FCC RF Test Report

APPLICANT	:	Lenovo(Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT	:	Portable Tablet Computer
BRAND NAME	:	Lenovo
MODEL NAME	:	Lenovo TB-J616X
FCC ID	:	O57TBJ616X
STANDARD	:	47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)
TEST DATE(S)	:	May 28, 2021 ~ Jun. 07, 2021

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

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

Reviewed by: Jason Jia / Supervisor

Approved by: Alex Wang / Manager

ACCREDITED
Cert #5145.02

Sporton International (Kunshan) Inc.

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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APPENDIX A. TEST RESULTS OF CONDUCTED TEST

APPENDIX B. TEST RESULTS OF RADIATED TEST

APPENDIX C. TEST SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG152109A	Rev. 01	Initial issue of report	Jul. 07, 2021

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.5	§24.232(d)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §22.355	Frequency Stability for Temperature & Voltage	< 2.5 ppm for Part 22	PASS	-
	§2.1055 §24.235		Within Authorized Band		
4.4	§2.1053; §22.917(a); §24.238(a)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 20.51 dB at 2510.000 MHz

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

Lenovo(Shanghai) Electronics Technology Co., Ltd.
Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone

1.2 Manufacturer

Lenovo PC HK Limited
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Portable Tablet Computer
Brand Name	Lenovo
Model Name	Lenovo TB-J616X
FCC ID	O57TBJ616X
EUT supports Radios application	GSM/WCDMA/LTE WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR / EDR / LE FM Receiver and GNSS
IMEI Code	Conducted: 865736050005134 Radiation: 865736050005472
HW Version	Lenovo Tablet TB-J616X
SW Version	Lenovo TB-J616X_RF01_210516
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 MHz ~ 849 MHz 1900: 1850MHz ~ 1910MHz **WCDMA:** Band V: 824 MHz ~ 849 MHz Band II: 1850 MHz ~ 1910 MHz
Rx Frequency	**GSM/GPRS/EDGE:** 850: 869 MHz ~ 894 MHz 1900: 1930 MHz ~ 1990 MHz **WCDMA:** Band V: 869 MHz ~ 894 MHz Band II: 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	**GSM/GPRS/EDGE:** 850: 32.61 dBm 1900: 30.01 dBm **WCDMA:** Band V: 22.45 dBm Band II: 22.93 dBm
Antenna Type	Fixed Internal Antenna
Antenna Gain	Cellular Band: -3.79 dBi PCS Band: -1.13 dBi
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA : BPSK HSPA : QPSK HSPA+ : 16QAM DC-HSDPA : 64QAM

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP Power, and Emission Designator

FCC Rule	Frequency Band	Frequency Range (MHz)	Type of Modulation	Maximum ERP/EIRP (W)	Emission Designator
Part 22	GSM850 (GSM)	824.2 ~ 848.8	GMSK	0.4645	245KGXW
Part 22	GSM850 (EDGE)	824.2 ~ 848.8	8PSK	0.1318	235KG7W
Part 22	WCDMA Band V	826.4 ~ 846.6	BPSK	0.0448	4M16F9W
Part 24	GSM1900 (GSM)	1850.2 ~ 1909.8	GMSK	0.7727	243KGXW
Part 24	GSM1900 (EDGE)	1850.2 ~ 1909.8	8PSK	0.3532	240KG7W
Part 24	WCDMA Band II	1852.4 ~ 1907.6	BPSK	0.1514	4M16F9W

1.7 Testing Location

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

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH04-KS TH01-KS	CN1257	314309

1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24a

1.9 Applicable Standards

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

- 47 CFR Part 2, 22(H), 24(E)
- ANSI 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:

