FCC RF Test Report

APPLICANT	:	**Motorola Mobility LLC**
EQUIPMENT	:	**Mobile Cellular Phone**
BRAND NAME	:	**Motorola**
MODEL NAME	:	**XT1920DL**
FCC ID	:	**IHDT56XF2**
STANDARD	:	**FCC 47 CFR Part 2, 22(H), 24(E), 27(L)**
CLASSIFICATION	:	**PCS Licensed Transmitter Held to Ear (PCE)**

The product was received on Mar. 23, 2017 and testing was completed on Apr. 13, 2018. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.26-2015 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.

Eric Shih

TESTING
NVLAP LAB CODE 600156-0

Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 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 Specification of Accessory 7
1.6 Modification of EUT 7
1.7 Re-use of Measured Data 8
1.8 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator 9
1.9 Testing Location 10
1.10 Applicable Standards 10

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST **11**

2.1 Test Mode 11
2.2 Connection Diagram of Test System 12
2.3 Support Unit used in test configuration 12
2.4 Measurement Results Explanation Example 12

3 CONDUCTED TEST RESULT **13**

3.1 Measuring Instruments 13
3.2 Test Setup 13
3.3 Test Result of Conducted Test 13
3.4 Conducted Output Power 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

APPENDIX D. REFERENCE REPORT

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG832306A	Rev. 01	Initial issue of report	May 09, 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	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.5	§24.232(d)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.6	§2.1049 §22.917(b) §24.238(b) §27.53(g)	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §22.355	Frequency Stability for Temperature & Voltage	< 2.5 ppm for Part 22H	PASS	-
	§2.1055 §24.235		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 29.29 dB at 5640.000 MHz

1 General Description

1.1 Applicant

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

1.2 Manufacturer

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1920DL
FCC ID	IHDT56XF2
EUT supports Radios application	CDMA/EV-DO/GSM/GPRS/EGPRS/WCDMA/HSPA/ DC-HSDPA/HSPA+(16QAM uplink is not supported)/LTE WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE/ Bluetooth v4.1 LE/Bluetooth v4.2 LE
IMEI Code	Conducted: 354132090008122 Radiation: 354132090006951
HW Version	DVT1B
SW Version	OPP28.1
EUT Stage	Identical Prototype

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

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	**GSM/GPRS/EDGE:** 850: 824.2 MHz ~ 848.8 MHz 1900: 1850.2 MHz ~ 1909.8MHz **WCDMA:** Band V: 826.4 MHz ~ 846.6 MHz Band II: 1852.4 MHz ~ 1907.6 MHz Band IV: 1712.4 MHz ~ 1752.6 MHz **CDMA2000:** BC0: 824.70 MHz ~ 848.31 MHz BC1: 1851.25 MHz ~ 1908.75 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 **CDMA2000:** BC0: 869.70 MHz ~ 893.31 MHz BC1: 1931.25 MHz ~ 1988.75 MHz
Maximum Output Power to Antenna	**GSM/GPRS/EDGE:** 850: 32.35 dBm 1900: 29.38 dBm **WCDMA:** Band V: 23.08 dBm Band II: 23.26 dBm Band IV: 23.00 dBm **CDMA2000:** BC0: 23.70 dBm BC1: 24.53 dBm
Antenna Type	Monopole Antenna
Antenna Gain	Cellular Band: -2.33 dBi PCS Band: 0.55 dBi AWS Band: -1.5 dBi
Type of Modulation	GSM/GPRS: GMSK EDGE: GMSK / 8PSK WCDMA : BPSK (Uplink) HSDPA/DC-HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM (16QAM uplink is not supported) DC-HSDPA : 64QAM CDMA2000 1xRTT: QPSK CDMA2000 1xEV-DO: QPSK/8PSK

1.5 Specification of Accessory

Specification of Accessory				
AC Adapter 1	**Brand Name**	Motorola (Acbel)	**Model Name**	C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc,2000mA		
AC Adapter 2	**Brand Name**	Motorola (Salom)	**Model Name**	SSW-2919UMTJ C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc,2000mA		
Battery	**Brand Name**	Motorola (SCUD)	**Model Name**	BL270
	Power Rating	3.85Vdc,4000mAh	**Type**	Li-ion, ATL426580
USB Cable	**Brand Name**	Motorola (Saibao)	**Model Name**	SLQ-A077A
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		

1.6 Modification of EUT

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

1.7 Re-use of Measured Data

1.7.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: XT1920DL, FCC ID: IHDT56XF2) is electrically identical to the reference device (Model: XT1922-6, XT1922-7, XT1922-9, FCC ID: IHDT56XB1) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 484596 D01.

1.7.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., some difference of population/depopulation to enable support of different cellular bands, please refer to the Product Equality Declaration.

The re-used RF data includes the following bands provided in Appendix D (Sporton RF Report No. FG7D1310A for the reference device Model: XT1922-6, XT1922-7, XT1922-9, FCC ID: IHDT56XB1):

1.7.3 Spot Check Verification Data Section

In order to confirm hardware similarity of the subject device with the reference device, spot check measurements were performed on the subject device for Conducted power, ERP/EIRP and Radiatied spurious emission, the test result were consistent with FCC ID: IHDT56XB1 and full test of WCDMA and CDMA band.

Assertions concerning the similarity of these devices are based on representations by the applicant. The applicant accepts full responsibility for the validity of the similarity claim, and for the determination that verification test data are sufficient to support it.

1.7.4 Reference detail Section:

Equipment Class	Reference FCC ID	Folder Test	Report Title/Section
PCE (2G/3G)	IHDT56XB1	Part 22H.24E.27L (FG7D1301A)	All conducted sections applicable for GSM 850/1900
PCE (LTE)	IHDT56XB1	Part 2(H).24(E).27(L). 27(M).27(F).27(H) (FG7D1301B)	All sections applicable for LTE Band 12 and all conducted sections applicable for LTE Band 13

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

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22H	GSM850 GSM	GMSK	0.6124	-	-
Part 22H	GSM850 EDGE class 8	8PSK	0.1738	-	-
Part 22H	WCDMA Band V RMC 12.2Kbps	BPSK	0.0724	0.0013 ppm	4M13F9W
Part 22H	CDMA2000 BC0 1xRTT	QPSK	0.0836	0.0258 ppm	1M27F9W
Part 24E	GSM1900 GSM	GMSK	0.9840	-	-
Part 24E	GSM1900 EDGE class 8	8PSK	0.4477	-	-
Part 24E	WCDMA Band II RMC 12.2Kbps	BPSK	0.2404	0.0004 ppm	4M15F9W
Part 24E	CDMA2000 BC1 1xRTT	QPSK	0.3221	0.0145 ppm	1M27F9W
Part 27L	WCDMA Band IV RMC 12.2Kbps	BPSK	0.1413	0.0005 ppm	4M14F9W

1.9 Testing Location

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No are CN5018 and CN5019.

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	TH01-SZ	251365

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	03CH01-SZ	577730

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

1.10 Applicable Standards

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

- 47 CFR Part 2, 22(H), 24(E), 27(L)
- ANSI 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.

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:

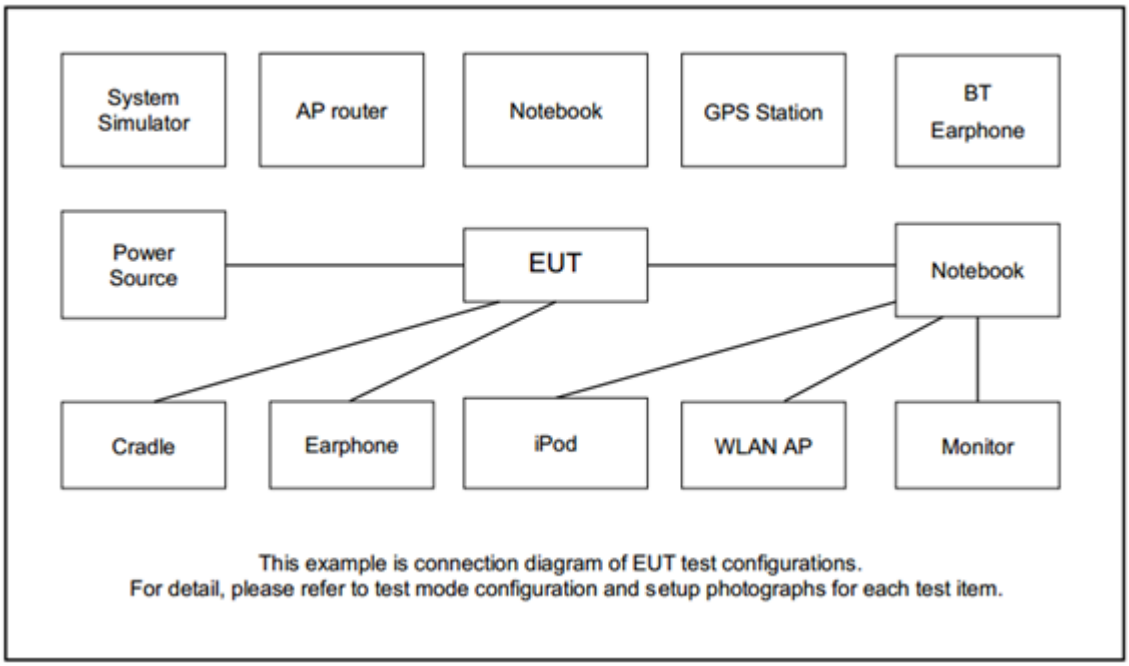
1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V and CDMA BC0.
2. 30 MHz to 10th harmonic for WCDMA Band IV.
3. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II and CDMA BC1.

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
CDMA BC0	■ 1xRTT Link	■ 1xRTT Link
CDMA BC1	■ 1xRTT Link	■ 1xRTT 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 INSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
3.	Earphone	Ashley ROW	N/A	N/A	Unshielded,1.2m	N/A

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 4.5 dB and a 10dB attenuator.

Example :

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

= 4.5 + 10 = 14.5 (dB)

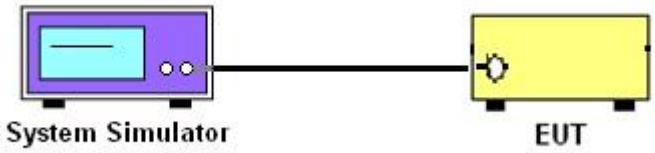
3 Conducted Test Result

3.1 Measuring Instruments

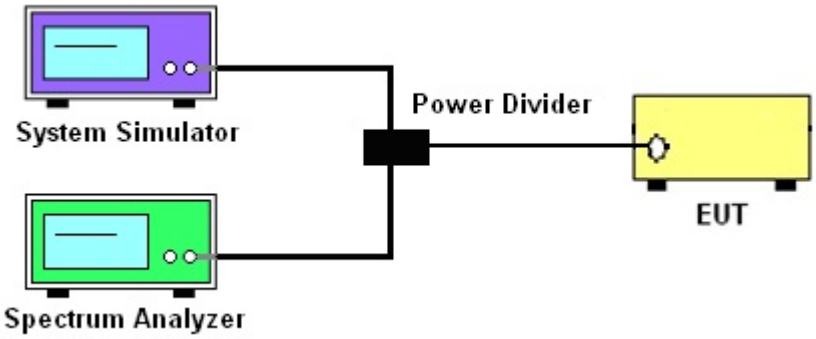
See list of measuring instruments of this test report.

3.2 Test Setup

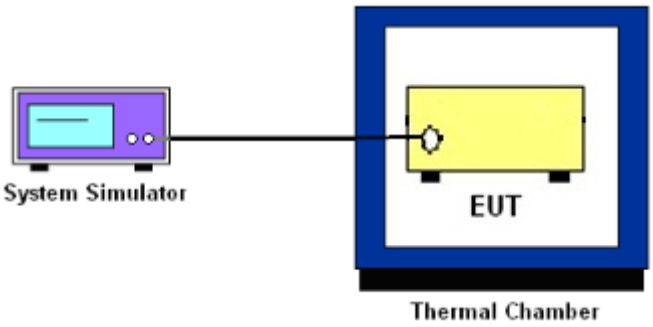
3.2.1 Conducted Output Power



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 and CDMA BC0.

The EIRP of mobile transmitters must not exceed 2 Watts for GSM1900 and WCDMA Band II and CDMA BC1.

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

The testing follows ANSI C63.26 Section 5.2

The transmitter output port was connected to the system simulator.

Set EUT at maximum power through the system simulator.

Select lowest, middle, and highest channels for each band and different modulation.

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.

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.

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.

