# **FCC RF Test Report**

APPLICANT : BLU Products, Inc.

EQUIPMENT : Mobile phone

BRAND NAME : BLU

: STUDIO C 8+8 MODEL NAME MARKETING NAME : STUDIO C 8+8 FCC ID : YHLBLUSTDC88

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 Feb. 20, 2016 and testing was completed on Mar. 24, 2016. 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 / TIA / EIA-603-D-2010 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Prepared by: Ken Chen / Manager

Von Cher

Approved by: Jones Tsai / Manager

### SPORTON INTERNATIONAL (SHENZHEN) INC.

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SPORTON INTERNATIONAL (SHENZHEN) INC.

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: Rev. 01

Testing Laboratory 2353

Report No.: FG622001

Report Version Report Template No.: BU5-FG22/24/27 Version 1.1

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## **REVISION HISTORY**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG622001	Rev. 01	Initial issue of report	Mar. 31, 2016

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### **SUMMARY OF TEST RESULT**

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.4	§2.1046	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.5)	Conducted Output Power	Reporting Only	PASS	-
3.5	§24.232(d)	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.5)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.6	§2.1049 §22.917(b) §24.238(b) §27.53(g)	RSS-GEN(6.6) RSS-132(3.1) RSS-133(3.1) RSS-139 (3.1)	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
	§2.1055 §22.355	RSS-GEN(6.11) RSS-132 (5.3)	Chalailia fa	< 2.5 ppm for Part 22H		
3.9	§2.1055 §24.235 §27.54	RSS-GEN(6.11) RSS-133 (6.3) RSS-139 (6.4)	Frequency Stability for Temperature & Voltage	Within Authorized Band	PASS	-
	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
4.4	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	RSS-139 (6.5) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
4.5	§2.1053 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 24.97 dB at 1648.400 MHz

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### 1 General Description

### 1.1 Applicant

**BLU Products, Inc.** 

10814 NW 33rd St # 100 Doral, FL 33172

#### 1.2 Manufacturer

**BLU Products, Inc.** 

10814 NW 33rd St # 100 Doral, FL 33172

### 1.3 Product Feature of Equipment Under Test

	Product Feature
Equipment	Mobile phone
Brand Name	BLU
Model Name	STUDIO C 8+8
Marketing Name	STUDIO C 8+8
FCC ID	YHLBLUSTDC88
	GSM/GPRS/EGPRS
EUT supports Radios application	WCDMA/HSPA/HSPA+(16QAM uplink is not supported)
Eor supports Radios application	WLAN2.4GHz 802.11b/g/n HT20/HT40
	Bluetooth v3.0+EDR/Bluetooth v4.0 LE
	Conducted: 868047010033621/868047010033639
IMEI Code	Radiation: 868047010033647/868047010033654
	ERP/EIRP: 868047010033621/868047010033639
HW Version	V1.2
SW Version	V0.2
EUT Stage	Pre-Production

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#### 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.** After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose dual SIM1 card to perform all tests.

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## 1.4 Product Specification of Equipment Under Test

Standards	-related Pro	oduct Specification		
	GSM/GPRS/EDGE:			
	850:	824.2 MHz ~ 848.8 MHz		
	1900:	1850.2 MHz ~ 1909.8MHz		
Tx Frequency	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		
	GSM/GPF	RS/EDGE:		
	850:	869.2 MHz ~ 893.8 MHz		
	1900:	1930.2 MHz ~ 1989.8 MHz		
Rx Frequency	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		
	GSM/GPRS/EDGE:			
	850:	31.70 dBm		
	1900:	29.32 dBm		
Maximum Output Power to Antenna	WCDMA:			
	Band V:	22.21 dBm		
	Band II:	22.54 dBm		
	Band IV:	22.40 dBm		
Antenna Type	Monopole A	Antenna		
	GSM: GMSK			
	GPRS: GM			
Type of Modulation	EDGE: GMSK / 8PSK			
Trype of Modulation	WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink)			
	HSUPA: QPSK (Uplink)			
	HSPA+: 16QAM (Uplink is not supported)			

### 1.5 Modification of EUT

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

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# 1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22H	GSM850 GSM	GMSK	0.7798	0.0132 ppm	248KGXW
Part 22H	GSM850 EDGE class 8	8PSK	0.3784	0.0179 ppm	254KG7W
Part 22H	WCDMA Band V RMC 12.2Kbps	QPSK	0.0910	0.0143 ppm	4M18F9W
Part 24E	GSM1900 GSM	GMSK	0.9376	0.0059 ppm	247KGXW
Part 24E	GSM1900 EDGE class 8	8PSK	0.7145	0.0064 ppm	259KG7W
Part 24E	WCDMA Band II RMC 12.2Kbps	QPSK	0.2208	0.0064 ppm	4M17F9W
Part 27L	WCDMA Band IV RMC 12.2Kbps	QPSK	0.1622	0.0081 ppm	4M17F9W

### 1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.					
	1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili					
	Town, Nanshan District, Shenzhen, Guangdong, P. R. China					
Test Site Location	TEL: +86-755-8637-9589					
	FAX: +86-755-8637-9595					
Took Cita No	Sporton Site No.					
Test Site No.	TH01-SZ					

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.					
Test Site Location	No. 3 Building, the third floor of south, Shah warehouse, Nanshan District, Shenzhen, Guange TEL: +86-755-3320-2398					
Took Cita No	Sporton Site No.	FCC/IC Registration No.				
Test Site No.	03CH02-SZ	566869/4086F				

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

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### 1.8 Applicable Standards

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

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

#### Remark:

- 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.

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### 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

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

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

Radiated emissions were investigated as following frequency range:

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

All modes and data rates and positions were investigated.

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

Test Modes							
Band	Radiated TCs	Conducted TCs					
GSM 850	■ GSM Link	■ GSM Link					
GSIVI 650	■ EDGE class 8 Link	■ EDGE class 8 Link					
GSM 1900	■ GSM Link	■ GSM Link					
GSW 1900	■ EDGE class 8 Link	■ EDGE class 8 Link					
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link					
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link					
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link					

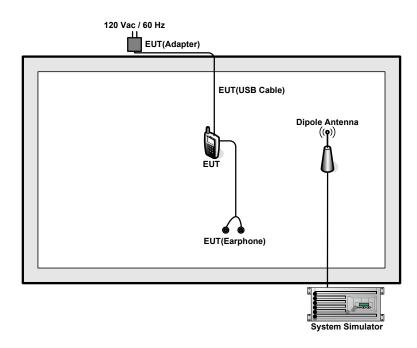
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### 2.2 Connection Diagram of Test System



### 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

### 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)

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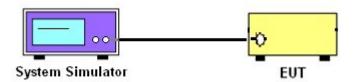
### 3 Conducted Test Result

### 3.1 Measuring Instruments

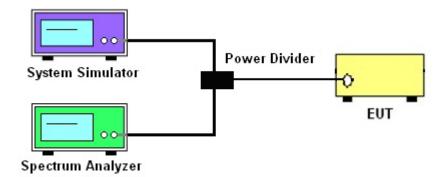
See list of measuring instruments of this test report.

### 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.

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### 3.4 Conducted Output Power

#### 3.4.1 Description of the Conducted Output Power

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

#### 3.4.2 Test Procedures

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

### 3.5 Peak-to-Average Ratio

#### 3.5.1 Description of the PAR Measurement

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

#### 3.5.2 Test Procedures

- 1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.7.1.
- 2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- 3. Set EUT to transmit at maximum output power.
- 4. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
- 5. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.

