subtest-2	21.98	21.89	22.09	20.42	20.38	20.16
HSDPA Subtest-3	21.48	21.41	21.58	19.85	19.94	19.73
HSDPA Subtest-4	21.46	21.39	21.55	19.83	19.93	19.71
DC-HSDPA Subtest-1	21.92	21.91	22.08	20.38	20.31	20.15
DC-HSDPA Subtest-2	21.91	21.85	22.03	20.42	20.36	20.08
DC-HSDPA Subtest-3	21.42	21.38	21.38	19.78	19.88	19.68
DC-HSDPA Subtest-4	21.46	21.38	21.49	19.76	19.78	19.63
HSUPA Subtest-1	21.31	21.36	21.60	20.06	20.09	19.73
HSUPA Subtest-2	20.67	20.97	20.56	19.49	19.53	19.24
HSUPA Subtest-3	20.67	20.55	20.89	19.11	19.13	18.95
HSUPA Subtest-4	21.32	20.98	21.05	19.48	19.52	19.87
HSUPA Subtest-5	22.10	22.00	22.10	20.50	20.60	20.30

ERP/EIRP

GSM850 (G_T - L_C = -2.40 dBi)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	32.60	32.62	32.65
Conducted Power (Watts)	1.8197	1.8281	1.8408
ERP(dBm)	28.05	28.07	28.10
ERP(Watts)	0.6383	0.6412	0.6457

GSM850 (EDGE) (G_T - L_C = -2.40 dBi)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	26.55	26.47	26.50
Conducted Power (Watts)	0.4519	0.4436	0.4467
ERP(dBm)	22.00	21.92	21.95
ERP(Watts)	0.1585	0.1556	0.1567

GSM1900 (G_T - L_C = 1.30 dBi)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	29.55	29.33	29.40
Conducted Power (Watts)	0.9016	0.8570	0.8710
EIRP(dBm)	30.85	30.63	30.70
EIRP(Watts)	1.2162	1.1561	1.1749

GSM1900 (EDGE) (G_T - L_C = 1.30 dBi)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	25.18	25.09	25.17
Conducted Power (Watts)	0.3296	0.3228	0.3289
EIRP(dBm)	26.48	26.39	26.47
EIRP(Watts)	0.4446	0.4355	0.4436

WCDMA Band V (G_T - L_C = -2.40 dBi)			
Channel	4132	4182	4233
	(Low)	(Mid)	(High)
Frequency (MHz)	826.4	836.4	846.6
Conducted Power (dBm)	23.49	23.50	23.34
Conducted Power (Watts)	0.2234	0.2239	0.2158
ERP(dBm)	18.94	18.95	18.79
ERP(Watts)	0.0783	0.0785	0.0757

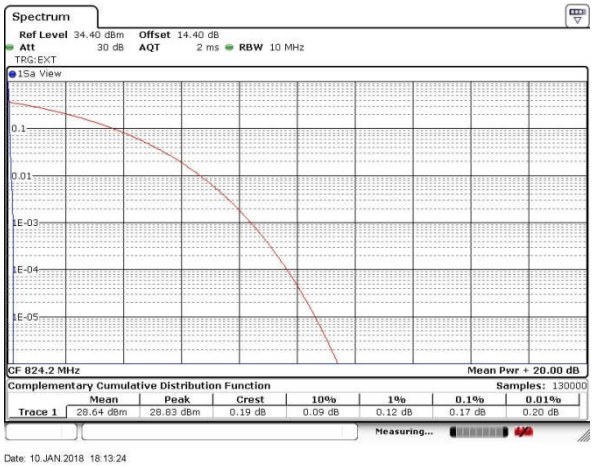
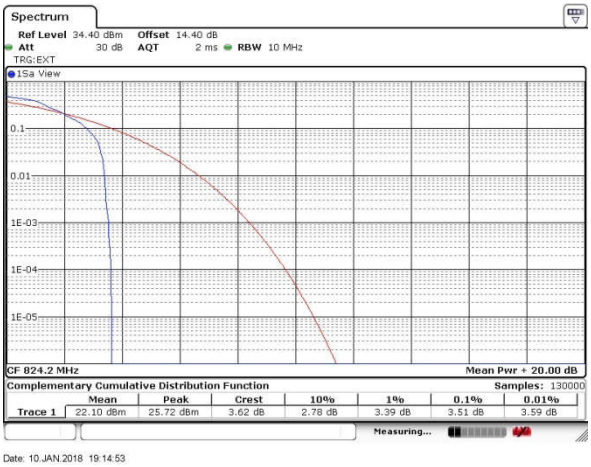
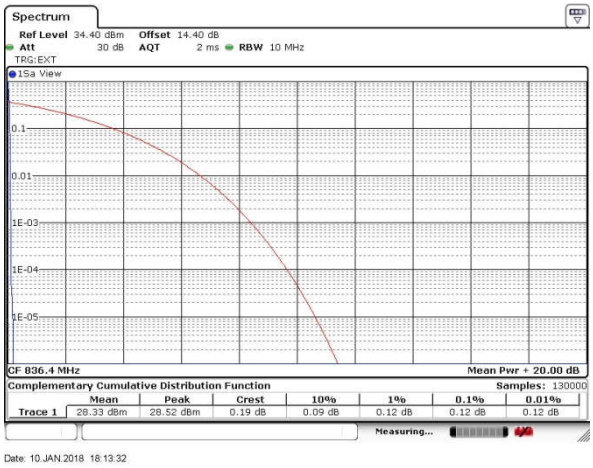
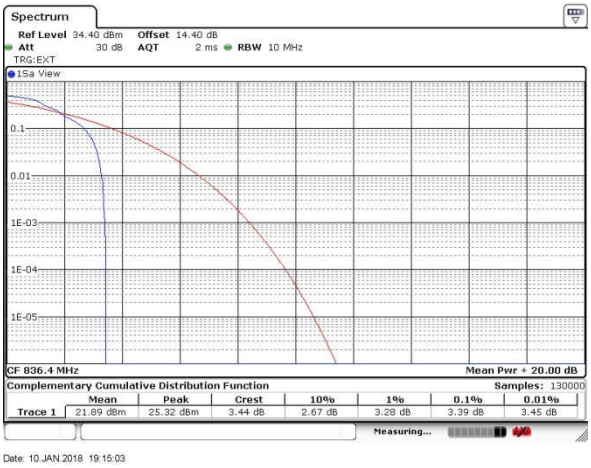
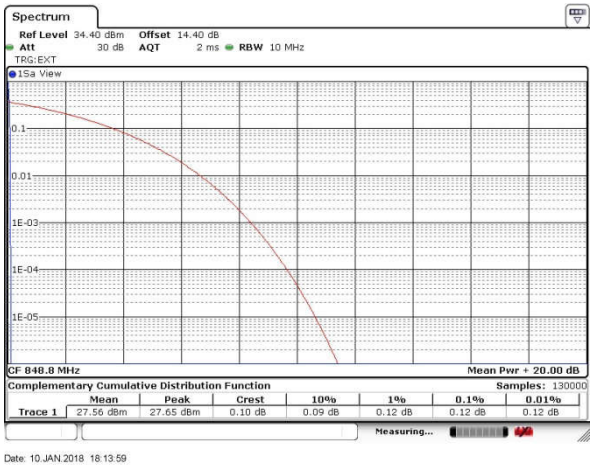
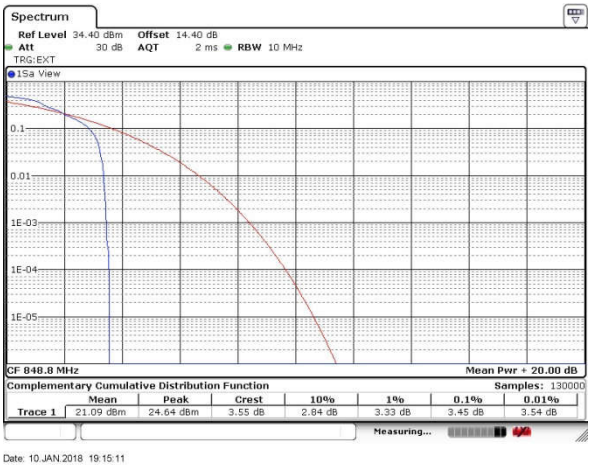
WCDMA Band II (G_T - L_C = 1.30 dBi)			
Channel	9262	9400	9538
	(Low)	(Mid)	(High)
Frequency (MHz)	1852.4	1880	1907.6
Conducted Power (dBm)	21.90	21.91	21.70
Conducted Power (Watts)	0.1549	0.1552	0.1479
EIRP(dBm)	23.20	23.21	23.00
EIRP(Watts)	0.2089	0.2094	0.1995

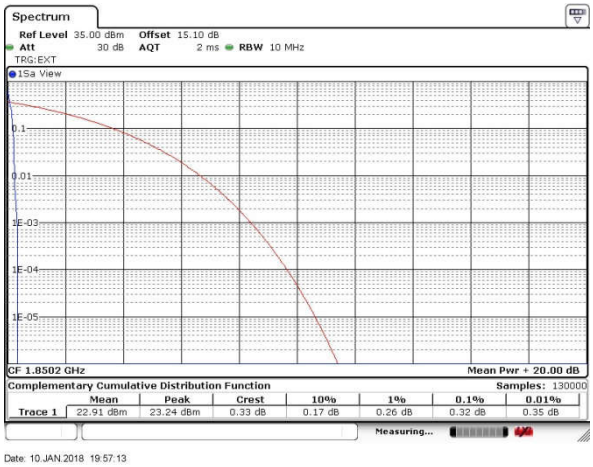
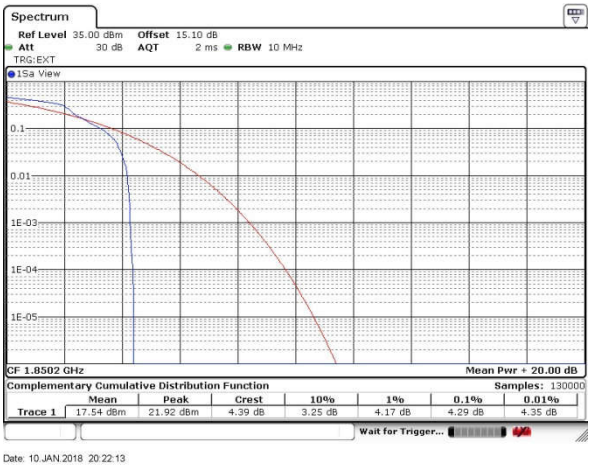
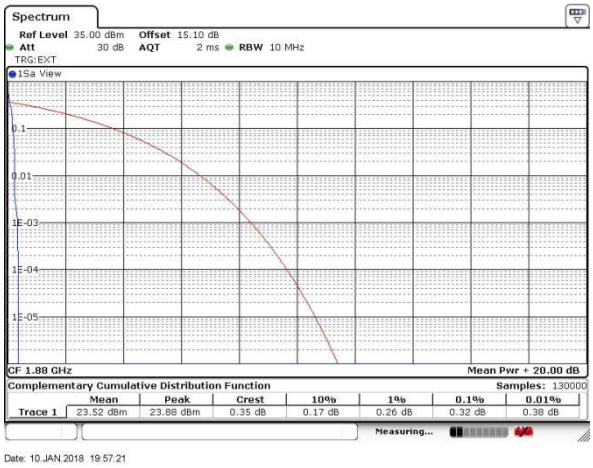
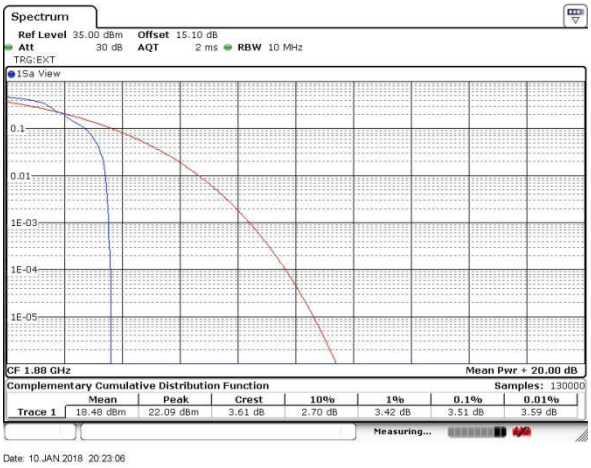
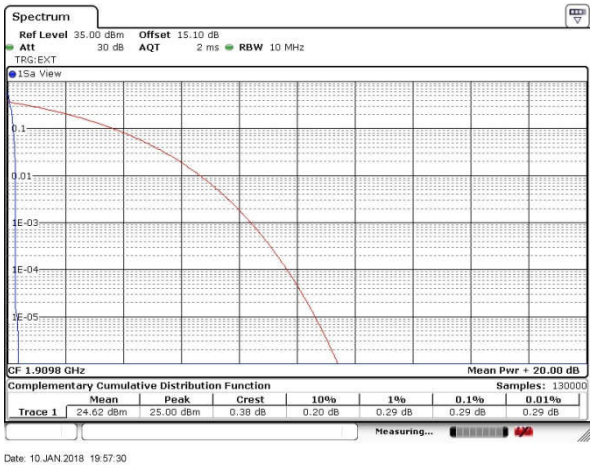
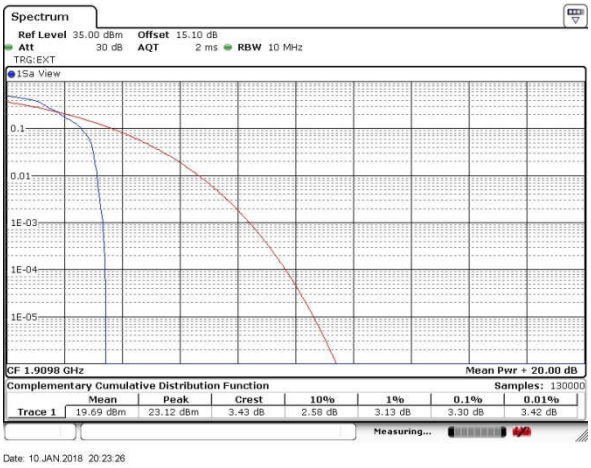
Peak-to-Average Ratio