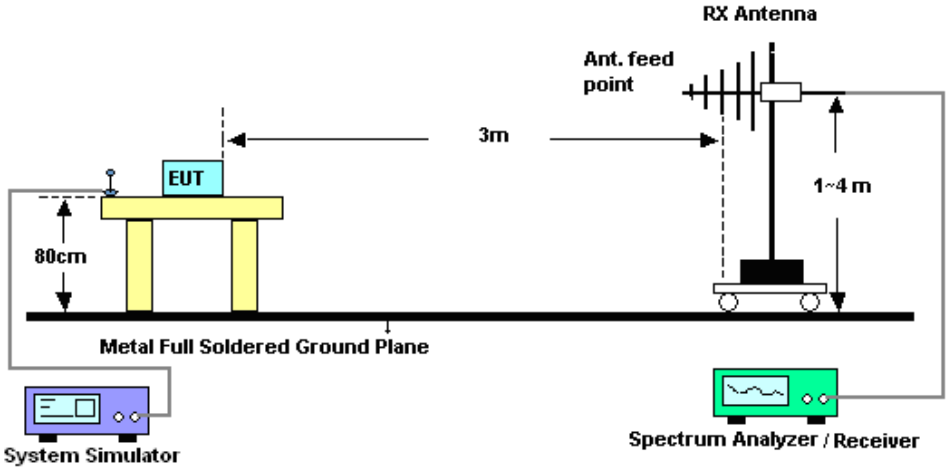
4 Radiated Test Items

4.1 Measuring Instruments

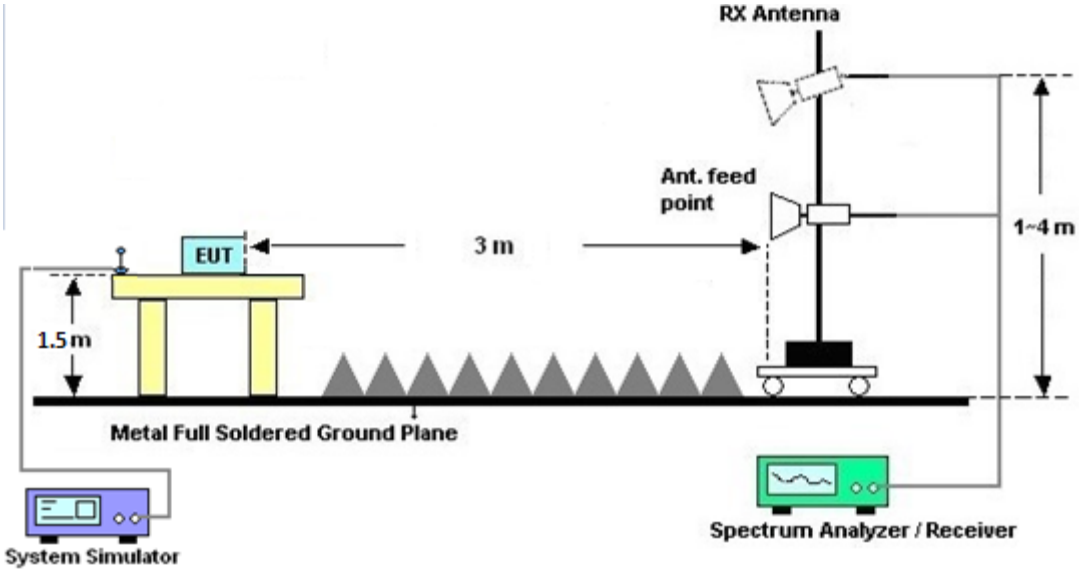
See list of measuring instruments of this test report.

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	9kHz~40GHz	Apr. 20, 2017	Apr. 13, 2018	Apr. 19, 2018	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 20, 2017	Apr. 13, 2018	Jul. 19, 2018	Conducted (TH01-SZ)
Radio Communication Analyzer	Anritsu	MT8820C	6201563777	2G/3G/4G (CDMA)	Jan. 03, 2018	Apr. 13, 2018	Jan. 02, 2019	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Apr. 20, 2017	Apr. 06, 2018~ Apr. 07, 2018	Apr. 19, 2018	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5Ghz	Oct. 19, 2017	Apr. 06, 2018~ Apr. 07, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	May 10, 2017	Apr. 06, 2018~ Apr. 07, 2018	May 09, 2018	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	119436	1GHz~18GHz	Jul. 28, 2017	Apr. 06, 2018~ Apr. 07, 2018	Jul. 27, 2018	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Jun.16, 2017	Apr. 06, 2018~ Apr. 07, 2018	Jun. 15, 2018	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 20, 2017	Apr. 06, 2018~ Apr. 07, 2018	Apr.19, 2018	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00 101800-30-10P-R	1707137	1GHz~18GHz	Oct. 19, 2017	Apr. 06, 2018~ Apr. 07, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 18, 2017	Apr. 06, 2018~ Apr. 07, 2018	Jul. 17, 2018	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	61601000198 5	N/A	NCR	Apr. 06, 2018~ Apr. 07, 2018	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 06, 2018~ Apr. 07, 2018	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 06, 2018~ Apr. 07, 2018	NCR	Radiation (03CH01-SZ)

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))	2.5dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.5dB

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

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

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	32.32	32.35	32.33	29.34	29.38	29.37
GPRS class 8	32.30	32.33	32.31	29.32	29.36	29.35
GPRS class 10	29.12	29.16	29.03	26.26	26.32	26.30
GPRS class 11	27.11	27.16	27.06	24.17	24.27	24.24
GPRS class 12	27.00	27.05	27.02	23.85	23.86	23.82
EGPRS class 8	26.88	26.66	26.50	25.88	25.96	25.68
EGPRS class 10	26.55	26.30	26.31	25.50	25.73	25.52
EGPRS class 11	25.14	24.87	24.98	24.22	24.31	24.13
EGPRS class 12	23.75	23.60	23.58	22.67	22.69	22.62

Conducted Power (*Unit: dBm)									
Band	WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Channel	4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
AMR 12.2Kbps	22.88	22.89	23.05	23.20	23.24	23.19	22.98	22.93	22.85
RMC 12.2Kbps	22.90	22.92	23.08	23.24	23.26	23.22	23.00	22.96	22.89
HSDPA Subtest-1	22.18	22.25	22.30	22.64	22.64	22.72	22.00	21.91	21.80
HSDPA Subtest-2	22.21	22.25	22.26	22.64	22.63	22.73	21.98	21.89	21.81
HSDPA Subtest-3	21.69	21.75	21.81	22.14	22.17	22.25	21.49	21.40	21.41
HSDPA Subtest-4	21.71	21.75	21.78	22.12	22.12	22.23	21.48	21.40	21.40
DC-HSDPA Subtest-1	21.87	21.92	21.99	22.35	22.14	22.03	22.01	21.90	21.92
DC-HSDPA Subtest-2	21.86	21.93	21.95	22.11	22.10	21.98	21.87	21.79	21.77
DC-HSDPA Subtest-3	21.40	21.43	21.56	21.68	21.65	21.52	21.42	21.19	21.18
DC-HSDPA Subtest-4	21.37	21.40	21.48	21.97	21.60	21.47	21.23	21.13	21.15
HSUPA Subtest-1	22.23	22.24	22.34	22.67	22.66	22.75	22.03	21.98	21.66
HSUPA Subtest-2	20.23	20.31	20.34	20.64	20.68	20.79	20.02	19.95	19.60
HSUPA Subtest-3	21.27	21.29	21.35	21.62	21.68	21.79	20.98	20.97	21.35
HSUPA Subtest-4	20.29	20.25	20.36	20.61	20.64	20.72	20.01	19.99	20.08
HSUPA Subtest-5	22.20	22.30	22.40	22.70	22.70	22.80	22.00	22.00	21.50

Conducted Power (*Unit: dBm)						
Band	**CDMA 2000 BC0**			**CDMA 2000 BC1**		
Channel	**1013**	**384**	**777**	**25**	**600**	**1175**
Frequency	**824.7**	**836.52**	**848.31**	**1851.25**	**1880**	**1908.75**
1xRTT RC1 SO55	23.64	**23.70**	23.62	24.47	**24.53**	24.34
1xRTT RC3 SO55	23.63	23.69	23.60	24.46	24.51	24.32
1xRTT RC3 SO32 (+ F-SCH)	23.58	23.60	23.51	24.40	24.47	24.15
1xRTT RC3 SO32 (+SCH)	23.55	23.57	23.48	24.21	24.36	24.13
1xEVDO RTAP 153.6Kbps	23.48	23.54	23.46	24.15	24.21	24.08
1xEVDO RETAP 4096Bits	23.08	23.15	23.06	23.77	23.81	23.74

ERP/EIRP

GSM850 (G_T - L_C= -2.33 dBi)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	32.32	32.35	32.33
Conducted Power (Watts)	1.7061	1.7179	1.7100
ERP(dBm)	27.84	27.87	27.85
ERP(Watts)	0.6081	0.6124	0.6095

EDGE850 (G_T - L_C= -2.33 dBi)			
Channel	128	189	251
	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8
Conducted Power (dBm)	26.88	26.66	26.50
Conducted Power (Watts)	0.4875	0.4634	0.4467
ERP(dBm)	22.40	22.18	22.02
ERP(Watts)	0.1738	0.1652	0.1592

GSM1900 (GT - LC= 0.55 dBi)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	29.34	29.38	29.37
Conducted Power (Watts)	0.8590	0.8670	0.8650
EIRP(dBm)	29.89	29.93	29.92
EIRP(Watts)	0.9750	0.9840	0.9817

EDGE1900 (G_T - L_C= 0.55 dBi)			
Channel	512	661	810
	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	25.88	25.96	25.68
Conducted Power (Watts)	0.3873	0.3945	0.3698
EIRP(dBm)	26.43	26.51	26.23
EIRP(Watts)	0.4395	0.4477	0.4198

WCDMA Band V (G_T - L_C= -2.33 dBi)			
Channel	4132	4182	4233
	(Low)	(Mid)	(High)
Frequency (MHz)	826.4	836.4	846.6
Conducted Power (dBm)	22.90	22.92	23.08
Conducted Power (Watts)	0.1950	0.1959	0.2032
ERP(dBm)	18.42	18.44	18.60
ERP(Watts)	0.0695	0.0698	0.0724

WCDMA Band II (G_T - L_C= 0.55 dBi)			
Channel	9262	9400	9538
	(Low)	(Mid)	(High)
Frequency (MHz)	1852.4	1880	1907.6
Conducted Power (dBm)	23.24	23.26	23.22
Conducted Power (Watts)	0.2109	0.2118	0.2099
EIRP(dBm)	23.79	23.81	23.77
EIRP(Watts)	0.2393	0.2404	0.2382

WCDMA Band IV (G_T - L_C= -1.5 dBi)			
Channel	1312	1413	1513
	(Low)	(Mid)	(High)
Frequency (MHz)	1712.4	1732.6	1752.6
Conducted Power (dBm)	23.00	22.96	22.89
Conducted Power (Watts)	0.1995	0.1977	0.1945
EIRP(dBm)	21.50	21.46	21.39
EIRP(Watts)	0.1413	0.1400	0.1377

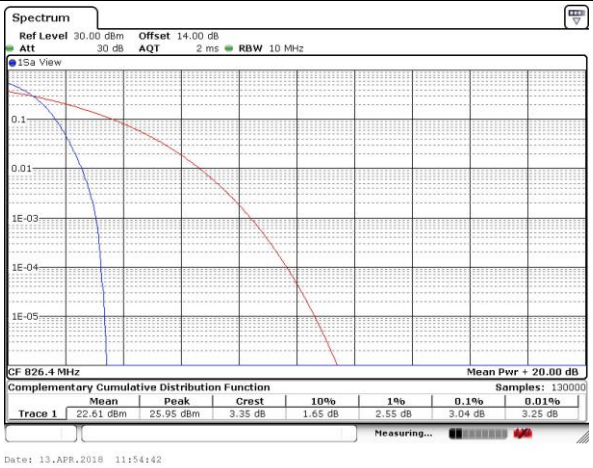
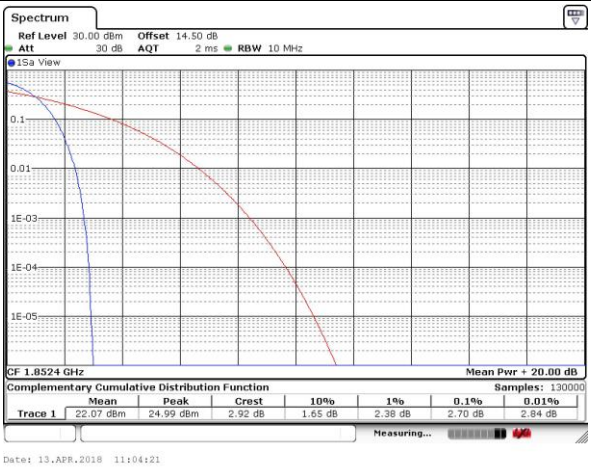
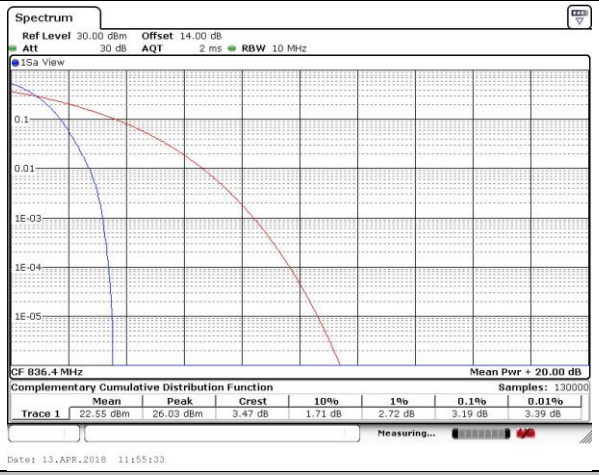
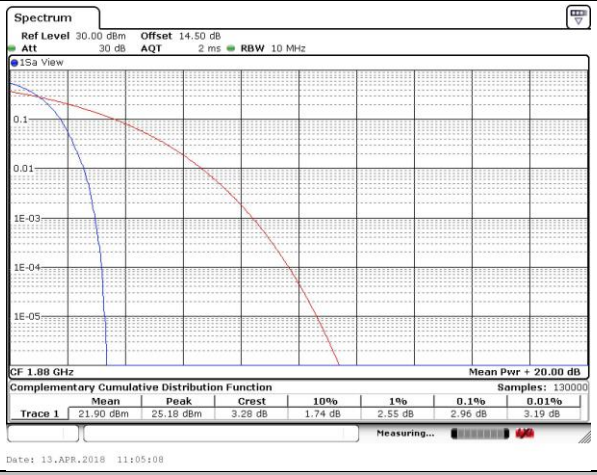
CDMA BC0 (G_T - L_C= -2.33 dBi)			
Channel	824.7	836.52	848.31
	(Low)	(Mid)	(High)
Frequency (MHz)	826.4	836.4	846.6
Conducted Power (dBm)	23.64	23.70	23.62
Conducted Power (Watts)	0.2312	0.2344	0.2301
ERP(dBm)	19.16	19.22	19.14
ERP(Watts)	0.0824	0.0836	0.0820

