FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2025-1
FCC ID	:	IHDT56YE1
STANDARD	:	47 CFR Part 2, 22(H), 24(E), 27(L)
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)

The product was received on May 14, 2019 and completely tested on Jun. 05, 2019. We, Sporton International (ShenZhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown 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 (ShenZhen) Inc., the test report shall not be reproduced except in full.

Derreck Chen

Reviewed by: Derreck Chen / Supervisor

Eric Shih

Approved by: Eric Shih / Manager

ACCREDITED Cert #5145.01

Sporton International (ShenZhen) Inc.

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China

TABLE OF CONTENTS

REVISION HISTORY **3**

SUMMARY OF TEST RESULT **4**

1 GENERAL DESCRIPTION **5**

1.1 Applicant 5
1.2 Product Feature of Equipment Under Test 5
1.3 Product Specification of Equipment Under Test 6
1.4 Modification of EUT 6
1.5 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator 7
1.6 Testing Location 8
1.7 Applicable Standards 8
1.8 Specification of Accessory 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
2.5 Frequency List of Low/Middle/High Channels 12

3 CONDUCTED TEST RESULT **13**

3.1 Measuring Instruments 13
3.2 Test Setup 13
3.3 Test Result of Conducted Test 13
3.4 Conducted Output Power and ERP/EIRP 14
3.5 Peak-to-Average Ratio 15
3.6 99% Occupied Bandwidth and 26dB Bandwidth Measurement 16
3.7 Conducted Band Edge 17
3.8 Conducted Spurious Emission 18
3.9 Frequency Stability 19

4 RADIATED TEST ITEMS **20**

4.1 Measuring Instruments 20
4.2 Test Setup 20
4.3 Test Result of Radiated Test 20
4.4 Field Strength of Spurious Radiation Measurement 21

5 LIST OF MEASURING EQUIPMENT **22**

6 UNCERTAINTY OF EVALUATION **23**

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
FG951427A	Rev. 01	Initial issue of report	Jun. 21, 2019

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)(5)	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	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 27.30 dB at 2510.000 MHz

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago, IL60654 USA

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2025-1
FCC ID	IHDT56YE1
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+(16QAM uplink is not supported)/LTE WLAN 2.4GHz 802.11b/g/n HT20 Bluetooth BR/EDR/LE FM Receiver/GNSS
IMEI Code	Conducted: 354170100019630/354170100024689 Radiation: 354170100019580/354170100024630
HW Version	V1.2
SW Version	PTA29.29
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are four types of EUT, the differences between them are for memory, sample 1/2 is 2+32GB capacity and sample 3/4 is 4+64GB capacity. And sample 1/4 is dual SIM card, sample 2/3 is single SIM card. According to the difference, we choose sample 1 to perform full tests

1.3 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: 33.15 dBm 1900: 30.58 dBm **WCDMA:** Band V: 23.15 dBm Band II: 23.04 dBm Band IV: 22.85 dBm
Antenna Type	LOOP Antenna
Antenna Gain	Cellular Band: -2.01 dBi PCS Band: -2.11 dBi AWS Band: -1.96 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

1.4 Modification of EUT

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

1.5 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	0.7925	0.0023 ppm	244KGXW
Part 22H	GSM850 EDGE class 8	8PSK	0.1932	0.0027 ppm	237KG7W
Part 22H	WCDMA Band V RMC 12.2Kbps	BPSK	0.0793	0.0072 ppm	4M19F9W
Part 24E	GSM1900 GSM	GMSK	0.7031	0.0015 ppm	244KGXW
Part 24E	GSM1900 EDGE class 8	8PSK	0.2541	0.0014 ppm	241KG7W
Part 24E	WCDMA Band II RMC 12.2Kbps	BPSK	0.1239	0.0043 ppm	4M17F9W
Part 27L	WCDMA Band IV RMC 12.2Kbps	BPSK	0.1227	0.0058 ppm	4M18F9W

1.6 Testing Location

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-SZ	CN1256	421272

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH06-KS	CN1257	314309

1.7 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 C63.26-2015
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- 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.

1.8 Specification of Accessory

Specification of Accessory				
AC Adapter 1(US)	**Brand Name**	Motorola(Achel)	**Model Name**	SC-61
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc, 1000mA		
AC Adapter 1(AR)	**Brand Name**	Motorola(Achel)	**Model Name**	SC-64
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc, 1000mA		
AC Adapter 1(Chile)	**Brand Name**	Motorola(Achel)	**Model Name**	SC-62
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc, 1000mA		
AC Adapter 2(US)	**Brand Name**	Motorola(Chenyang)	**Model Name**	SC-61
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc, 1000mA		
AC Adapter 2(AR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	SC-64
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc, 1000mA		
AC Adapter 3(BR)	**Brand Name**	Motorola(Tenpao)	**Model Name**	SC-47
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5Vdc, 2000mA		
AC Adapter 4(BR)	**Brand Name**	Motorola(Salom)	**Model Name**	SC-47
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5Vdc, 2000mA		
AC Adapter 4(BR)	**Brand Name**	Motorola(Salom/Flex)	**Model Name**	SC-47
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5Vdc, 2000mA		
Battery	**Brand Name**	Motorola(SCUD)	**Model Name**	KC40
	Power Rating	3.8Vdc,3000mAh	**Type**	Li-ion
Earphone	**Brand Name**	Motorola(JUWEI)	**Model Name**	EL09-IN
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
USB Cable 1	**Brand Name**	Motorola(SUNTOPS)	**Model Name**	I-CE
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		
USB Cable 2	**Brand Name**	Motorola(Saibao)	**Model Name**	I-CE
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		
USB Cable 3	**Brand Name**	Motorola(I SHENG)	**Model Name**	SKN6472A
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		

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 v03r01 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:

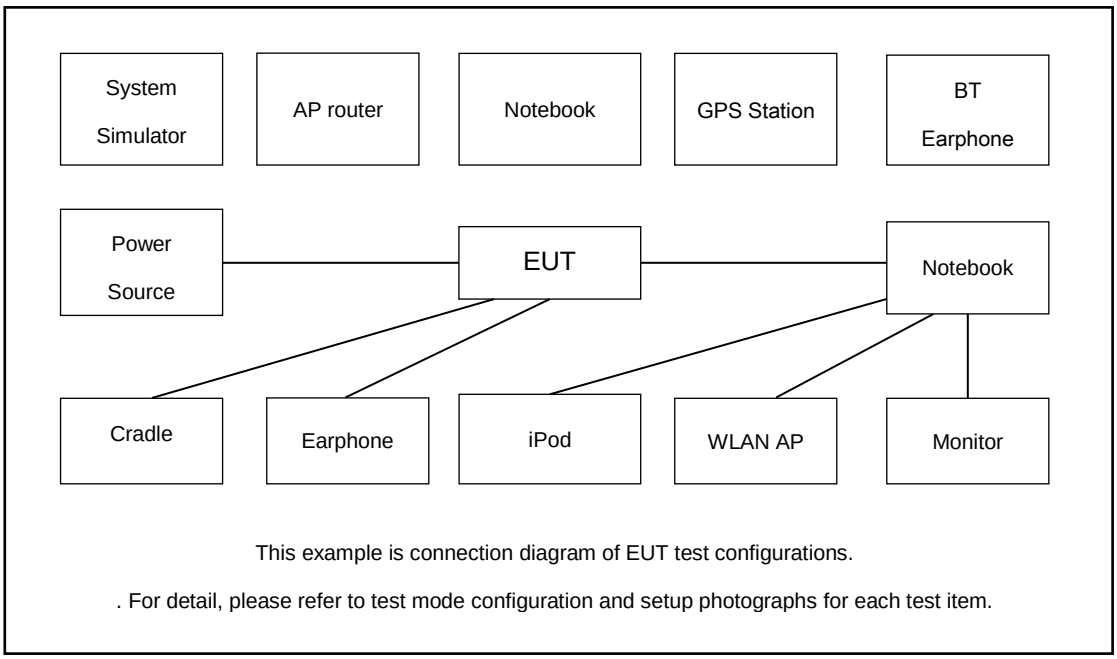
1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V.
2. 30 MHz to 10th harmonic for WCDMA Band IV.
3. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II.

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



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW INSTEK	GPD-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 4.0 dB and a 10dB attenuator.

Example :

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

= 4.0 + 10 = 14.0 (dB)

2.5 Frequency List of Low/Middle/High Channels

Frequency List				
Band	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
GSM850	Channel	128	189	251
	Frequency	824.2	836.4	848.8
WCDMA Band V	Channel	4132	4182	4233
	Frequency	826.4	836.4	846.6
GSM1900	Channel	512	661	810
	Frequency	1850.2	1880.0	1909.8
WCDMA Band II	Channel	9262	9400	9538
	Frequency	1852.4	1880.0	1907.6
WCDMA Band IV	Channel	1312	1413	1513
	Frequency	1712.4	1732.6	1752.6

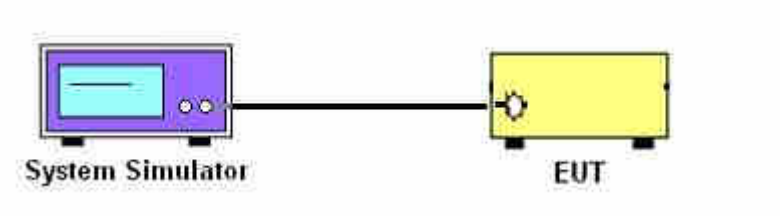
3 Conducted Test Result

3.1 Measuring Instruments

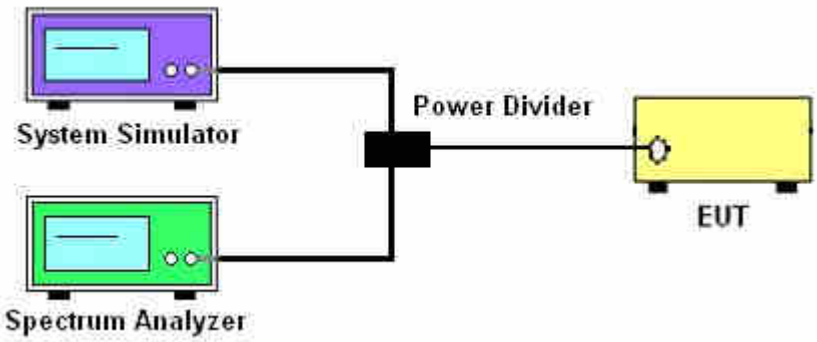
See list of measuring instruments of this test report.

3.2 Test Setup

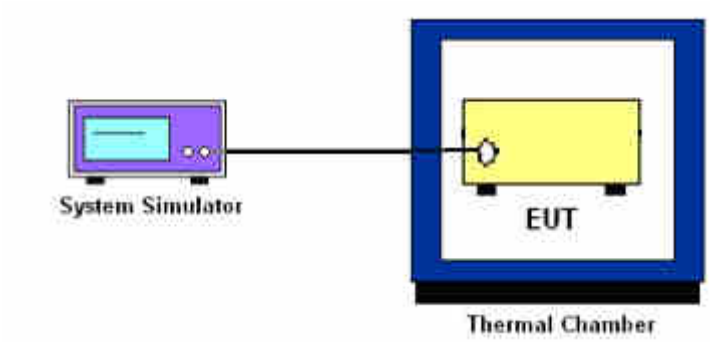
3.2.1 Conducted Output Power



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 testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

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 ANSI C63.26 Section 5.2.3.4 (CCDF).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

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 ANSI C63.26 Section 5.4
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 ANSI C63.26 section 5.7
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)

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 ANSI C63.26 section 5.7
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)

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 ANSI C63.26 section 5.6.4
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 step 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 ANSI C63.26 section 5.6.5
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 for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

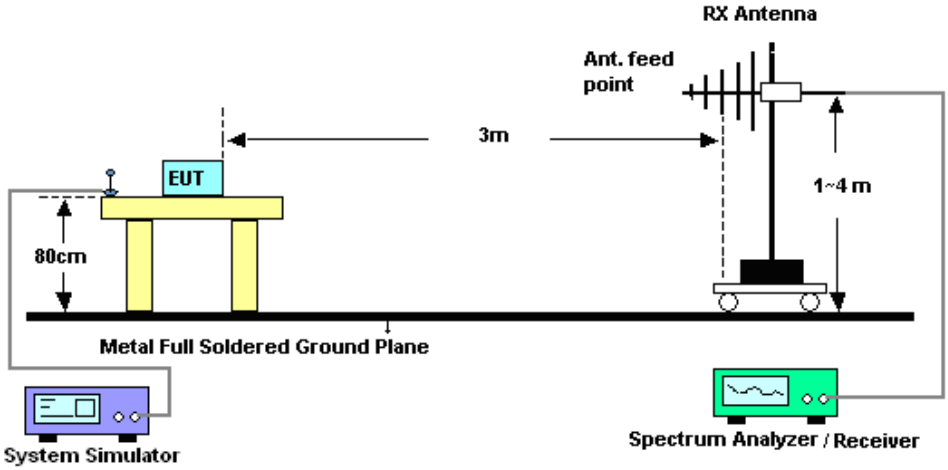
4 Radiated Test Items

4.1 Measuring Instruments

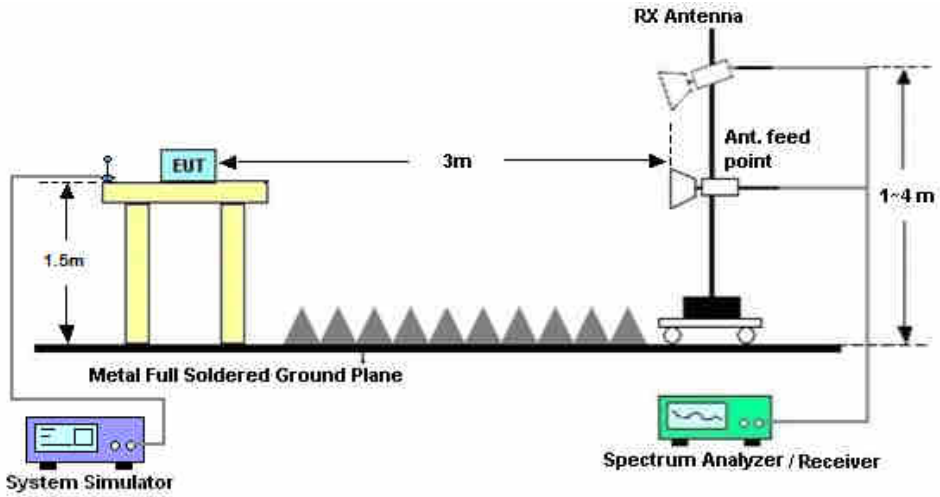
See list of measuring instruments of this test report.