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### 3.6 99% Occupied Bandwidth and 26dB Bandwidth Measurement

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

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

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

#### 3.6.2 Test Procedures

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

### 3.7 Conducted Band Edge

#### 3.7.1 Description of Conducted Band Edge Measurement

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

#### 3.7.2 Test Procedures

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

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### 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 10<sup>th</sup> harmonic.

#### 3.8.2 Test Procedures

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

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### 3.9 Frequency Stability

#### 3.9.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

#### 3.9.2 Test Procedures for Temperature Variation

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

#### 3.9.3 Test Procedures for Voltage Variation

- 1. The testing follows FCC KDB 971168 D01 v02r02 Section 9.0.
- 2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
- 3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
- 4. The variation in frequency was measured for the worst case.

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#### 4 Radiated Test Items

### 4.1 Measuring Instruments

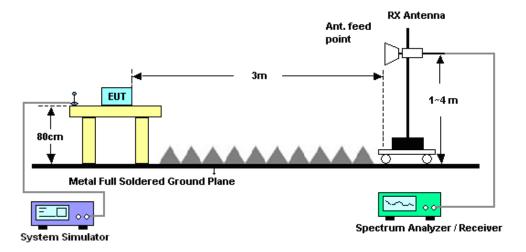
See list of measuring instruments of this test report.

### 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.

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# 4.4 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

#### 4.4.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-D-2010, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band) and 1 Watts (AWS Band).

#### 4.4.2 Test Procedures

- The testing follows FCC KDB 971168 D01 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-D-2010 Section 2.2.17.
- The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
- 3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
- 4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. Tx Cable loss + Substitution antenna gain Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP = LVL + Correction factor and ERP = EIRP 2.15. Take the record of the output power at substitution antenna.

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	GSM/GPRS/EDGE	WCDMA/HSPA	
SPAN	500kHz	10MHz	
RBW	10kHz	100kHz	
VBW	30kHz	300kHz	
Detector	RMS	RMS	
Trace	Average	Average	
Average Type	Power	Power	
Sweep Count	100	100	

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### 4.5 Field Strength of Spurious Radiation Measurement

#### 4.5.1 Description of Field Strength of Spurious Radiated Measurement

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

#### 4.5.2 Test Procedures

- The testing follows FCC KDB 971168 D01 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
- 2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
- 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
- 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- 9. Taking the record of output power at antenna port.
- 10. Repeat step 7 to step 8 for another polarization.
- 11. EIRP (dBm) = S.G. Power Tx Cable Loss + Tx Antenna Gain
- 12. ERP (dBm) = EIRP 2.15
- 13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
  - = P(W) [43 + 10log(P)] (dB)
  - = [30 + 10log(P)] (dBm) [43 + 10log(P)] (dB)
  - = -13dBm.

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# **5** List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jan. 12, 2016	Feb. 25, 2016~ Feb. 26, 2016	Jan. 11, 2017	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Aug. 07, 2015	Feb. 25, 2016~ Feb. 26, 2016	Aug. 06, 2016	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz; Max 30dBm	Oct. 20, 2015	Mar. 24, 2016	Oct. 19, 2016	Radiation (03CH02-SZ)
Spectrum Analyzer	R&S	FSV40	101041	10kHz~40GHz;Ma x 30dBm	Oct. 20, 2015	Mar. 24, 2016	Oct. 19, 2016	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	May 06, 2015	Mar. 24, 2016	May 05, 2016	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1285	1GHz~18GHz	Jan. 11, 2016	Mar. 24, 2016	Jan. 10, 2017	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Aug. 17, 2015	Mar. 24, 2016	Aug. 16, 2016	Radiation (03CH02-SZ)
Amplifier	HP	8447F	3113A04622	9kHz~1300MHz / 30 dB	Aug. 07, 2015	Mar. 24, 2016	Aug. 06, 2016	Radiation (03CH01-SZ)
Amplifier	Agilent	8449B	3008A01023	1GHz~26.5GHz	Oct. 20, 2015	Mar. 24, 2016	Oct. 19, 2016	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 08, 2015	Mar. 24, 2016	Jul. 07, 2016	Radiation (03CH02-SZ
AC Power Source	Chroma	61601	61601000247 0	N/A	NCR	Mar. 24, 2016	NCR	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Mar. 24, 2016	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Mar. 24, 2016	NCR	Radiation (03CH02-SZ)

NCR: No Calibration Required

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# 6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of	5.0dB
Confidence of 95% (U = 2Uc(y))	3.0db

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## **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	31.66	31.62	<mark>31.70</mark>	<mark>29.32</mark>	29.28	29.27
GPRS class 8	31.65	31.58	31.69	29.28	29.18	29.21
GPRS class 10	31.38	31.29	31.37	29.00	28.89	28.94
GPRS class 11	30.35	30.28	30.34	28.02	27.91	27.97
GPRS class 12	29.52	29.49	29.55	27.21	27.12	27.13
EGPRS class 8	27.81	27.68	27.78	27.10	27.05	27.09
EGPRS class 10	27.01	26.89	26.99	26.26	26.10	26.20
EGPRS class 11	25.28	25.14	25.28	24.22	24.03	24.04
EGPRS class 12	24.33	24.23	24.29	23.02	22.93	22.91

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	22.17	22.15	22.02	22.52	22.30	22.43	22.29	22.08	22.39
RMC 12.2Kbps	22.18	<mark>22.21</mark>	22.05	<mark>22.54</mark>	22.31	22.44	22.31	22.10	<mark>22.40</mark>
HSDPA Subtest-1	21.19	21.10	20.92	21.38	21.17	21.17	20.91	21.06	21.31
HSDPA Subtest-2	21.18	21.06	20.91	21.36	21.18	21.18	20.91	21.04	21.23
HSDPA Subtest-3	20.71	20.61	20.45	20.91	20.70	20.72	20.48	20.58	20.74
HSDPA Subtest-4	20.68	20.58	20.44	20.88	20.70	20.69	20.46	20.57	20.78
HSUPA Subtest-1	19.16	19.04	18.91	19.46	19.3	19.28	19.03	19.2	19.31
HSUPA Subtest-2	19.15	19.02	18.91	19.45	19.21	19.18	19.02	19.13	19.31
HSUPA Subtest-3	20.15	20.04	19.94	20.34	20.18	20.2	19.99	20.1	20.27
HSUPA Subtest-4	18.61	18.48	18.34	18.92	18.71	18.73	18.47	18.59	18.79
HSUPA Subtest-5	21.20	21.20	21.00	21.40	21.20	21.20	21.00	21.10	21.30

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### A1. GSM

# Peak-to-Average Ratio

Mode	GSM850		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.20	2.68	
Middle CH	0.20	2.60	PASS
Highest CH	0.24	2.72	]

Mode	GSM1900		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.28	2.76	
Middle CH	0.24	2.76	PASS
Highest CH	0.28	2.88	

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**GSM850 (GSM)** GSM850 (EDGE class 8) **Lowest Channel Lowest Channel** \* Trace 1
31.14 dBm
31.41 dBm
0.27 dB Trace 1 27.29 dBm 30.07 dBm 2.77 dB Crest Peak 0.16 dB 0.20 dB 0.20 dB 0.20 dB Date: 25.FEB.2016 23:57:55 Date: 26.FEB.2016 00:07:44 **Middle Channel Middle Channel** \* \* Trace 1 31.07 dBm 31.34 dBm 0.26 dB Mean Peak Crest 0.16 dB 0.20 dB 0.20 dB 0.20 dB Date: 25.FEB.2016 23:58:10 **Highest Channel Highest Channel %** \* Trace 1
31.04 dBm
31.27 dBm
0.23 dB Trace 1 27.23 dBm 30.00 dBm 2.77 dB 0.16 dB