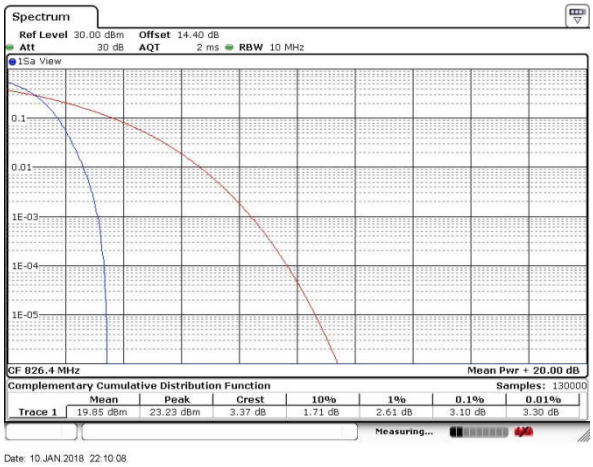
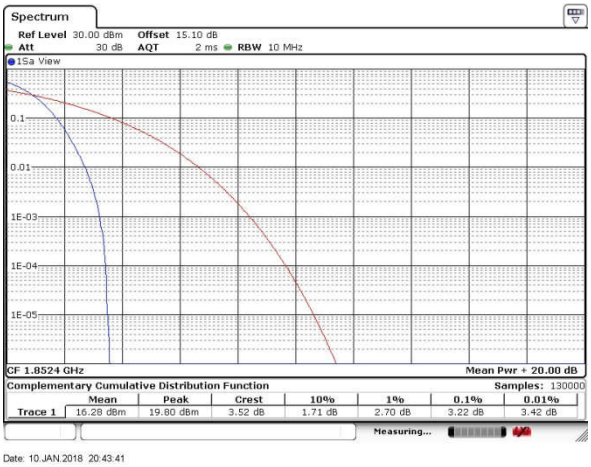
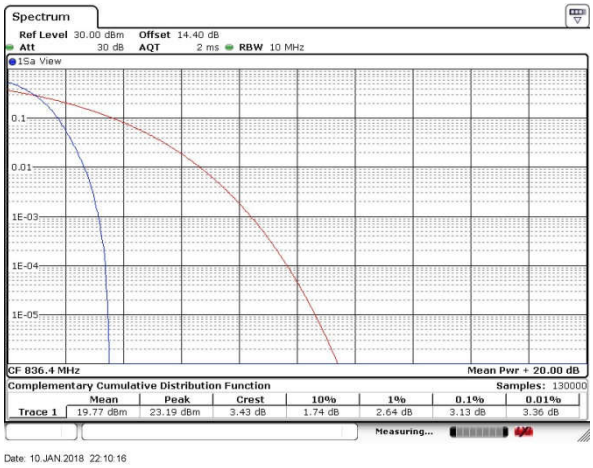
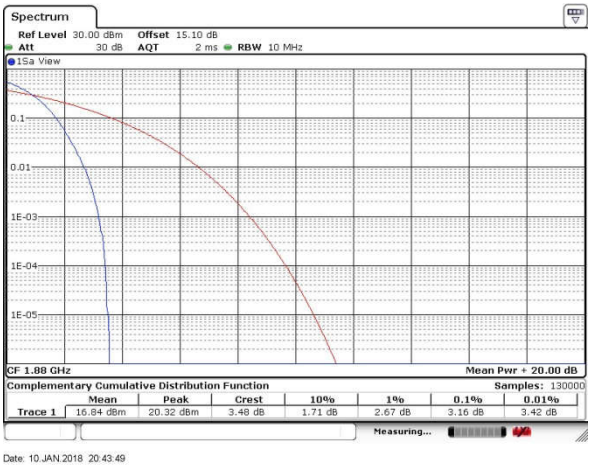
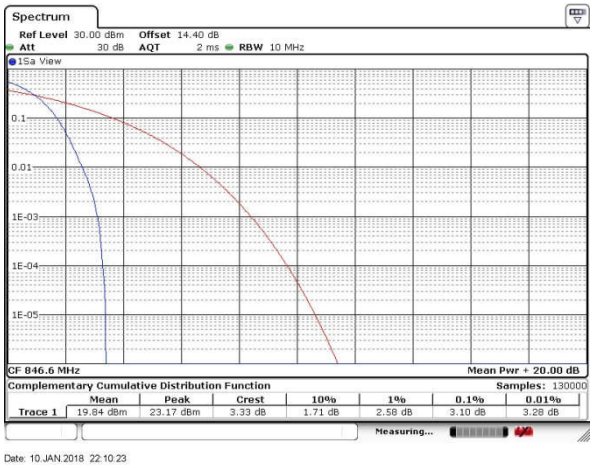
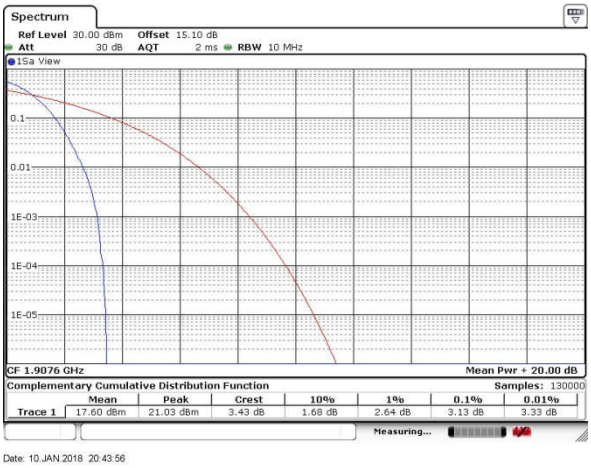
Mode	GSM850		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.17	3.51	PASS
Middle CH	0.12	3.39	
Highest CH	0.12	3.45	

Mode	GSM1900		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.32	4.29	PASS
Middle CH	0.32	3.51	
Highest CH	0.29	3.30	

Mode	WCDMA Band V	WCDMA Band II	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	3.10	3.22	PASS
Middle CH	3.13	3.16	
Highest CH	3.10	3.13	

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**
	

26dB Bandwidth

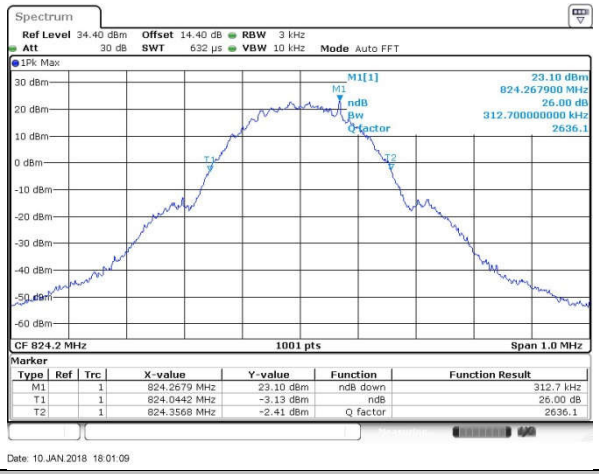
Mode	GSM850	
Mod.	GSM	EDGE class 8
Lowest CH	0.313	0.311
Middle CH	0.314	0.311
Highest CH	0.317	0.308

Mode	GSM1900	
Mod.	GSM	EDGE class 8
Lowest CH	0.314	0.309
Middle CH	0..317	0.314
Highest CH	0.315	0.319

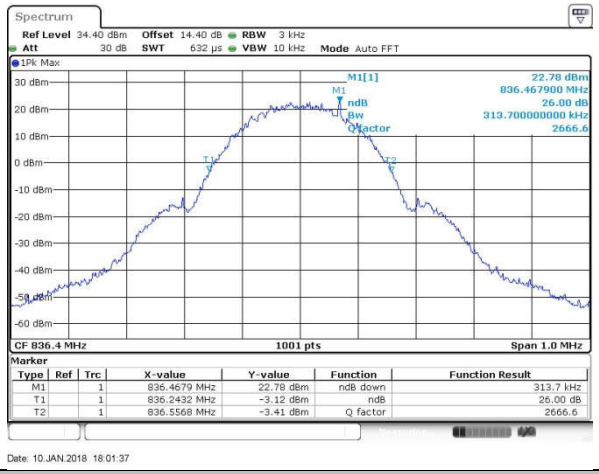
Mode	WCDMA Band V	WCDMA Band II
Mod.	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.72	4.70
Middle CH	4.72	4.70
Highest CH	4.71	4.72

GSM850 (GSM)

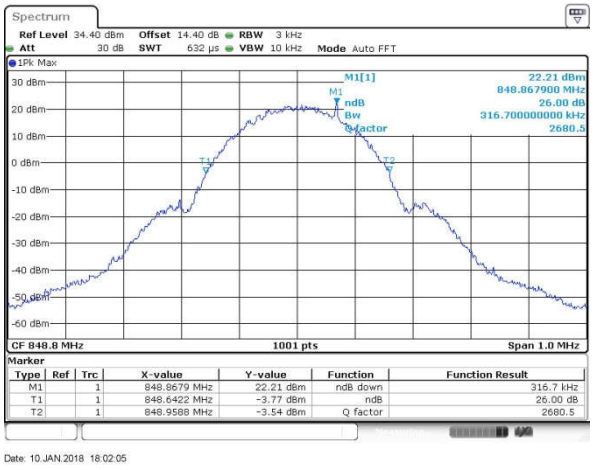
Lowest Channel



Middle Channel

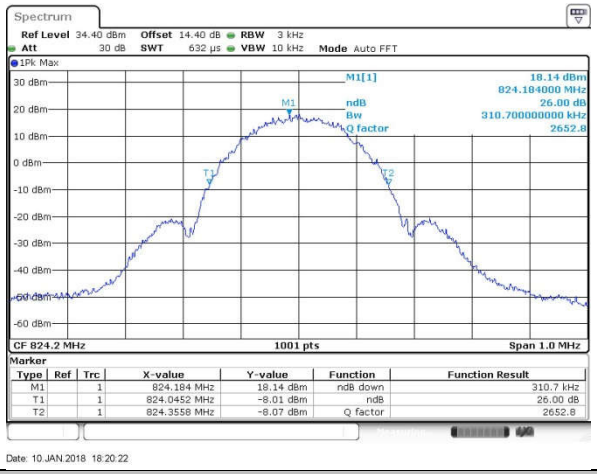


Highest Channel

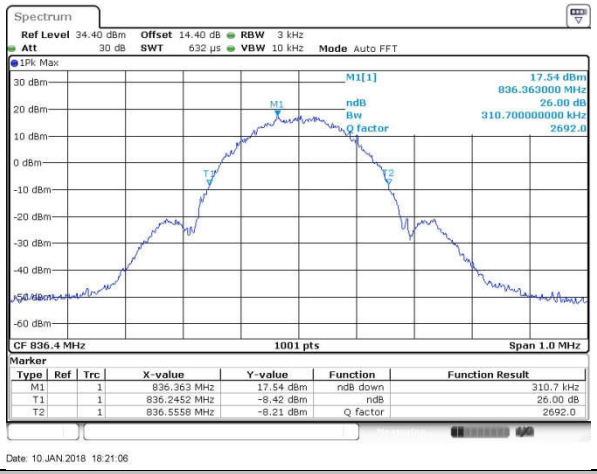


GSM850 (EDGE class 8)