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 ANSI C63.26 Section 5.5
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)

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 18, 2019	Jun. 01, 2019~ Jun. 05, 2019	Apr. 17, 2020	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Dec. 22, 2018	Jun. 01, 2019~ Jun. 05, 2019	Dec. 21, 2019	Conducted (TH01-SZ)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471084	10Hz-44GHz	Jun. 25, 2018	May 25, 2019~ May 26, 2019	Jun. 24, 2019	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 28, 2018	May 25, 2019~ May 26, 2019	Dec. 27, 2019	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 20, 2018	May 25, 2019~ May 26, 2019	Oct. 19, 2019	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2019	May 25, 2019~ May 26, 2019	Jan. 04, 2020	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	187289	9KHz ~1GHZ	Aug. 06, 2018	May 25, 2019~ May 26, 2019	Aug. 05, 2019	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Apr. 17, 2019	May 25, 2019~ May 26, 2019	Apr. 16, 2020	Radiation (03CH06-KS)
Amplifier	MITEQ	TTA1840-35 -HG	2014749	18~40GHz	Jan. 14, 2019	May 25, 2019~ May 26, 2019	Jan. 13, 2020	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270203	500MHz~26.5GHz	Apr. 15, 2019	May 25, 2019~ May 26, 2019	Apr. 14, 2020	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 25, 2019~ May 26, 2019	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 25, 2019~ May 26, 2019	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 25, 2019~ May 26, 2019	NCR	Radiation (03CH06-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.5dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.1dB**

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	32.92	33.15	32.90	30.58	30.49	30.13
GPRS class 8	32.90	33.12	32.86	30.55	30.45	30.09
GPRS class 10	31.88	32.10	31.87	29.46	29.37	29.00
GPRS class 11	29.77	30.00	29.78	27.35	27.26	26.91
GPRS class 12	28.65	28.88	28.66	26.29	26.20	25.89
EGPRS class 8	27.02	26.92	26.98	25.88	25.94	26.16
EGPRS class 10	26.04	26.04	26.02	24.98	25.02	25.12
EGPRS class 11	23.93	24.00	23.89	22.96	23.11	23.12
EGPRS class 12	22.84	22.94	22.98	21.97	22.02	22.09

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 12.2K	23.12	23.07	23.08	22.90	22.95	23.02	22.79	22.83	22.76
RMC 12.2K	23.15	23.10	23.09	22.92	22.99	23.04	22.80	22.85	22.79
HSDPA Subtest-1	22.18	22.12	22.13	21.82	21.93	21.92	21.67	21.74	21.70
HSDPA Subtest-2	22.12	22.02	22.00	21.68	21.84	21.88	21.60	21.64	21.64
HSDPA Subtest-3	21.60	21.56	21.49	21.20	21.37	21.40	21.15	21.14	21.14
HSDPA Subtest-4	21.61	21.48	21.51	21.24	21.37	21.32	21.05	21.11	21.11
DC-HSDPA Subtest-1	22.09	22.10	22.08	21.82	21.91	21.95	21.60	21.64	21.68
DC-HSDPA Subtest-2	22.13	22.08	22.11	21.80	21.95	21.89	21.62	21.60	21.62
DC-HSDPA Subtest-3	21.64	21.58	21.49	21.41	21.43	21.49	21.18	21.23	21.20
DC-HSDPA Subtest-4	21.61	21.52	21.52	21.39	21.38	21.40	21.15	21.18	21.21
HSUPA Subtest-1	20.22	20.11	20.08	19.83	19.96	19.99	19.66	19.72	19.69
HSUPA Subtest-2	20.18	20.10	20.04	19.78	19.90	19.99	19.63	19.68	19.68
HSUPA Subtest-3	21.18	21.11	21.09	20.81	20.92	20.90	20.66	20.72	20.69
HSUPA Subtest-4	19.71	19.51	19.60	19.29	19.41	19.45	19.09	19.23	19.22
HSUPA Subtest-5	21.10	21.00	21.00	20.70	20.80	20.80	20.70	20.60	20.60

ERP/EIRP

GSM850 (G_T - L_C= -2.01 dB)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	32.92	33.15	32.90
Conducted Power (Watts)	1.9588	2.0654	1.9498
ERP(dBm)	28.76	28.99	28.74
ERP(Watts)	0.7516	0.7925	0.7482

EDGE850 (G_T - L_C= -2.01 dB)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	27.02	26.92	26.98
Conducted Power (Watts)	0.5035	0.4920	0.4989
ERP(dBm)	22.86	22.76	22.82
ERP(Watts)	0.1932	0.1888	0.1914

GSM1900 (G_T - L_C= -2.11 dB)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	30.58	30.49	30.13
Conducted Power (Watts)	1.1429	1.1194	1.0304
EIRP(dBm)	28.47	28.38	28.02
EIRP(Watts)	0.7031	0.6887	0.6339

EDGE1900 (G_T - L_C= -2.11 dB)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	25.88	25.94	26.16
Conducted Power (Watts)	0.3873	0.3926	0.4130
EIRP(dBm)	23.77	23.83	24.05
EIRP(Watts)	0.2382	0.2415	0.2541

WCDMA Band V (G_T - L_C = -2.01 dB)			
Channel	4132	4182	4233
	(Low)	(Mid)	(High)
Frequency (MHz)	826.4	836.4	846.6
Conducted Power (dBm)	23.15	23.10	23.09
Conducted Power (Watts)	0.2065	0.2042	0.2037
ERP(dBm)	18.99	18.94	18.93
ERP(Watts)	0.0793	0.0783	0.0782

WCDMA Band II (G_T - L_C = -2.11 dB)			
Channel	9262	9400	9538
	(Low)	(Mid)	(High)
Frequency (MHz)	1852.4	1880	1907.6
Conducted Power (dBm)	22.92	22.99	23.04
Conducted Power (Watts)	0.1959	0.1991	0.2014
EIRP(dBm)	20.81	20.88	20.93
EIRP(Watts)	0.1205	0.1225	0.1239

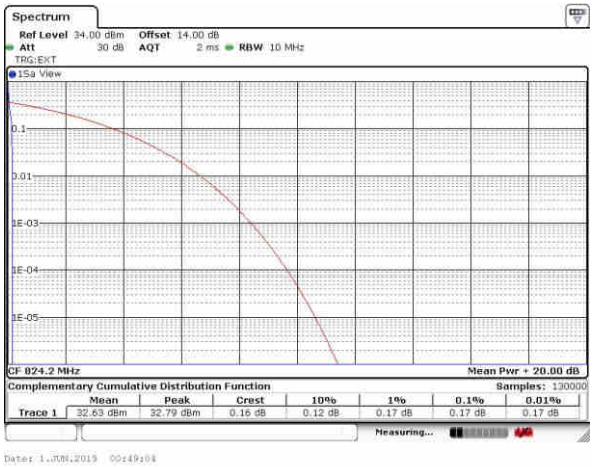
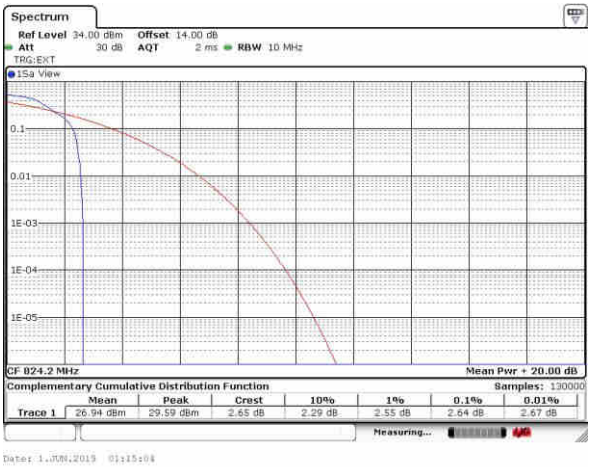
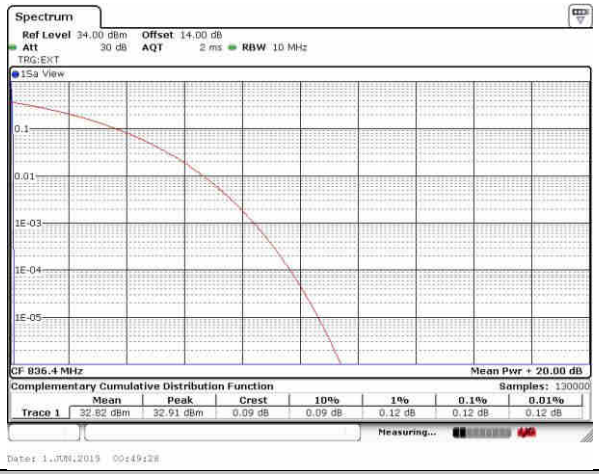
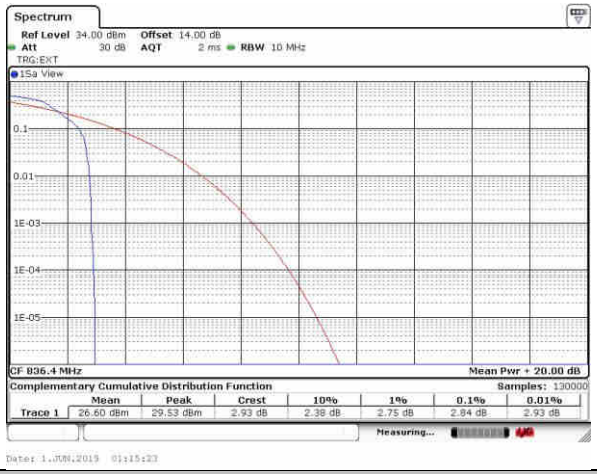
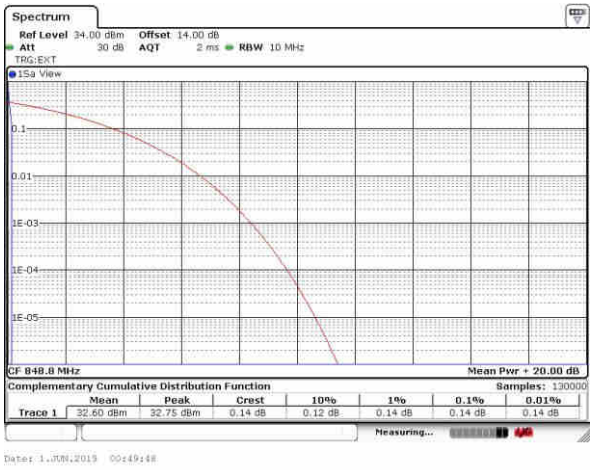
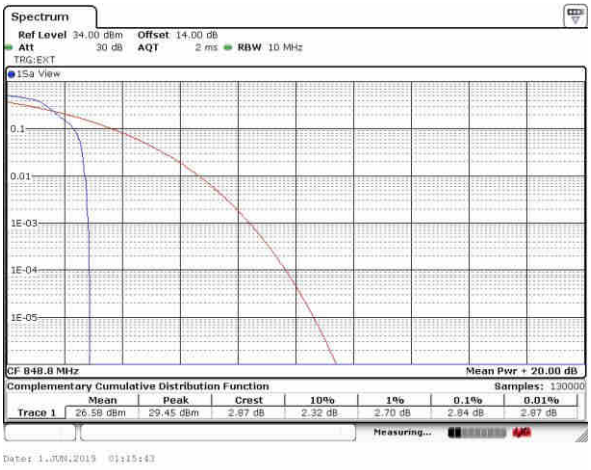
WCDMA Band IV (G_T - L_C = -1.96 dB)			
Channel	1312	1413	1513
	(Low)	(Mid)	(High)
Frequency (MHz)	1712.4	1732.6	1752.6
Conducted Power (dBm)	22.80	22.85	22.79
Conducted Power (Watts)	0.1905	0.1928	0.1901
EIRP(dBm)	20.84	20.89	20.83
EIRP(Watts)	0.1213	0.1227	0.1211

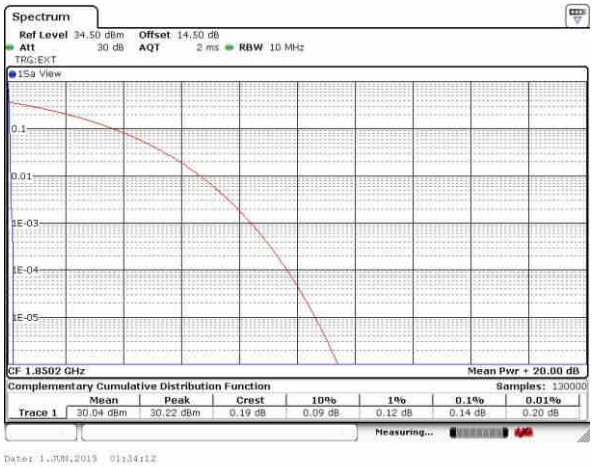
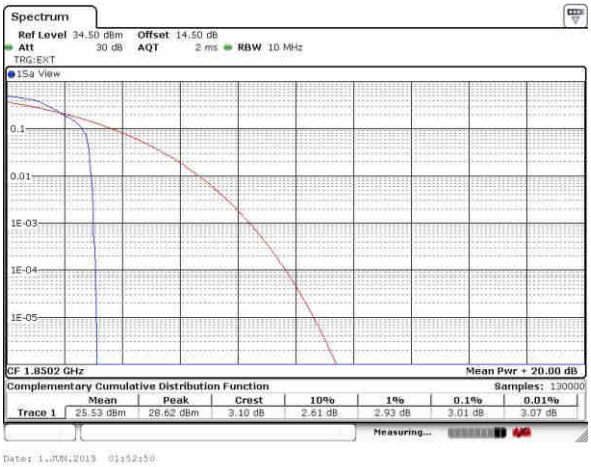
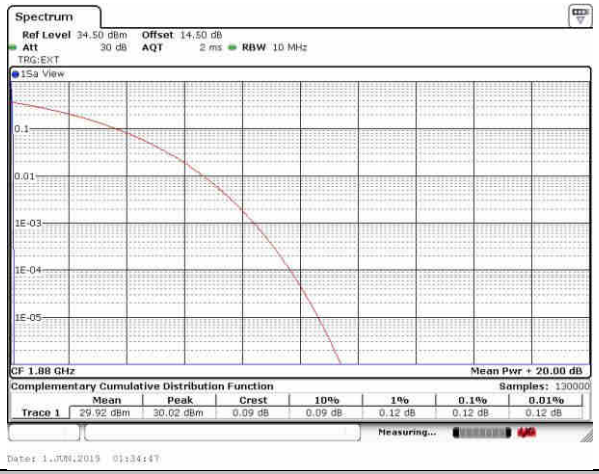
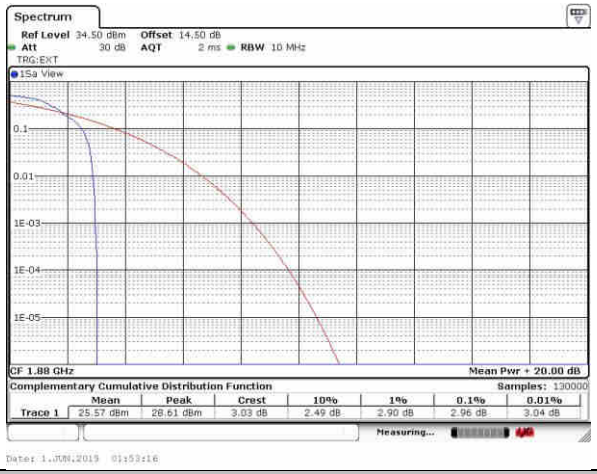
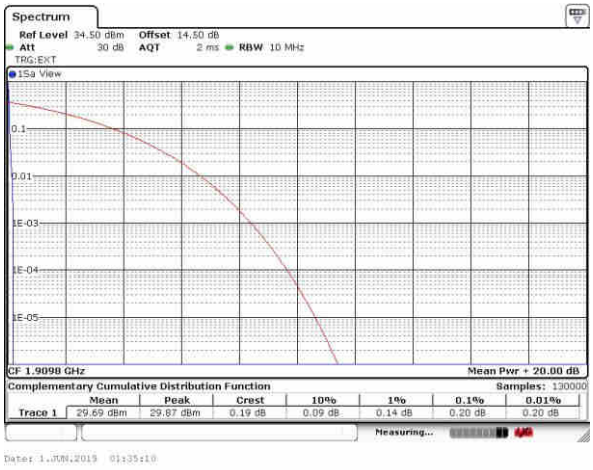
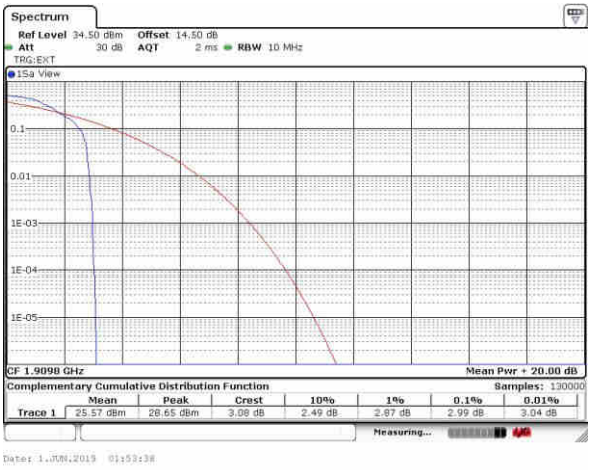
Peak-to-Average Ratio