CDMA BC1 (G_T - L_C= 0.55 dBi)			
Channel	824.7	836.52	848.31
	(Low)	(Mid)	(High)
Frequency (MHz)	1852.4	1880	1907.6
Conducted Power (dBm)	24.47	24.53	24.34
Conducted Power (Watts)	0.2799	0.2838	0.2716
EIRP(dBm)	25.02	25.08	24.89
EIRP(Watts)	0.3177	0.3221	0.3083

Peak-to-Average Ratio

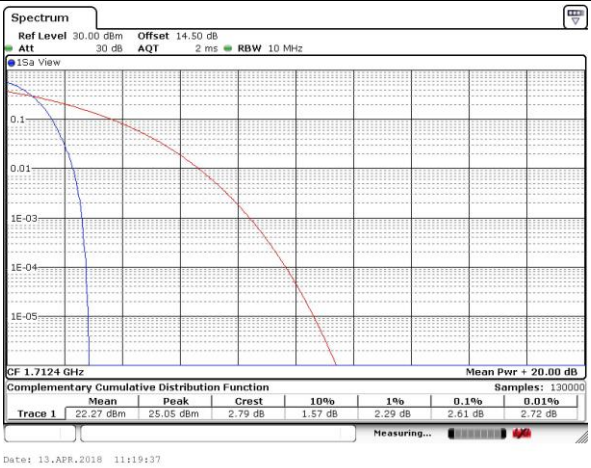
Mode	WCDMA Band V(dB)	WCDMA Band II(dB)	WCDMA Band IV(dB)	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	3.04	2.70	2.61	PASS
Middle CH	3.19	2.96	2.87	
Highest CH	3.22	2.67	3.13	

Mode	CDMA BC0(dB)	CDMA BC1(dB)	Limit: 13dB
Mod.	1xRTT	1xRTT	Result
Lowest CH	3.30	2.84	PASS
Middle CH	3.39	2.96	
Highest CH	3.48	2.78	

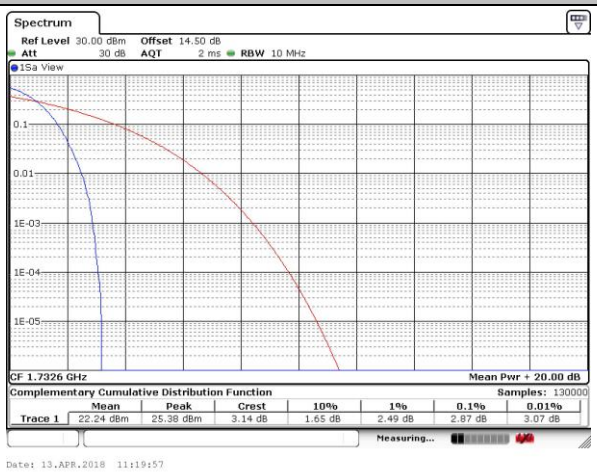
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**

WCDMA Band IV (RMC 12.2Kbps)

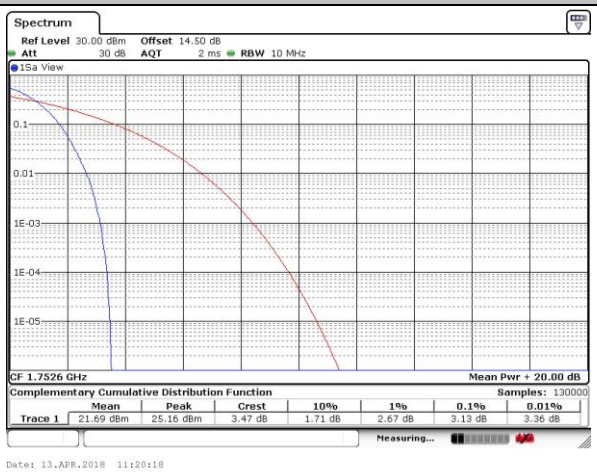
Lowest Channel

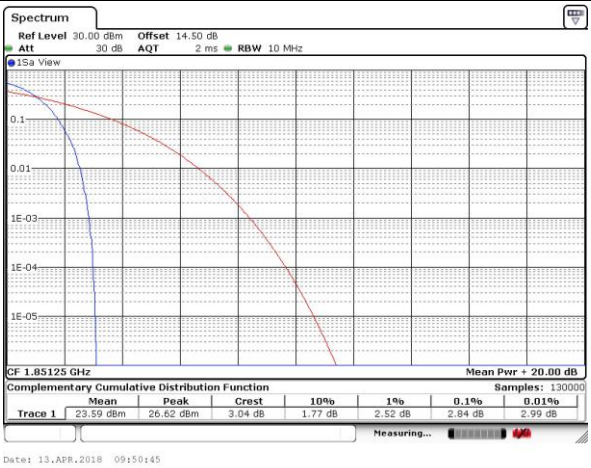
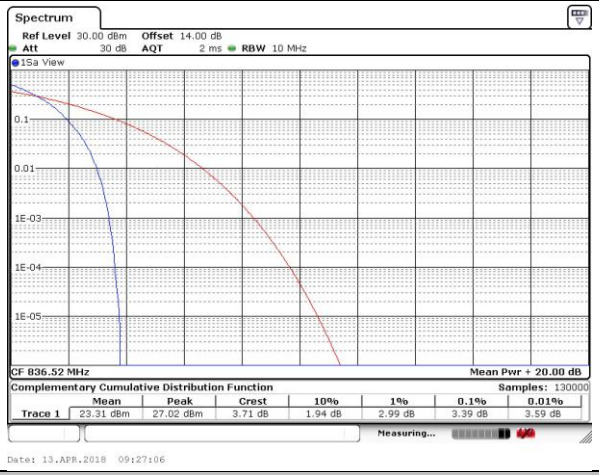


Middle Channel



Highest Channel



CDMA BC0 (1xRTT)	CDMA BC1 (1xRTT)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**

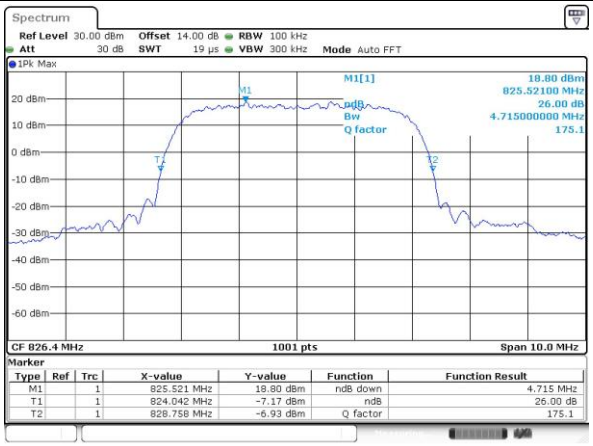
26dB Bandwidth

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

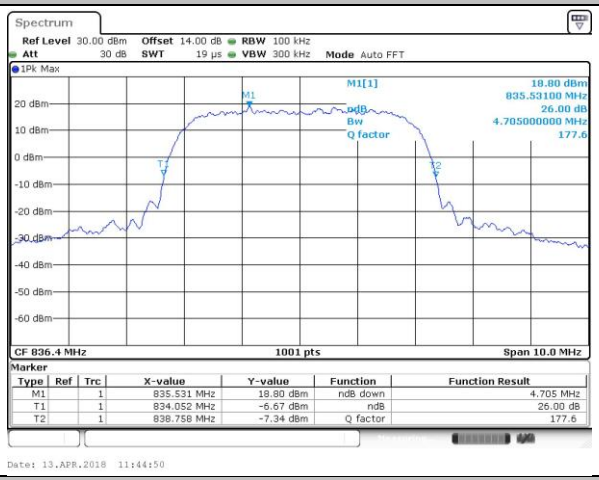
Mode	CDMA BC0(MHz)	CDMA BC1(MHz)
Mod.	1xRTT	1xRTT
Lowest CH	1.42	1.44
Middle CH	1.42	1.44
Highest CH	1.43	1.44

WCDMA Band V (RMC 12.2Kbps)

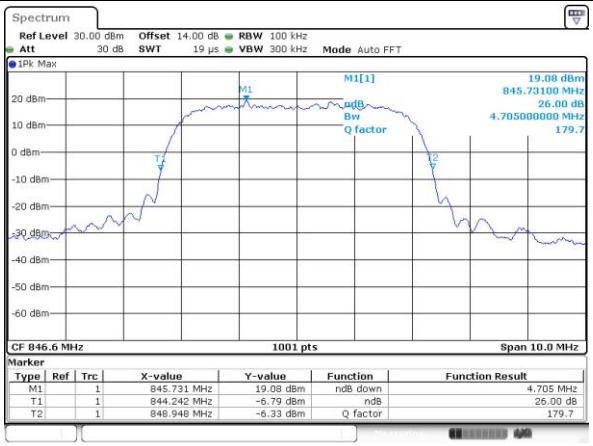
Lowest Channel



Middle Channel

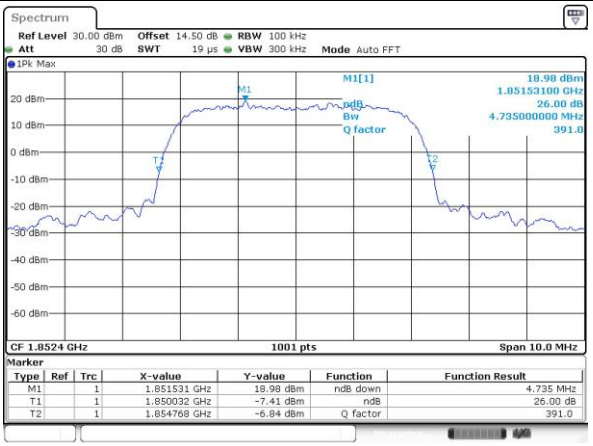


Highest Channel

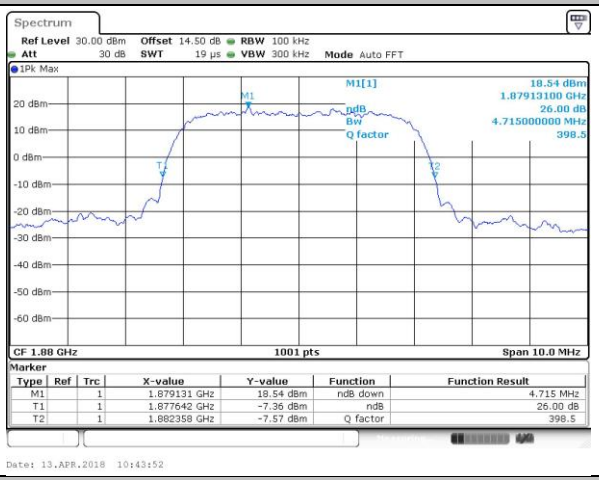


WCDMA Band II (RMC 12.2Kbps)

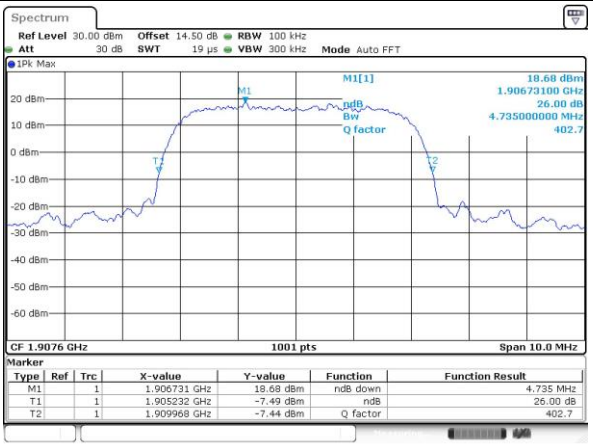
Lowest Channel



Middle Channel

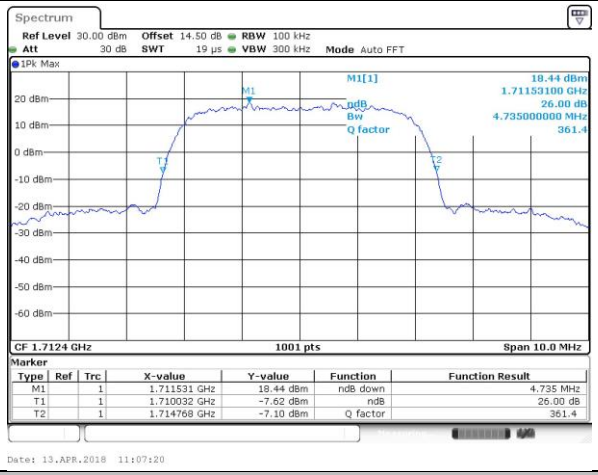


Highest Channel

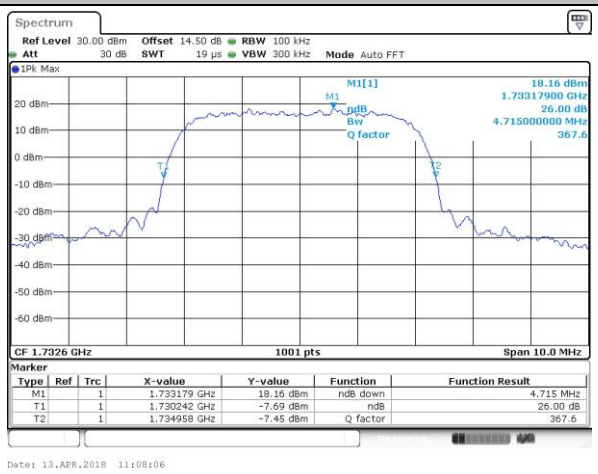


WCDMA Band IV (RMC 12.2Kbps)