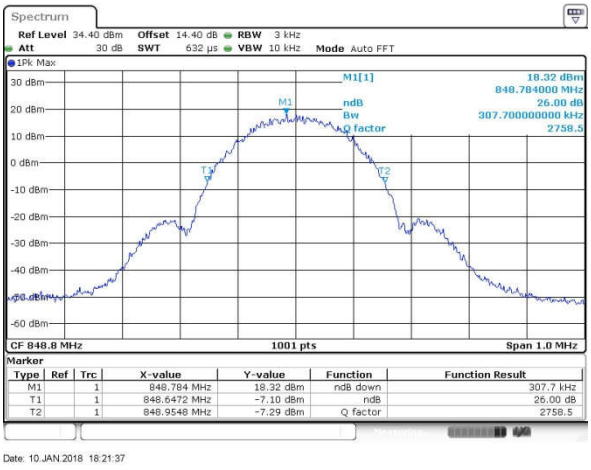
Lowest Channel

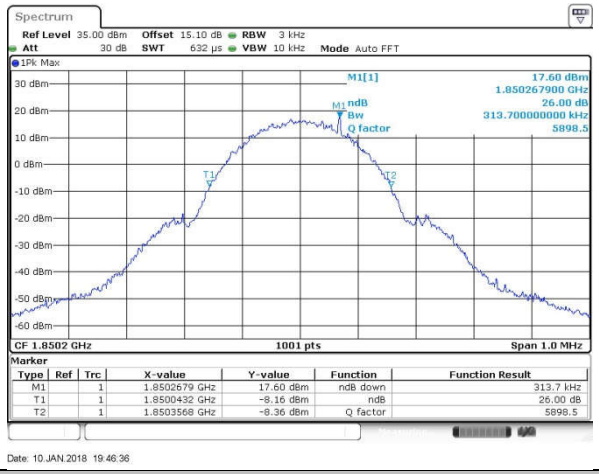
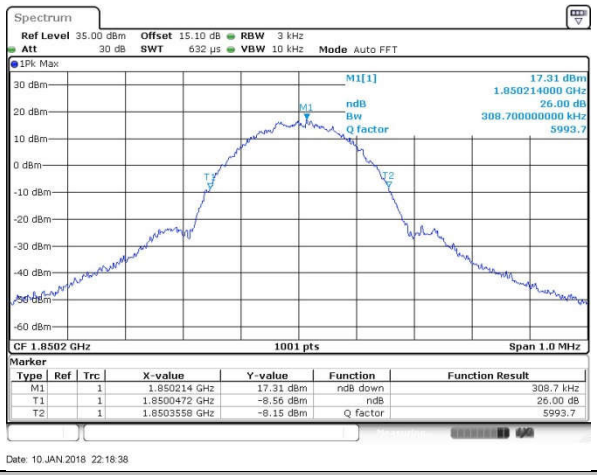
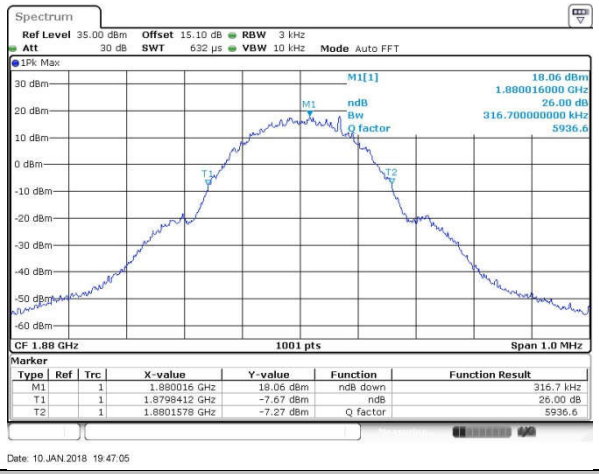
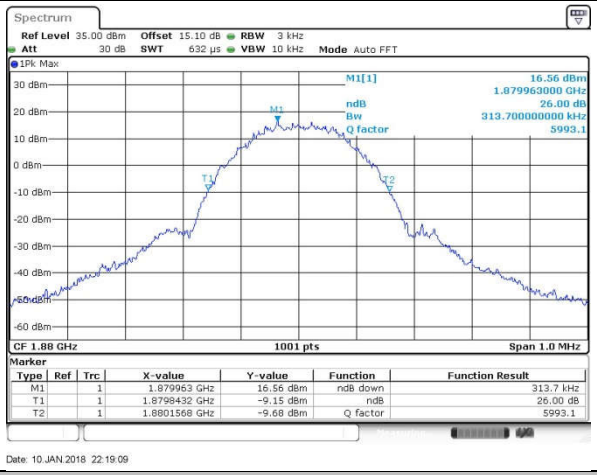
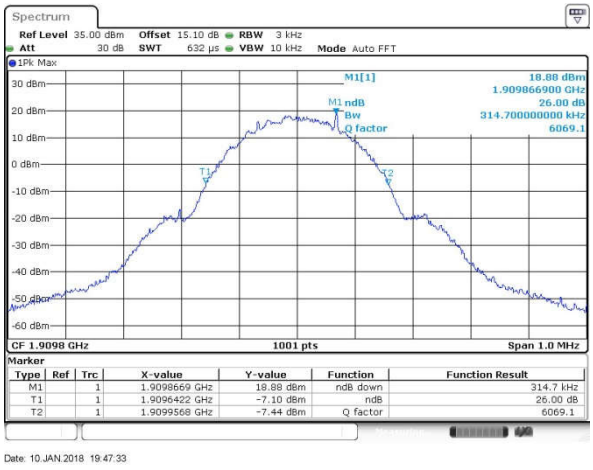
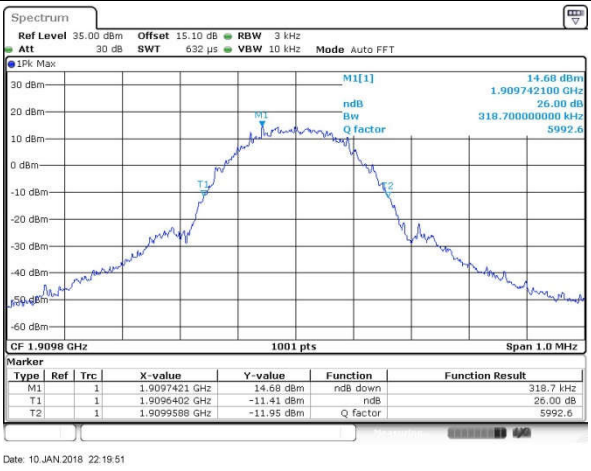


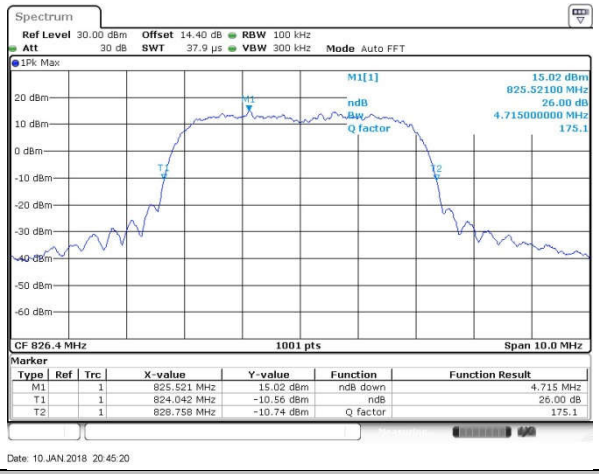
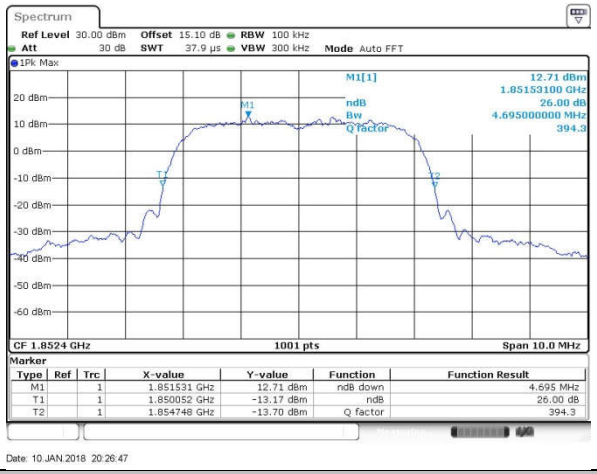
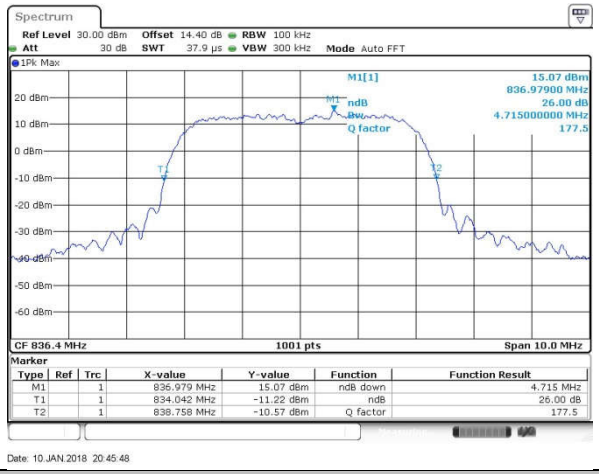
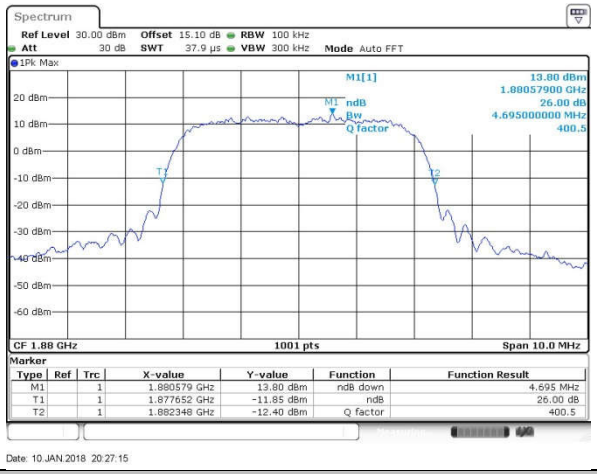
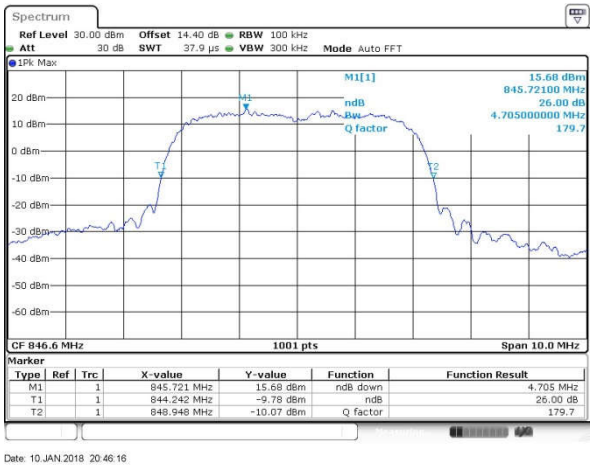
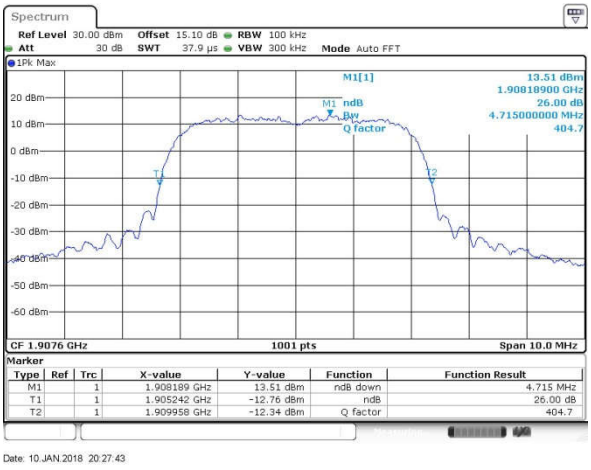
Middle Channel



Highest Channel



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

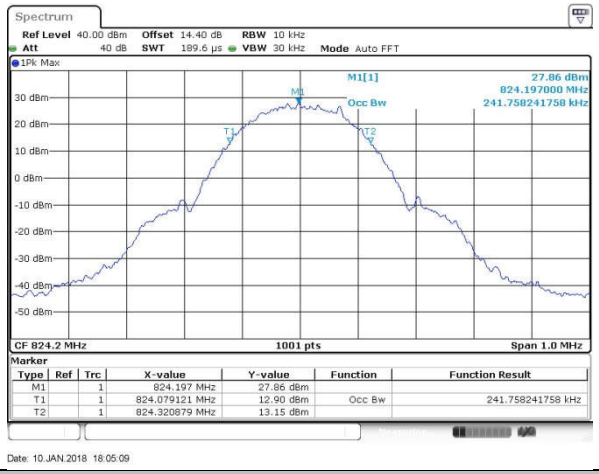
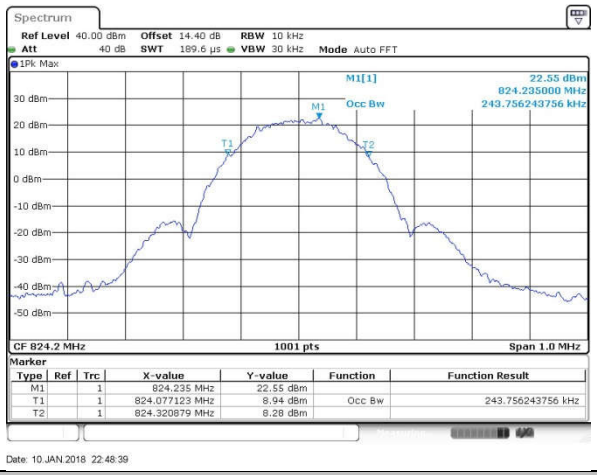
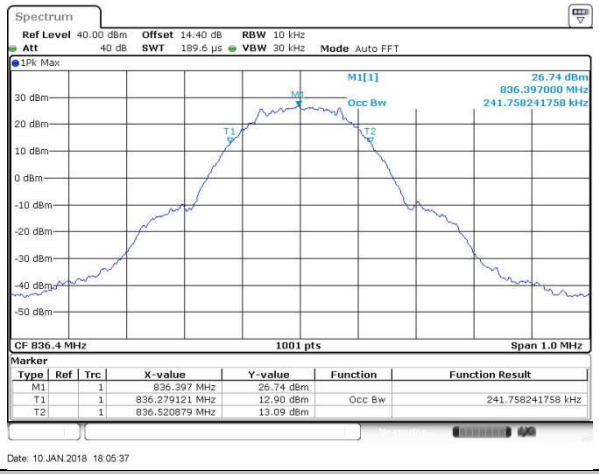
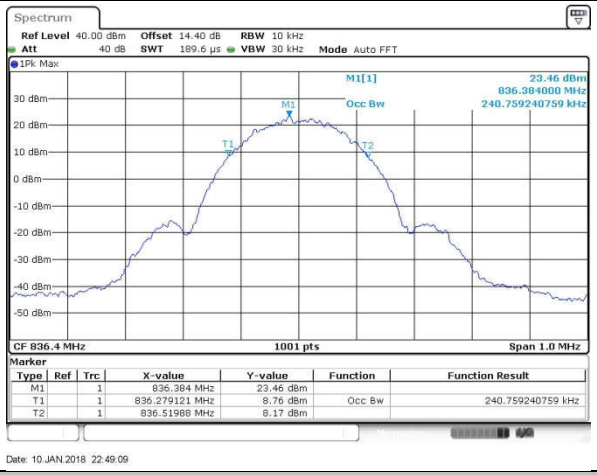
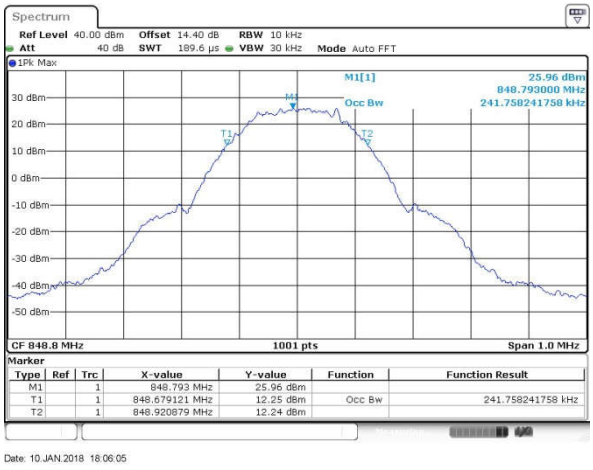
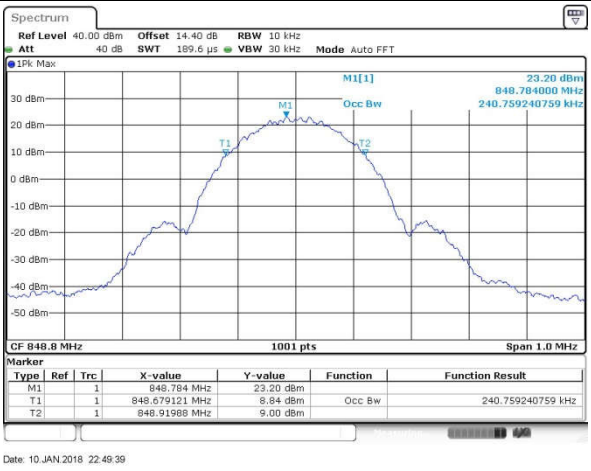
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