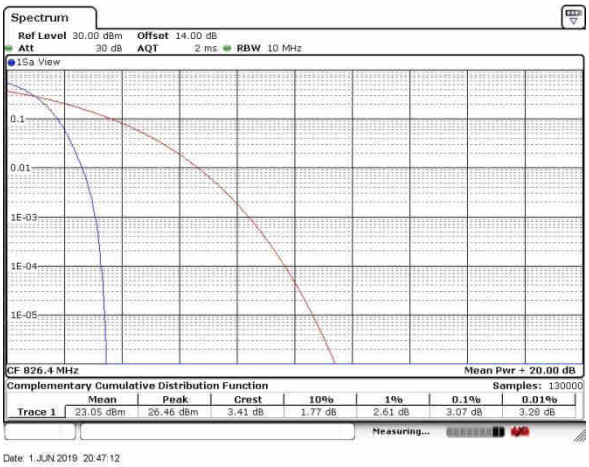
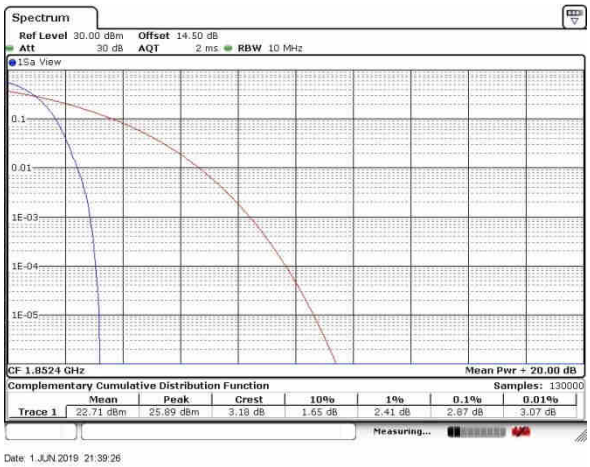
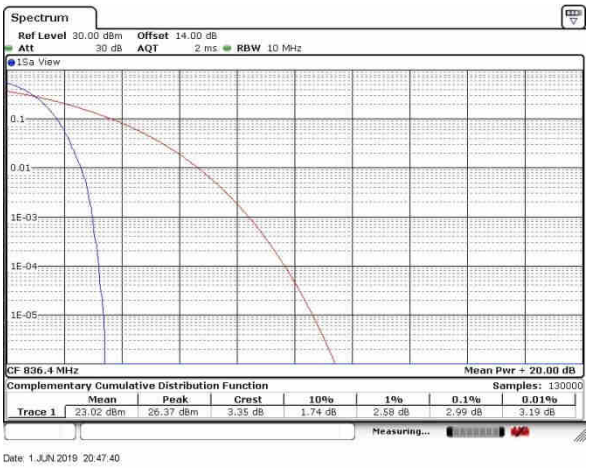
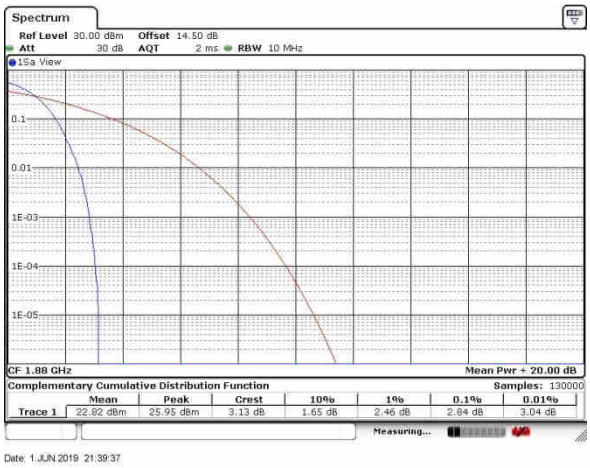
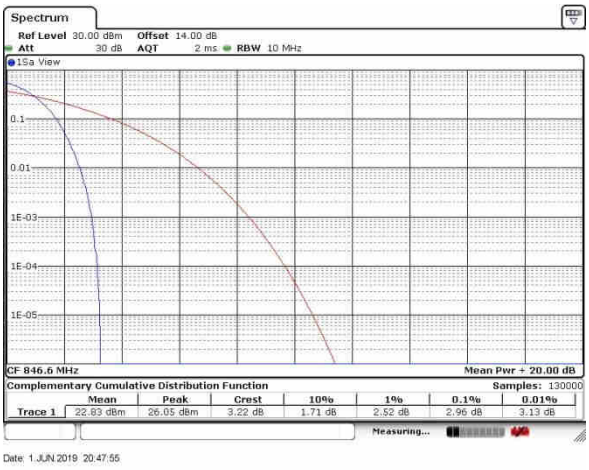
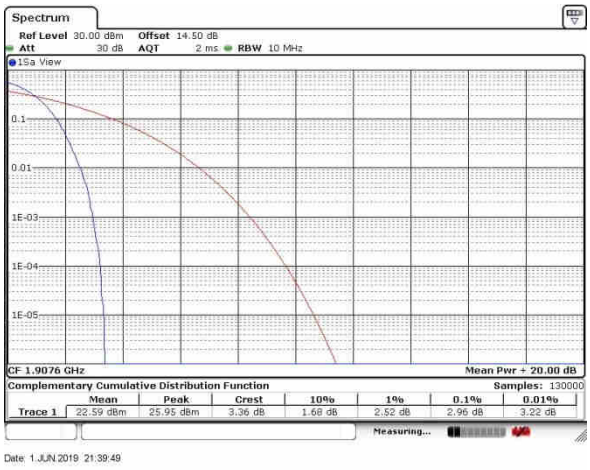
Mode	GSM850(dB)		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.17	2.64	PASS
Middle CH	0.12	2.84	
Highest CH	0.14	2.84	

Mode	GSM1900(dB)		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.14	3.01	PASS
Middle CH	0.12	2.96	
Highest CH	0.20	2.99	

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	3.07	2.87	2.87	PASS
Middle CH	2.99	2.84	2.93	
Highest CH	2.96	2.96	2.84	

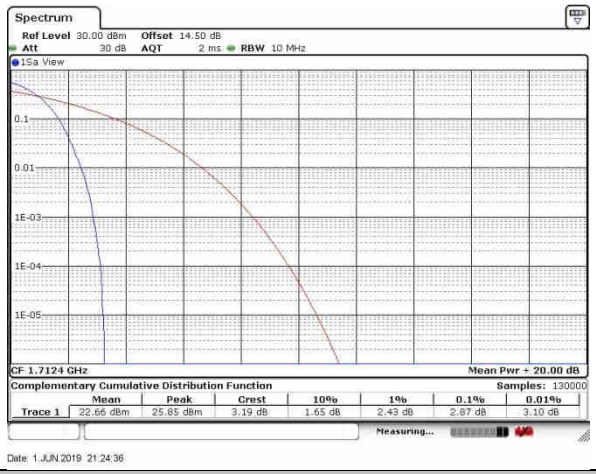
GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

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

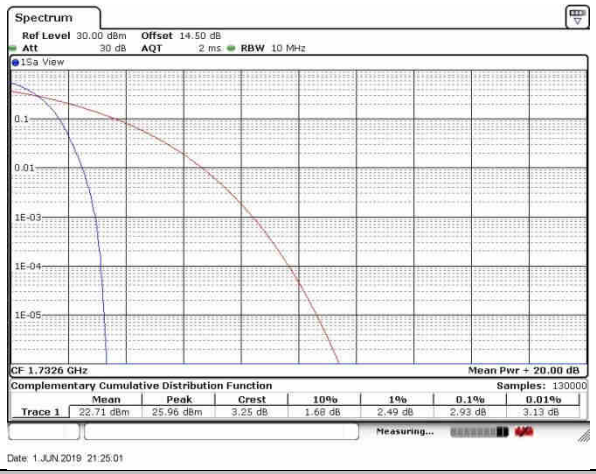
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

WCDMA Band IV (RMC 12.2Kbps)

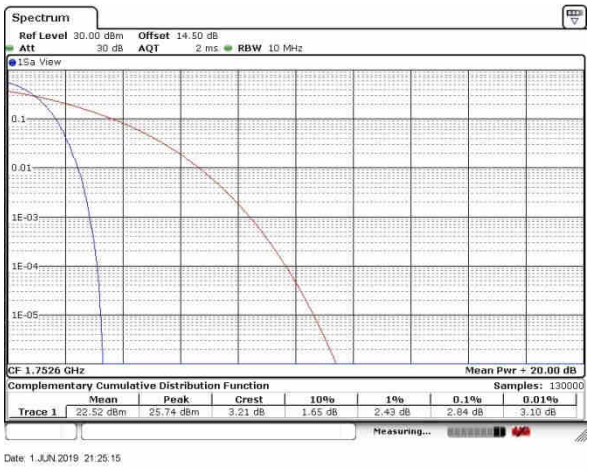
Lowest Channel



Middle Channel



Highest Channel

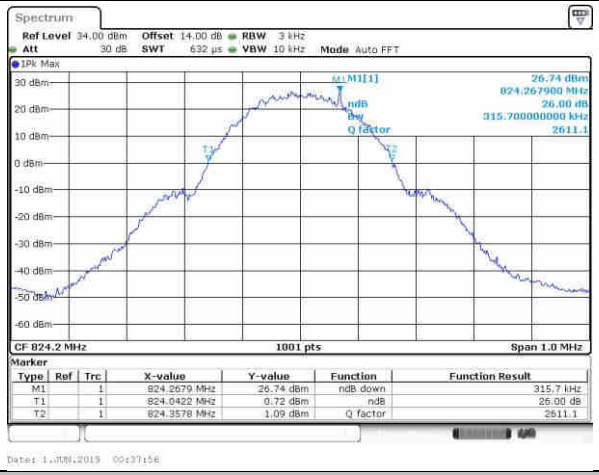
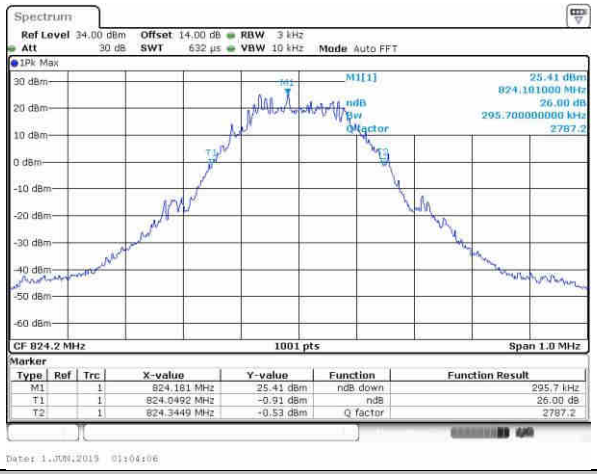
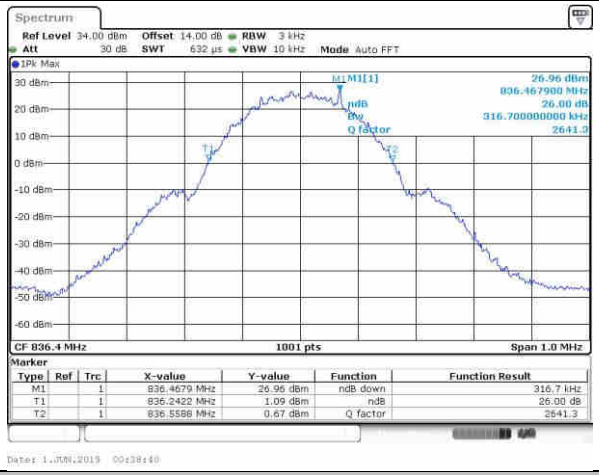
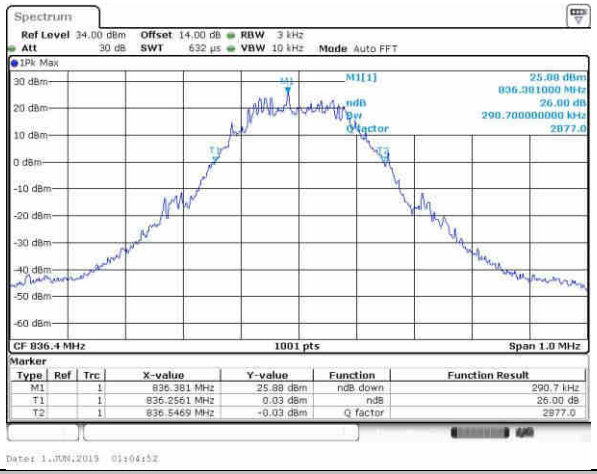
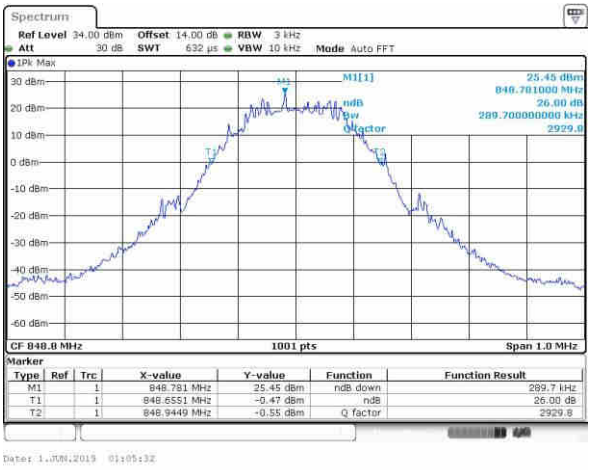


26dB Bandwidth

Mode	GSM850(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.316	0.296
Middle CH	0.317	0.291
Highest CH	0.316	0.290

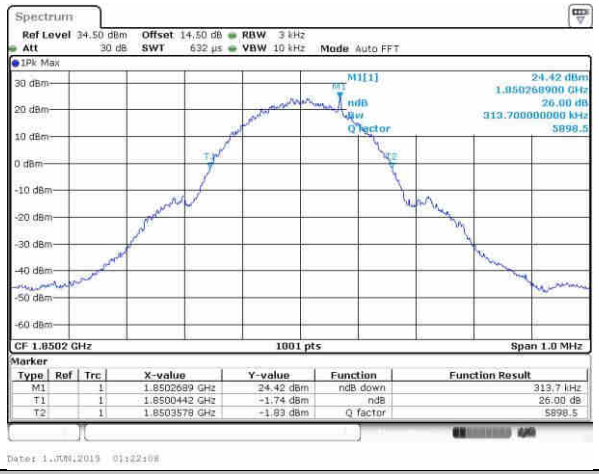
Mode	GSM1900(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.314	0.294
Middle CH	0.315	0.308
Highest CH	0.315	0.300

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	4.695	4.725	4.715
Middle CH	4.695	4.715	4.705
Highest CH	4.705	4.705	4.705

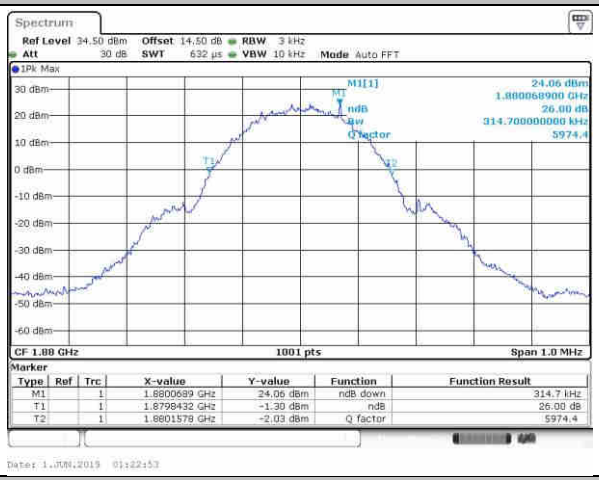
GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

GSM1900 (GSM)

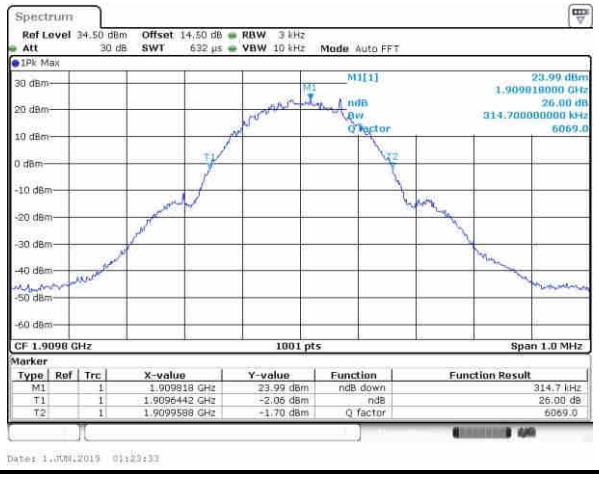
Lowest Channel



Middle Channel

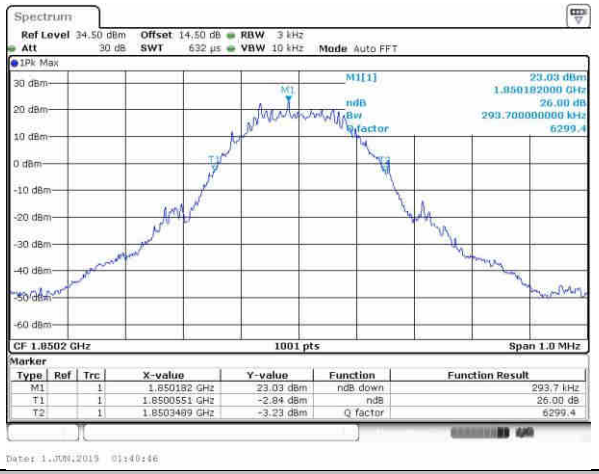


Highest Channel

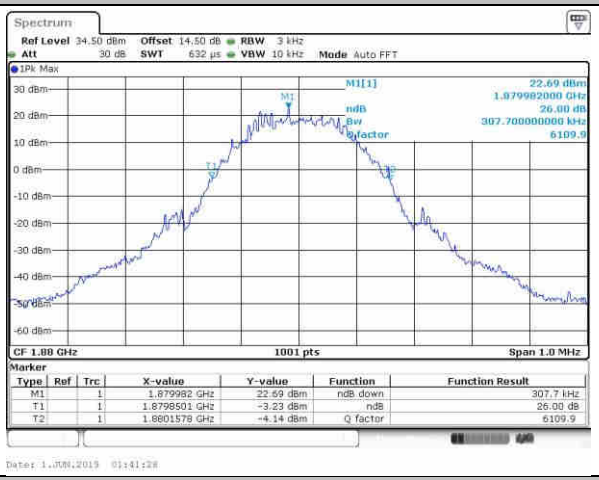


GSM1900 (EDGE class 8)