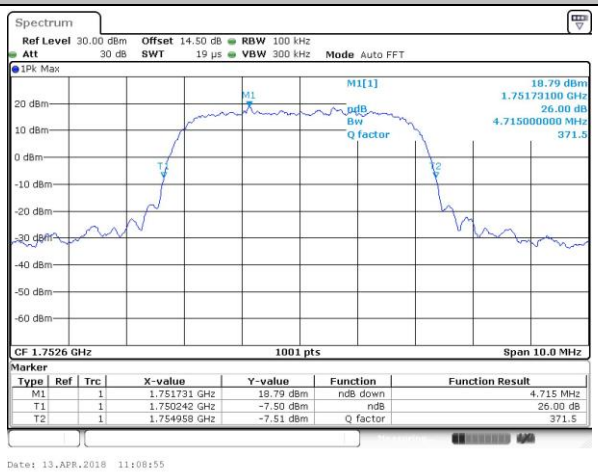
Lowest Channel



Middle Channel

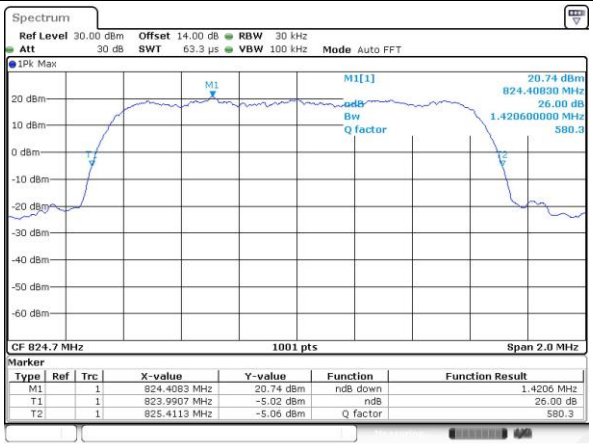


Highest Channel

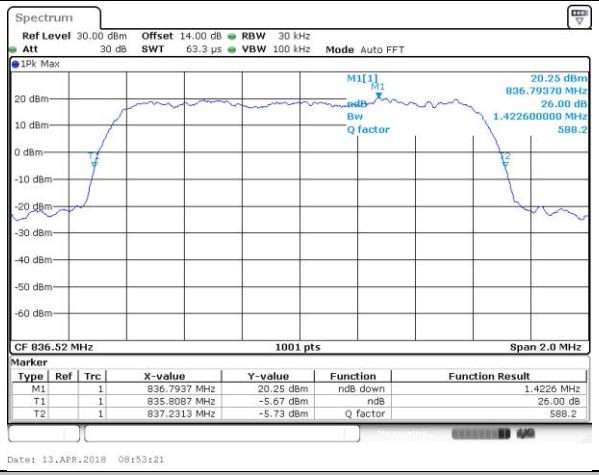


CDMA BC0 (1xRTT)

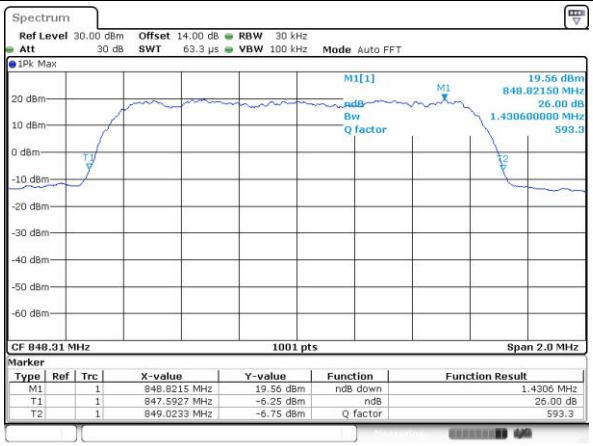
Lowest Channel



Middle Channel

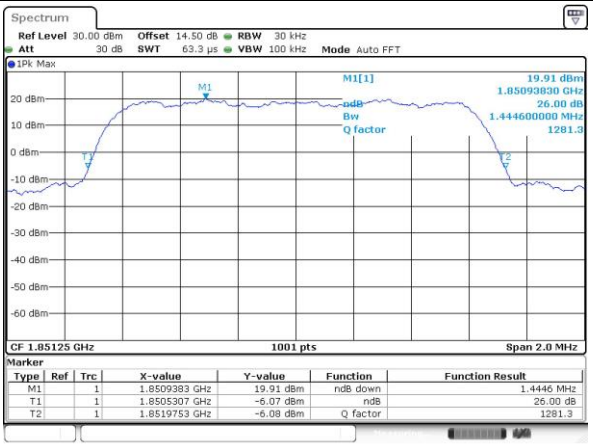


Highest Channel

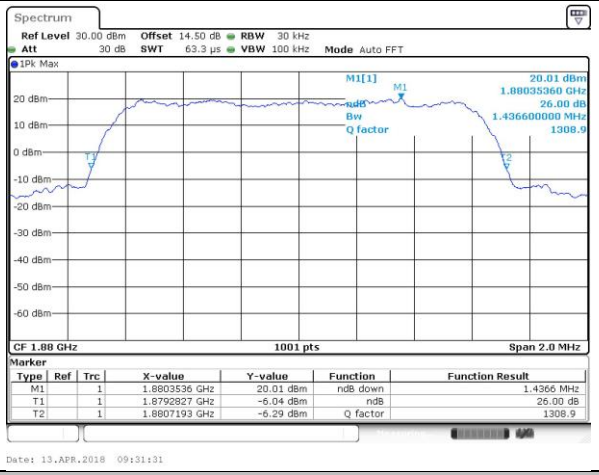


CDMA BC1 (1xRTT)

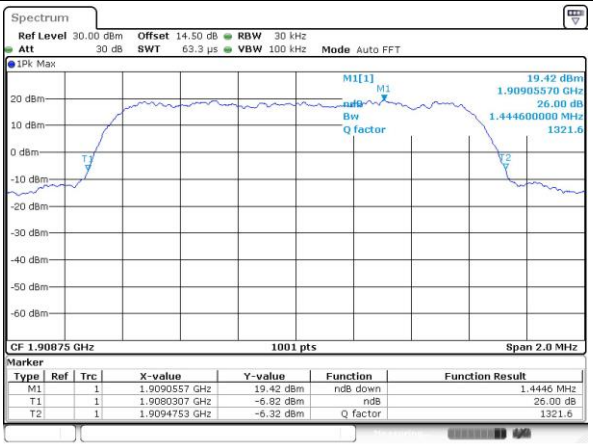
Lowest Channel



Middle Channel



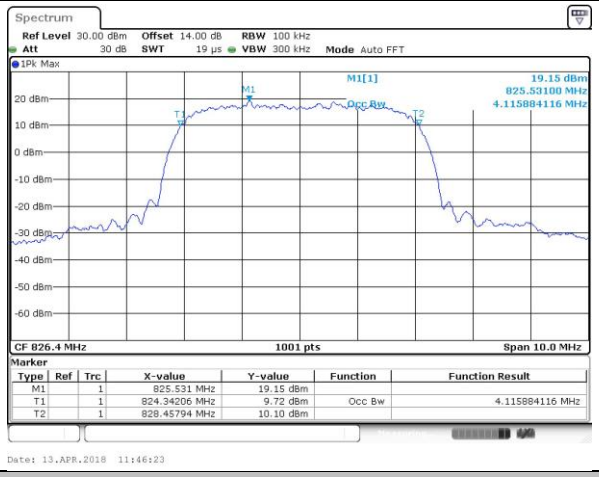
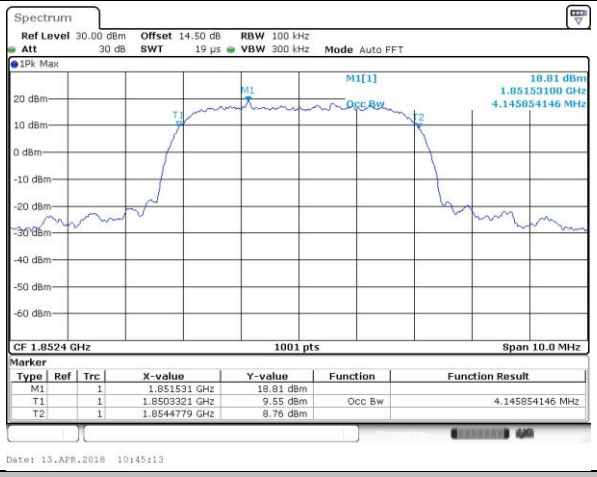
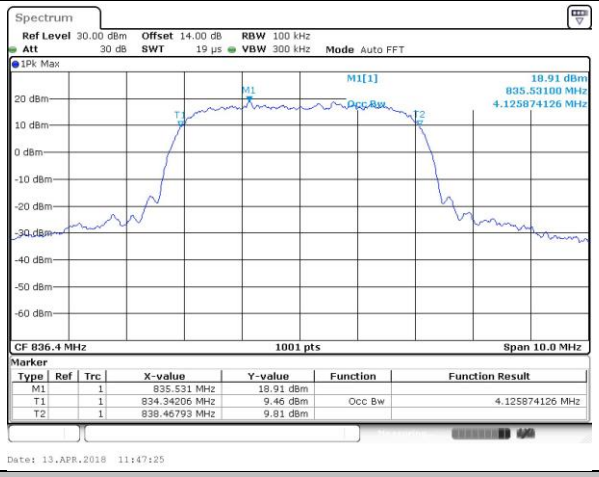
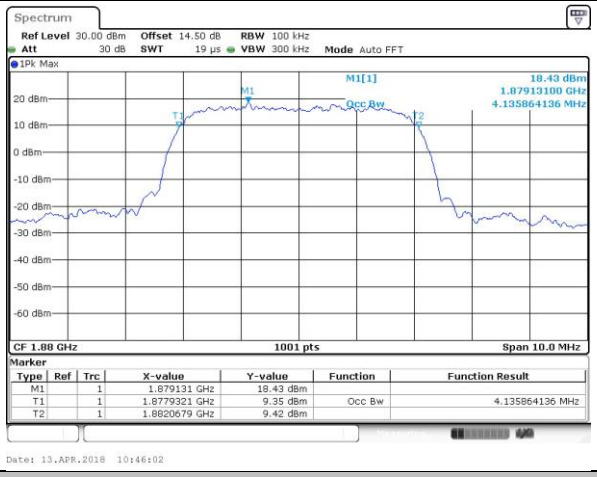
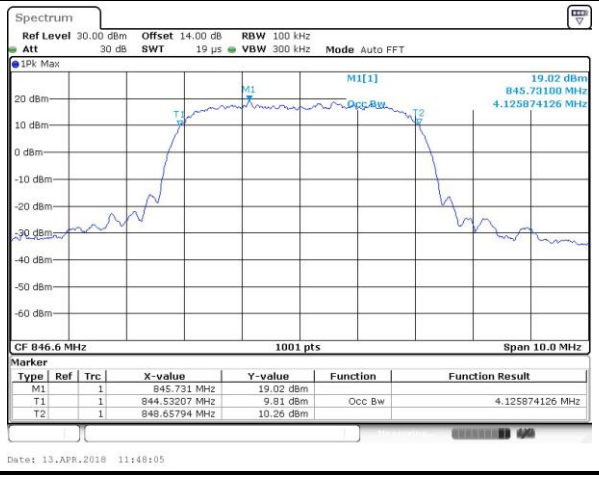
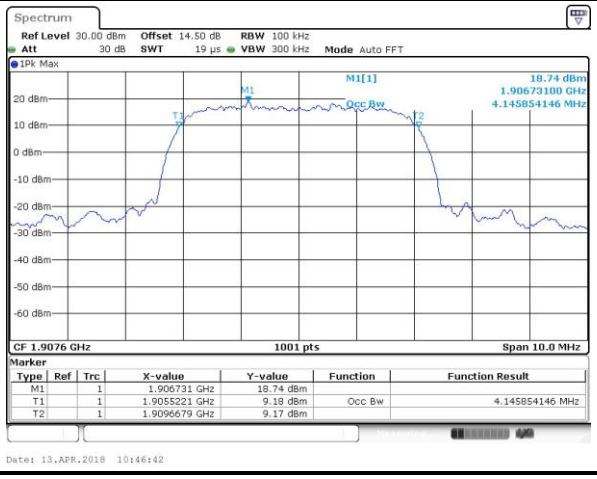
Highest Channel