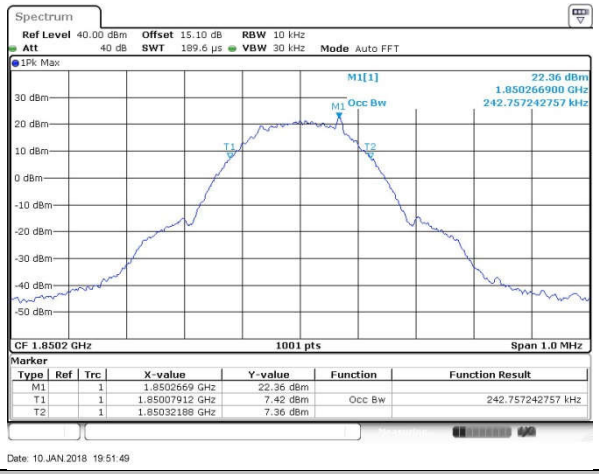
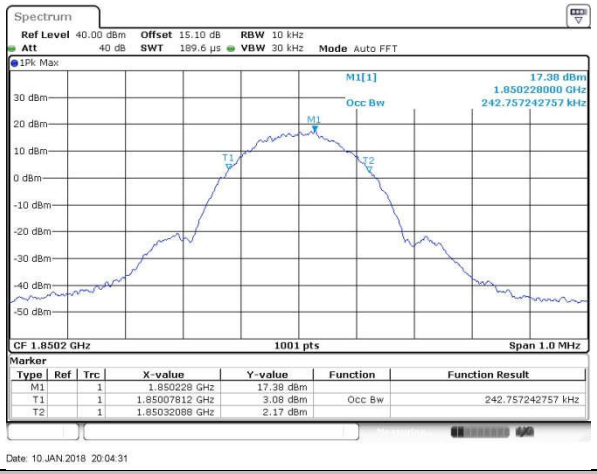
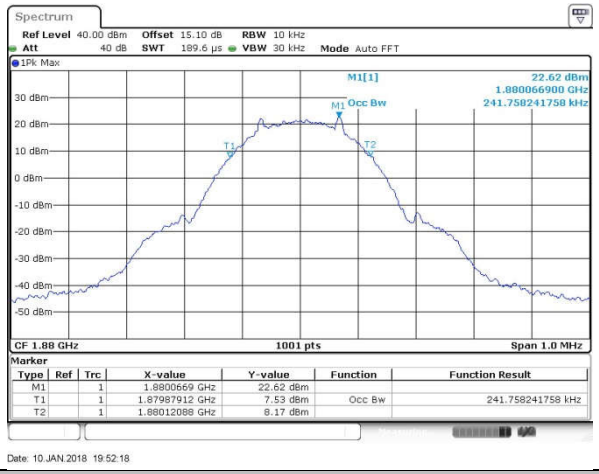
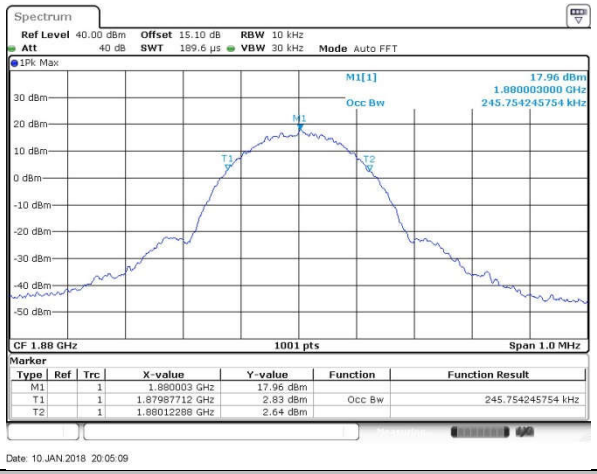
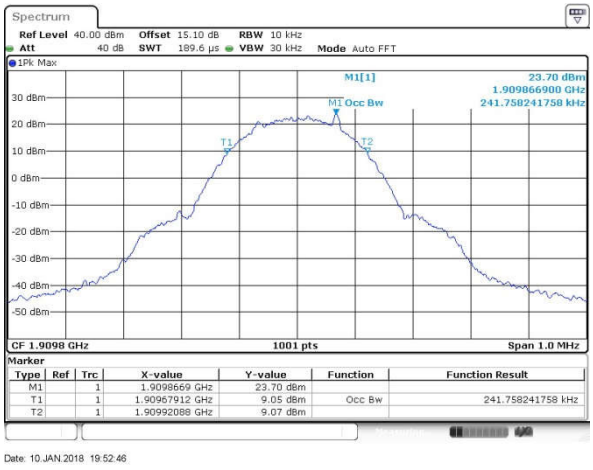
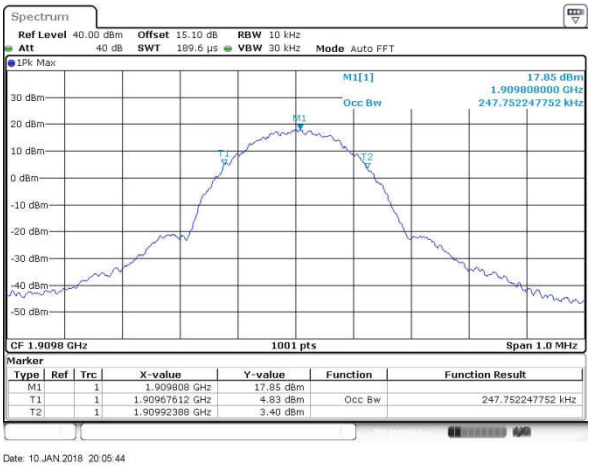
Occupied Bandwidth

Mode	GSM850	
Mod.	GSM	EDGE class 8
Lowest CH	0.242	0.244
Middle CH	0.242	0.241
Highest CH	0.242	0.241

Mode	GSM1900	
Mod.	GSM	EDGE class 8
Lowest CH	0.243	0.243
Middle CH	0.242	0.246
Highest CH	0.242	0.248

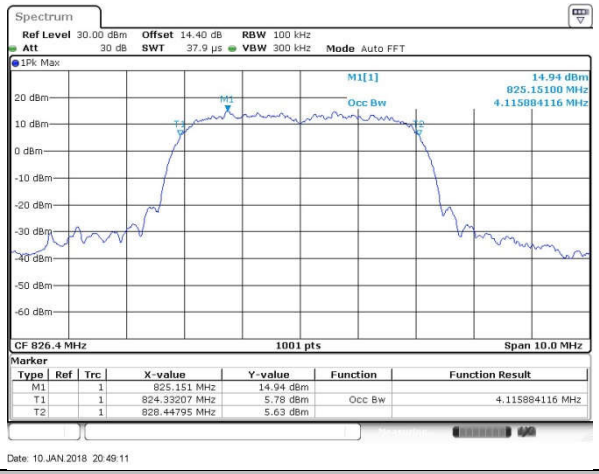
Mode	WCDMA Band V	WCDMA Band II
Mod.	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.12	4.13
Middle CH	4.13	4.11
Highest CH	4.14	4.12

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

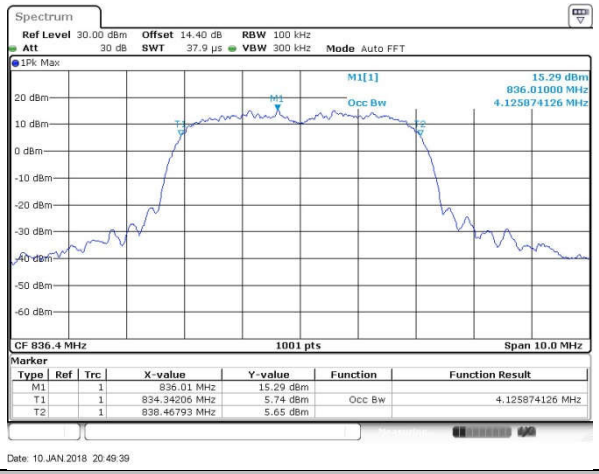
GSM1900 (GSM)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

WCDMA Band V (RMC 12.2Kbps)

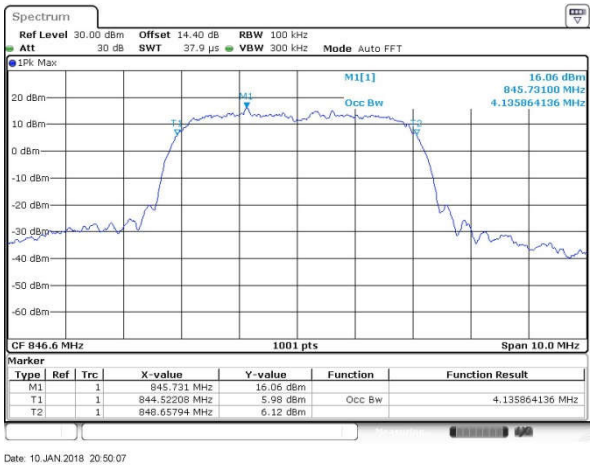
Lowest Channel



Middle Channel

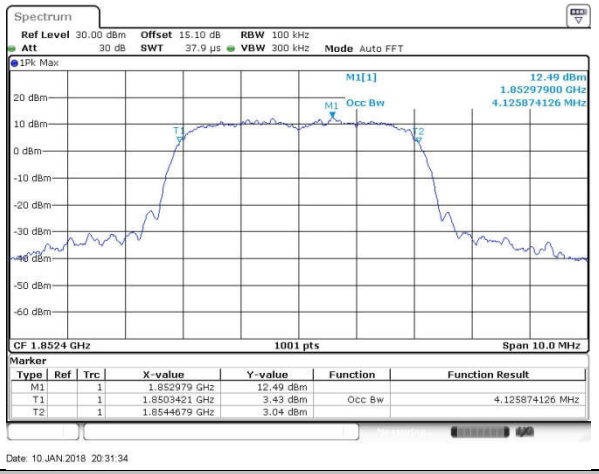


Highest Channel

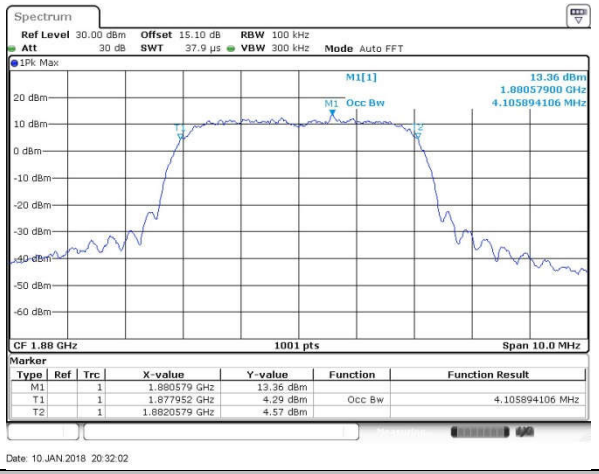


WCDMA Band II (RMC 12.2Kbps)

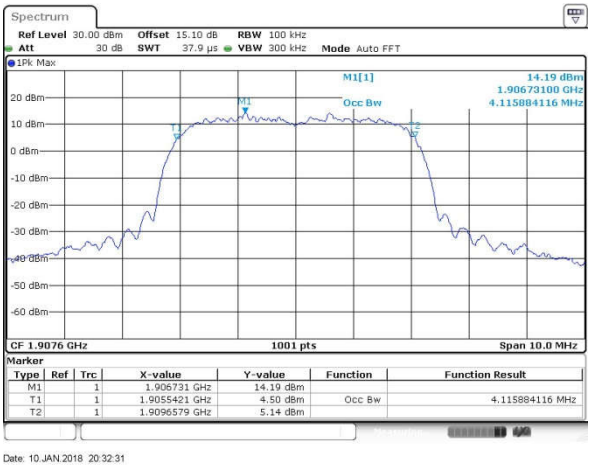
Lowest Channel



Middle Channel



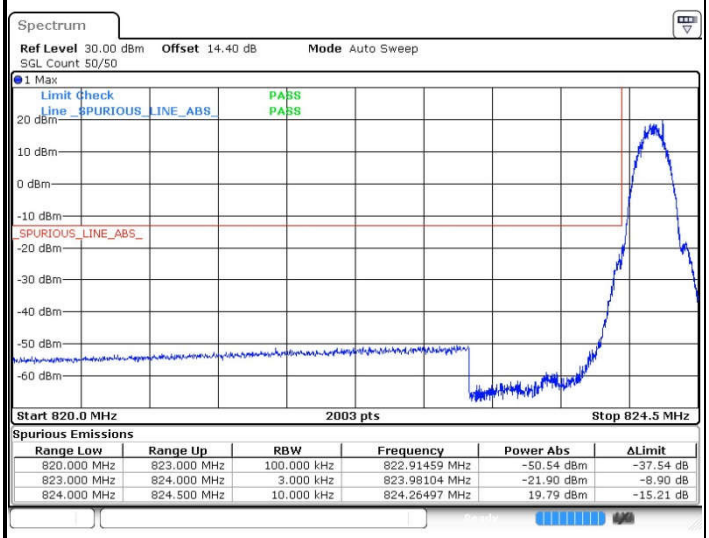
Highest Channel



Conducted Band Edge

GSM850 (GSM)