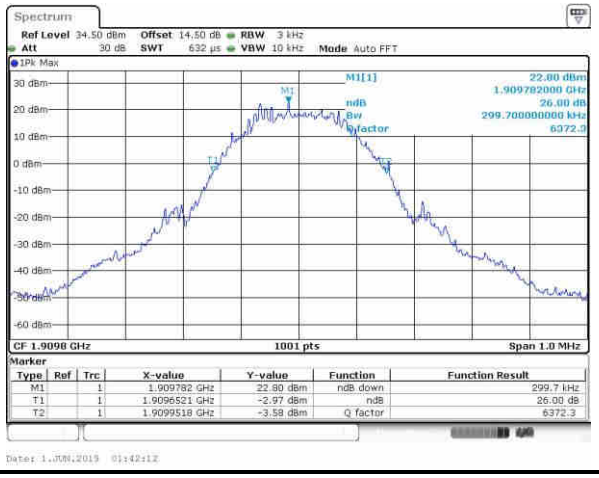
Lowest Channel

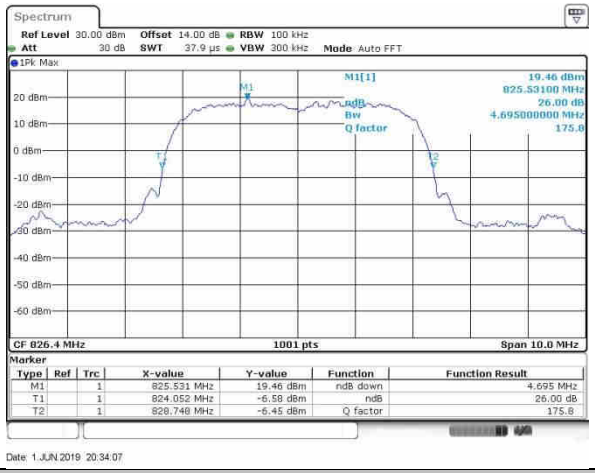
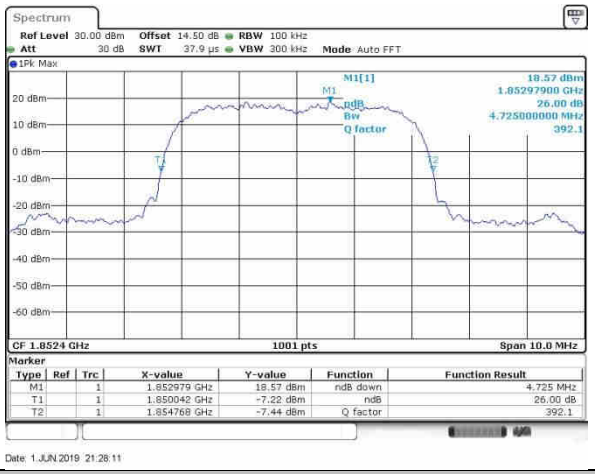
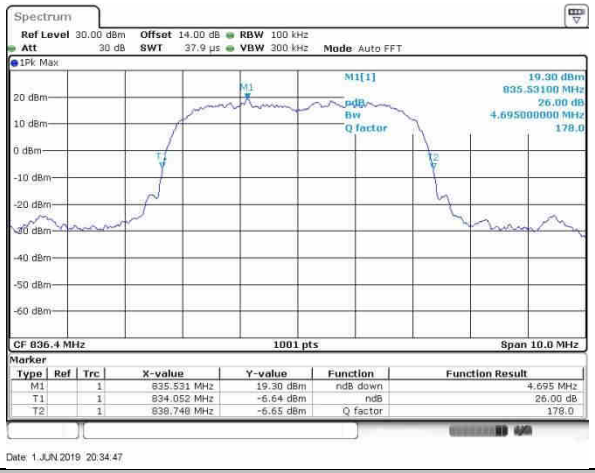
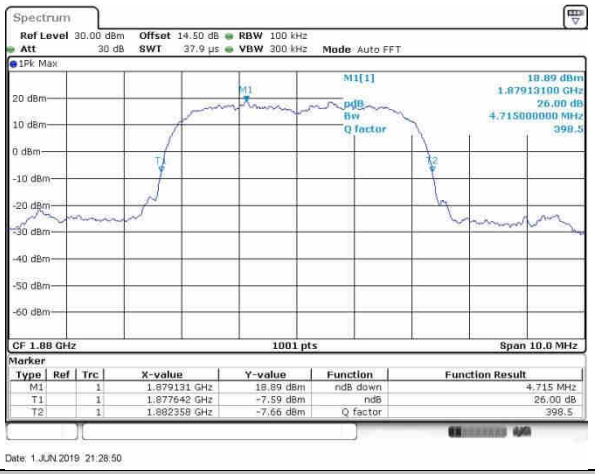
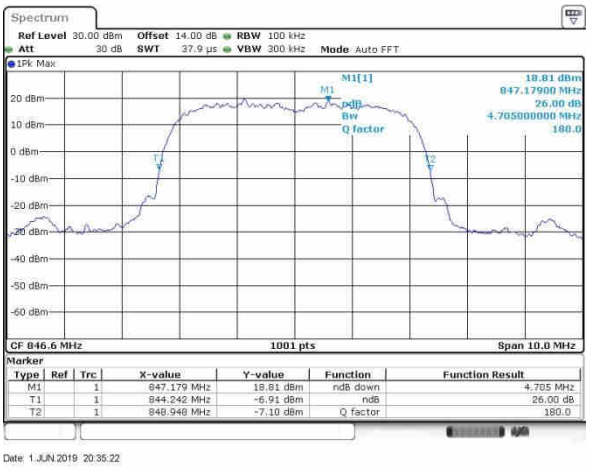
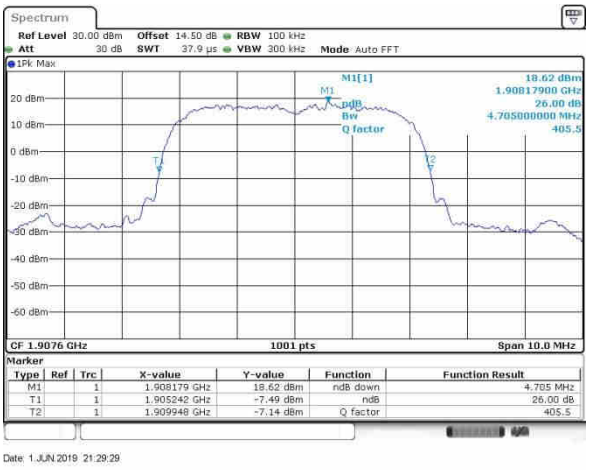


Middle Channel



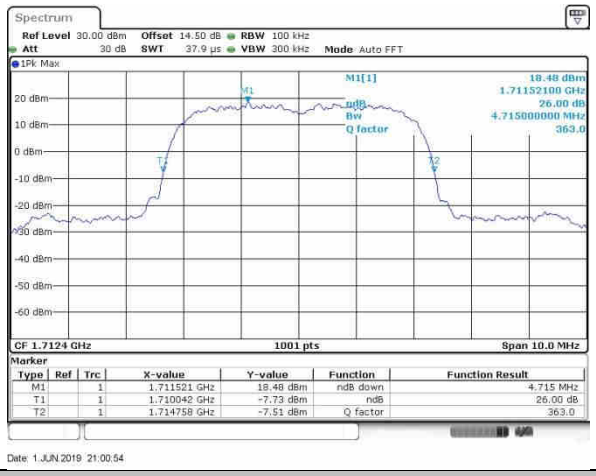
Highest Channel



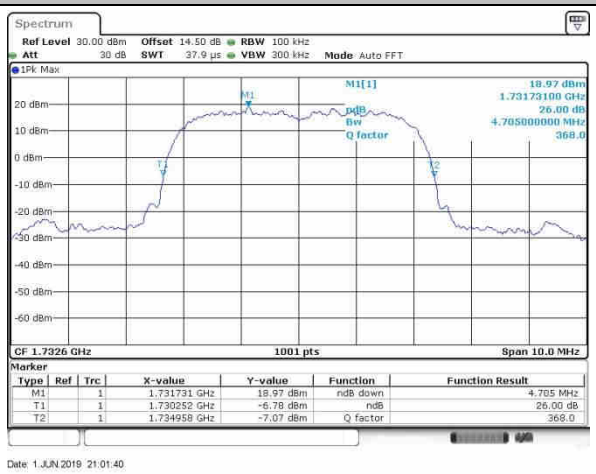
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

WCDMA Band IV (RMC 12.2Kbps)

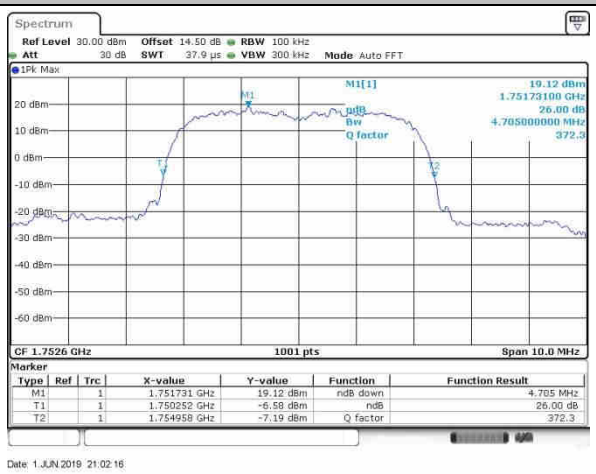
Lowest Channel



Middle Channel



Highest Channel

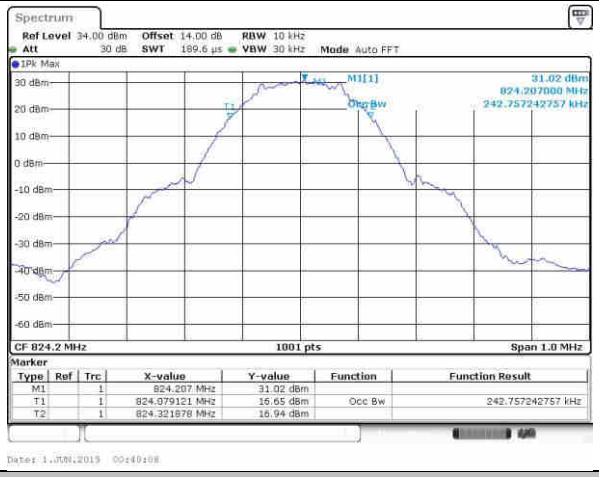
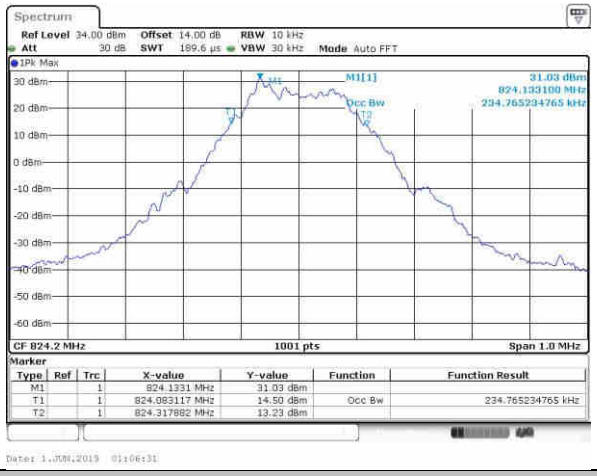
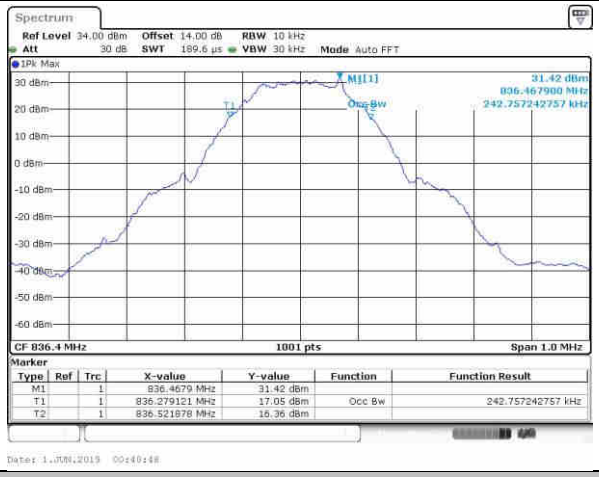
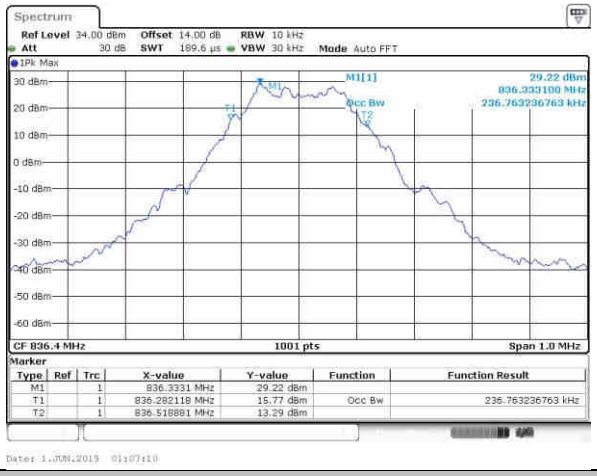
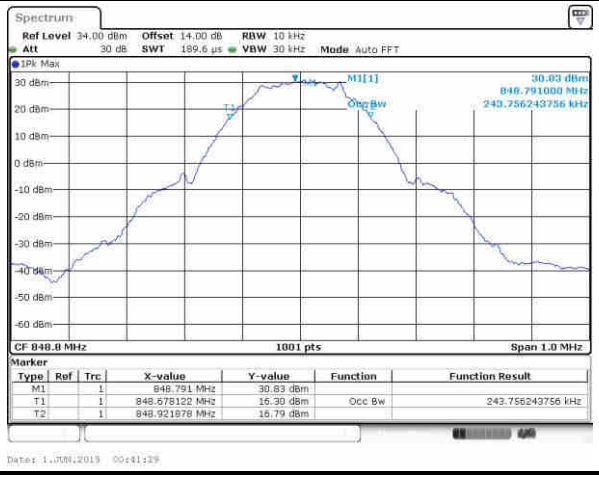
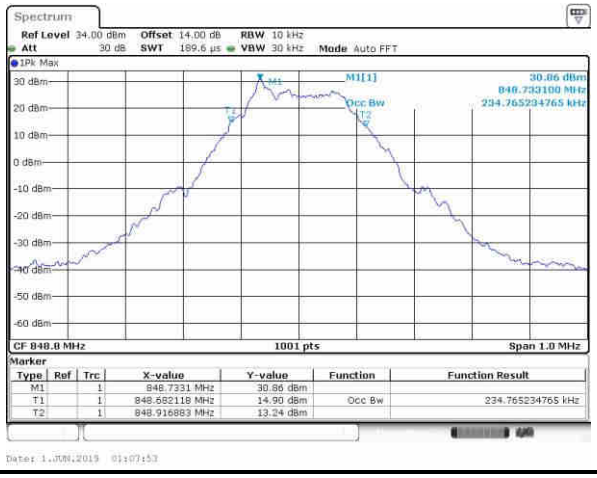