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Date: 26.FEB.2016 00:08:23

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**GSM1900 (GSM)** GSM1900 (EDGE class 8) **Lowest Channel Lowest Channel %** \* Trace 1 28.56 dBm 28.80 dBm 0.25 dB Trace 1 26.62 dBm 29.37 dBm 2.75 dB Peak Peak 0.16 dB 0.24 dB 0.28 dB 0.28 dB 2.20 dB 2.64 dB 2.76 dB 2.76 dB 10 % Date: 25.FEB.2016 23:43:49 Date: 25.FEB.2016 23:08:00 **Middle Channel Middle Channel** \* \* Trace 1 28.23 dBm 28.52 dBm 0.30 dB Trace 1 26.47 dBm 29.30 dBm 2.83 dB Mean Peak Crest Mean Peak Crest 0.16 dB 0.24 dB 0.24 dB 0.28 dB 2.20 dB 2.64 dB 2.76 dB 2.80 dB 10 % 1 % .1 % .01 % Date: 25.FEB.2016 23:44:06 Date: 25.FEB.2016 23:08:21 **Highest Channel Highest Channel %** \* Trace 1 28.06 dBm 28.38 dBm 0.32 dB Trace 1 26.19 dBm 29.16 dBm 2.97 dB Peak Crest 0.20 dB 2.20 dB 2.68 dB 2.88 dB 2.96 dB 10 %

Date: 25.FEB.2016 23:08:58

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# 26dB Bandwidth

Mode	GSM850			
Mod.	GSM EDGE class 8			
Lowest CH	0.314	0.298		
Middle CH	0.302	0.312		
Highest CH	0.314	0.315		

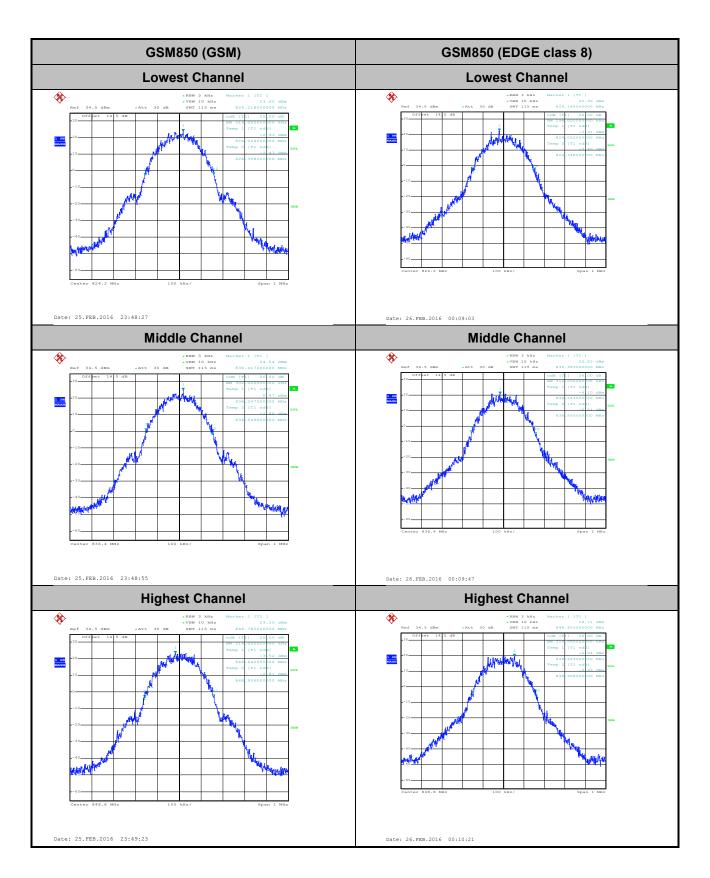
Mode	GSM1900			
Mod.	GSM EDGE class 8			
Lowest CH	0.298	0.311		
Middle CH	0.313	0.308		
Highest CH	0.300	0.319		

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**GSM1900 (GSM)** GSM1900 (EDGE class 8) **Lowest Channel Lowest Channel Middle Channel Middle Channel** Date: 25.FEB.2016 22:54:16 Date: 25.FEB.2016 23:34:40 **Highest Channel Highest Channel** \* \*

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# **Occupied Bandwidth**

Mode	GSM850			
Mod.	GSM EDGE class 8			
Lowest CH	0.247	0.252		
Middle CH	0.248	0.254		
Highest CH	0.245	0.249		

Mode	GSM1900			
Mod.	GSM EDGE class 8			
Lowest CH	0.245	0.255		
Middle CH	0.245	0.259		
Highest CH	0.247	0.252		

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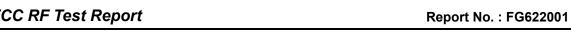
GSM850 (GSM) GSM850 (EDGE class 8) **Lowest Channel Lowest Channel** \* Date: 26.FEB.2016 00:12:08 **Middle Channel Middle Channel** Date: 25.FEB.2016 23:52:17 **Highest Channel Highest Channel** \*

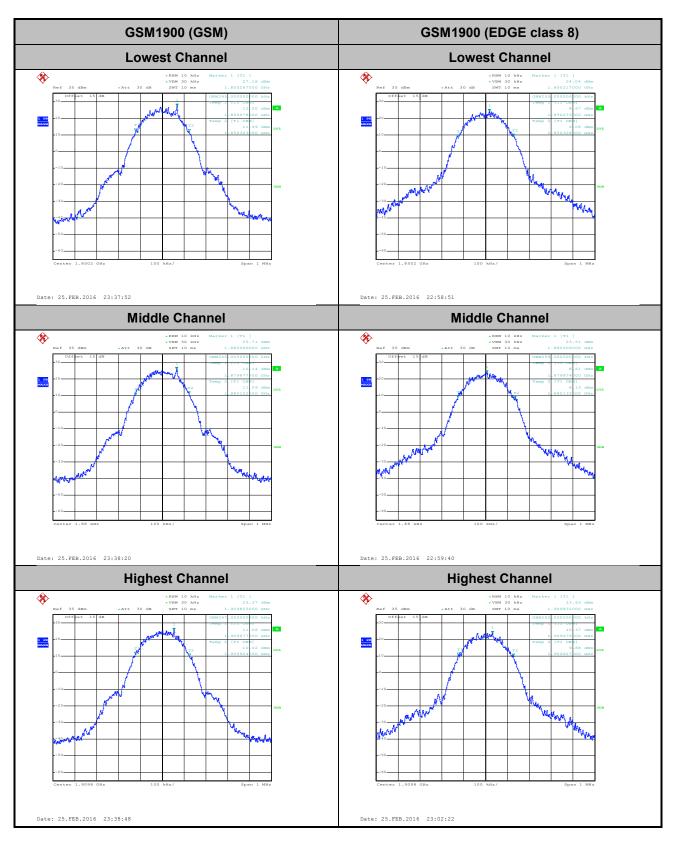
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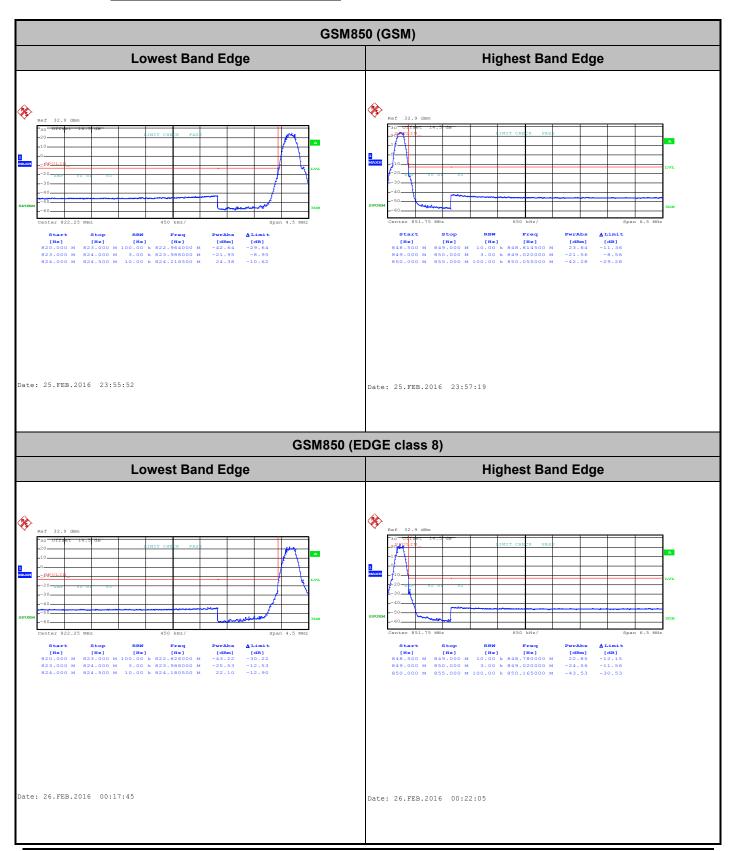