Lowest Band Edge

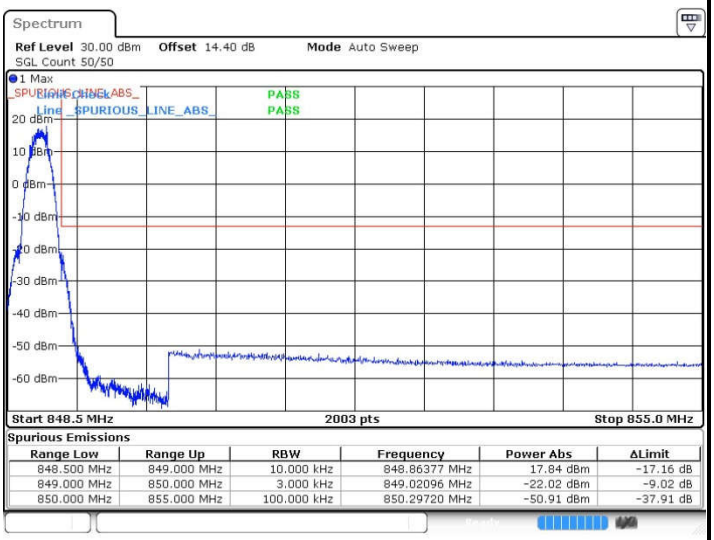


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.91459 MHz	-50.54 dBm	-37.54 dB
823.000 MHz	824.000 MHz	3.000 kHz	823.98104 MHz	-21.90 dBm	-8.90 dB
824.000 MHz	824.500 MHz	10.000 kHz	824.26497 MHz	19.79 dBm	-15.21 dB

Date: 10.JAN.2018 18:08:02

Highest Band Edge



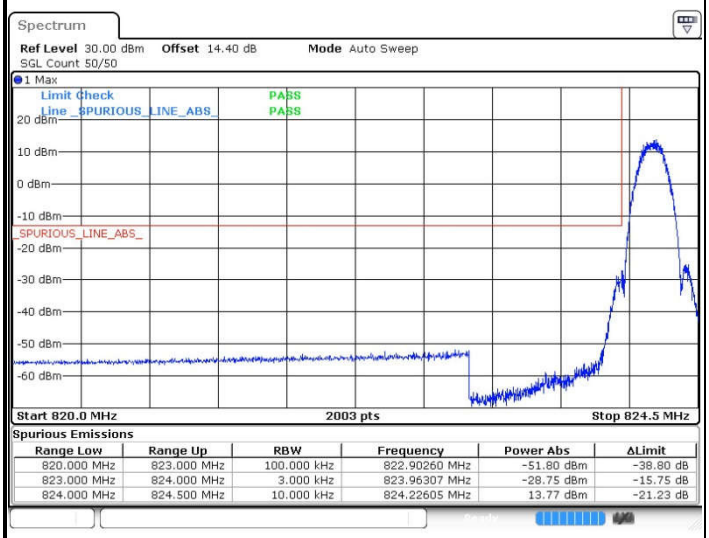
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
848.500 MHz	849.000 MHz	10.000 kHz	848.86377 MHz	17.84 dBm	-17.16 dB
849.000 MHz	850.000 MHz	3.000 kHz	849.02096 MHz	-22.02 dBm	-9.02 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.29720 MHz	-50.91 dBm	-37.91 dB

Date: 10.JAN.2018 18:09:29

GSM850 (EDGE class 8)

Lowest Band Edge

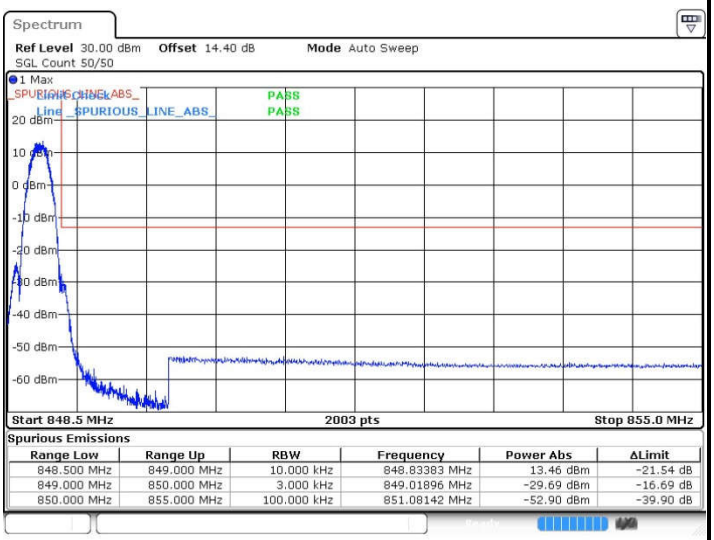


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.90260 MHz	-51.80 dBm	-38.80 dB
823.000 MHz	824.000 MHz	3.000 kHz	823.96307 MHz	-28.75 dBm	-15.75 dB
824.000 MHz	824.500 MHz	10.000 kHz	824.22605 MHz	13.77 dBm	-21.23 dB

Date: 10.JAN.2018 18:23:24

Highest Band Edge



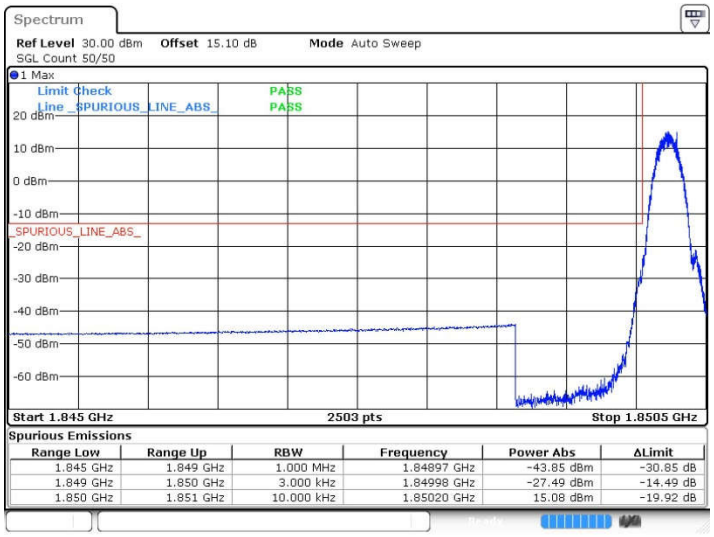
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
848.500 MHz	849.000 MHz	10.000 kHz	848.83383 MHz	13.46 dBm	-21.54 dB
849.000 MHz	850.000 MHz	3.000 kHz	849.01896 MHz	-29.69 dBm	-16.69 dB
850.000 MHz	855.000 MHz	100.000 kHz	851.08142 MHz	-52.90 dBm	-39.90 dB

Date: 10.JAN.2018 18:24:54

GSM1900 (GSM)

Lowest Band Edge

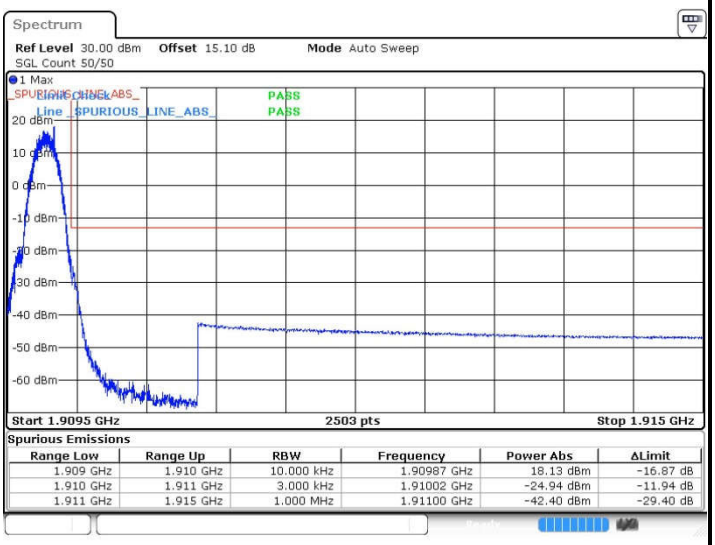


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84897 GHz	-43.85 dBm	-30.85 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.84998 GHz	-27.49 dBm	-14.49 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85020 GHz	15.08 dBm	-19.92 dB

Date: 10.JAN.2018 19:22:16

Highest Band Edge



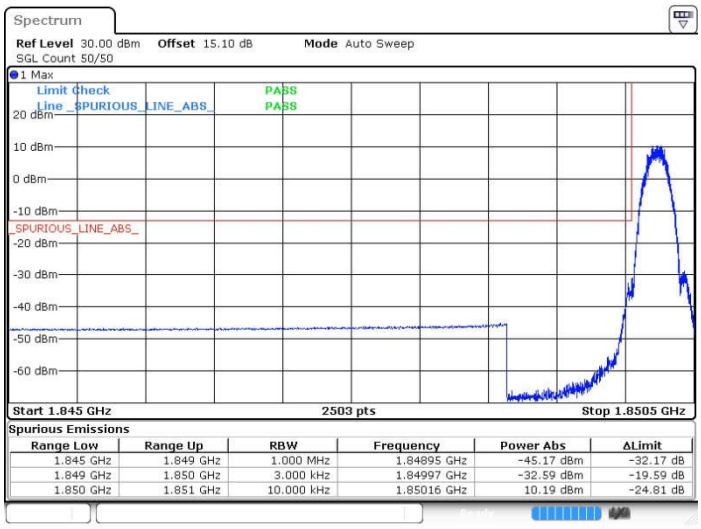
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90987 GHz	18.13 dBm	-16.87 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91002 GHz	-24.94 dBm	-11.94 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91100 GHz	-42.40 dBm	-29.40 dB

Date: 10.JAN.2018 19:23:43

GSM1900 (EDGE class 8)

Lowest Band Edge

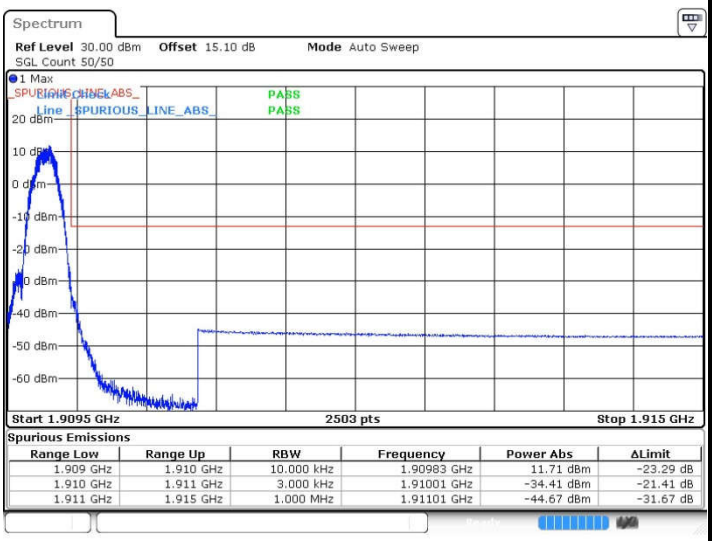


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84895 GHz	-45.17 dBm	-32.17 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.84997 GHz	-32.59 dBm	-19.59 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85016 GHz	10.19 dBm	-24.81 dB

Date: 10.JAN.2018 20:07:17

Highest Band Edge



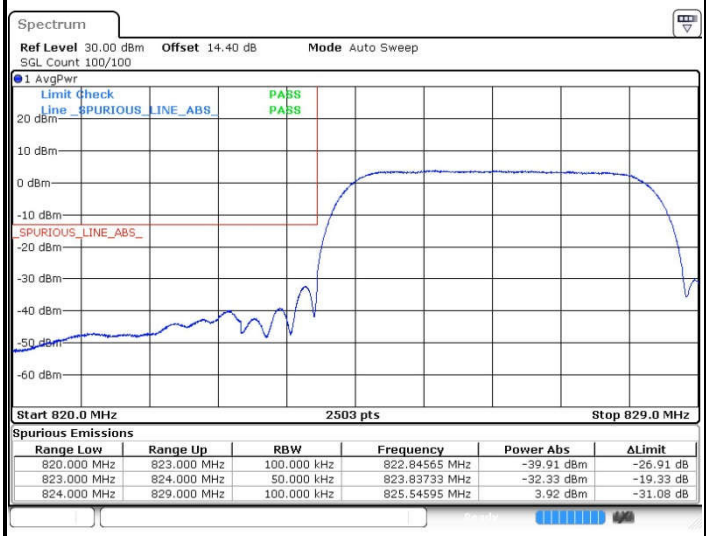
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90983 GHz	11.71 dBm	-23.29 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91001 GHz	-34.41 dBm	-21.41 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91101 GHz	-44.67 dBm	-31.67 dB

Date: 10.JAN.2018 20:08:51

WCDMA Band V (RMC 12.2Kbps)