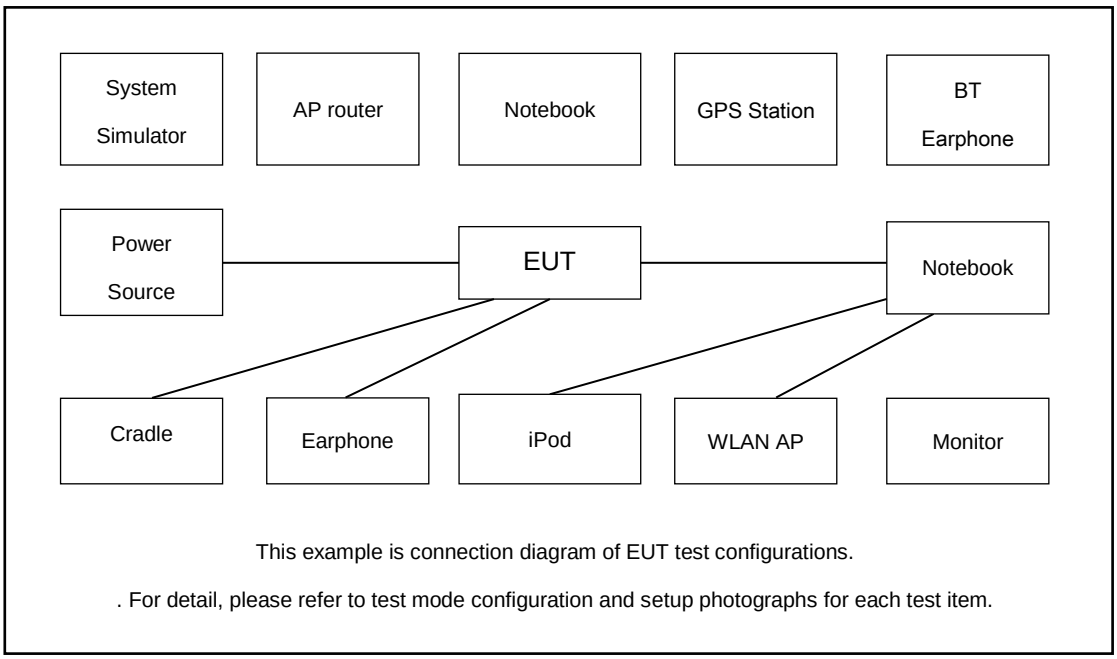
1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V.
2. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II.

All modes and data rates and positions were investigated.

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

Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	■ GSM Link ■ EDGE 1 Tx slots Link	■ GSM Link ■ EDGE 1 Tx slots Link
GSM 1900	■ GSM Link ■ EDGE 1 Tx slots Link	■ GSM Link ■ EDGE 1 Tx slots Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

2.2 Connection Diagram of Test System



The EUT has been configuration operated in a manner tended to maximize its emission characteristics in a typical application.

2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Base Station	Anritsu	MT8821C	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 4.8 dB and a 10dB attenuator.

Example :

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

= 4.8 + 10 = 14.8 (dB)

2.5 Frequency List of Low/Middle/High Channels

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

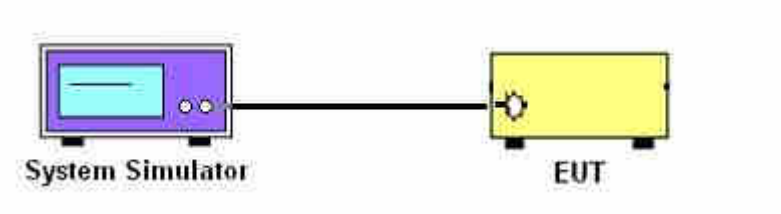
3 Conducted Test Result

3.1 Measuring Instruments

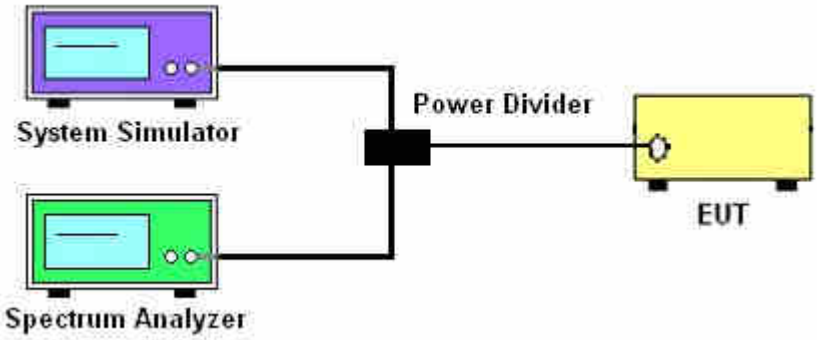
See list of measuring instruments of this test report.