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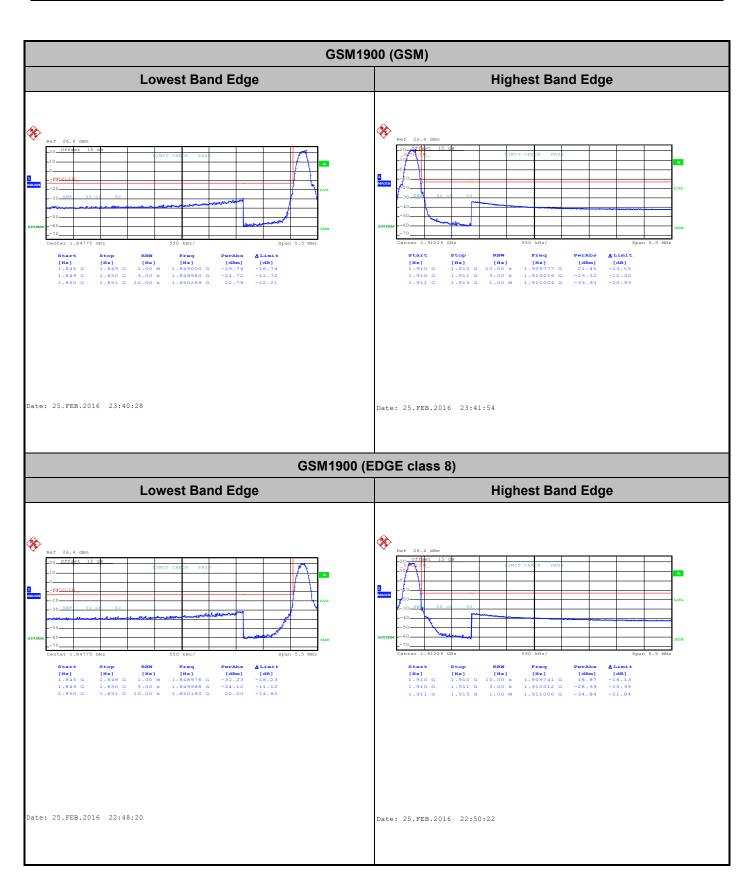
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# **Conducted Band Edge**



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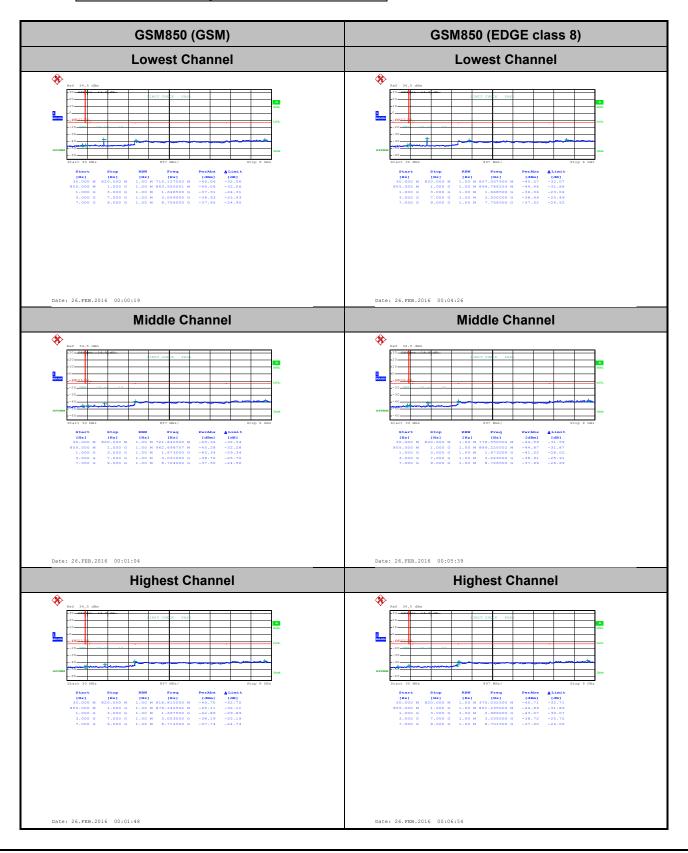


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# **Conducted Spurious Emission**

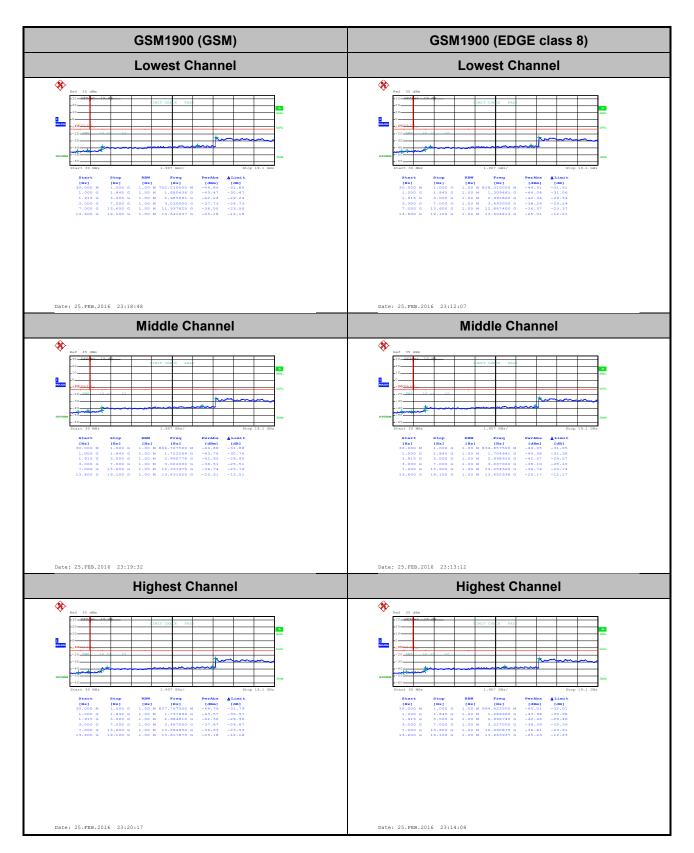


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### Frequency Stability

Test Conditions	Middle Channel	GSM850 (GSM)	GSM850 (EDGE class 8)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviatio	n (ppm)	Result
50	Normal Voltage	0.0108	0.0120	
40	Normal Voltage	0.0072	0.0084	
30	Normal Voltage	0.0060	0.0072	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0072	0.0084	
0	Normal Voltage	0.0084	0.0120	
-10	Normal Voltage	0.0096	0.0143	PASS
-20	Normal Voltage	0.0120	0.0155	
-30	Normal Voltage	0.0132	0.0179	
20	Maximum Voltage	0.0036	0.0036	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0024	0.0048	