Occupied Bandwidth

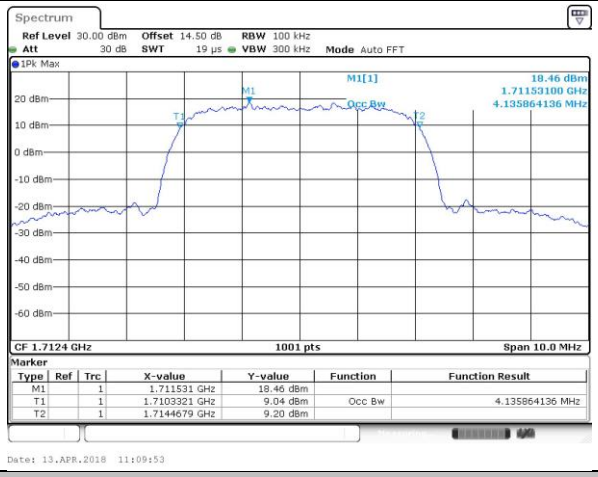
Mode	WCDMA Band V(MHz)	WCDMA Band II(MHz)	WCDMA Band IV(MHz)
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.12	4.15	4.14
Middle CH	4.13	4.14	4.12
Highest CH	4.13	4.15	4.12

Mode	CDMA BC0(MHz)	CDMA BC1(MHz)
Mod.	1xRTT	1xRTT
Lowest CH	1.27	1.27
Middle CH	1.27	1.27
Highest CH	1.27	1.27

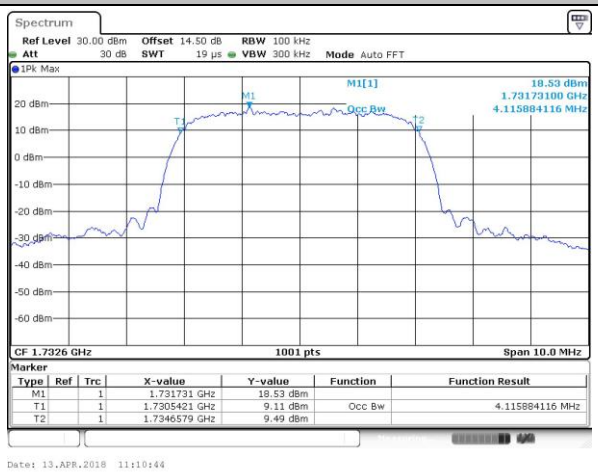
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

WCDMA Band IV (RMC 12.2Kbps)

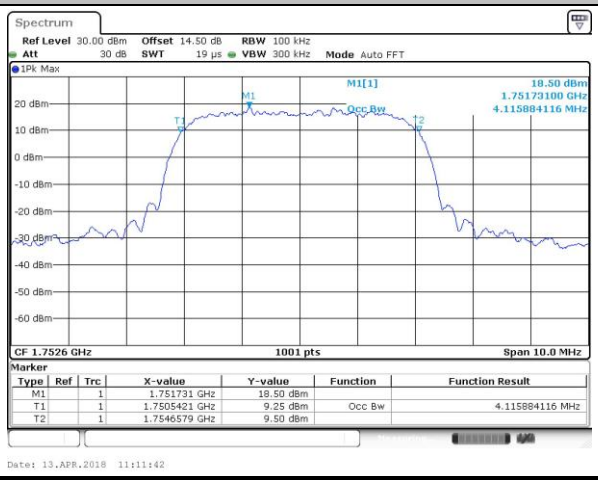
Lowest Channel



Middle Channel

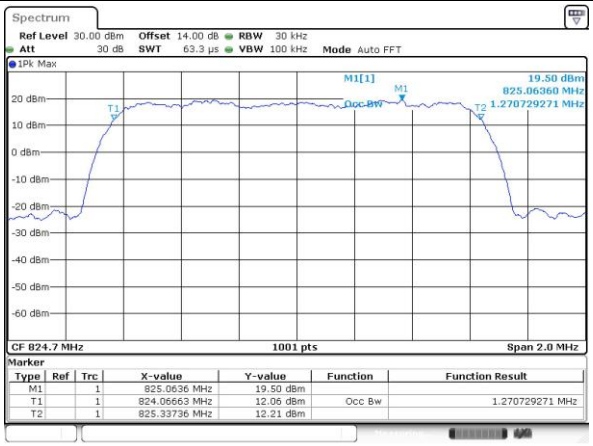


Highest Channel

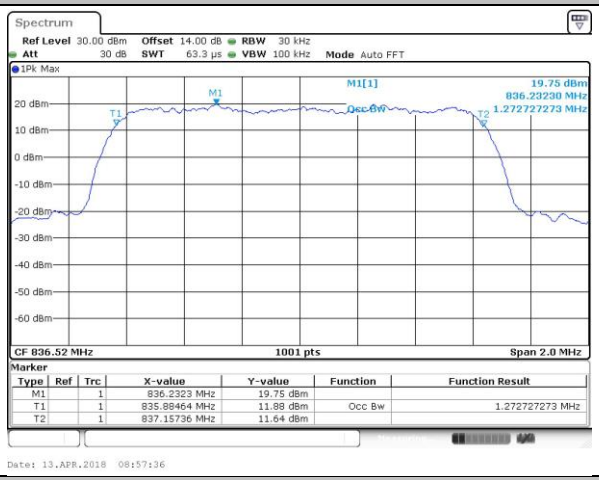


CDMA BC0 (1xRTT)

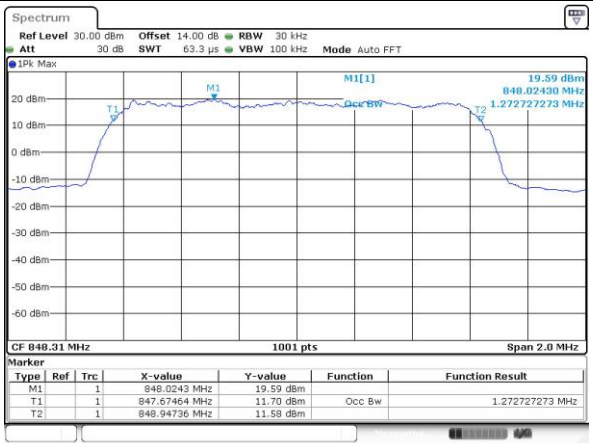
Lowest Channel



Middle Channel

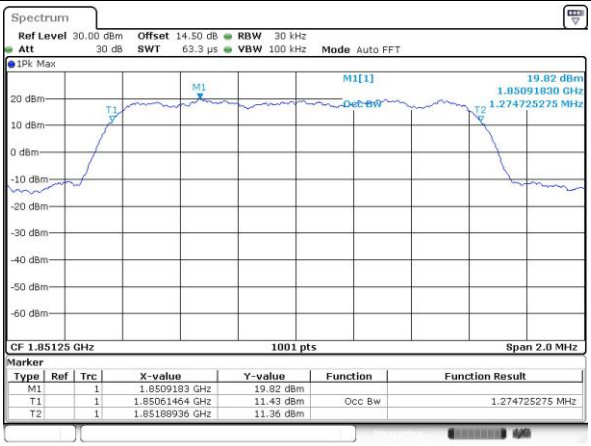


Highest Channel

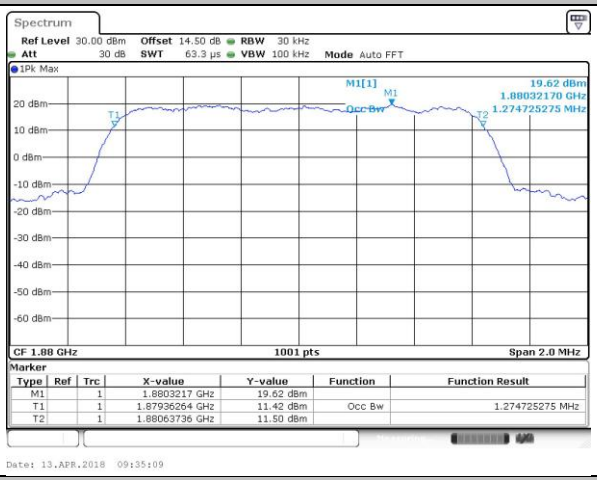


CDMA BC1 (1xRTT)

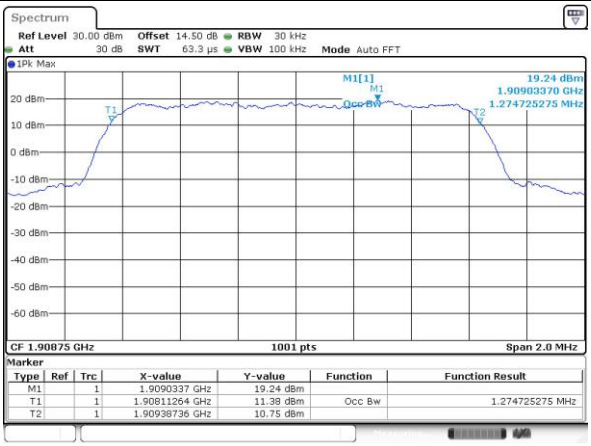
Lowest Channel



Middle Channel



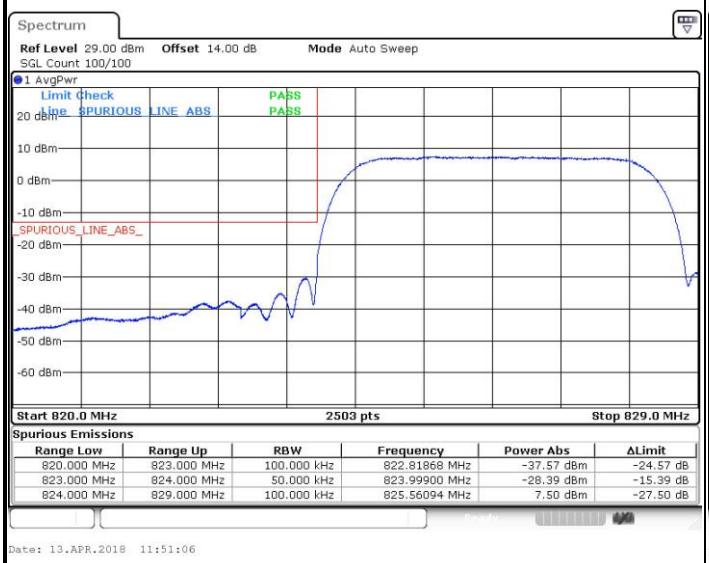
Highest Channel



Conducted Band Edge

WCDMA Band V (RMC 12.2Kbps)

Lowest Band Edge

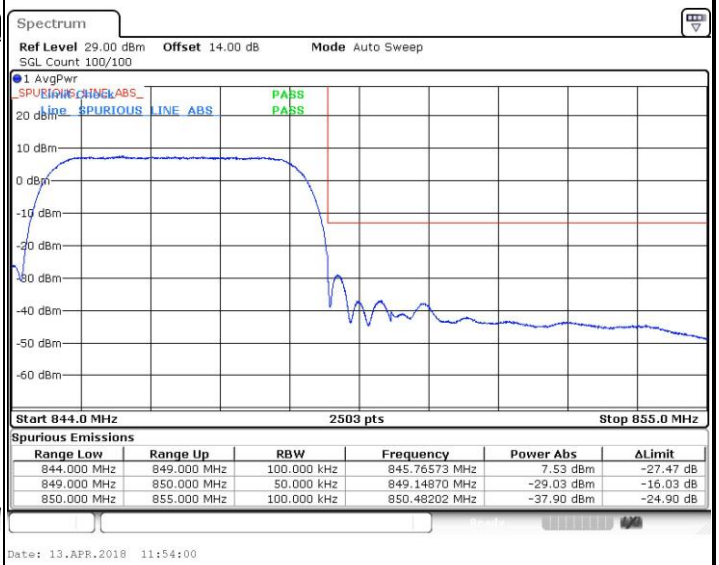


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.81868 MHz	-37.57 dBm	-24.57 dB
823.000 MHz	824.000 MHz	50.000 kHz	823.99900 MHz	-28.39 dBm	-15.39 dB
824.000 MHz	829.000 MHz	100.000 kHz	825.56094 MHz	7.50 dBm	-27.50 dB

Date: 13.APR.2018 11:51:06

Highest Band Edge



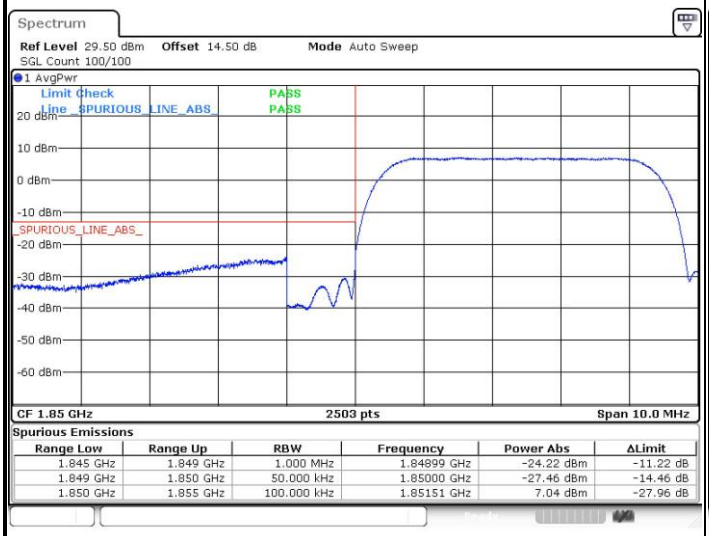
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
844.000 MHz	849.000 MHz	100.000 kHz	845.76573 MHz	7.53 dBm	-27.47 dB
849.000 MHz	850.000 MHz	50.000 kHz	849.14870 MHz	-29.03 dBm	-16.03 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.48202 MHz	-37.90 dBm	-24.90 dB