Lowest Band Edge

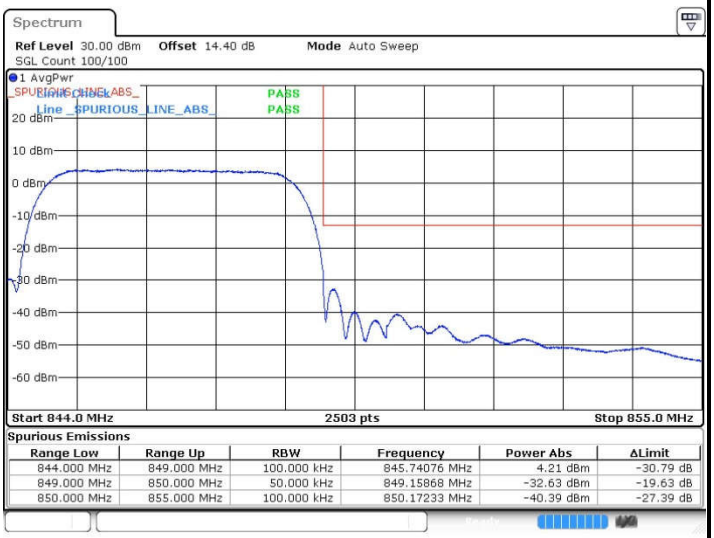


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.84565 MHz	-39.91 dBm	-26.91 dB
823.000 MHz	824.000 MHz	50.000 kHz	823.83733 MHz	-32.33 dBm	-19.33 dB
824.000 MHz	829.000 MHz	100.000 kHz	825.54595 MHz	3.92 dBm	-31.08 dB

Date: 10.JAN.2018 20:52:52

Highest Band Edge



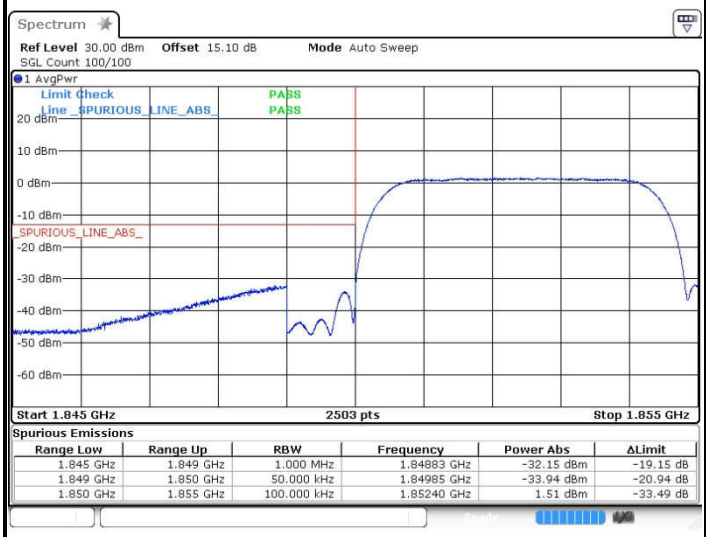
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
844.000 MHz	849.000 MHz	100.000 kHz	845.74076 MHz	4.21 dBm	-30.79 dB
849.000 MHz	850.000 MHz	50.000 kHz	849.15868 MHz	-32.63 dBm	-19.63 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.17233 MHz	-40.39 dBm	-27.39 dB

Date: 10.JAN.2018 20:55:34

WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge

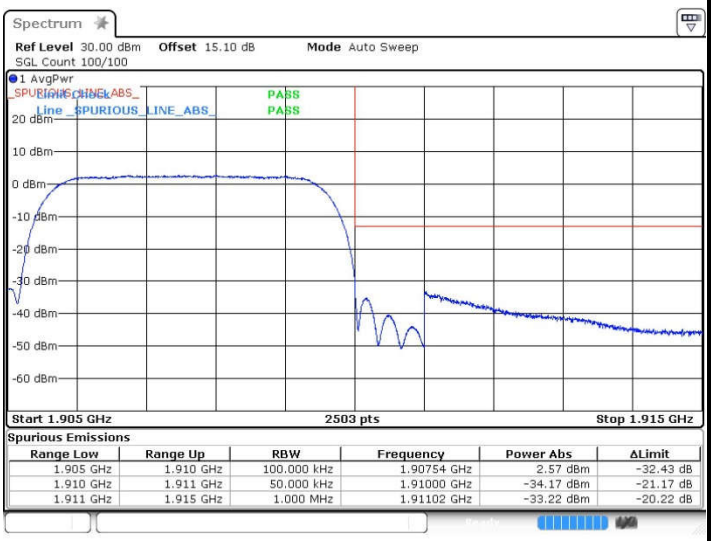


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84883 GHz	-32.15 dBm	-19.15 dB
1.849 GHz	1.850 GHz	50.000 kHz	1.84985 GHz	-33.94 dBm	-20.94 dB
1.850 GHz	1.855 GHz	100.000 kHz	1.85240 GHz	1.51 dBm	-33.49 dB

Date: 10.JAN.2018 20:36:12

Highest Band Edge



Spurious Emissions

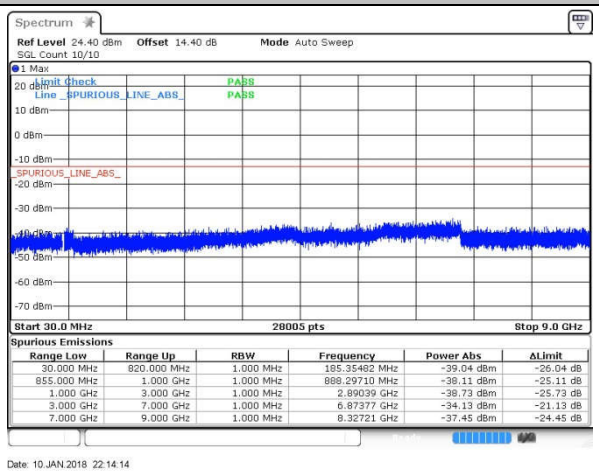
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.905 GHz	1.910 GHz	100.000 kHz	1.90754 GHz	2.57 dBm	-32.43 dB
1.910 GHz	1.911 GHz	50.000 kHz	1.91000 GHz	-34.17 dBm	-21.17 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91102 GHz	-33.22 dBm	-20.22 dB

Date: 10.JAN.2018 20:38:53

Conducted Spurious Emission

GSM850 (GSM)

Lowest Channel

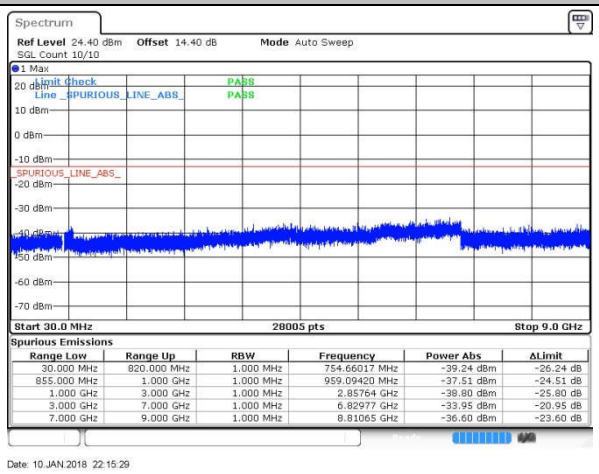


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	185.35482 MHz	-39.04 dBm	-26.04 dB
855.000 MHz	1.000 GHz	1.000 MHz	888.29710 MHz	-38.11 dBm	-25.11 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.89039 GHz	-38.73 dBm	-25.73 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.87377 GHz	-34.13 dBm	-21.13 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.32721 GHz	-37.45 dBm	-24.45 dB

Date: 10.JAN.2018 22:14:14

Middle Channel

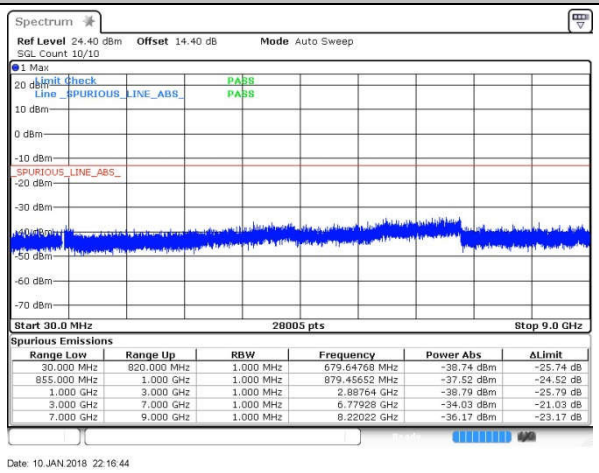


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	754.66017 MHz	-39.24 dBm	-26.24 dB
855.000 MHz	1.000 GHz	1.000 MHz	959.09420 MHz	-37.51 dBm	-24.51 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.85764 GHz	-38.80 dBm	-25.80 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.82977 GHz	-33.95 dBm	-20.95 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.81065 GHz	-36.60 dBm	-23.60 dB

Date: 10.JAN.2018 22:15:29

Highest Channel



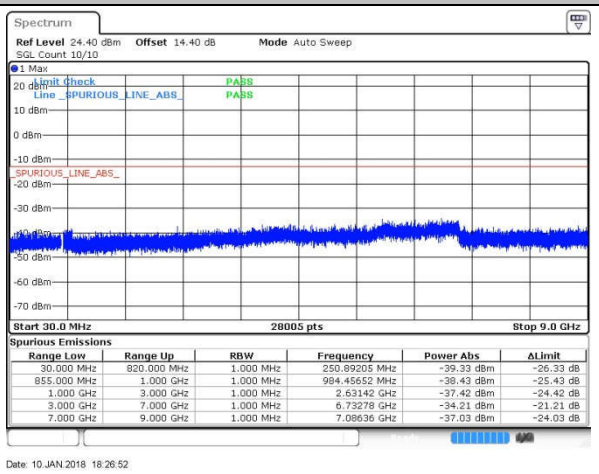
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	679.64768 MHz	-38.74 dBm	-25.74 dB
855.000 MHz	1.000 GHz	1.000 MHz	879.45652 MHz	-37.52 dBm	-24.52 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.88764 GHz	-38.79 dBm	-25.79 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.77928 GHz	-34.03 dBm	-21.03 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.22022 GHz	-36.17 dBm	-23.17 dB

Date: 10.JAN.2018 22:16:44

GSM850 (EDGE class 8)

Lowest Channel

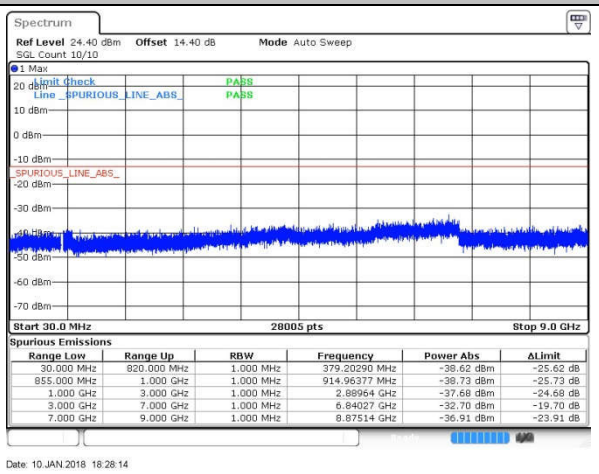


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	250.89205 MHz	-39.33 dBm	-26.33 dB
855.000 MHz	1.000 GHz	1.000 MHz	984.45652 MHz	-38.43 dBm	-25.43 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.63142 GHz	-37.42 dBm	-24.42 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.73278 GHz	-34.21 dBm	-21.21 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.08636 GHz	-37.03 dBm	-24.03 dB

Date: 10.JAN.2018 18:26:52

Middle Channel

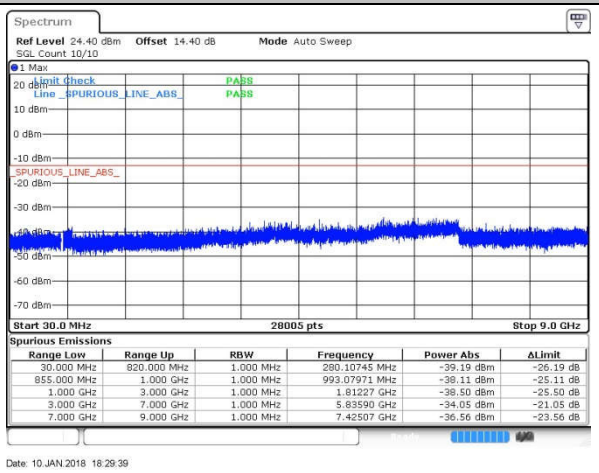


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	379.20290 MHz	-38.62 dBm	-25.62 dB
855.000 MHz	1.000 GHz	1.000 MHz	914.96377 MHz	-38.73 dBm	-25.73 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.88964 GHz	-37.68 dBm	-24.68 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.84027 GHz	-32.70 dBm	-19.70 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.87514 GHz	-36.91 dBm	-23.91 dB

Date: 10.JAN.2018 18:28:14

Highest Channel



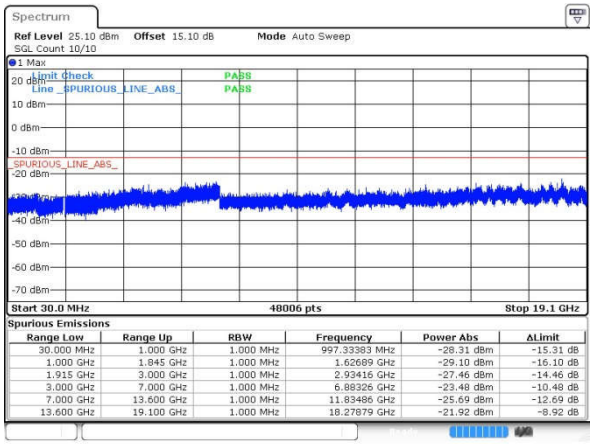
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	280.10745 MHz	-39.19 dBm	-26.19 dB
855.000 MHz	1.000 GHz	1.000 MHz	993.07971 MHz	-38.11 dBm	-25.11 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.81227 GHz	-38.50 dBm	-25.50 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.83590 GHz	-34.05 dBm	-21.05 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.42507 GHz	-36.56 dBm	-23.56 dB