Note: Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.35 V

Test Conditions	Middle Channel	GSM1900 (GSM)	GSM1900 (EDGE class 8)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviatio	n (ppm)	Result
50	Normal Voltage	0.0032	0.0037	
40	Normal Voltage	0.0021	0.0027	
30	Normal Voltage	0.0011	0.0016	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0011	0.0011	
0	Normal Voltage	0.0016	0.0016	
-10	Normal Voltage	0.0032	0.0037	PASS
-20	Normal Voltage	0.0053	0.0043	
-30	Normal Voltage	0.0059	0.0064	
20	Maximum Voltage	0.0027	0.0027	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0016	0.0021	

#### Note:

- 1. Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.35 V
- **2.** The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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#### A2. WCDMA

### Peak-to-Average Ratio

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	3.12	2.96	2.92	
Middle CH	3.16	2.96	3.00	PASS
Highest CH	3.08	2.76	3.00	

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WCDMA Band V (RMC 12.2Kbps) WCDMA Band II (RMC 12.2Kbps) **Lowest Channel Lowest Channel %** \* Trace 1 22.00 dBm 25.50 dBm 3.50 dB Trace 1 22.19 dBm 25.50 dBm 3.31 dB Peak Peak 1.76 dB 2.64 dB 3.12 dB 3.40 dB 10 % 1.72 dB 2.52 dB 2.96 dB 3.16 dB Date: 25.FEB.2016 21:40:22 **Middle Channel Middle Channel %** \* Trace 1 22.02 dBm 25.50 dBm 3.48 dB Trace 1 21.83 dBm 25.14 dBm 3.32 dB Mean Peak Crest Mean Peak Crest 1.76 dB 2.64 dB 3.16 dB 3.40 dB 1.72 dB 2.52 dB 2.96 dB 3.16 dB 10 % 1 % .1 % .01 % Date: 25.FEB.2016 22:14:45 Date: 25.FEB.2016 21:40:37 **Highest Channel Highest Channel % %** Trace 1 21.84 dBm 25.29 dBm 3.44 dB Trace 1 21.88 dBm Crest 1.72 dB 2.56 dB 3.08 dB 3.32 dB 10 % 1.68 dB

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WCDMA Band IV (RMC 12.2Kbps) **Lowest Channel** \* Mean Peak Crest 10 % 1 % .1 % Date: 25.FEB.2016 21:48:54 **Middle Channel** \* 1.72 dB 2.56 dB 3.00 dB 3.20 dB **Highest Channel %** Trace 1
Mean 21.95 dBm
Peak 25.29 dBm
Crest 3.34 dB Date: 25.FEB.2016 21:49:23

SPORTON INTERNATIONAL (SHENZHEN) INC.

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## 26dB Bandwidth

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.67	4.69	4.67
Middle CH	4.69	4.67	4.70
Highest CH	4.69	4.68	4.69

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WCDMA Band V (RMC 12.2Kbps) WCDMA Band II (RMC 12.2Kbps) **Lowest Channel Lowest Channel** \* Date: 25.FEB.2016 21:27:37 Middle Channel **Middle Channel** Date: 25.FEB.2016 22:05:42 **Highest Channel Highest Channel** \* **%** 

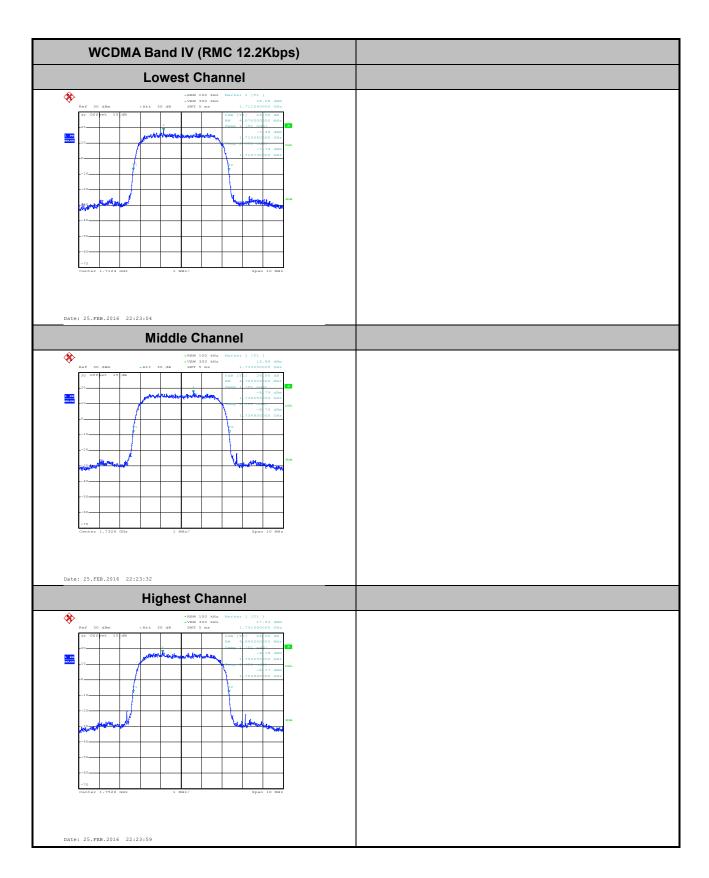
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## Occupied Bandwidth

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.16	4.16	4.16
Middle CH	4.15	4.17	4.17
Highest CH	4.18	4.17	4.16

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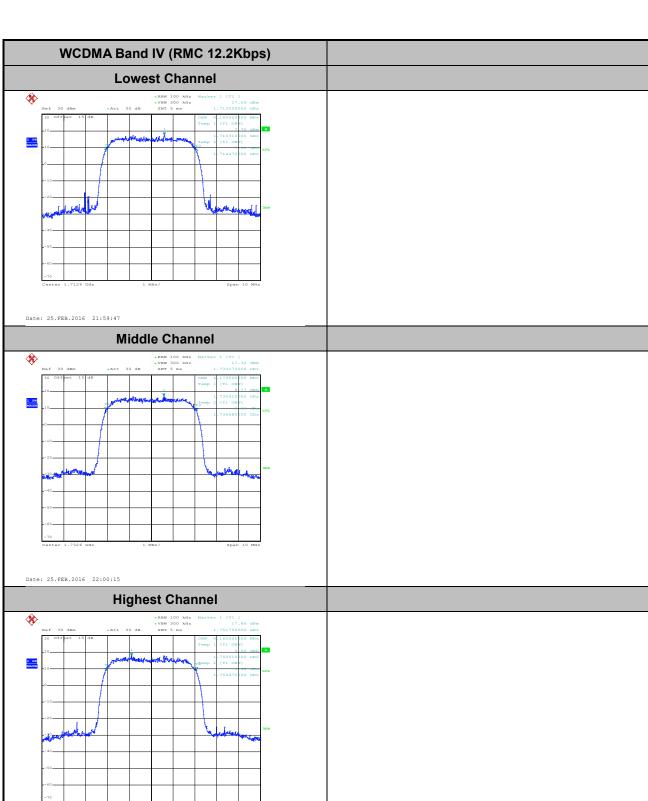
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WCDMA Band V (RMC 12.2Kbps) WCDMA Band II (RMC 12.2Kbps) **Lowest Channel Lowest Channel** \* Date: 25.FEB.2016 21:31:44 Middle Channel **Middle Channel** Date: 25.FEB.2016 22:07:37 **Highest Channel Highest Channel** \* **%** Date: 25.FEB.2016 22:08:05 Date: 25.FEB.2016 21:32:39