Date: 13.APR.2018 11:54:00

WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge

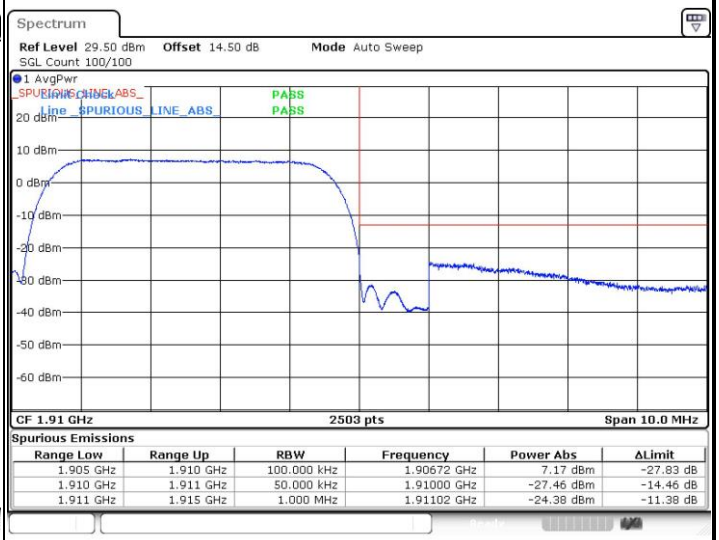


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84899 GHz	-24.22 dBm	-11.22 dB
1.849 GHz	1.850 GHz	50.000 kHz	1.85000 GHz	-27.46 dBm	-14.46 dB
1.850 GHz	1.855 GHz	100.000 kHz	1.85151 GHz	7.04 dBm	-27.96 dB

Date: 13.APR.2018 10:50:03

Highest Band Edge

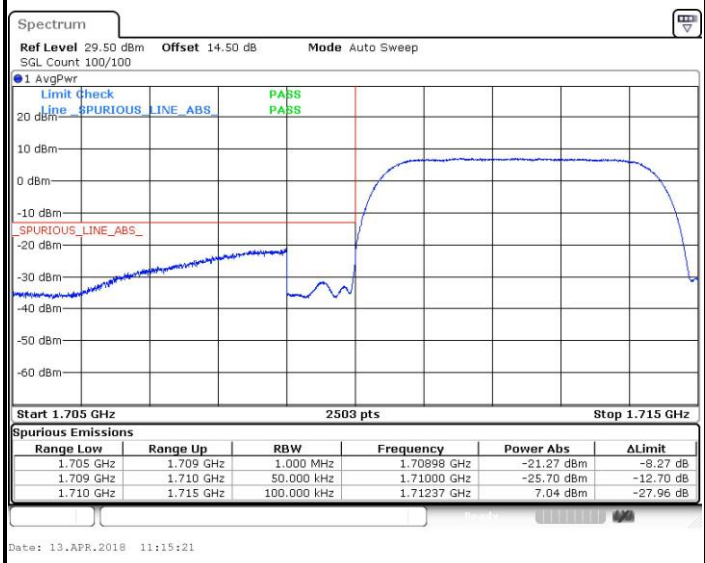


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.905 GHz	1.910 GHz	100.000 kHz	1.90672 GHz	7.17 dBm	-27.83 dB
1.910 GHz	1.911 GHz	50.000 kHz	1.91000 GHz	-27.46 dBm	-14.46 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91102 GHz	-24.38 dBm	-11.38 dB

Date: 13.APR.2018 10:54:09

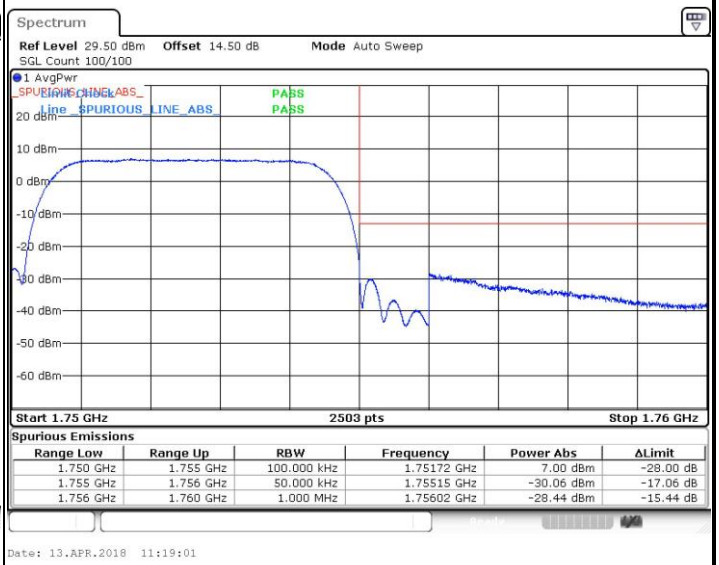
WCDMA Band IV (RMC 12.2Kbps)	
Lowest Band Edge	**Highest Band Edge**



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.705 GHz	1.709 GHz	1.000 MHz	1.70898 GHz	-21.27 dBm	-8.27 dB
1.709 GHz	1.710 GHz	50.000 kHz	1.71000 GHz	-25.70 dBm	-12.70 dB
1.710 GHz	1.715 GHz	100.000 kHz	1.71237 GHz	7.04 dBm	-27.96 dB

Date: 13.APR.2018 11:15:21



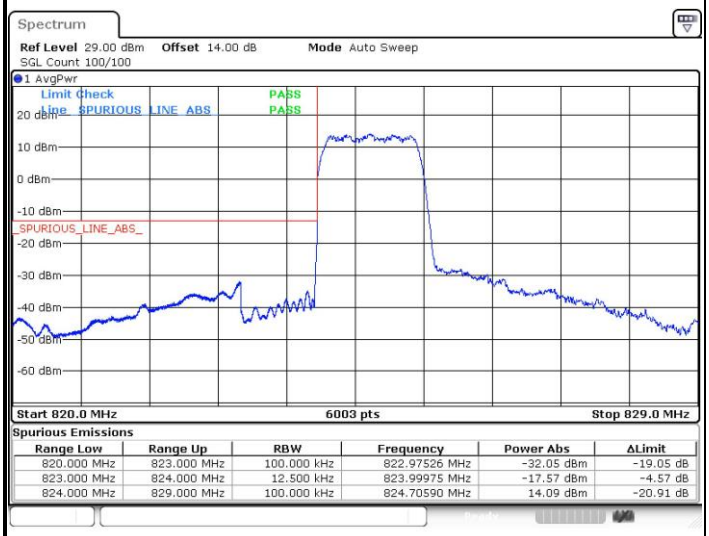
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.750 GHz	1.755 GHz	100.000 kHz	1.75172 GHz	7.00 dBm	-28.00 dB
1.755 GHz	1.756 GHz	50.000 kHz	1.75515 GHz	-30.06 dBm	-17.06 dB
1.756 GHz	1.760 GHz	1.000 MHz	1.75602 GHz	-28.44 dBm	-15.44 dB

Date: 13.APR.2018 11:19:01

CDMA BC0 (1xRTT)

Lowest Band Edge

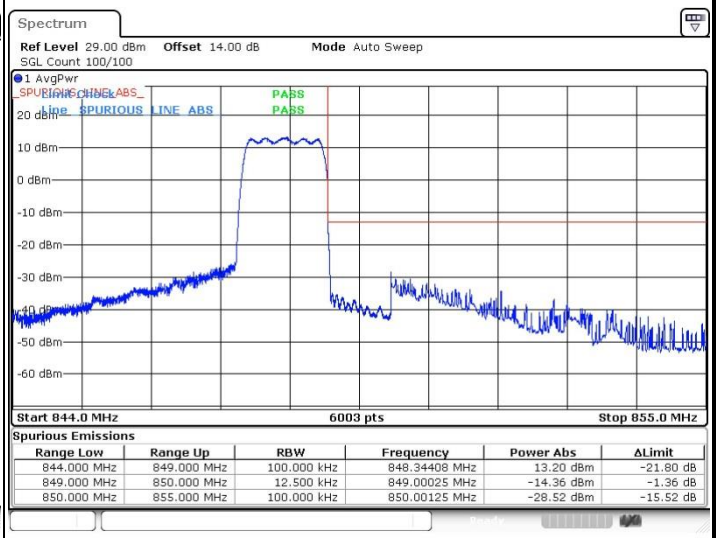


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
820.000 MHz	823.000 MHz	100.000 kHz	822.97526 MHz	-32.05 dBm	-19.05 dB
823.000 MHz	824.000 MHz	12.500 kHz	823.99975 MHz	-17.57 dBm	-4.57 dB
824.000 MHz	829.000 MHz	100.000 kHz	824.70590 MHz	14.09 dBm	-20.91 dB

Date: 13.APR.2018 09:06:07

Highest Band Edge



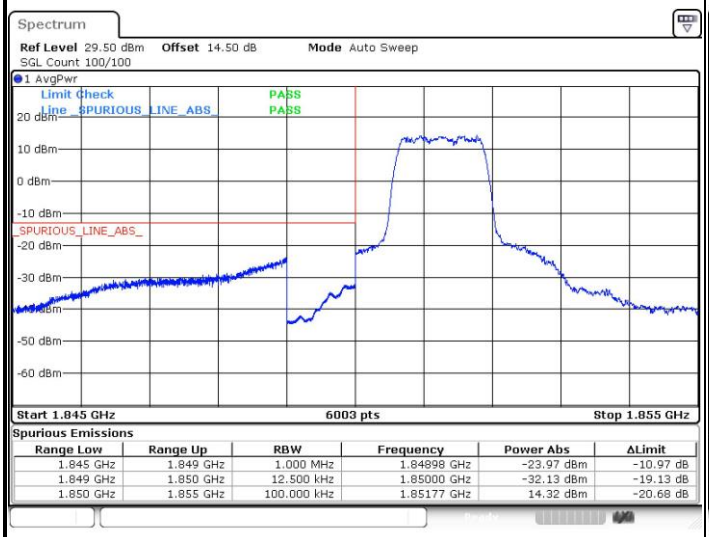
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
844.000 MHz	849.000 MHz	100.000 kHz	848.34408 MHz	13.20 dBm	-21.80 dB
849.000 MHz	850.000 MHz	12.500 kHz	849.00025 MHz	-14.36 dBm	-1.36 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.00125 MHz	-28.52 dBm	-15.52 dB

Date: 13.APR.2018 10:00:21

CDMA BC1 (1xRTT)

Lowest Band Edge

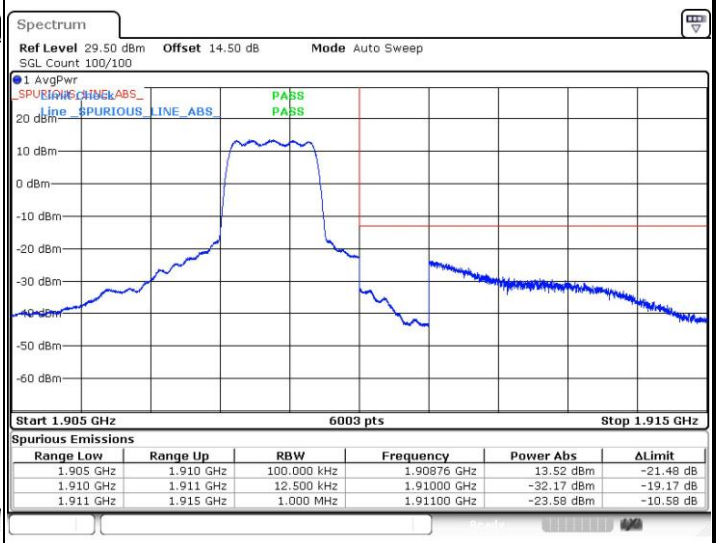


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84898 GHz	-23.97 dBm	-10.97 dB
1.849 GHz	1.850 GHz	12.500 kHz	1.85000 GHz	-32.13 dBm	-19.13 dB
1.850 GHz	1.855 GHz	100.000 kHz	1.85177 GHz	14.32 dBm	-20.68 dB

Date: 13.APR.2018 09:39:35

Highest Band Edge



Spurious Emissions

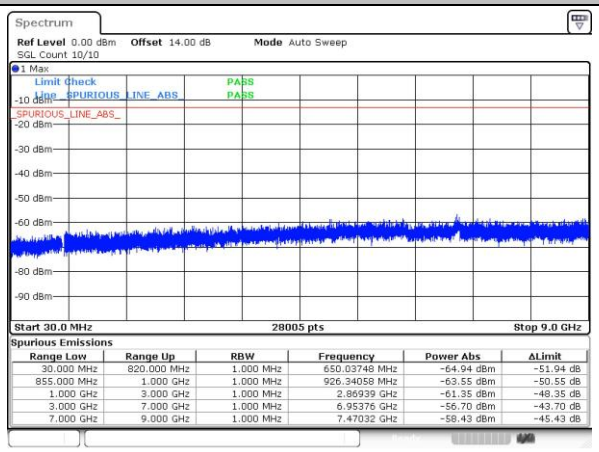
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.905 GHz	1.910 GHz	100.000 kHz	1.90876 GHz	13.52 dBm	-21.48 dB
1.910 GHz	1.911 GHz	12.500 kHz	1.91000 GHz	-32.17 dBm	-19.17 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91100 GHz	-23.58 dBm	-10.58 dB