Date: 10.JAN.2018 18:29:39

GSM1900 (GSM)

Lowest Channel

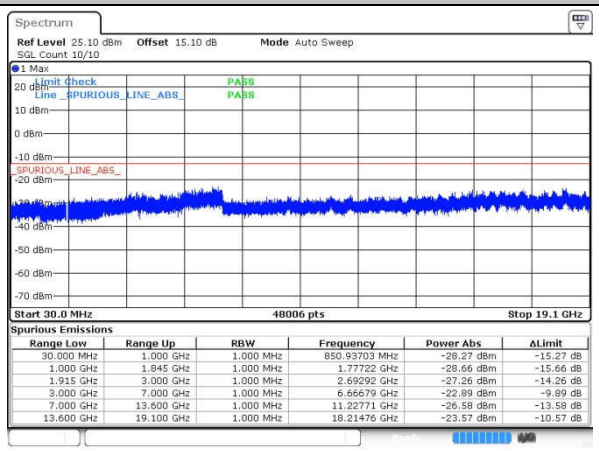


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	997.33383 MHz	-28.31 dBm	-15.31 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.62689 GHz	-29.10 dBm	-16.10 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.93416 GHz	-27.46 dBm	-14.46 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.88326 GHz	-23.48 dBm	-10.48 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.83486 GHz	-25.69 dBm	-12.69 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.27879 GHz	-21.92 dBm	-8.92 dB

Date: 10.JAN.2018 19:54:08

Middle Channel

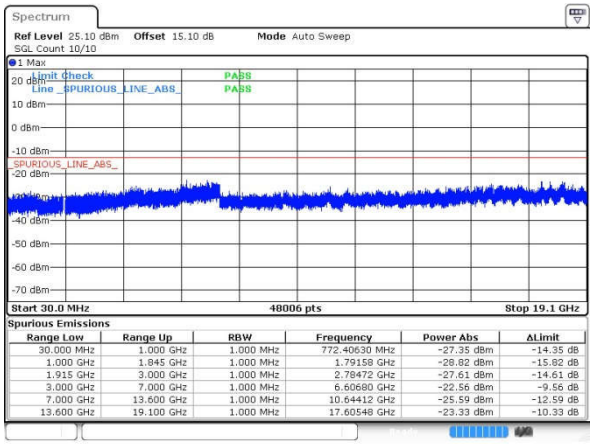


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	850.93703 MHz	-28.27 dBm	-15.27 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.77722 GHz	-28.66 dBm	-15.66 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.69292 GHz	-27.26 dBm	-14.26 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.66679 GHz	-22.89 dBm	-9.89 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.22771 GHz	-26.58 dBm	-13.58 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.21476 GHz	-23.57 dBm	-10.57 dB

Date: 10.JAN.2018 19:55:23

Highest Channel



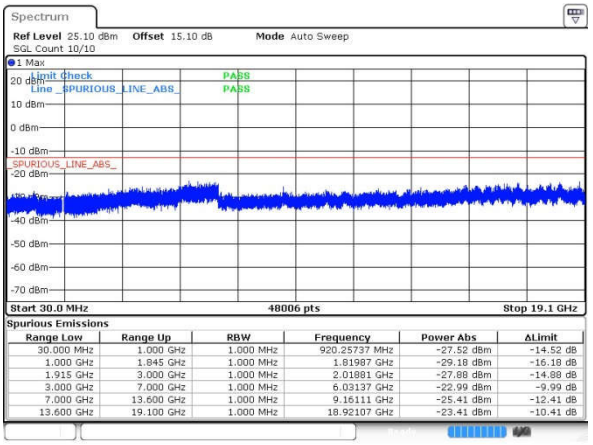
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	772.40630 MHz	-27.35 dBm	-14.35 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.79158 GHz	-28.82 dBm	-15.82 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.78472 GHz	-27.61 dBm	-14.61 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.60680 GHz	-22.56 dBm	-9.56 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.64412 GHz	-25.59 dBm	-12.59 dB
13.600 GHz	19.100 GHz	1.000 MHz	17.60548 GHz	-23.33 dBm	-10.33 dB

Date: 10.JAN.2018 19:56:39

GSM1900 (EDGE class 8)

Lowest Channel

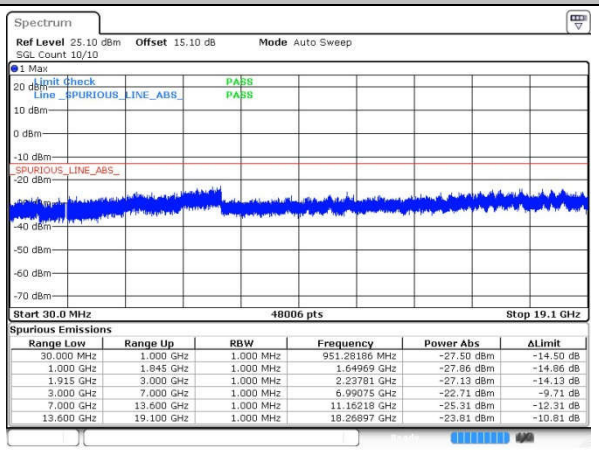


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	920.25737 MHz	-27.52 dBm	-14.52 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.81987 GHz	-29.18 dBm	-16.18 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.01881 GHz	-27.88 dBm	-14.88 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.03137 GHz	-22.99 dBm	-9.99 dB
7.000 GHz	13.600 GHz	1.000 MHz	9.16111 GHz	-25.41 dBm	-12.41 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.92107 GHz	-23.41 dBm	-10.41 dB

Date: 10.JAN.2018 20:14:00

Middle Channel

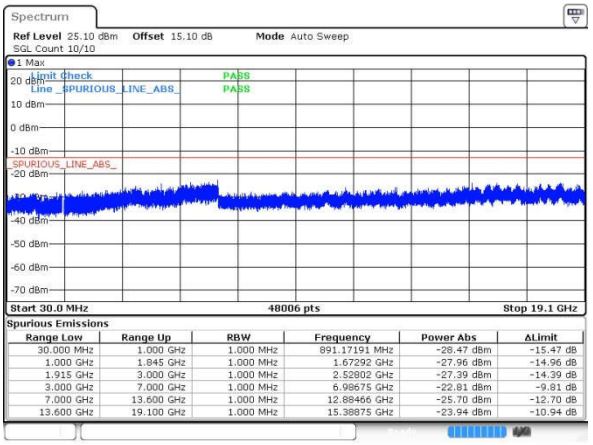


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	951.28186 MHz	-27.50 dBm	-14.50 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.64969 GHz	-27.86 dBm	-14.86 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.23781 GHz	-27.13 dBm	-14.13 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99075 GHz	-22.71 dBm	-9.71 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.16218 GHz	-25.31 dBm	-12.31 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.26697 GHz	-23.81 dBm	-10.81 dB

Date: 10.JAN.2018 20:15:22

Highest Channel



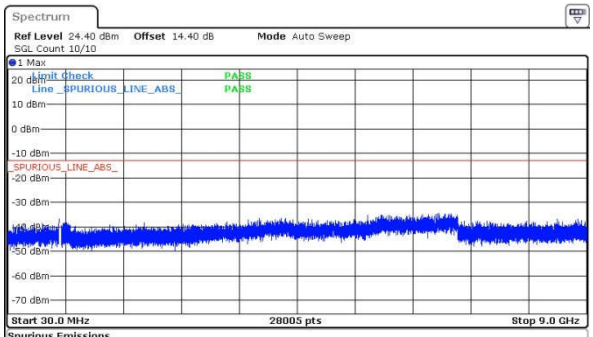
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	891.17191 MHz	-28.47 dBm	-15.47 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.67292 GHz	-27.96 dBm	-14.96 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.52802 GHz	-27.39 dBm	-14.39 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98675 GHz	-22.81 dBm	-9.81 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.88466 GHz	-25.70 dBm	-12.70 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.38875 GHz	-23.94 dBm	-10.94 dB

Date: 10.JAN.2018 20:16:38

WCDMA Band V (RMC 12.2Kbps)

Lowest Channel

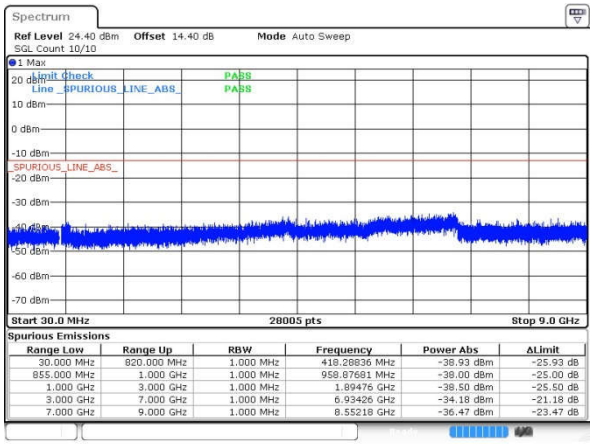


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	819.80260 MHz	-36.84 dBm	-23.84 dB
855.000 MHz	1.000 GHz	1.000 MHz	939.67391 MHz	-38.36 dBm	-25.36 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.14648 GHz	-38.34 dBm	-25.34 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.70079 GHz	-34.51 dBm	-21.51 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.54043 GHz	-36.83 dBm	-23.83 dB

Date: 10.JAN.2018 21:20:37

Middle Channel

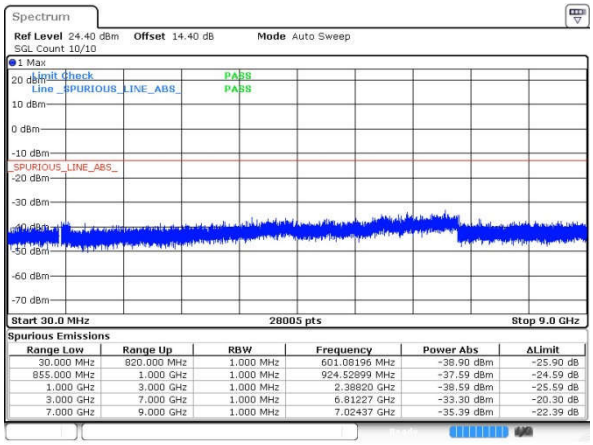


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	418.28836 MHz	-38.93 dBm	-25.93 dB
855.000 MHz	1.000 GHz	1.000 MHz	958.87681 MHz	-38.00 dBm	-25.00 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.89476 GHz	-38.50 dBm	-25.50 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.93426 GHz	-34.18 dBm	-21.18 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.55218 GHz	-36.47 dBm	-23.47 dB

Date: 10.JAN.2018 21:21:52

Highest Channel



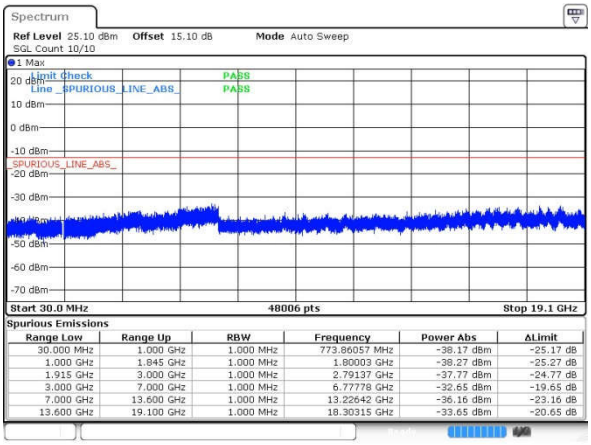
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	601.08196 MHz	-38.90 dBm	-25.90 dB
855.000 MHz	1.000 GHz	1.000 MHz	924.52899 MHz	-37.59 dBm	-24.59 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.38820 GHz	-38.59 dBm	-25.59 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.81227 GHz	-33.30 dBm	-20.30 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.02437 GHz	-35.39 dBm	-22.39 dB

Date: 10.JAN.2018 21:23:07

WCDMA Band II (RMC 12.2Kbps)

Lowest Channel

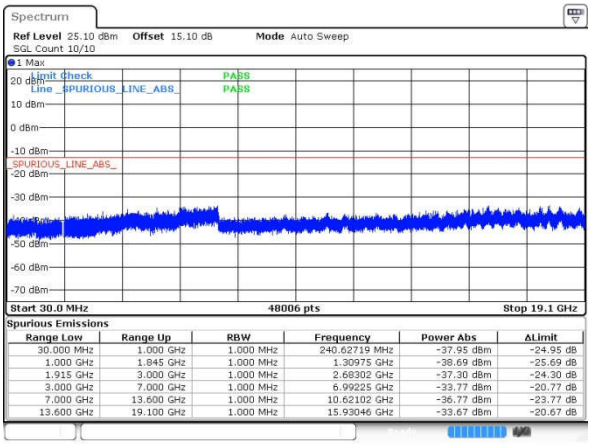


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	773.86057 MHz	-38.17 dBm	-25.17 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.80003 GHz	-38.27 dBm	-25.27 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.79137 GHz	-37.77 dBm	-24.77 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.77778 GHz	-32.65 dBm	-19.65 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.22642 GHz	-36.16 dBm	-23.16 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.30315 GHz	-33.65 dBm	-20.65 dB