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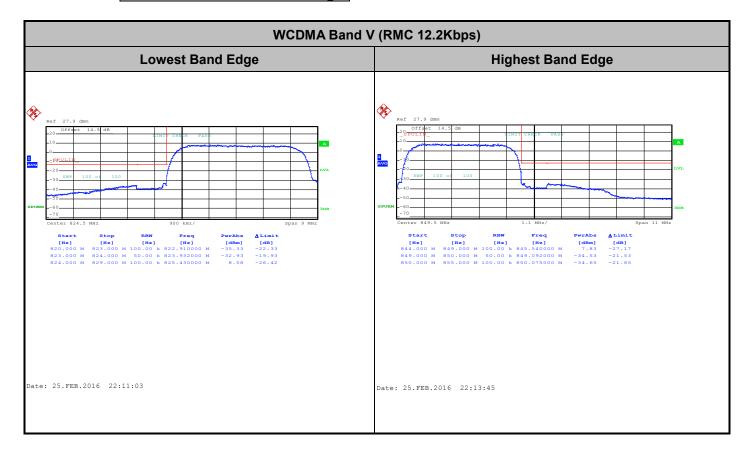
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Date: 25.FEB.2016 22:00:42

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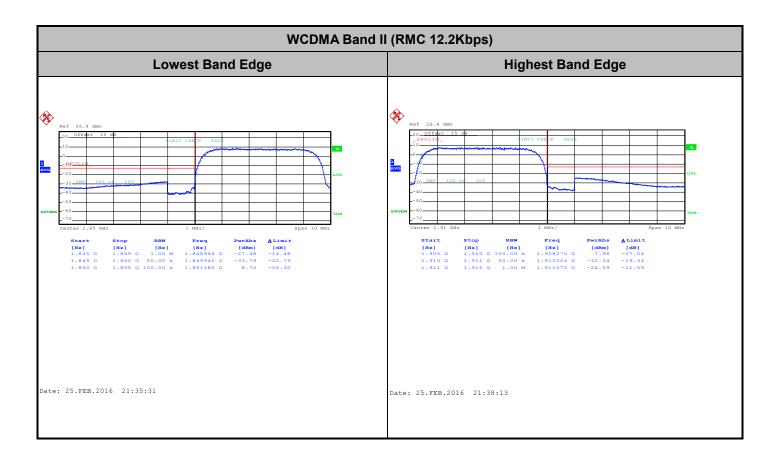
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## **Conducted Band Edge**



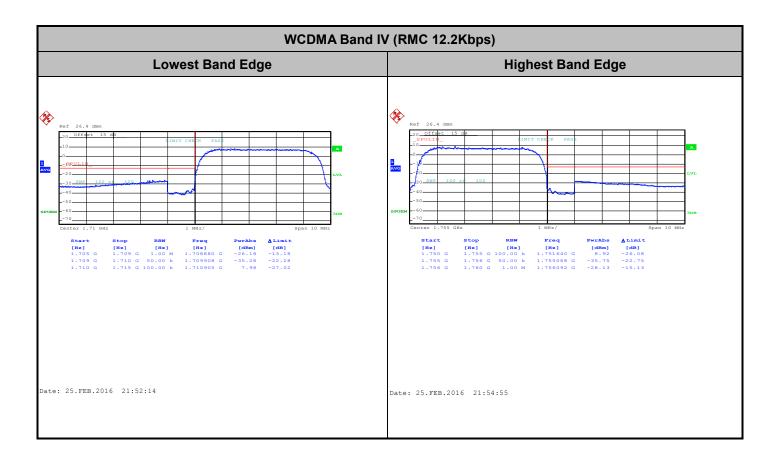
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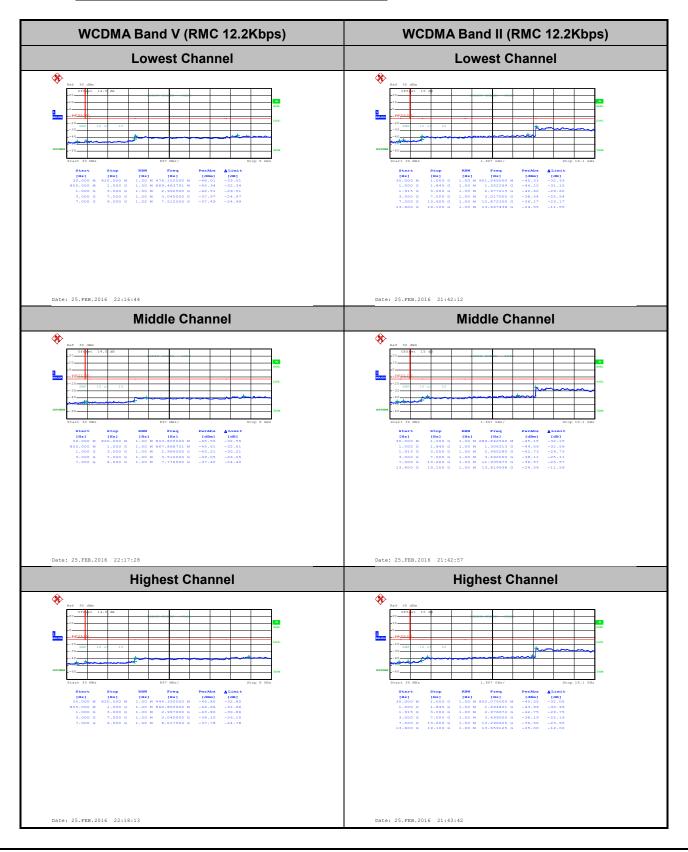
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### **Conducted Spurious Emission**



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WCDMA Band IV (RMC 12.2Kbps) **Lowest Channel** \* Date: 25.FEB.2016 21:45:21 **Middle Channel Highest Channel %** Date: 25.FEB.2016 21:46:51

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## Frequency Stability

Test Conditions	Middle Channel WCDMA Band V (RMC 12.2Kbps)		Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0096	
40	Normal Voltage	0.0048	
30	Normal Voltage	0.0024	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0036	
0	Normal Voltage	0.0048	
-10	Normal Voltage	0.0072	PASS
-20	Normal Voltage	0.0096	
-30	Normal Voltage	0.0143	
20	Maximum Voltage	0.0096	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0060	

Note: Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage =4.35 V

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0053	
40	Normal Voltage	0.0021	
30	Normal Voltage	0.0011	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0016	
0	Normal Voltage	0.0021	
-10	Normal Voltage	0.0032	PASS
-20	Normal Voltage	0.0053	
-30	Normal Voltage	0.0064	
20	Maximum Voltage	0.0021	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0011	

#### Note:

- 1. Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.35 V
- 2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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Test Conditions	Middle Channel	WCDMA Band IV (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0058	
40	Normal Voltage	0.0023	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0017	
0	Normal Voltage	0.0035	
-10	Normal Voltage	0.0046	PASS
-20	Normal Voltage	0.0069	
-30	Normal Voltage	0.0081	
20	Maximum Voltage	0.0035	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0012	

#### Note:

- 1. Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.6 V.; Maximum Voltage =4.35 V
- **2.** The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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#### **Appendix B. Test Results of Radiated Test**