Date: 13.APR.2018 09:42:26

Conducted Spurious Emission

WCDMA Band V (RMC 12.2Kbps)

Lowest Channel

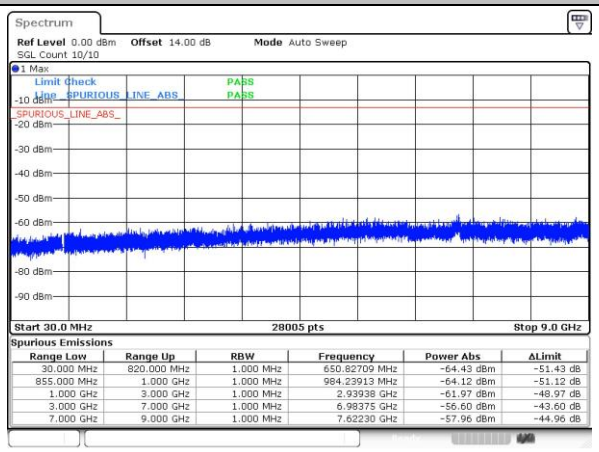


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	650.03748 MHz	-64.94 dBm	-51.94 dB
855.000 MHz	1.000 GHz	1.000 MHz	926.34058 MHz	-63.55 dBm	-50.55 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.86939 GHz	-61.35 dBm	-48.35 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.95376 GHz	-56.70 dBm	-43.70 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.47032 GHz	-58.43 dBm	-45.43 dB

Date: 13.APR.2018 13:45:37

Middle Channel

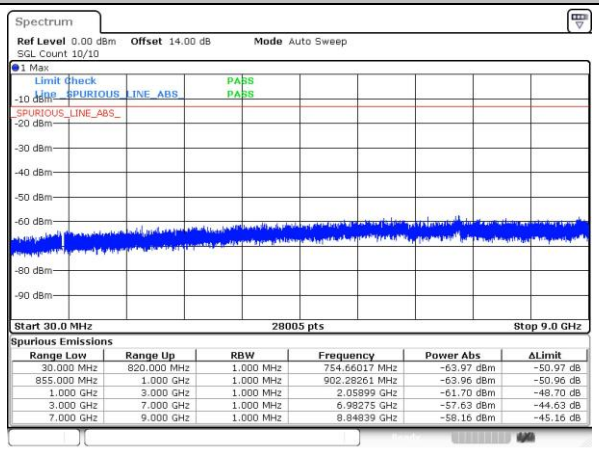


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	650.82709 MHz	-64.43 dBm	-51.43 dB
855.000 MHz	1.000 GHz	1.000 MHz	984.23913 MHz	-64.12 dBm	-51.12 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.93938 GHz	-61.97 dBm	-48.97 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98375 GHz	-56.60 dBm	-43.60 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.62230 GHz	-57.96 dBm	-44.96 dB

Date: 13.APR.2018 13:47:07

Highest Channel



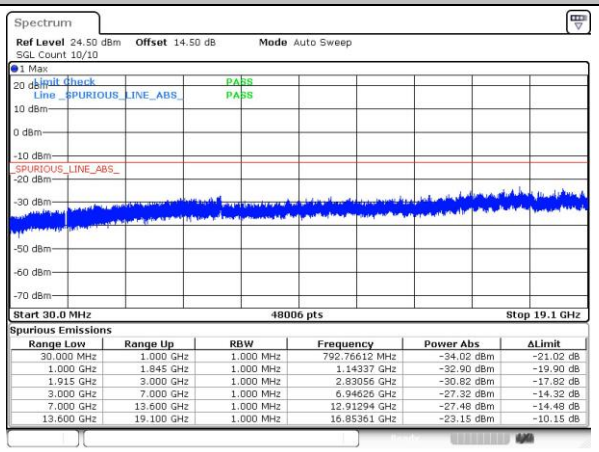
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	754.66017 MHz	-63.97 dBm	-50.97 dB
855.000 MHz	1.000 GHz	1.000 MHz	902.28261 MHz	-63.96 dBm	-50.96 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.05899 GHz	-61.70 dBm	-48.70 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98275 GHz	-57.63 dBm	-44.63 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.84839 GHz	-58.16 dBm	-45.16 dB

Date: 13.APR.2018 13:48:37

WCDMA Band II (RMC 12.2Kbps)

Lowest Channel

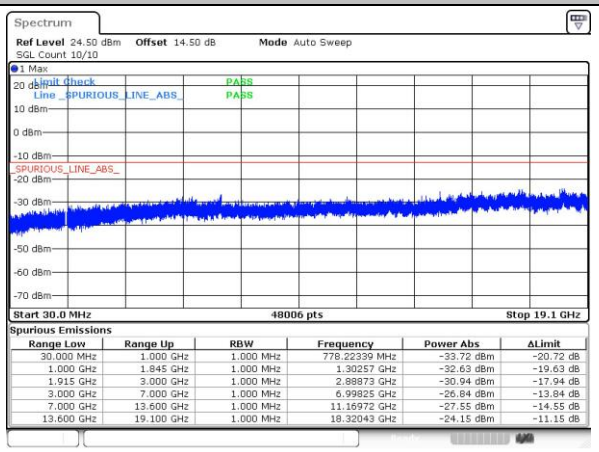


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	792.76612 MHz	-34.02 dBm	-21.02 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.14337 GHz	-32.90 dBm	-19.90 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.83056 GHz	-30.82 dBm	-17.82 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94626 GHz	-27.32 dBm	-14.32 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.91294 GHz	-27.48 dBm	-14.48 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.85361 GHz	-23.15 dBm	-10.15 dB

Date: 13.APR.2018 10:57:35

Middle Channel

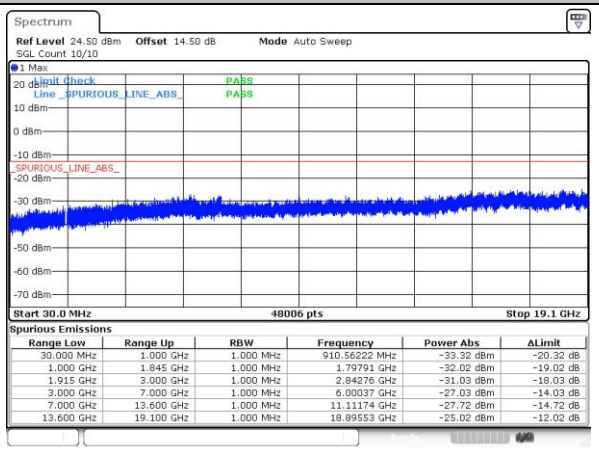


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	778.22339 MHz	-33.72 dBm	-20.72 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.30257 GHz	-32.63 dBm	-19.63 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.88873 GHz	-30.94 dBm	-17.94 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99825 GHz	-26.84 dBm	-13.84 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.16972 GHz	-27.55 dBm	-14.55 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.32043 GHz	-24.15 dBm	-11.15 dB

Date: 13.APR.2018 10:59:06

Highest Channel



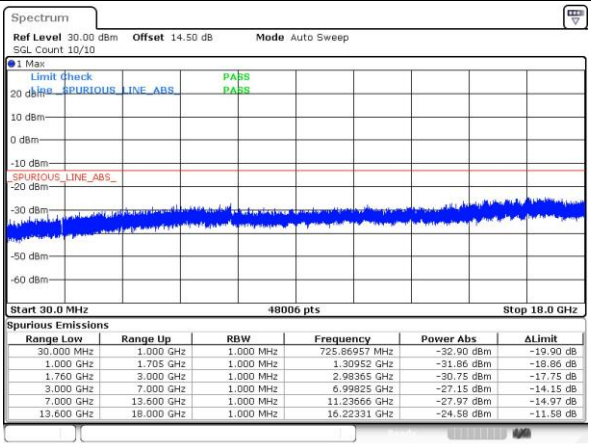
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	910.56222 MHz	-33.32 dBm	-20.32 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.79791 GHz	-32.02 dBm	-19.02 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.84276 GHz	-31.03 dBm	-18.03 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.00037 GHz	-27.03 dBm	-14.03 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.11174 GHz	-27.72 dBm	-14.72 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.89553 GHz	-25.02 dBm	-12.02 dB

Date: 13.APR.2018 11:00:51

WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel

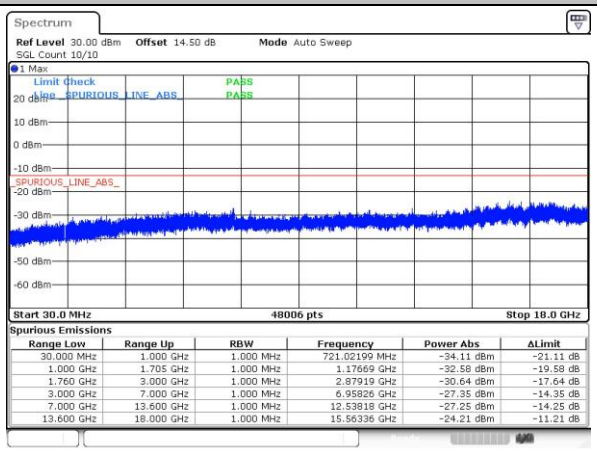


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	725.86957 MHz	-32.90 dBm	-19.90 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.30952 GHz	-31.86 dBm	-18.86 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.98365 GHz	-30.75 dBm	-17.75 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99825 GHz	-27.15 dBm	-14.15 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.23666 GHz	-27.97 dBm	-14.97 dB
13.600 GHz	18.000 GHz	1.000 MHz	16.22331 GHz	-24.58 dBm	-11.58 dB

Date: 13.APR.2018 11:26:22

Middle Channel

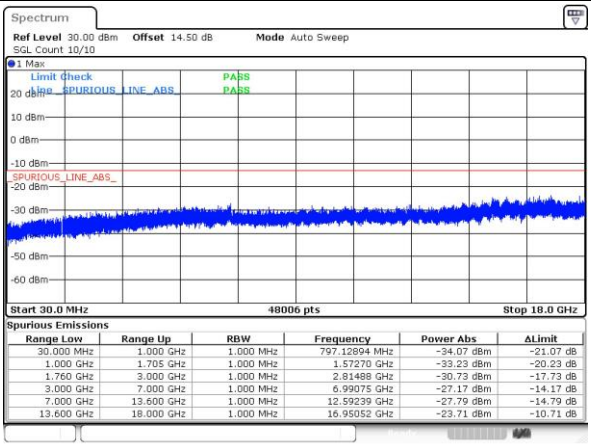


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	721.02199 MHz	-34.11 dBm	-21.11 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.17669 GHz	-32.58 dBm	-19.58 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.87919 GHz	-30.64 dBm	-17.64 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.95826 GHz	-27.35 dBm	-14.35 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.53818 GHz	-27.25 dBm	-14.25 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.56336 GHz	-24.21 dBm	-11.21 dB

Date: 13.APR.2018 11:27:58

Highest Channel



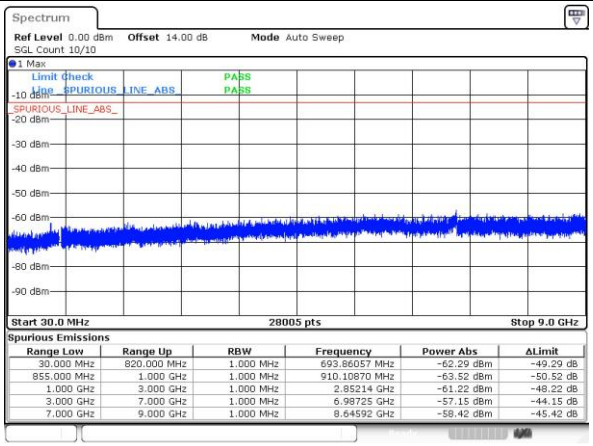
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	797.12894 MHz	-34.07 dBm	-21.07 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.57270 GHz	-33.23 dBm	-20.23 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.81488 GHz	-30.73 dBm	-17.73 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99075 GHz	-27.17 dBm	-14.17 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.59239 GHz	-27.79 dBm	-14.79 dB
13.600 GHz	18.000 GHz	1.000 MHz	16.95052 GHz	-23.71 dBm	-10.71 dB

Date: 13.APR.2018 11:29:35

CDMA BC0 (1xRTT)

Lowest Channel

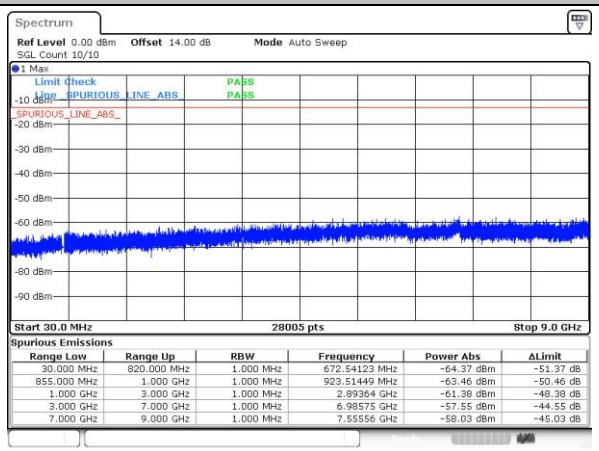


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	693.86057 MHz	-62.29 dBm	-49.29 dB
855.000 MHz	1.000 GHz	1.000 MHz	910.10870 MHz	-63.52 dBm	-50.52 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.85214 GHz	-61.22 dBm	-48.22 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98725 GHz	-57.15 dBm	-44.15 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.64592 GHz	-58.42 dBm	-45.42 dB