3.2 Test Setup

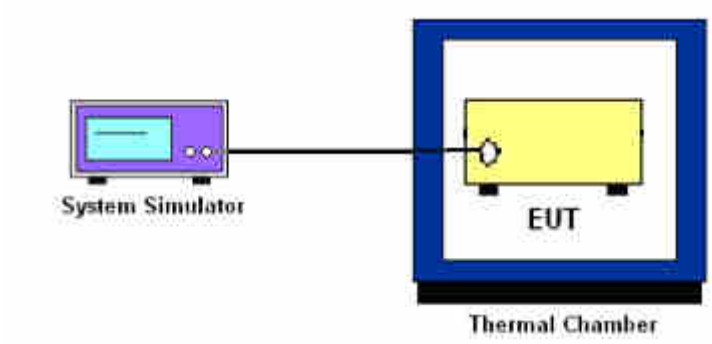
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP/EIRP

3.4.1 Description of the Conducted Output Power and ERP/EIRP

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

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

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

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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

3.5.2 Test Procedures

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

3.6 99% Occupied Bandwidth and 26dB Bandwidth Measurement

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

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

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

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

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

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The band edges of low and high channels for the highest RF powers were measured.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

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

3.9.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.9.3 Test Procedures for Voltage Variation

1. The testing follows ANSI C63.26 section 5.6.5
2. The EUT was placed in a temperature chamber at 20±5°C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