## **ERP/EIRP**

Channel	Mode	Horiz	ontal	Vertical		
Channel	Wode	ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)	
Lowest	GSM850	27.30	0.5370	15.45	0.0351	
Middle	GSM	28.44	0.6982	16.49	0.0446	
Highest	GSIVI	28.92	0.7798	17.33	0.0541	
Lowest	GSM850	23.08	0.2032	11.21	0.0132	
Middle		24.45	0.2786	12.51	0.0178	
Highest	EDGE class 8	25.78	0.3784	14.20	0.0263	
Lowest	MCDMA Bond V	18.72	0.0745	6.84	0.0048	
Middle	WCDMA Band V RMC 12.2Kbps	19.50	0.0891	7.57	0.0057	
Highest		19.59	0.0910	8.05	0.0064	
Limit	ERP < 7W	Result		PASS		

Channel	Mode	Horiz	ontal	Vertical		
Chamilei	Wode	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)	
Lowest	GSM1900	29.51	0.8933	29.72	0.9376	
Middle	GSM GSM	29.46	0.8831	29.70	0.9333	
Highest	GSIVI	29.61	0.9141	29.69	0.9311	
Lowest	00144000	28.28	0.6730	28.39	0.6902	
Middle	GSM1900 EDGE class 8	28.19	0.6592	28.54	0.7145	
Highest	EDGE Class o	28.22	0.6637	28.29	0.6745	
Lowest	MCDMA Bond II	23.06	0.2023	23.30	0.2138	
Middle	WCDMA Band II RMC 12.2Kbps	22.79	0.1901	22.79	0.1901	
Highest		23.44	0.2208	23.43	0.2203	
Limit	EIRP < 2W	Re	sult	PA	SS	

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Channel	Mode	Horiz	ontal	Vertical		
Channel	Wode	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)	
Lowest	WCDMA Band IV RMC 12.2Kbps	20.95	0.1245	20.90	0.1230	
Middle		20.59	0.1146	20.94	0.1242	
Highest		21.69	0.1476	22.10	0.1622	
Limit	EIRP < 1W	Result		PASS		

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# Radiated Spurious Emission

				GSM8	50 (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)
	1648.4	-41.40	-13	-28.40	-47.11	-39.83	4.92	5.50	Н
	2472.6	-51.64	-13	-38.64	-58.16	-49.18	6.11	5.80	Н
Lowest	3296.8	-50.61	-13	-37.61	-59.33	-49.23	7.33	8.10	Н
Lowest	1648.4	-44.85	-13	-31.85	-50.38	-43.28	4.92	5.50	V
	2472.6	-54.10	-13	-41.10	-59.68	-51.64	6.11	5.80	V
	3296.8	-53.01	-13	-40.01	-61.24	-51.63	7.33	8.10	V
	1672	-38.21	-13	-25.21	-44.34	-36.64	4.92	5.50	Н
	2510	-44.73	-13	-31.73	-53.42	-42.27	6.11	5.80	Н
N 4: -1 -11 -	3346	-48.77	-13	-35.77	-57.49	-47.39	7.33	8.10	Н
Middle	1672	-41.10	-13	-28.10	-47.24	-39.53	4.92	5.50	٧
	2510	-48.21	-13	-35.21	-55.49	-45.75	6.11	5.80	٧
	3346	-51.95	-13	-38.95	-60.18	-50.57	7.33	8.10	V
	1697.6	-42.09	-13	-29.09	-47.62	-40.52	4.92	5.50	Н
	2546.4	-50.05	-13	-37.05	-57.09	-47.59	6.11	5.80	Н
115.1	3395.2	-51.67	-13	-38.67	-60.39	-50.29	7.33	8.10	Н
Highest	1697.6	-44.32	-13	-31.32	-49.88	-42.75	4.92	5.50	V
	2546.4	-49.84	-13	-36.84	-56.73	-47.38	6.11	5.80	V
	3395.2	-53.96	-13	-40.96	-62.19	-52.58	7.33	8.10	V

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

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	GSM850 (EDGE class 8)											
Channel	Frequency ( MHz )	ERP (dBm)	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)			
	1648.4	-37.97	-13	-24.97	-44.10	-36.40	4.92	5.50	Н			
	2472.6	-55.48	-13	-42.48	-61.77	-53.02	6.11	5.80	Н			
Lowcot	3296.8	-56.58	-13	-43.58	-65.30	-55.20	7.33	8.10	Н			
Lowest	1648.4	-41.09	-13	-28.09	-47.23	-39.52	4.92	5.50	V			
	2472.6	-55.98	-13	-42.98	-61.56	-53.52	6.11	5.80	V			
	3296.8	-56.73	-13	-43.73	-64.96	-55.35	7.33	8.10	V			
	1672	-38.85	-13	-25.85	-44.98	-37.28	4.92	5.50	Н			
	2510	-50.89	-13	-37.89	-57.84	-48.43	6.11	5.80	Н			
Middle	3346	-52.38	-13	-39.38	-61.10	-51.00	7.33	8.10	Н			
Middle	1672	-44.13	-13	-31.13	-49.70	-42.56	4.92	5.50	V			
	2510	-54.51	-13	-41.51	-60.09	-52.05	6.11	5.80	V			
	3346	-54.82	-13	-41.82	-63.05	-53.44	7.33	8.10	V			
	1697.6	-46.88	-13	-33.88	-51.52	-45.31	4.92	5.50	Н			
	2546.4	-48.82	-13	-35.82	-56.31	-46.36	6.11	5.80	Н			
I limb a a f	3395.2	-53.50	-13	-40.50	-62.22	-52.12	7.33	8.10	Н			
Highest	1697.6	-48.20	-13	-35.20	-52.85	-46.63	4.92	5.50	V			
	2546.4	-52.41	-13	-39.41	-58.10	-49.95	6.11	5.80	V			
	3395.2	-55.90	-13	-42.90	-64.13	-54.52	7.33	8.10	V			

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	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)			
	3700.4	-49.54	-13	-36.54	-64.04	-49.91	7.73	8.10	Н			
	5550.6	-48.47	-13	-35.47	-66.48	-49.37	9.5	10.40	Н			
Lowest	7400.8	-46.62	-13	-33.62	-67.03	-47.24	11.08	11.70	Н			
Lowest	3700.4	-47.74	-13	-34.74	-62.83	-48.11	7.73	8.1	V			
	5550.6	-48.32	-13	-35.32	-66.59	-49.22	9.5	10.4	V			
	7400.8	-46.81	-13	-33.81	-67.31	-47.43	11.08	11.7	V			
	3760	-47.07	-13	-34.07	-61.57	-47.44	7.73	8.10	Н			
	5640	-48.39	-13	-35.39	-66.40	-49.29	9.5	10.40	Н			
M: al all a	7520	-46.03	-13	-33.03	-66.44	-46.65	11.08	11.70	Н			
Middle	3760	-49.22	-13	-36.22	-64.31	-49.59	7.73	8.1	V			
	5640	-48.01	-13	-35.01	-66.28	-48.91	9.5	10.4	V			
	7520	-46.53	-13	-33.53	-67.03	-47.15	11.08	11.7	V			
	3819.6	-49.26	-13	-36.26	-63.76	-49.63	7.73	8.10	Н			
	5729.4	-42.87	-13	-29.87	-60.88	-43.77	9.5	10.40	Н			
I limbaat	7639.2	-44.35	-13	-31.35	-64.76	-44.97	11.08	11.70	Н			
Highest	3819.6	-48.56	-13	-35.56	-63.65	-48.93	7.73	8.1	V			
	5729.4	-45.78	-13	-32.78	-64.05	-46.68	9.5	10.4	V			
	7639.2	-45.05	-13	-32.05	-65.55	-45.67	11.08	11.7	V			