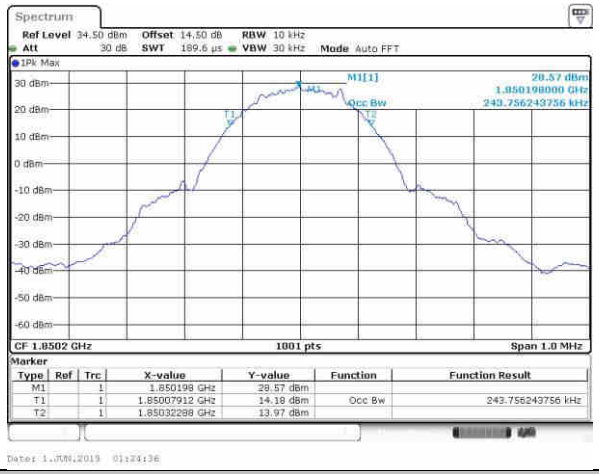
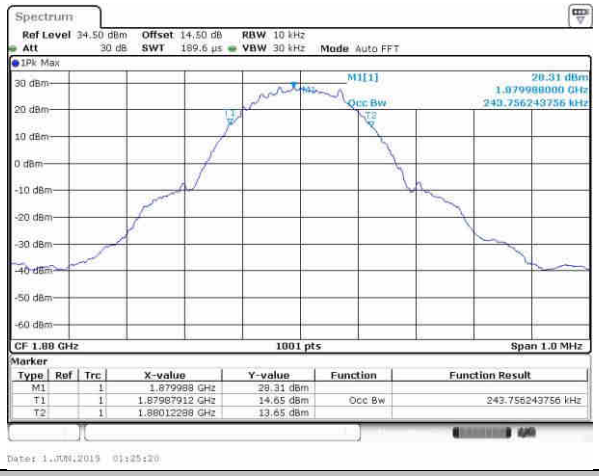
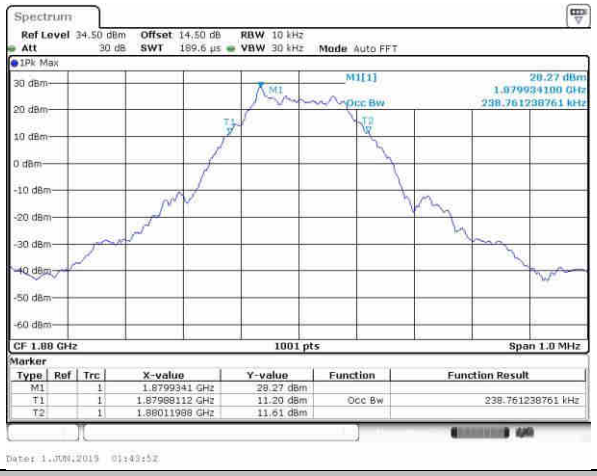
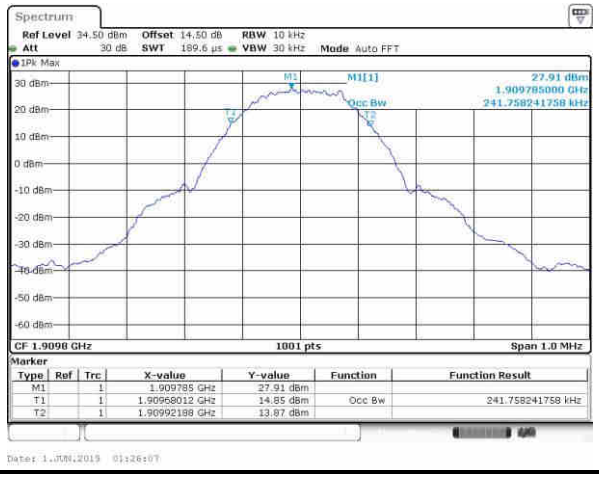
Occupied Bandwidth

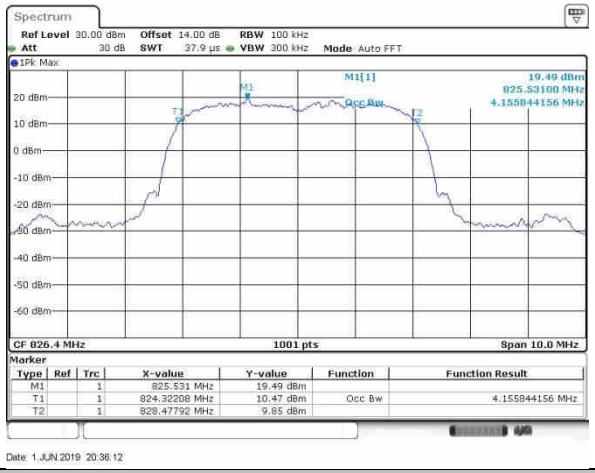
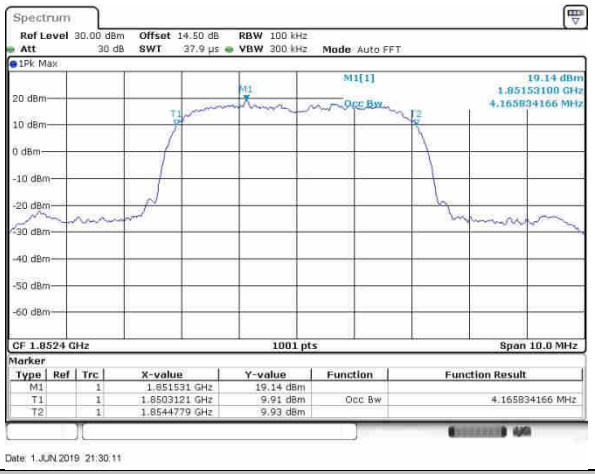
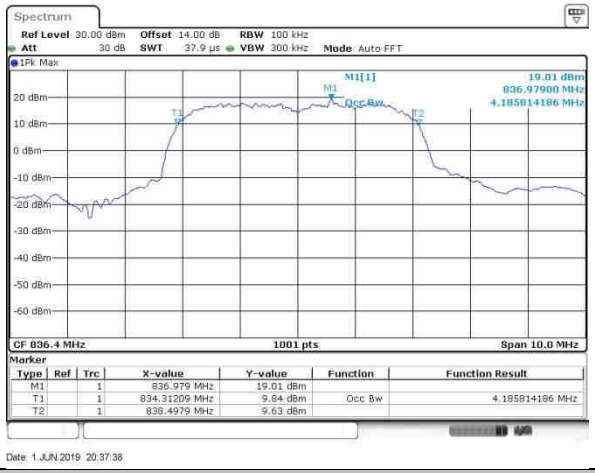
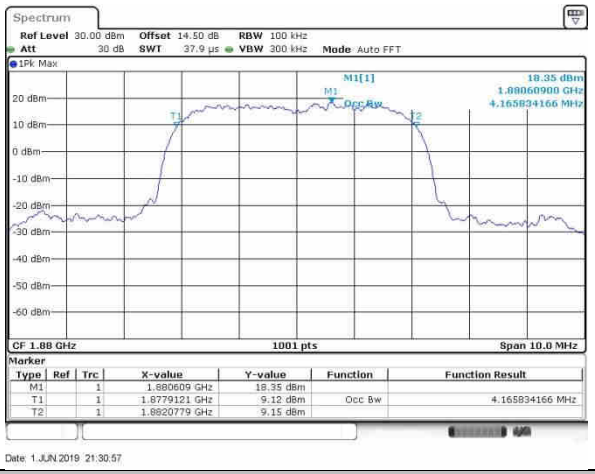
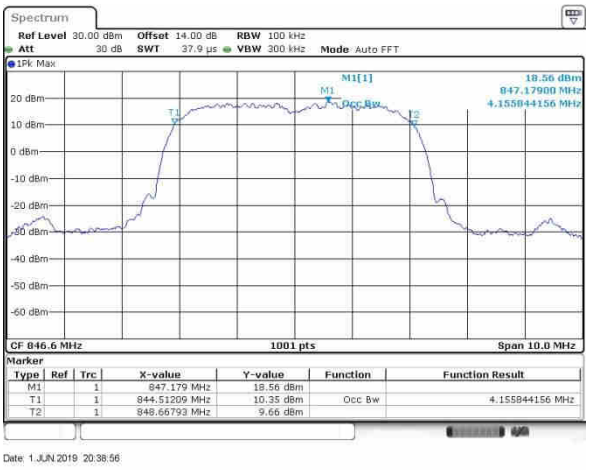
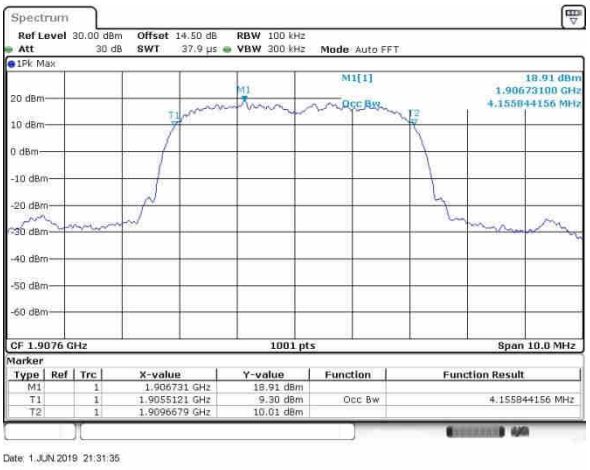
Mode	GSM850(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.243	0.235
Middle CH	0.243	0.237
Highest CH	0.244	0.235

Mode	GSM1900(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.244	0.236
Middle CH	0.244	0.239
Highest CH	0.242	0.241

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	4.16	4.17	4.18
Middle CH	4.19	4.17	4.17
Highest CH	4.16	4.16	4.18

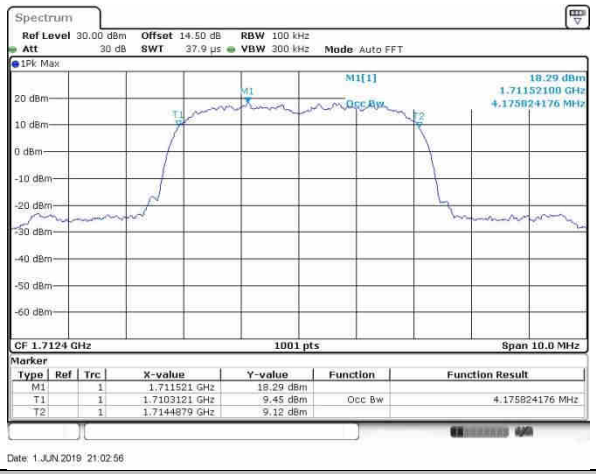
GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

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

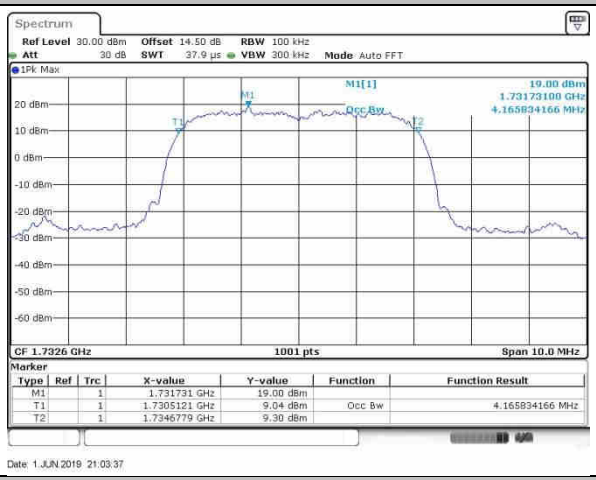
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

WCDMA Band IV (RMC 12.2Kbps)

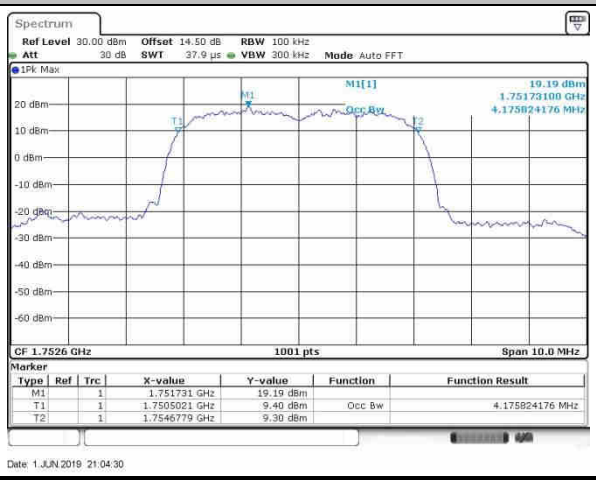
Lowest Channel



Middle Channel



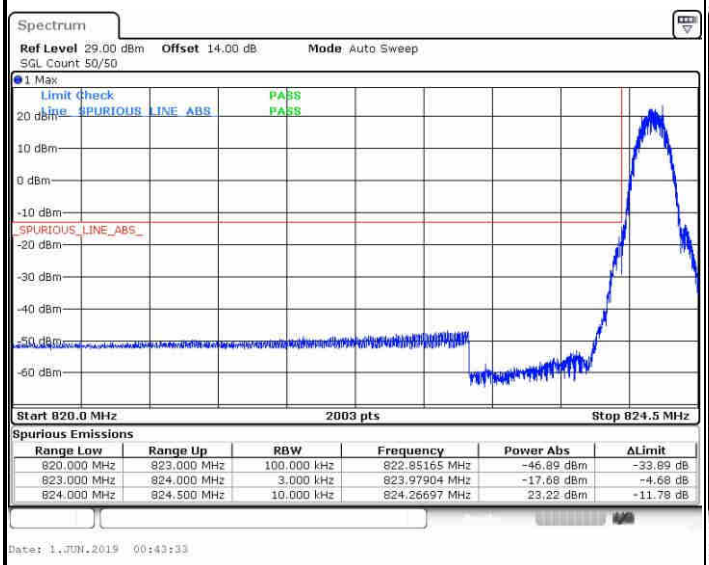
Highest Channel



Conducted Band Edge

GSM850 (GSM)

Lowest Band Edge

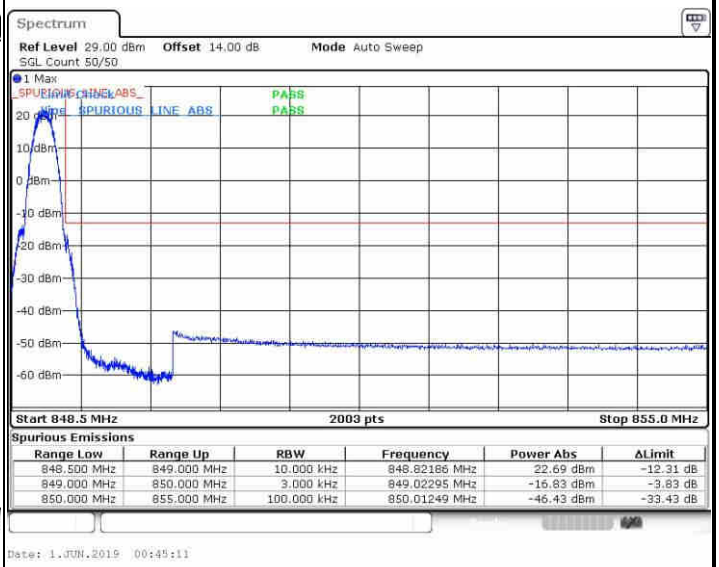


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.85165 MHz	-46.89 dBm	-33.89 dB
823.000 MHz	824.000 MHz	3.000 kHz	823.97904 MHz	-17.68 dBm	-4.68 dB
824.000 MHz	824.500 MHz	10.000 kHz	824.26697 MHz	23.22 dBm	-11.78 dB

Date: 1.JUN.2019 00:43:33

Highest Band Edge



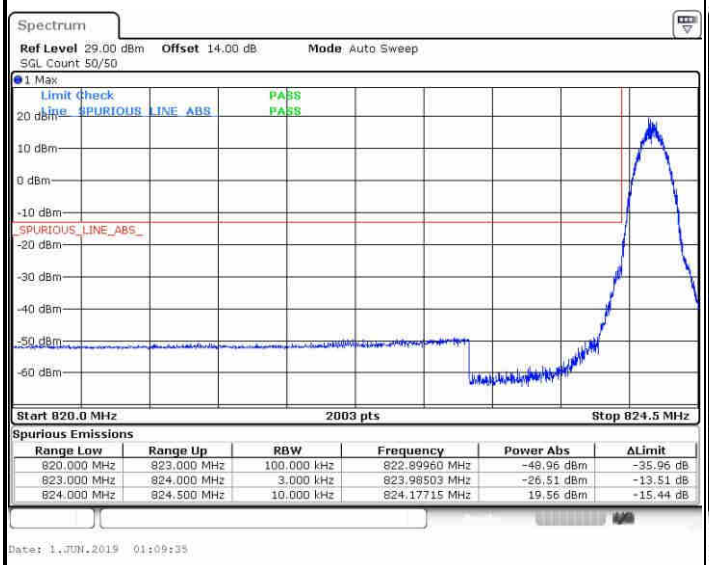
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
848.500 MHz	849.000 MHz	10.000 kHz	848.82186 MHz	22.69 dBm	-12.31 dB
849.000 MHz	850.000 MHz	3.000 kHz	849.02295 MHz	-16.83 dBm	-3.83 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.01249 MHz	-46.43 dBm	-33.43 dB

Date: 1.JUN.2019 00:45:11

GSM850 (EDGE class 8)