Date: 13.APR.2018 09:18:50

Middle Channel

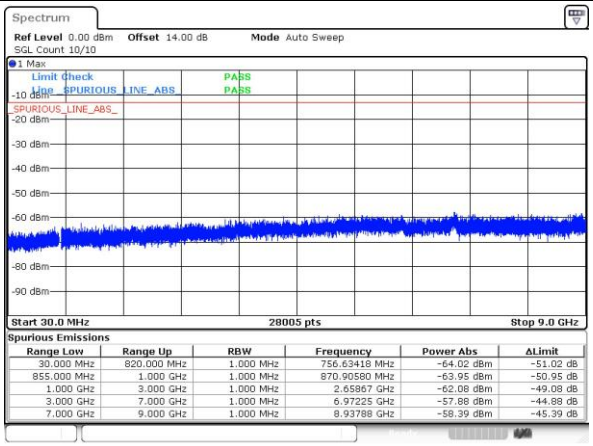


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	672.54123 MHz	-64.37 dBm	-51.37 dB
855.000 MHz	1.000 GHz	1.000 MHz	923.51449 MHz	-63.46 dBm	-50.46 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.89364 GHz	-61.38 dBm	-48.38 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98575 GHz	-57.55 dBm	-44.55 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.55556 GHz	-58.03 dBm	-45.03 dB

Date: 13.APR.2018 09:20:24

Highest Channel



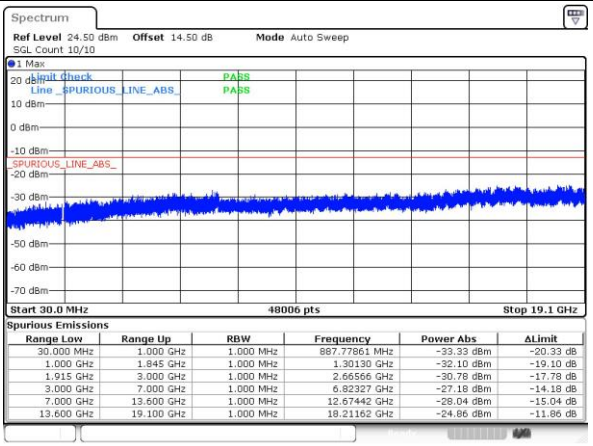
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	756.63418 MHz	-64.02 dBm	-51.02 dB
855.000 MHz	1.000 GHz	1.000 MHz	870.90580 MHz	-63.95 dBm	-50.95 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.65867 GHz	-62.08 dBm	-49.08 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.97225 GHz	-57.88 dBm	-44.88 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.93788 GHz	-58.39 dBm	-45.39 dB

Date: 13.APR.2018 09:21:53

CDMA BC1 (1xRTT)

Lowest Channel

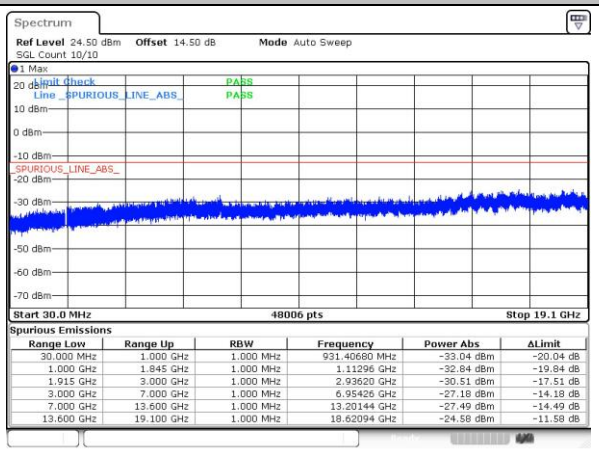


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	887.77861 MHz	-33.33 dBm	-20.33 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.30130 GHz	-32.10 dBm	-19.10 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.66566 GHz	-30.78 dBm	-17.78 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.82327 GHz	-27.18 dBm	-14.18 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.67442 GHz	-28.04 dBm	-15.04 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.21162 GHz	-24.86 dBm	-11.86 dB

Date: 13.APR.2018 09:44:51

Middle Channel

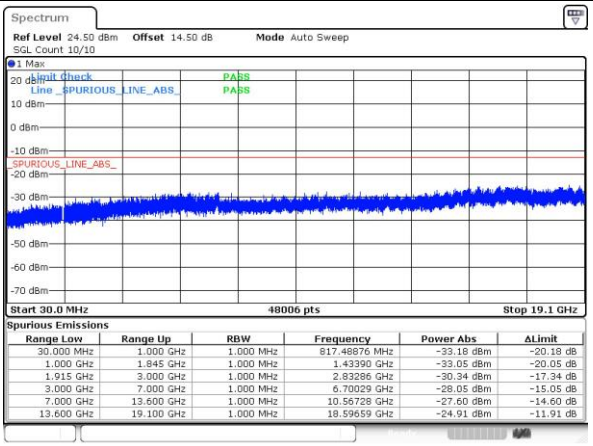


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	931.40680 MHz	-33.04 dBm	-20.04 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.11296 GHz	-32.84 dBm	-19.84 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.93620 GHz	-30.51 dBm	-17.51 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.95426 GHz	-27.18 dBm	-14.18 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.20144 GHz	-27.49 dBm	-14.49 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.62094 GHz	-24.58 dBm	-11.58 dB

Date: 13.APR.2018 09:46:19

Highest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	817.48876 MHz	-33.18 dBm	-20.18 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.43390 GHz	-33.05 dBm	-20.05 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.83286 GHz	-30.34 dBm	-17.34 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.70029 GHz	-28.05 dBm	-15.05 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.56728 GHz	-27.60 dBm	-14.60 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.59659 GHz	-24.91 dBm	-11.91 dB

Date: 13.APR.2018 09:47:47

Frequency Stability

Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2Kbps)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0013	PASS
40	Normal Voltage	0.0008	
30	Normal Voltage	0.0002	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0002	
0	Normal Voltage	0.0005	
-10	Normal Voltage	0.0007	
-20	Normal Voltage	0.0008	
-30	Normal Voltage	0.0008	
20	Maximum Voltage	0.0008	
20	Normal Voltage	0.0011	
20	Battery End Point	0.0007	

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

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0000	PASS
40	Normal Voltage	0.0003	
30	Normal Voltage	0.0003	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0002	
0	Normal Voltage	0.0002	
-10	Normal Voltage	0.0002	
-20	Normal Voltage	0.0000	
-30	Normal Voltage	0.0004	
20	Maximum Voltage	0.0002	
20	Normal Voltage	0.0003	
20	Battery End Point	0.0001	

Note:

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

Test Conditions	Middle Channel	WCDMA Band IV (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0005	PASS
40	Normal Voltage	0.0001	
30	Normal Voltage	0.0001	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0005	
0	Normal Voltage	0.0000	
-10	Normal Voltage	0.0002	
-20	Normal Voltage	0.0003	
-30	Normal Voltage	0.0001	
20	Maximum Voltage	0.0004	
20	Normal Voltage	0.0002	
20	Battery End Point	0.0002	

Note:

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

Test Conditions	Middle Channel	CDMA BC0 (1xRTT)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0019	PASS
40	Normal Voltage	0.0025	
30	Normal Voltage	0.0031	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0041	
0	Normal Voltage	0.0023	
-10	Normal Voltage	0.0142	
-20	Normal Voltage	0.0033	
-30	Normal Voltage	0.0032	
20	Maximum Voltage	0.0258	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0018	

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

Test Conditions	Middle Channel	CDMA BC1 (1xRTT)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0139	PASS
40	Normal Voltage	0.0041	
30	Normal Voltage	0.0031	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0050	
0	Normal Voltage	0.0023	
-10	Normal Voltage	0.0026	
-20	Normal Voltage	0.0126	
-30	Normal Voltage	0.0032	
20	Maximum Voltage	0.0145	
20	Normal Voltage	0.0038	
20	Battery End Point	0.0018	

Note:

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

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

GSM850 (GSM)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672.8	-56.91	-13	-43.91	-62.47	-61.32	2.84	9.40	H
	2509.2	-65.36	-13	-52.36	-75.78	-70.11	3.7	10.60	H
	3345.6	-65.78	-13	-52.78	-80.54	-71.86	4.37	12.60	H
	1672.8	-58.51	-13	-45.51	-63.22	-62.92	2.84	9.40	V
	2509.2	-65.95	-13	-52.95	-75.78	-70.70	3.70	10.60	V
	3345.6	-66.90	-13	-53.90	-80.47	-72.98	4.37	12.60	V

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

EDGE 850 (GSM)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672.8	-59.74	-13	-46.74	-65.30	-64.15	2.84	9.40	H
	2509.2	-63.22	-13	-50.22	-73.64	-67.97	3.7	10.60	H
	3345.6	-66.00	-13	-53.00	-80.76	-72.08	4.37	12.60	H
	1672.8	-58.14	-13	-45.14	-62.85	-62.55	2.84	9.40	V
	2509.2	-67.41	-13	-54.41	-77.24	-72.16	3.70	10.60	V
	3345.6	-67.18	-13	-54.18	-80.75	-73.26	4.37	12.60	V

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

GSM1900 (GSM)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3760	-53.55	-13	-40.55	-73.16	-61.30	4.85	12.60	H
	5640	-55.86	-13	-42.86	-79.31	-63.38	5.58	13.10	H
	7520	-59.86	-13	-46.86	-83.38	-64.60	6.56	11.30	H
	3760	-57.64	-13	-44.64	-78.03	-65.39	4.85	12.60	V
	5640	-57.32	-13	-44.32	-81.37	-64.84	5.58	13.10	V
	7520	-59.95	-13	-46.95	-83.49	-64.69	6.56	11.30	V

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

EDGE1900 (GSM)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3760	-58.69	-13	-45.69	-78.30	-66.44	4.85	12.60	H
	5640	-42.29	-13	-29.29	-65.74	-49.81	5.58	13.10	H
	7520	-59.93	-13	-46.93	-83.45	-64.67	6.56	11.30	H
	3760	-57.33	-13	-44.33	-77.72	-65.08	4.85	12.60	V
	5640	-47.06	-13	-34.06	-71.11	-54.58	5.58	13.10	V
	7520	-59.79	-13	-46.79	-83.33	-64.53	6.56	11.30	V

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

WCDMA Band V (RMC 12.2Kbps)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672.8	-72.07	-13	-59.07	-77.63	-76.48	2.84	9.40	H
	2509.2	-69.17	-13	-56.17	-79.59	-73.92	3.7	10.60	H
	3345.6	-65.83	-13	-52.83	-80.59	-71.91	4.37	12.60	H
	1672.8	-72.91	-13	-59.91	-77.62	-77.32	2.84	9.40	V
	2509.2	-69.84	-13	-56.84	-79.67	-74.59	3.70	10.60	V
	3345.6	-67.16	-13	-54.16	-80.73	-73.24	4.37	12.60	V

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

WCDMA Band II (RMC 12.2Kbps)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3760	-61.11	-13	-48.11	-80.72	-68.86	4.85	12.60	H
	5640	-59.12	-13	-46.12	-82.57	-66.64	5.58	13.10	H
	7520	-59.47	-13	-46.47	-82.99	-64.21	6.56	11.30	H
	3760	-60.27	-13	-47.27	-80.66	-68.02	4.85	12.60	V
	5640	-58.42	-13	-45.42	-82.47	-65.94	5.58	13.10	V
	7520	-59.68	-13	-46.68	-83.22	-64.42	6.56	11.30	V

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

WCDMA Band IV(RMC 12.2Kbps)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3465.2	-59.68	-13	-46.68	-79.01	-67.91	4.37	12.60	H
	5197.8	-57.92	-13	-44.92	-82.08	-65.68	4.94	12.70	H
	6930.4	-58.47	-13	-45.47	-82.38	-63.85	6.32	11.70	H
	3465.2	-62.75	-13	-49.75	-78.83	-70.98	4.37	12.60	V
	5197.8	-62.64	-13	-49.64	-82.15	-70.40	4.94	12.70	V
	6930.4	-58.40	-13	-45.40	-82.31	-63.78	6.32	11.70	V

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

CDMA BC0 (1xRTT)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672.8	-68.71	-13	-55.71	-74.27	-73.12	2.84	9.40	H
	2509.2	-64.71	-13	-51.71	-75.13	-69.46	3.7	10.60	H
	3345.6	-64.11	-13	-51.11	-78.87	-70.19	4.37	12.60	H
	1672.8	-69.93	-13	-56.93	-74.64	-74.34	2.84	9.40	V
	2509.2	-66.66	-13	-53.66	-76.49	-71.41	3.70	10.60	V
	3345.6	-65.31	-13	-52.31	-78.88	-71.39	4.37	12.60	V

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

CDMA BC1 (1xRTT)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3760	-61.16	-13	-48.16	-80.77	-68.91	4.85	12.60	H
	5640	-59.13	-13	-46.13	-82.58	-66.65	5.58	13.10	H
	7520	-59.77	-13	-46.77	-83.29	-64.51	6.56	11.30	H
	3760	-60.32	-13	-47.32	-80.71	-68.07	4.85	12.60	V
	5640	-58.49	-13	-45.49	-82.54	-66.01	5.58	13.10	V
	7520	-59.64	-13	-46.64	-83.18	-64.38	6.56	11.30	V

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