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	GSM1900 (EDGE class 8)											
Channel	Frequency (MHz)	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)			
	3700.4	-51.23	-13	-38.23	-65.73	-51.60	7.73	8.10	Н			
	5550.6	-47.12	-13	-34.12	-65.13	-48.02	9.5	10.40	Н			
Lowcot	7400.8	-46.44	-13	-33.44	-66.85	-47.06	11.08	11.70	Н			
Lowest	3700.4	-50.04	-13	-37.04	-65.13	-50.41	7.73	8.1	V			
	5550.6	-46.11	-13	-33.11	-64.38	-47.01	9.5	10.4	V			
	7400.8	-46.56	-13	-33.56	-67.06	-47.18	11.08	11.7	V			
	3760	-50.94	-13	-37.94	-65.44	-51.31	7.73	8.10	Н			
	5640	-47.10	-13	-34.10	-65.11	-48.00	9.5	10.40	Н			
Middle	7520	-46.28	-13	-33.28	-66.69	-46.90	11.08	11.70	Н			
Middle	3760	-50.15	-13	-37.15	-65.24	-50.52	7.73	8.1	V			
	5640	-46.20	-13	-33.20	-64.47	-47.10	9.5	10.4	V			
	7520	-45.22	-13	-32.22	-65.72	-45.84	11.08	11.7	V			
	3819.6	-51.17	-13	-38.17	-65.67	-51.54	7.73	8.10	Н			
	5729.4	-41.71	-13	-28.71	-59.72	-42.61	9.5	10.40	Н			
I II alaas	7639.2	-46.12	-13	-33.12	-66.53	-46.74	11.08	11.70	Н			
Highest	3819.6	-49.14	-13	-36.14	-64.23	-49.51	7.73	8.1	V			
	5729.4	-41.05	-13	-28.05	-59.32	-41.95	9.5	10.4	V			
	7639.2	-45.90	-13	-32.90	-66.4	-46.52	11.08	11.7	V			

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	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)			
	1652.8	-60.46	-13	-47.46	-62.77	-58.89	4.92	5.50	Н			
	2479.2	-57.74	-13	-44.74	-64.03	-55.28	6.11	5.80	Н			
Lawast	3305.6	-56.79	-13	-43.79	-65.51	-55.41	7.33	8.10	Н			
Lowest	1652.8	-59.70	-13	-46.70	-62.18	-58.13	4.92	5.50	V			
	2479.2	-58.96	-13	-45.96	-64.54	-56.50	6.11	5.80	V			
	3305.6	-57.52	-13	-44.52	-65.75	-56.14	7.33	8.10	V			
	1672	-58.39	-13	-45.39	-60.70	-56.82	4.92	5.50	Н			
	2510	-58.13	-13	-45.13	-64.42	-55.67	6.11	5.80	Н			
N 4: -I -II -	3346	-56.63	-13	-43.63	-65.35	-55.25	7.33	8.10	Н			
Middle	1672	-59.03	-13	-46.03	-61.51	-57.46	4.92	5.50	V			
	2510	-58.89	-13	-45.89	-64.47	-56.43	6.11	5.80	V			
	3346	-57.25	-13	-44.25	-65.48	-55.87	7.33	8.10	V			
	1693.2	-58.28	-13	-45.28	-60.59	-56.71	4.92	5.50	Н			
	2539.8	-58.29	-13	-45.29	-64.58	-55.83	6.11	5.80	Н			
Highest	3386.4	-56.20	-13	-43.20	-64.92	-54.82	7.33	8.10	Н			
	1693.2	-57.87	-13	-44.87	-60.35	-56.30	4.92	5.50	V			
	2539.8	-58.72	-13	-45.72	-64.30	-56.26	6.11	5.80	V			
	3386.4	-57.42	-13	-44.42	-65.65	-56.04	7.33	8.10	V			

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	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)			
	3704.8	-49.81	-13	-36.81	-64.31	-50.18	7.73	8.10	Н			
	5557.2	-48.68	-13	-35.68	-66.69	-49.58	9.5	10.40	Н			
Lowoot	7409.6	-46.83	-13	-33.83	-67.24	-47.45	11.08	11.70	Н			
Lowest	3704.8	-50.11	-13	-37.11	-65.2	-50.48	7.73	8.1	V			
	5557.2	-49.17	-13	-36.17	-67.44	-50.07	9.5	10.4	V			
	7409.6	-46.54	-13	-33.54	-67.04	-47.16	11.08	11.7	V			
	3760	-48.77	-13	-35.77	-63.27	-49.14	7.73	8.10	Н			
	5640	-48.95	-13	-35.95	-66.96	-49.85	9.5	10.40	Н			
NA: -I -II -	7520	-45.41	-13	-32.41	-65.82	-46.03	11.08	11.70	Н			
Middle	3760	-50.45	-13	-37.45	-65.54	-50.82	7.73	8.1	V			
	5640	-48.88	-13	-35.88	-67.15	-49.78	9.5	10.4	V			
	7520	-46.03	-13	-33.03	-66.53	-46.65	11.08	11.7	V			
	3815.2	-48.16	-13	-35.16	-62.66	-48.53	7.73	8.10	Н			
	5722.8	-48.87	-13	-35.87	-66.88	-49.77	9.5	10.40	Н			
I limboot	7630.4	-45.44	-13	-32.44	-65.85	-46.06	11.08	11.70	Н			
Highest	3815.2	-49.91	-13	-36.91	-65	-50.28	7.73	8.1	V			
	5722.8	-48.91	-13	-35.91	-67.18	-49.81	9.5	10.4	V			
	7630.4	-46.15	-13	-33.15	-66.65	-46.77	11.08	11.7	V			

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	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)			
	3424.8	-50.15	-13	-37.15	-64.90	-55.42	7.33	12.60	Н			
	5137.2	-48.29	-13	-35.29	-66.29	-51.84	9.15	12.70	Н			
Lowcot	6849.6	-46.74	-13	-33.74	-65.55	-47.80	10.64	11.70	Н			
Lowest	3424.8	-52.45	-13	-39.45	-64.03	-57.72	7.33	12.60	V			
	5137.2	-52.92	-13	-39.92	-66.67	-56.47	9.15	12.70	V			
	6849.6	-48.33	-13	-35.33	-66.42	-49.39	10.64	11.70	V			
	3465.2	-49.86	-13	-36.86	-64.61	-55.13	7.33	12.60	Н			
	5197.8	-48.37	-13	-35.37	-66.37	-51.92	9.15	12.70	Н			
NA: -I -II -	6930.4	-47.25	-13	-34.25	-66.06	-48.31	10.64	11.70	Н			
Middle	3465.2	-54.24	-13	-41.24	-65.82	-59.51	7.33	12.60	V			
	5197.8	-52.62	-13	-39.62	-66.37	-56.17	9.15	12.70	V			
	6930.4	-47.81	-13	-34.81	-65.9	-48.87	10.64	11.70	V			
	3505.2	-50.23	-13	-37.23	-64.98	-55.50	7.33	12.60	Н			
	5257.8	-48.31	-13	-35.31	-66.31	-51.86	9.15	12.70	Н			
11:	7010.4	-46.95	-13	-33.95	-65.76	-48.01	10.64	11.70	Н			
Highest	3505.2	-52.49	-13	-39.49	-64.07	-57.76	7.33	12.60	V			
	5257.8	-52.72	-13	-39.72	-66.47	-56.27	9.15	12.70	V			
	7010.4	-48.42	-13	-35.42	-66.51	-49.48	10.64	11.70	V			

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