Lowest Band Edge

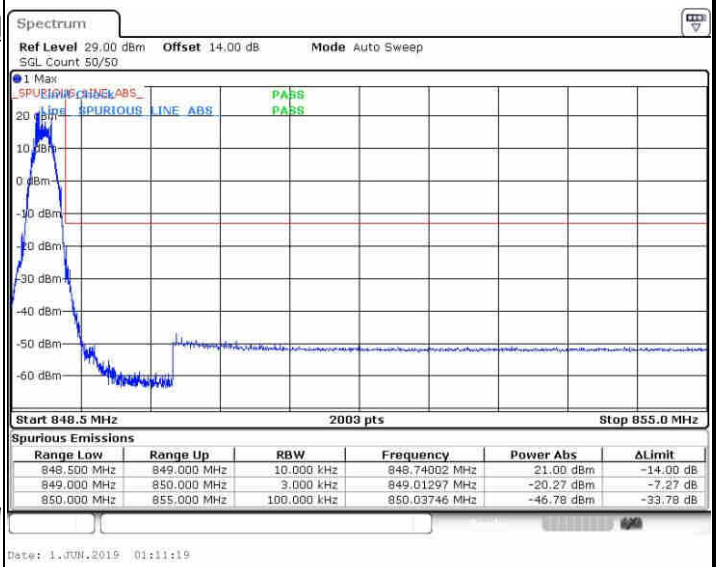


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.89960 MHz	-48.96 dBm	-35.96 dB
823.000 MHz	824.000 MHz	3.000 kHz	823.98503 MHz	-26.51 dBm	-13.51 dB
824.000 MHz	824.500 MHz	10.000 kHz	824.17715 MHz	19.56 dBm	-15.44 dB

Date: 1.JUN.2019 01:09:35

Highest Band Edge



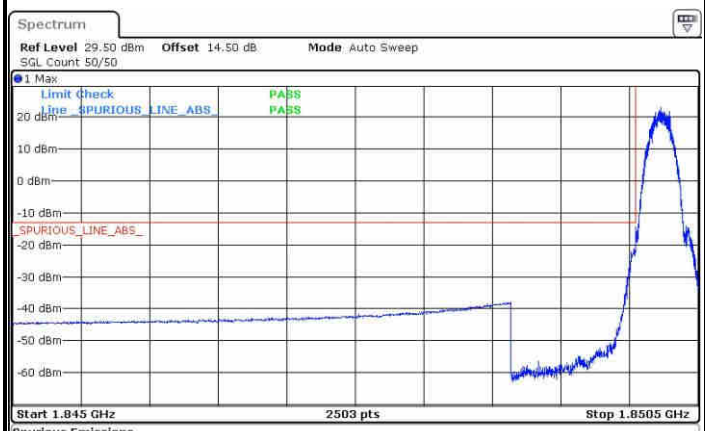
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
848.500 MHz	849.000 MHz	10.000 kHz	848.74002 MHz	21.00 dBm	-14.00 dB
849.000 MHz	850.000 MHz	3.000 kHz	849.01297 MHz	-20.27 dBm	-7.27 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.03746 MHz	-46.78 dBm	-33.78 dB

Date: 1.JUN.2019 01:11:19

GSM1900 (GSM)

Lowest Band Edge

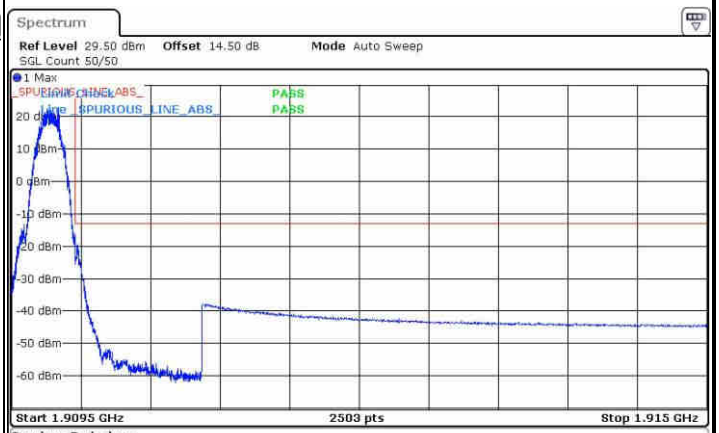


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84899 GHz	-38.00 dBm	-25.00 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.85000 GHz	-19.56 dBm	-6.56 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85020 GHz	22.94 dBm	-12.06 dB

Date: 1.JUN.2019 01:27:55

Highest Band Edge



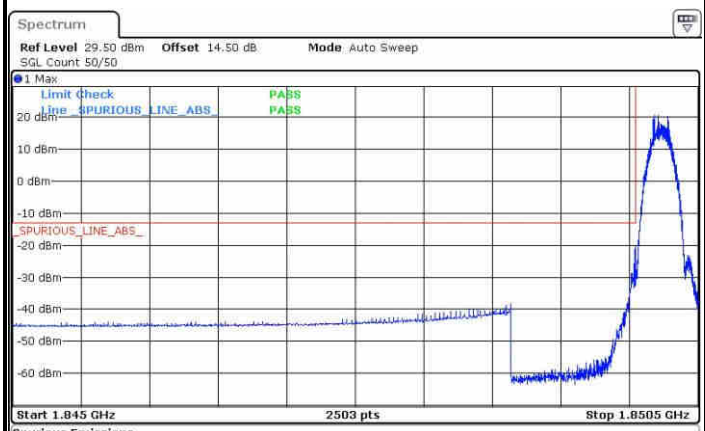
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90987 GHz	22.76 dBm	-12.24 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91002 GHz	-19.62 dBm	-6.62 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91101 GHz	-37.91 dBm	-24.91 dB

Date: 1.JUN.2019 01:29:38

GSM1900 (EDGE class 8)

Lowest Band Edge

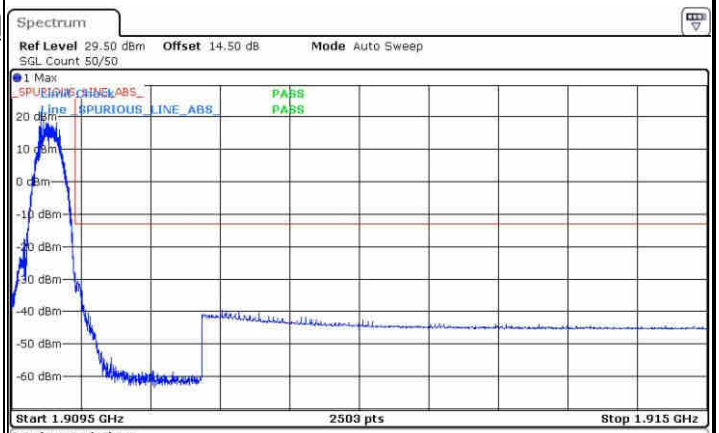


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84900 GHz	-38.34 dBm	-25.34 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.85000 GHz	-20.31 dBm	-7.31 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85018 GHz	20.50 dBm	-14.50 dB

Date: 1.JUN.2019 01:46:15

Highest Band Edge



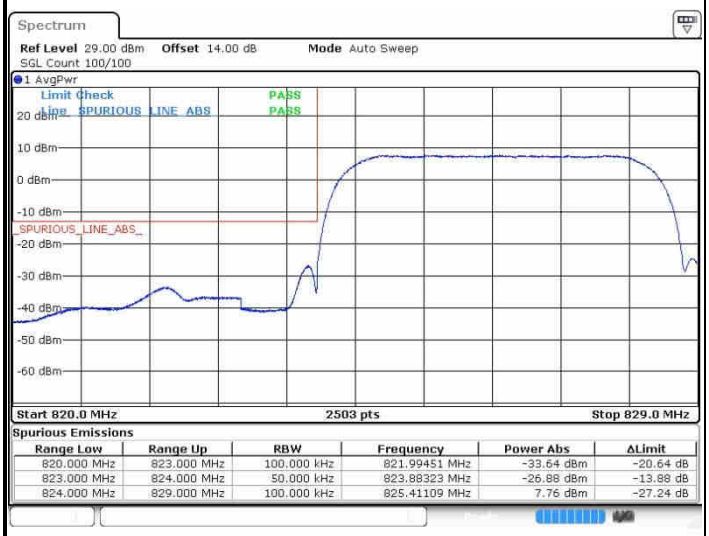
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90973 GHz	21.43 dBm	-13.57 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91002 GHz	-30.59 dBm	-17.59 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91116 GHz	-39.74 dBm	-26.74 dB

Date: 1.JUN.2019 01:48:00

WCDMA Band V (RMC 12.2Kbps)

Lowest Band Edge

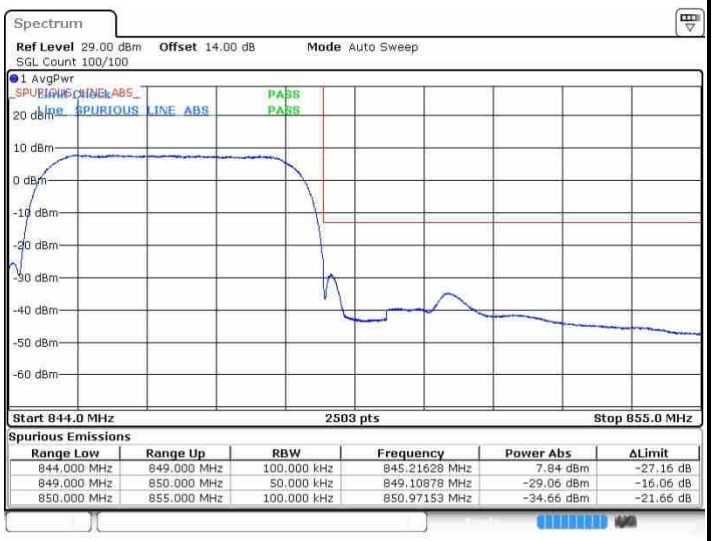


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	821.99451 MHz	-33.64 dBm	-20.64 dB
823.000 MHz	824.000 MHz	50.000 kHz	823.88323 MHz	-26.88 dBm	-13.88 dB
824.000 MHz	829.000 MHz	100.000 kHz	825.41109 MHz	7.76 dBm	-27.24 dB

Date: 1.JUN.2019 20:42:17

Highest Band Edge



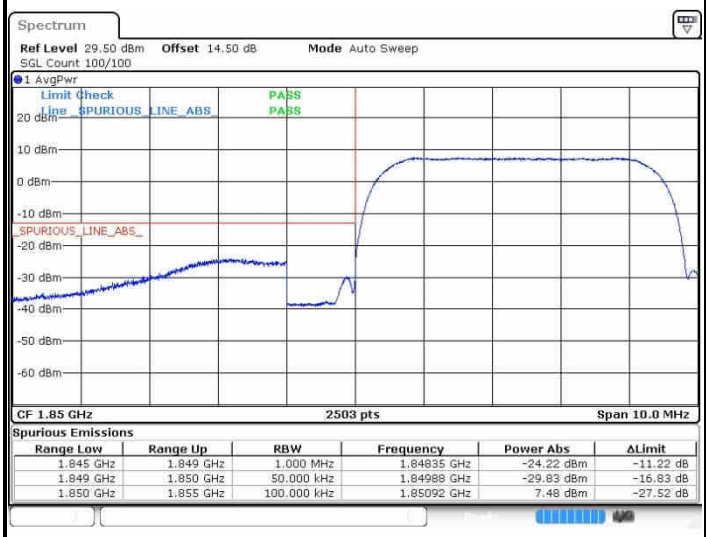
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
844.000 MHz	849.000 MHz	100.000 kHz	845.21628 MHz	7.84 dBm	-27.16 dB
849.000 MHz	850.000 MHz	50.000 kHz	849.10878 MHz	-29.06 dBm	-16.06 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.97153 MHz	-34.66 dBm	-21.66 dB

Date: 1.JUN.2019 20:45:12

WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge

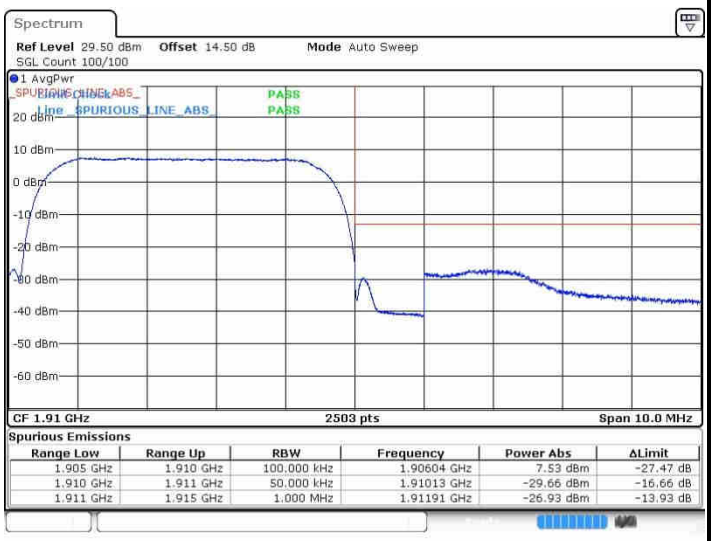


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84835 GHz	-24.22 dBm	-11.22 dB
1.849 GHz	1.850 GHz	50.000 kHz	1.84988 GHz	-29.83 dBm	-16.83 dB
1.850 GHz	1.855 GHz	100.000 kHz	1.85092 GHz	7.48 dBm	-27.52 dB

Date: 1.JUN.2019 21:34:32

Highest Band Edge

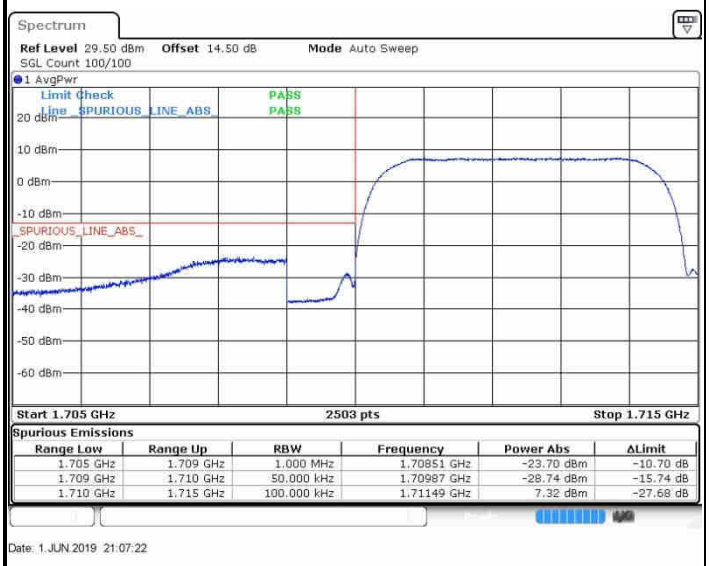


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.905 GHz	1.910 GHz	100.000 kHz	1.90604 GHz	7.53 dBm	-27.47 dB
1.910 GHz	1.911 GHz	50.000 kHz	1.91013 GHz	-29.66 dBm	-16.66 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91191 GHz	-26.93 dBm	-13.93 dB

Date: 1.JUN.2019 21:37:25

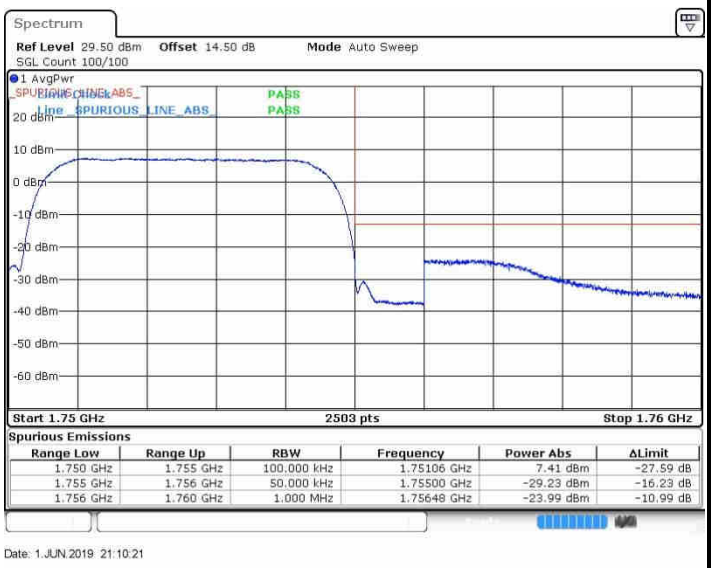
WCDMA Band IV (RMC 12.2Kbps)	
Lowest Band Edge	**Highest Band Edge**



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.705 GHz	1.709 GHz	1.000 MHz	1.70851 GHz	-23.70 dBm	-10.70 dB
1.709 GHz	1.710 GHz	50.000 kHz	1.70987 GHz	-28.74 dBm	-15.74 dB
1.710 GHz	1.715 GHz	100.000 kHz	1.71149 GHz	7.32 dBm	-27.68 dB