Date: 10.JAN.2018 20:40:15

Middle Channel

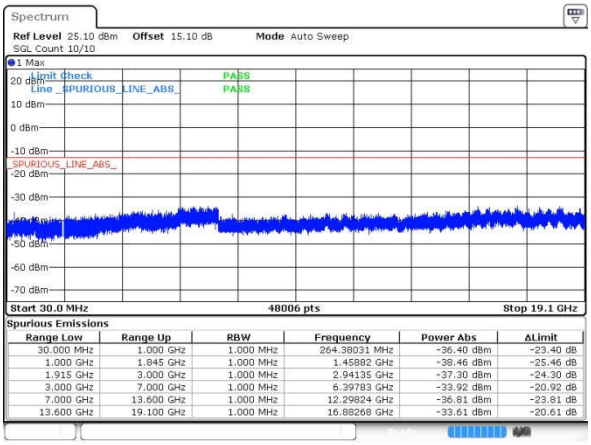


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	240.62719 MHz	-37.95 dBm	-24.95 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.30975 GHz	-38.69 dBm	-25.69 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.68302 GHz	-37.30 dBm	-24.30 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99225 GHz	-33.77 dBm	-20.77 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.62102 GHz	-36.77 dBm	-23.77 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.93046 GHz	-33.67 dBm	-20.67 dB

Date: 10.JAN.2018 20:41:31

Highest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	264.38031 MHz	-36.40 dBm	-23.40 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.45882 GHz	-38.46 dBm	-25.46 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.94135 GHz	-37.30 dBm	-24.30 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.39783 GHz	-33.92 dBm	-20.92 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.29824 GHz	-36.81 dBm	-23.81 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.88268 GHz	-33.61 dBm	-20.61 dB

Date: 10.JAN.2018 20:42:46

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	0.0215	PASS
40	Normal Voltage	0.0036	0.0120	
30	Normal Voltage	0.0012	0.0167	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0132	0.0060	
0	Normal Voltage	0.0143	0.0502	
-10	Normal Voltage	0.0263	0.0084	
-20	Normal Voltage	0.0203	0.0048	
-30	Normal Voltage	0.0120	0.0466	
20	Maximum Voltage	0.0191	0.0024	
20	Normal Voltage	0.0299	0.0430	
20	Battery End Point	0.0108	0.0490	

Test Conditions	Middle Channel	GSM1900 (GSM)	GSM1900 (EDGE class 8)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0128	0.0239	PASS
40	Normal Voltage	0.0112	0.0245	
30	Normal Voltage	0.0085	0.0048	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0059	0.0005	
0	Normal Voltage	0.0080	0.0027	
-10	Normal Voltage	0.0117	0.0138	
-20	Normal Voltage	0.0074	0.0037	
-30	Normal Voltage	0.0106	0.0101	
20	Maximum Voltage	0.0101	0.0128	
20	Normal Voltage	0.0138	0.0170	
20	Battery End Point	0.0037	0.0005	

Note:

1. Normal Voltage = 3.85V. ；Battery End Point (BEP) =3.5V.；Maximum Voltage =4.35 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	0.0143	PASS
40	Normal Voltage	0.0132	
30	Normal Voltage	0.0060	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0251	
0	Normal Voltage	0.0275	
-10	Normal Voltage	0.0072	
-20	Normal Voltage	0.0024	
-30	Normal Voltage	0.0323	
20	Maximum Voltage	0.0108	
20	Normal Voltage	0.0299	
20	Battery End Point	0.0335	

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0160	PASS
40	Normal Voltage	0.0138	
30	Normal Voltage	0.0032	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0027	
0	Normal Voltage	0.0202	
-10	Normal Voltage	0.0005	
-20	Normal Voltage	0.0027	
-30	Normal Voltage	0.0154	
20	Maximum Voltage	0.0176	
20	Normal Voltage	0.0053	
20	Battery End Point	0.0165	

Note:

1. Normal Voltage = 3.85V. ；Battery End Point (BEP) =3.5V.；Maximum Voltage =4.35V
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)
Lowest	1648	-40.31	-13	-27.31	-50.22	-47.26	0.53	9.63	H
	2472	-41.08	-13	-28.08	-54.52	-49.06	0.65	10.78	H
	3296	-55.61	-13	-42.61	-71.75	-64.69	0.76	11.99	H
	4120	-55.56	-13	-42.56	-72.95	-64.9	0.86	12.35	H
	1648	-33.33	-13	-20.33	-42.95	-40.28	0.53	9.63	V
	2472	-41.24	-13	-28.24	-55.17	-49.22	0.65	10.78	V
	3296	-55.75	-13	-42.75	-71.86	-64.83	0.76	11.99	V
	4120	-53.46	-13	-40.46	-72.03	-62.8	0.86	12.35	V
Middle	1672	-35.61	-13	-22.61	-45.7	-42.61	0.53	9.68	H
	2512	-41.17	-13	-28.17	-54.59	-49.17	0.66	10.81	H
	3344	-54.35	-13	-41.35	-70.55	-63.57	0.76	12.13	H
	1672	-33.57	-13	-20.57	-43.26	-40.57	0.53	9.68	V
	2512	-40.83	-13	-27.83	-54.66	-48.83	0.66	10.81	V
	3344	-53.01	-13	-40.01	-69.02	-62.23	0.76	12.13	V
Highest	1696	-31.37	-13	-18.37	-41.75	-38.42	0.53	9.73	H
	2544	-31.98	-13	-18.98	-45.46	-39.99	0.67	10.83	H
	3392	-54.84	-13	-41.84	-71.15	-64.2	0.77	12.28	H
	4248	-49.45	-13	-36.45	-67.06	-58.76	0.84	12.30	H
	1696	-30.68	-13	-17.68	-40.44	-37.73	0.53	9.73	V
	2544	-35.07	-13	-22.07	-48.92	-43.08	0.67	10.83	V
	3392	-57.42	-13	-44.42	-73.32	-66.78	0.77	12.28	V
	4248	-51.56	-13	-38.56	-70.44	-60.87	0.84	12.30	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	-59.78	-13	-46.78	-69.69	-66.73	0.53	9.63	H
	2472	-52.63	-13	-39.63	-66.07	-60.61	0.65	10.78	H
	3296	-59.00	-13	-46.00	-75.14	-68.08	0.76	11.99	H
	1648	-54.99	-13	-41.99	-64.61	-61.94	0.53	9.63	V
	2472	-53.74	-13	-40.74	-67.67	-61.72	0.65	10.78	V
	3296	-58.87	-13	-45.87	-74.98	-67.95	0.76	11.99	V
Middle	1672	-57.60	-13	-44.60	-67.69	-64.6	0.53	9.68	H
	2512	-56.66	-13	-43.66	-70.08	-64.66	0.66	10.81	H
	3344	-58.77	-13	-45.77	-74.97	-67.99	0.76	12.13	H
	1672	-54.32	-13	-41.32	-64.01	-61.32	0.53	9.68	V
	2512	-54.86	-13	-41.86	-68.69	-62.86	0.66	10.81	V
	3344	-58.37	-13	-45.37	-74.38	-67.59	0.76	12.13	V
Highest	1696	-56.68	-13	-43.68	-67.06	-63.73	0.53	9.73	H
	2544	-55.72	-13	-42.72	-69.2	-63.73	0.67	10.83	H
	3392	-58.56	-13	-45.56	-74.87	-67.92	0.77	12.28	H
	1696	-64.88	-13	-51.88	-74.64	-71.93	0.53	9.73	V
	2544	-59.77	-13	-46.77	-73.62	-67.78	0.67	10.83	V
	3392	-60.02	-13	-47.02	-75.92	-69.38	0.77	12.28	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)
Lowest	3702	-46.99	-13	-33.99	-63.98	-58.78	0.72	12.52	H
	5556	-54.67	-13	-41.67	-76.48	-66.84	1.00	13.17	H
	7404	-52.50	-13	-39.50	-77.61	-61.89	1.18	10.57	H
	3702	-46.61	-13	-33.61	-64.77	-58.4	0.72	12.52	V
	5556	-54.47	-13	-41.47	-76.4	-66.64	1.00	13.17	V
	7404	-52.76	-13	-39.76	-77.66	-62.15	1.18	10.57	V
Middle	3738	-47.78	-13	-34.78	-64.85	-59.58	0.70	12.50	H
	5604	-54.61	-13	-41.61	-76.33	-66.77	0.98	13.14	H
	7476	-52.05	-13	-39.05	-76.99	-61.31	1.18	10.44	H
	3738	-43.32	-13	-30.32	-61.57	-55.12	0.70	12.50	V
	5604	-53.38	-13	-40.38	-76.16	-65.54	0.98	13.14	V
	7476	-52.33	-13	-39.33	-77.3	-61.59	1.18	10.44	V
Highest	3822	-52.58	-13	-39.58	-69.85	-64.36	0.69	12.47	H
	5736	-55.05	-13	-42.05	-76.79	-67.12	0.99	13.06	H
	7644	-51.49	-13	-38.49	-76.7	-61.11	1.18	10.80	H
	3822	-46.74	-13	-33.74	-65.23	-58.52	0.69	12.47	V
	5736	-54.96	-13	-41.96	-76.91	-67.03	0.99	13.06	V
	7644	-51.84	-13	-38.84	-76.83	-61.46	1.18	10.80	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	3702	-51.98	-13	-38.98	-68.97	-63.77	0.72	12.52	H
	5553	-54.54	-13	-41.54	-76.39	-66.71	1.00	13.17	H
	7404	-52.37	-13	-39.37	-77.48	-61.76	1.18	10.57	H
	3702	-50.29	-13	-37.29	-68.45	-62.08	0.72	12.52	V
	5553	-54.71	-13	-41.71	-76.65	-66.88	1.00	13.17	V
	7404	-52.57	-13	-39.57	-77.47	-61.96	1.18	10.57	V
Middle	3762	-51.68	-13	-38.68	-68.83	-63.49	0.69	12.50	H
	5634	-54.53	-13	-41.53	-76.25	-66.67	0.98	13.12	H
	7524	-51.58	-13	-38.58	-76.5	-60.87	1.18	10.47	H
	3762	-52.09	-13	-39.09	-70.45	-63.9	0.69	12.50	V
	5634	-54.28	-13	-41.28	-76.17	-66.42	0.98	13.12	V
	7524	-52.25	-13	-39.25	-77.22	-61.54	1.18	10.47	V
Highest	3822	-55.94	-13	-42.94	-73.21	-67.72	0.69	12.47	H
	5733	-55.10	-13	-42.10	-76.82	-67.17	0.99	13.06	H
	7644	-51.67	-13	-38.67	-76.88	-61.29	1.18	10.80	H
	3822	-52.58	-13	-39.58	-71.07	-64.36	0.69	12.47	V
	5733	-54.83	-13	-41.83	-76.76	-66.9	0.99	13.06	V
	7644	-52.06	-13	-39.06	-77.05	-61.68	1.18	10.80	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	1648	-60.18	-13	-47.18	-70.09	-67.13	0.53	9.63	H
	2472	-60.32	-13	-47.32	-73.76	-68.3	0.65	10.78	H
	3296	-58.75	-13	-45.75	-74.89	-67.83	0.76	11.99	H
	1648	-54.00	-13	-41.00	-63.62	-60.95	0.53	9.63	V
	2472	-59.74	-13	-46.74	-73.67	-67.72	0.65	10.78	V
	3296	-58.80	-13	-45.80	-74.91	-67.88	0.76	11.99	V
Middle	1672	-60.38	-13	-47.38	-70.47	-67.38	0.53	9.68	H
	2512	-51.38	-13	-38.38	-64.8	-59.38	0.66	10.81	H
	3344	-58.44	-13	-45.44	-74.64	-67.66	0.76	12.13	H
	1672	-55.91	-13	-42.91	-65.6	-62.91	0.53	9.68	V
	2512	-60.14	-13	-47.14	-73.97	-68.14	0.66	10.81	V
	3344	-58.87	-13	-45.87	-74.88	-68.09	0.76	12.13	V
Highest	1688	-57.80	-13	-44.80	-68.05	-64.83	0.53	9.71	H
	2532	-60.57	-13	-47.57	-74.02	-68.58	0.66	10.82	H
	3376	-58.62	-13	-45.62	-74.89	-67.93	0.77	12.23	H
	1688	-53.56	-13	-40.56	-63.31	-60.59	0.53	9.71	V
	2532	-59.43	-13	-46.43	-73.26	-67.44	0.66	10.82	V
	3376	-58.72	-13	-45.72	-74.65	-68.03	0.77	12.23	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	3702	-48.30	-13	-35.30	-65.29	-60.09	0.72	12.52	H
	5553	-54.27	-13	-41.27	-76.12	-66.44	1.00	13.17	H
	7404	-52.23	-13	-39.23	-77.34	-61.62	1.18	10.57	H
	3702	-47.77	-13	-34.77	-65.93	-59.56	0.72	12.52	V
	5553	-54.58	-13	-41.58	-76.52	-66.75	1.00	13.17	V
	7404	-52.43	-13	-39.43	-77.33	-61.82	1.18	10.57	V
Middle	3756	-50.05	-13	-37.05	-67.16	-61.85	0.69	12.50	H
	5634	-54.36	-13	-41.36	-76.08	-66.5	0.98	13.12	H
	7512	-51.94	-13	-38.94	-76.81	-61.19	1.18	10.43	H
	3756	-48.96	-13	-35.96	-67.26	-60.76	0.69	12.50	V
	5634	-54.43	-13	-41.43	-76.32	-66.57	0.98	13.12	V
	7512	-51.36	-13	-38.36	-76.37	-60.61	1.18	10.43	V
Highest	3816	-47.43	-13	-34.43	-64.7	-59.22	0.69	12.47	H
	5724	-54.28	-13	-41.28	-76.03	-66.35	0.99	13.07	H
	7632	-51.74	-13	-38.74	-76.92	-61.33	1.18	10.77	H
	3816	-48.85	-13	-35.85	-67.34	-60.64	0.69	12.47	V
	5724	-54.51	-13	-41.51	-76.47	-66.58	0.99	13.07	V
	7632	-51.93	-13	-38.93	-76.86	-61.52	1.18	10.77	V

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