Date: 1.JUN.2019 21:07:22



Spurious Emissions

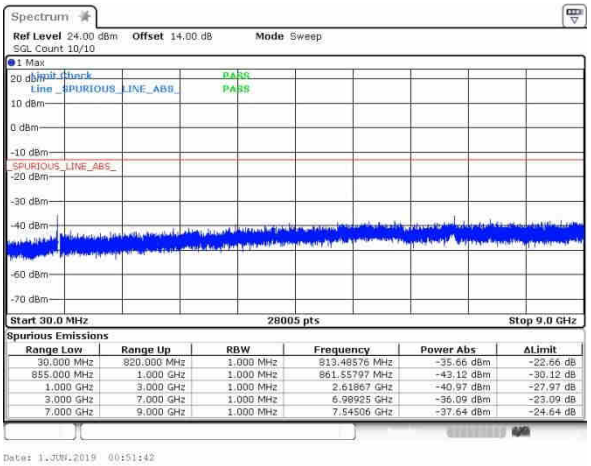
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.750 GHz	1.755 GHz	100.000 kHz	1.75106 GHz	7.41 dBm	-27.59 dB
1.755 GHz	1.756 GHz	50.000 kHz	1.75500 GHz	-29.23 dBm	-16.23 dB
1.756 GHz	1.760 GHz	1.000 MHz	1.75648 GHz	-23.99 dBm	-10.99 dB

Date: 1.JUN.2019 21:10:21

Conducted Spurious Emission

GSM850 (GSM)

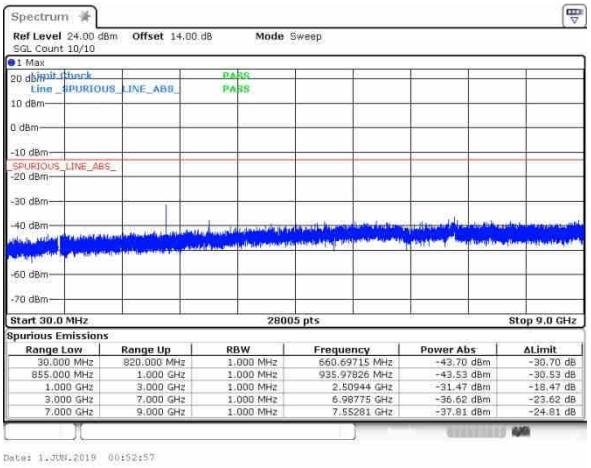
Lowest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	813.48576 MHz	-35.66 dBm	-22.66 dB
855.000 MHz	1.000 GHz	1.000 MHz	861.55797 MHz	-43.12 dBm	-30.12 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.61867 GHz	-40.97 dBm	-27.97 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98925 GHz	-36.09 dBm	-23.09 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.54506 GHz	-37.64 dBm	-24.64 dB

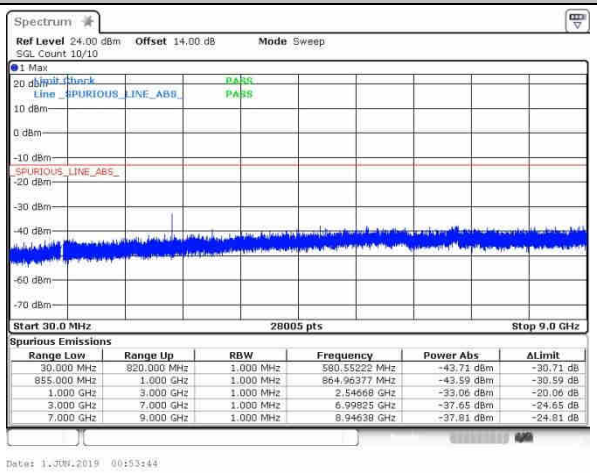
Middle Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	660.69715 MHz	-43.70 dBm	-30.70 dB
855.000 MHz	1.000 GHz	1.000 MHz	935.97826 MHz	-43.53 dBm	-30.53 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.50944 GHz	-31.47 dBm	-18.47 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98775 GHz	-36.62 dBm	-23.62 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.55281 GHz	-37.81 dBm	-24.81 dB

Highest Channel

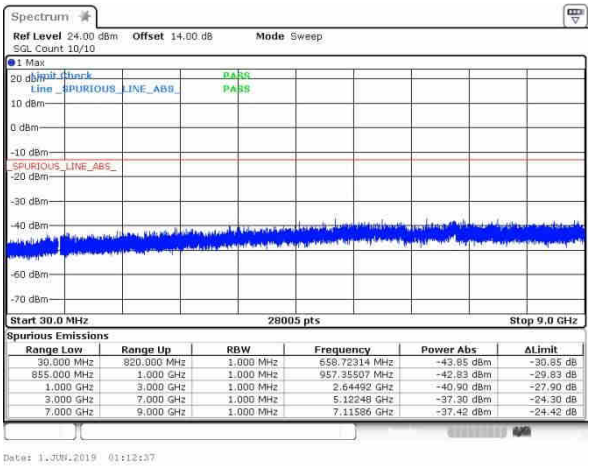


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	580.55222 MHz	-43.71 dBm	-30.71 dB
855.000 MHz	1.000 GHz	1.000 MHz	864.96377 MHz	-43.59 dBm	-30.59 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.54668 GHz	-33.06 dBm	-20.06 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99825 GHz	-37.65 dBm	-24.65 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.94638 GHz	-37.81 dBm	-24.81 dB

GSM850 (EDGE class 8)

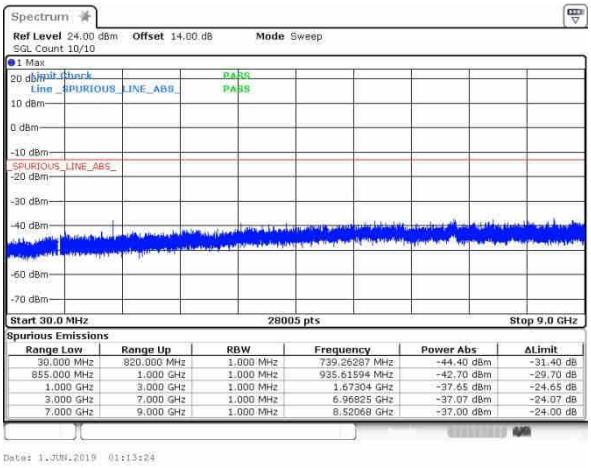
Lowest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	658.72314 MHz	-43.85 dBm	-30.85 dB
855.000 MHz	1.000 GHz	1.000 MHz	957.35507 MHz	-42.83 dBm	-29.83 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.64492 GHz	-40.90 dBm	-27.90 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.12248 GHz	-37.30 dBm	-24.30 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.11586 GHz	-37.42 dBm	-24.42 dB

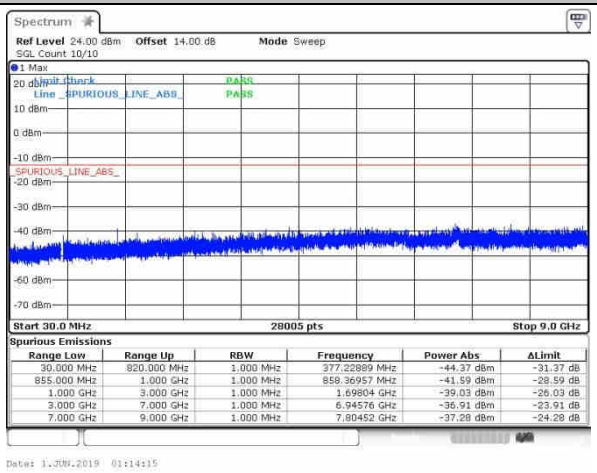
Middle Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	739.26287 MHz	-44.40 dBm	-31.40 dB
855.000 MHz	1.000 GHz	1.000 MHz	935.61594 MHz	-42.70 dBm	-29.70 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.67304 GHz	-37.65 dBm	-24.65 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.96825 GHz	-37.07 dBm	-24.07 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.52068 GHz	-37.00 dBm	-24.00 dB

Highest Channel

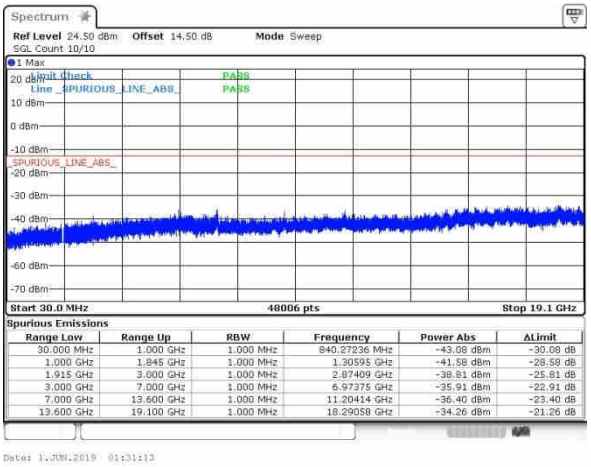


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	377.22889 MHz	-44.37 dBm	-31.37 dB
855.000 MHz	1.000 GHz	1.000 MHz	858.36957 MHz	-41.59 dBm	-28.59 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.69804 GHz	-39.03 dBm	-26.03 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94576 GHz	-36.91 dBm	-23.91 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.80452 GHz	-37.28 dBm	-24.28 dB

GSM1900 (GSM)

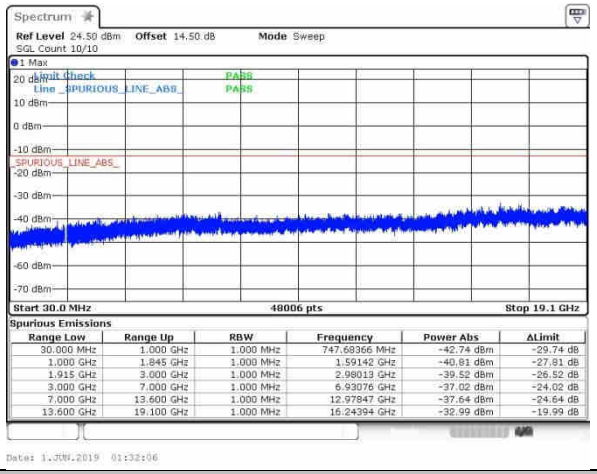
Lowest Channel



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	840.27236 MHz	-43.08 dBm	-30.08 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.30595 GHz	-41.58 dBm	-28.58 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.87409 GHz	-38.81 dBm	-25.81 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.97375 GHz	-35.91 dBm	-22.91 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.20414 GHz	-36.40 dBm	-23.40 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.29059 GHz	-34.26 dBm	-21.26 dB

Date: 1.JUN.2019 01:31:13

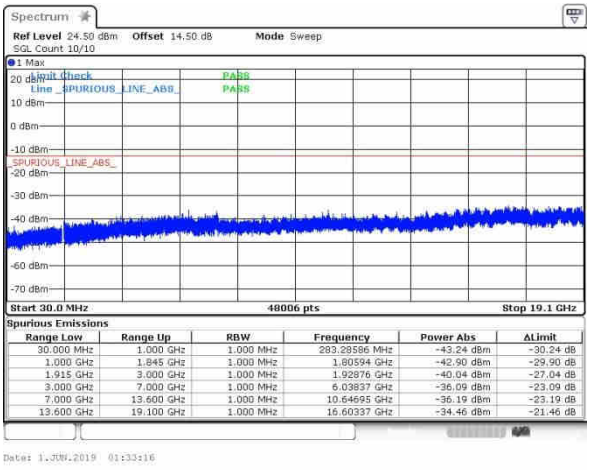
Middle Channel



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	747.68366 MHz	-42.74 dBm	-29.74 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.59142 GHz	-40.81 dBm	-27.81 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.98013 GHz	-39.52 dBm	-26.52 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.93076 GHz	-37.02 dBm	-24.02 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.97847 GHz	-37.64 dBm	-24.64 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.24394 GHz	-32.99 dBm	-19.99 dB

Date: 1.JUN.2019 01:32:06

Highest Channel

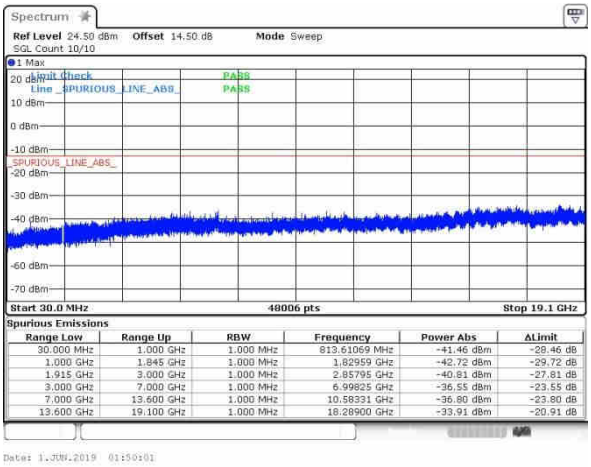


Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	283.28586 MHz	-43.24 dBm	-30.24 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.80594 GHz	-42.90 dBm	-29.90 dB
1.915 GHz	3.000 GHz	1.000 MHz	1.92876 GHz	-40.04 dBm	-27.04 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.03837 GHz	-36.09 dBm	-23.09 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.64695 GHz	-36.19 dBm	-23.19 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.60337 GHz	-34.46 dBm	-21.46 dB

Date: 1.JUN.2019 01:33:16

GSM1900 (EDGE class 8)

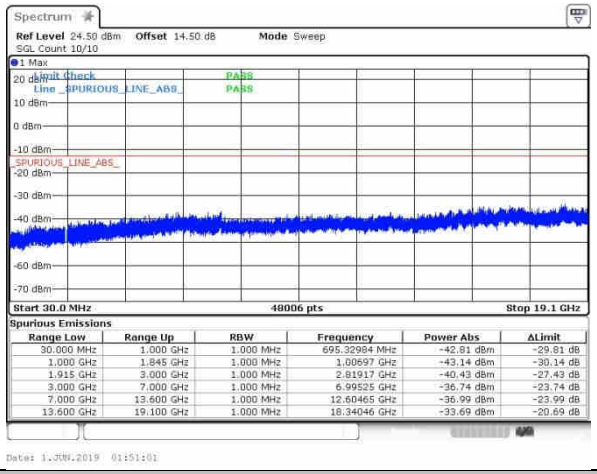
Lowest Channel



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	813.61069 MHz	-41.46 dBm	-28.46 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.82959 GHz	-42.72 dBm	-29.72 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.85795 GHz	-40.81 dBm	-27.81 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99825 GHz	-36.55 dBm	-23.55 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.58331 GHz	-36.80 dBm	-23.80 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.28900 GHz	-33.91 dBm	-20.91 dB

Date: 1.JUN.2019 01:50:01

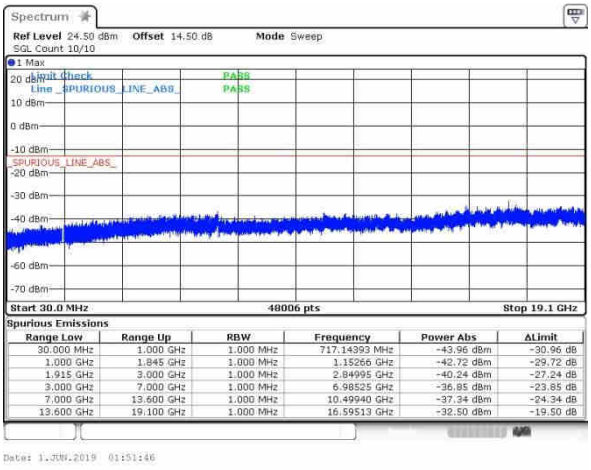
Middle Channel



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	695.32984 MHz	-42.81 dBm	-29.81 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.00697 GHz	-43.14 dBm	-30.14 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.81917 GHz	-40.43 dBm	-27.43 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99525 GHz	-36.74 dBm	-23.74 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.60465 GHz	-36.99 dBm	-23.99 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.34046 GHz	-33.69 dBm	-20.69 dB

Date: 1.JUN.2019 01:51:01

Highest Channel

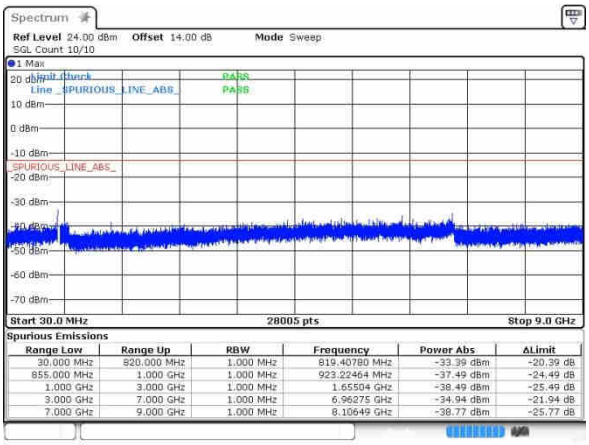


Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	717.14393 MHz	-43.96 dBm	-30.96 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.15266 GHz	-42.72 dBm	-29.72 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.84995 GHz	-40.24 dBm	-27.24 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98525 GHz	-36.85 dBm	-23.85 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.49940 GHz	-37.34 dBm	-24.34 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.59513 GHz	-32.50 dBm	-19.50 dB

Date: 1.JUN.2019 01:51:46

WCDMA Band V (RMC 12.2Kbps)

Lowest Channel

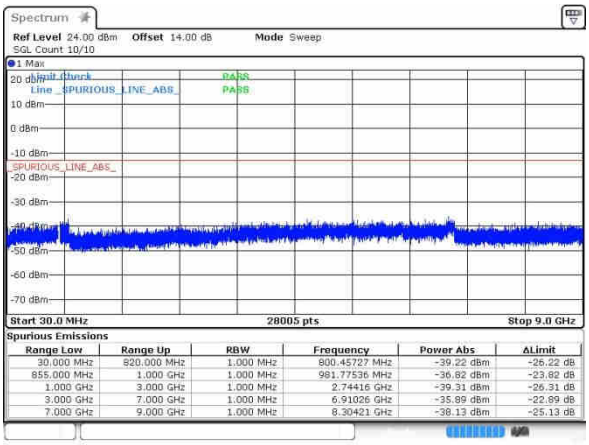


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	819.40780 MHz	-33.39 dBm	-20.39 dB
855.000 MHz	1.000 GHz	1.000 MHz	923.22464 MHz	-37.49 dBm	-24.49 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.65504 GHz	-38.49 dBm	-25.49 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.96275 GHz	-34.94 dBm	-21.94 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.10649 GHz	-38.77 dBm	-25.77 dB

Date: 1.JUN.2019 20:45:59

Middle Channel

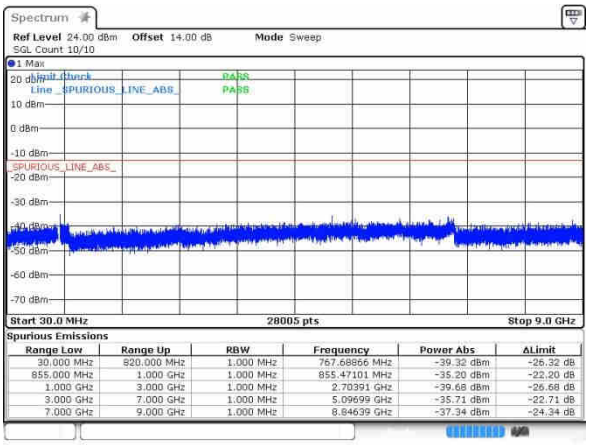


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	800.45727 MHz	-39.22 dBm	-26.22 dB
855.000 MHz	1.000 GHz	1.000 MHz	981.77536 MHz	-36.82 dBm	-23.82 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.74416 GHz	-39.31 dBm	-26.31 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.91026 GHz	-35.89 dBm	-22.89 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.30421 GHz	-38.13 dBm	-25.13 dB

Date: 1.JUN.2019 20:46:22

Highest Channel



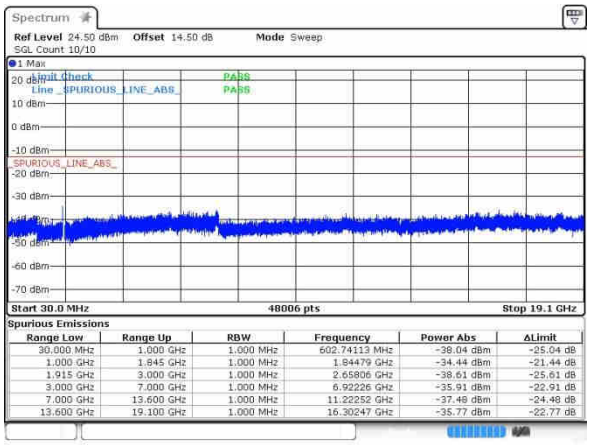
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	767.68866 MHz	-39.32 dBm	-26.32 dB
855.000 MHz	1.000 GHz	1.000 MHz	855.47101 MHz	-35.20 dBm	-22.20 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.70391 GHz	-39.68 dBm	-26.68 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.09699 GHz	-35.71 dBm	-22.71 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.84639 GHz	-37.34 dBm	-24.34 dB

Date: 1.JUN.2019 20:46:40

WCDMA Band II (RMC 12.2Kbps)

Lowest Channel

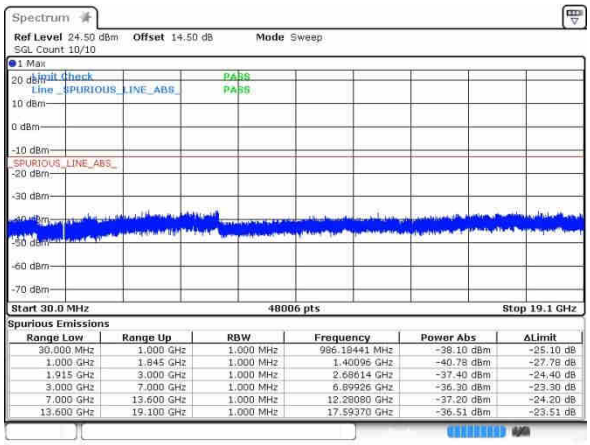


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	602.74113 MHz	-38.04 dBm	-25.04 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.84479 GHz	-34.44 dBm	-21.44 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.65806 GHz	-38.61 dBm	-25.61 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.92226 GHz	-35.91 dBm	-22.91 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.22252 GHz	-37.48 dBm	-24.48 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.30247 GHz	-35.77 dBm	-22.77 dB

Date: 1.JUN.2019 21:38:24

Middle Channel

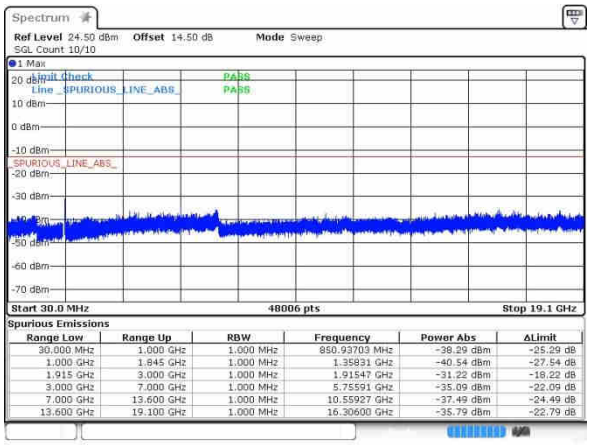


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	986.18441 MHz	-38.10 dBm	-25.10 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.40096 GHz	-40.78 dBm	-27.78 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.68614 GHz	-37.40 dBm	-24.40 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.89926 GHz	-36.30 dBm	-23.30 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.28080 GHz	-37.20 dBm	-24.20 dB
13.600 GHz	19.100 GHz	1.000 MHz	17.59370 GHz	-36.51 dBm	-23.51 dB

Date: 1.JUN.2019 21:38:44

Highest Channel



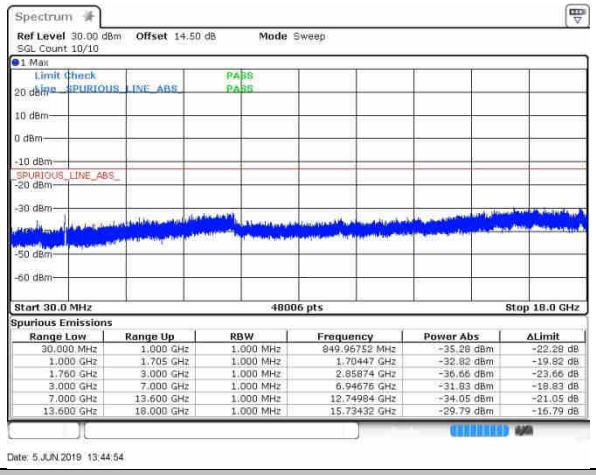
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	850.93703 MHz	-38.29 dBm	-25.29 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.35831 GHz	-40.54 dBm	-27.54 dB
1.915 GHz	3.000 GHz	1.000 MHz	1.91547 GHz	-31.22 dBm	-18.22 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.75591 GHz	-35.09 dBm	-22.09 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.55927 GHz	-37.49 dBm	-24.49 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.30600 GHz	-35.79 dBm	-22.79 dB

Date: 1.JUN.2019 21:39:04

WCDMA Band IV (RMC 12.2Kbps)

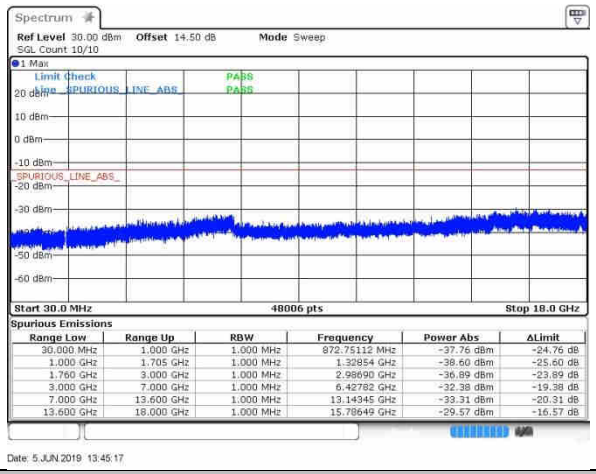
Lowest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	849.96752 MHz	-35.28 dBm	-22.28 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.70447 GHz	-32.82 dBm	-19.82 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.85874 GHz	-36.66 dBm	-23.66 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94676 GHz	-31.83 dBm	-18.83 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.74984 GHz	-34.05 dBm	-21.05 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.73432 GHz	-29.79 dBm	-16.79 dB

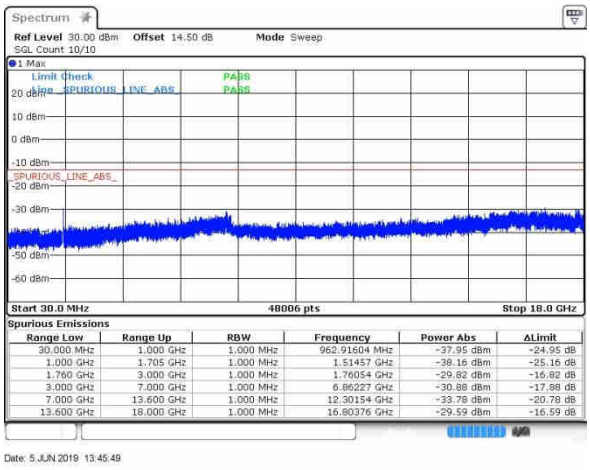
Middle Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	872.75112 MHz	-37.76 dBm	-24.76 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.32854 GHz	-38.60 dBm	-25.60 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.98690 GHz	-36.89 dBm	-23.89 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.42782 GHz	-32.38 dBm	-19.38 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.14345 GHz	-33.31 dBm	-20.31 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.78649 GHz	-29.57 dBm	-16.57 dB

Highest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	962.91604 MHz	-37.95 dBm	-24.95 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.51457 GHz	-38.16 dBm	-25.16 dB
1.760 GHz	3.000 GHz	1.000 MHz	1.76054 GHz	-29.82 dBm	-16.82 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.86227 GHz	-30.88 dBm	-17.88 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.30154 GHz	-33.78 dBm	-20.78 dB
13.600 GHz	18.000 GHz	1.000 MHz	16.80376 GHz	-29.59 dBm	-16.59 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	0.0012	0.0006	PASS
40	Normal Voltage	0.0023	0.0023	
30	Normal Voltage	0.0019	0.0010	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0001	0.0027	
0	Normal Voltage	0.0010	0.0008	
-10	Normal Voltage	0.0004	0.0002	
-20	Normal Voltage	0.0007	0.0016	
-30	Normal Voltage	0.0020	0.0012	
20	Maximum Voltage	0.0022	0.0007	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0019	0.0004	

Note: Normal Voltage = 3.8 V.; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.2 V.

Test Conditions	Middle Channel	GSM1900 (GSM)	GSM1900 (EDGE class 8)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0006	0.0002	PASS
40	Normal Voltage	0.0010	0.0000	
30	Normal Voltage	0.0009	0.0011	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0001	0.0003	
0	Normal Voltage	0.0004	0.0004	
-10	Normal Voltage	0.0001	0.0002	
-20	Normal Voltage	0.0004	0.0006	
-30	Normal Voltage	0.0011	0.0009	
20	Maximum Voltage	0.0015	0.0014	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0009	0.0005	

Note:

1. Normal Voltage = 3.8 V.; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.2 V.
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2Kbps)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0024	PASS
40	Normal Voltage	0.0060	
30	Normal Voltage	0.0048	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0060	
0	Normal Voltage	0.0072	
-10	Normal Voltage	0.0024	
-20	Normal Voltage	0.0036	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0024	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0072	

Note: Normal Voltage = 3.8 V.; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.2 V.

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0005	PASS
40	Normal Voltage	0.0021	
30	Normal Voltage	0.0011	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0043	
0	Normal Voltage	0.0037	
-10	Normal Voltage	0.0037	
-20	Normal Voltage	0.0043	
-30	Normal Voltage	0.0032	
20	Maximum Voltage	0.0032	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0005	

Note:

1. Normal Voltage = 3.8 V.; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.2 V.
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Test Conditions	Middle Channel	WCDMA Band IV (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0035	PASS
40	Normal Voltage	0.0012	
30	Normal Voltage	0.0006	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0012	
0	Normal Voltage	0.0046	
-10	Normal Voltage	0.0058	
-20	Normal Voltage	0.0035	
-30	Normal Voltage	0.0006	
20	Maximum Voltage	0.0035	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0017	

Note:

1. Normal Voltage = 3.8 V.; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.2 V.
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

GSM850 (GSM)								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-49.94	-13	-36.94	-53.18	1.11	6.50	H
	2510	-40.30	-13	-27.30	-42.92	1.43	6.20	H
	3348	-58.66	-13	-45.66	-63.10	1.71	8.30	H
	1672	-58.07	-13	-45.07	-61.31	1.11	6.50	V
	2508	-48.24	-13	-35.24	-50.86	1.43	6.20	V
	3348	-59.14	-13	-46.14	-63.58	1.71	8.30	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)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-55.28	-13	-42.28	-58.52	1.11	6.50	H
	2510	-55.68	-13	-42.68	-58.30	1.43	6.20	H
	3348	-59.53	-13	-46.53	-63.97	1.71	8.30	H
	1672	-61.73	-13	-48.73	-64.97	1.11	6.50	V
	2508	-57.33	-13	-44.33	-59.95	1.43	6.20	V
	3348	-59.38	-13	-46.38	-63.82	1.71	8.30	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)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3759	-48.27	-13	-35.27	-54.53	1.84	8.10	H
	5640	-49.70	-13	-36.70	-58.01	2.19	10.50	H
	7524	-51.56	-13	-38.56	-60.48	2.58	11.50	H
	3759	-47.21	-13	-34.21	-53.47	1.84	8.10	V
	5640	-51.53	-13	-38.53	-59.84	2.19	10.50	V
	7524	-51.67	-13	-38.67	-60.59	2.58	11.50	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)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3759	-53.37	-13	-40.37	-59.63	1.84	8.10	H
	5640	-53.31	-13	-40.31	-61.62	2.19	10.50	H
	7524	-51.92	-13	-38.92	-60.84	2.58	11.50	H
	3759	-53.92	-13	-40.92	-60.18	1.84	8.10	V
	5640	-53.26	-13	-40.26	-61.57	2.19	10.50	V
	7524	-51.92	-13	-38.92	-60.84	2.58	11.50	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)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-63.88	-13	-50.88	-67.12	1.11	6.50	H
	2510	-60.79	-13	-47.79	-63.41	1.43	6.20	H
	3348	-59.22	-13	-46.22	-63.66	1.71	8.30	H
	1672	-63.77	-13	-50.77	-67.01	1.11	6.50	V
	2510	-60.37	-13	-47.37	-62.99	1.43	6.20	V
	3348	-59.39	-13	-46.39	-63.83	1.71	8.30	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)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3759	-55.86	-13	-42.86	-62.12	1.84	8.10	H
	5640	-53.90	-13	-40.90	-62.21	2.19	10.50	H
	7524	-51.98	-13	-38.98	-60.90	2.58	11.50	H
	3759	-56.24	-13	-43.24	-62.50	1.84	8.10	V
	5640	-53.90	-13	-40.90	-62.21	2.19	10.50	V
	7524	-52.39	-13	-39.39	-61.31	2.58	11.50	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)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3465	-57.29	-13	-44.29	-63.98	1.75	8.44	H
	5199	-52.48	-13	-39.48	-60.90	1.94	10.36	H
	6936	-51.26	-13	-38.26	-60.50	2.47	11.71	H
	3465	-56.61	-13	-43.61	-63.30	1.75	8.44	V
	5196	-50.26	-13	-37.26	-58.68	1.94	10.36	V
	6936	-51.78	-13	-38.78	-61.02	2.47	11.71	V

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