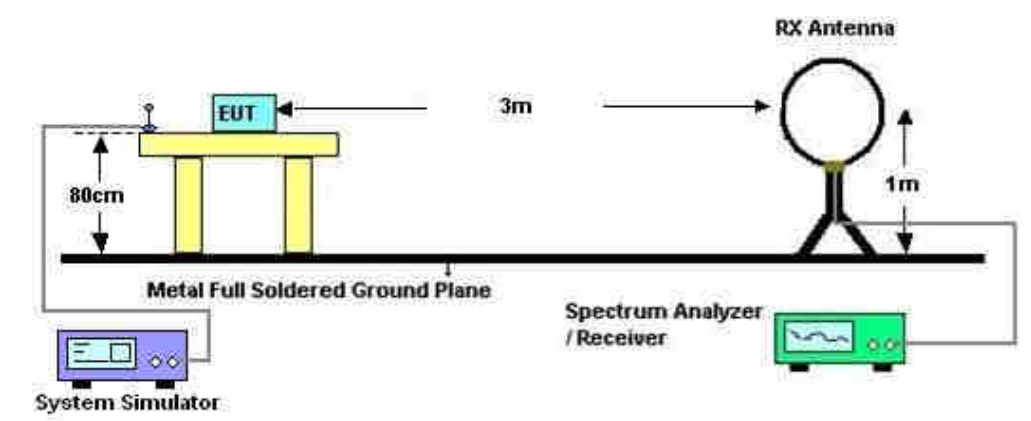
4 Radiated Test Items

4.1 Measuring Instruments

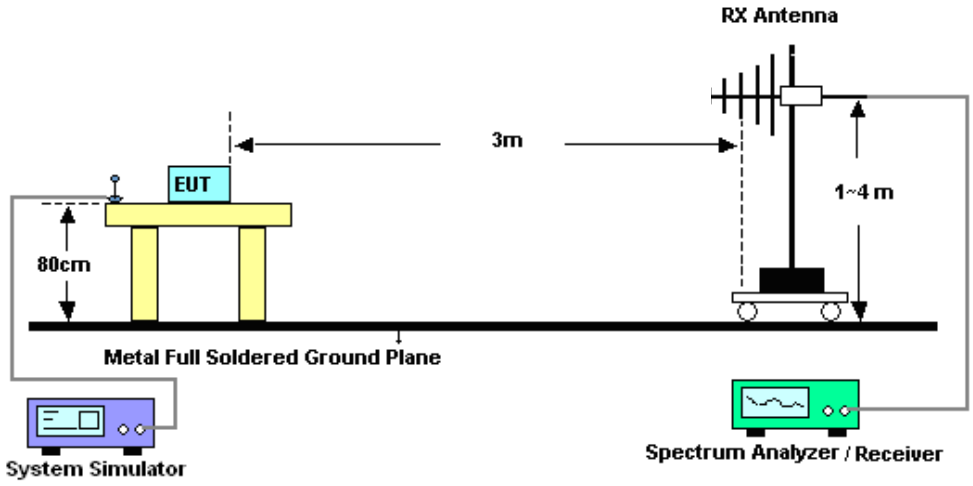
See list of measuring instruments of this test report.

4.2 Test Setup

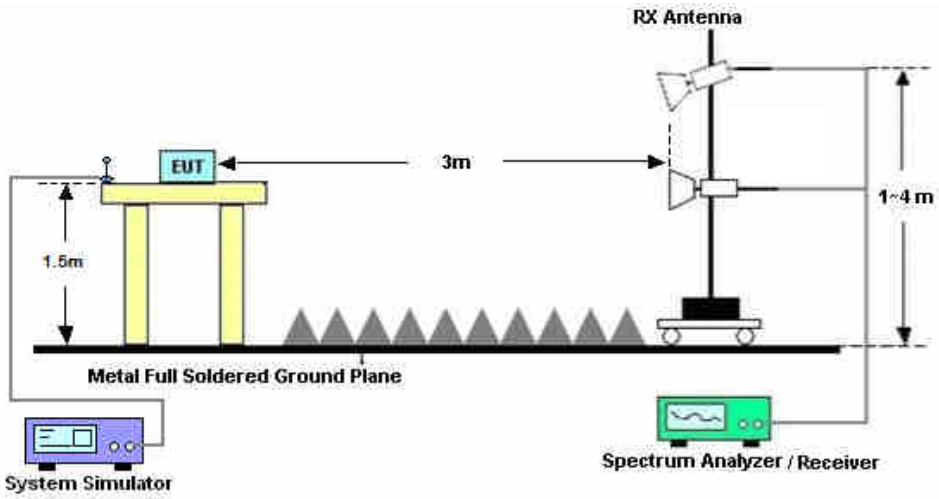
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

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	101040	10Hz~40GHz	Nov. 01, 2020	May 28, 2021~ May 29, 2021	Oct. 31, 2021	Conducted (TH01-KS)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 26, 2020	May 28, 2021~ May 29, 2021	Dec. 25, 2021	Conducted (TH01-SZ)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 03, 2020	May 28, 2021~ May 29, 2021	Jul. 02, 2021	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 13, 2021	Jun. 07, 2021	Apr. 12, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 1, 2020	Jun. 07, 2021	Oct. 31, 2021	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jun. 08, 2020	Jun. 07, 2021	Jun. 07, 2021	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 18, 2021	Jun. 07, 2021	Apr. 17, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Jan. 06, 2021	Jun. 07, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 06, 2021	Jun. 07, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 07, 2021	Jun. 07, 2021	Jan. 06, 2022	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Jan. 06, 2021	Jun. 07, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 14, 2020	Jun. 07, 2021	Oct. 13, 2021	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jun. 07, 2021	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jun. 07, 2021	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jun. 07, 2021	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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

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

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

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

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

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

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

---------- THE END ----------

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) and ERP/EIRP

GSM850	Burst Average Power (dBm)			ERP(W)		
TX Channel	128	189	251			
Frequency (MHz)	824.2	836.4	848.8	L	M	H
GSM 1 Tx slot	32.55	32.59	32.61	0.4581	0.4624	0.4645
GPRS 1 Tx slot	32.51	32.56	32.38	0.4539	0.4592	0.4406
GPRS 2 Tx slots	30.97	31.01	30.84	0.3184	0.3214	0.3090
GPRS 3 Tx slots	28.95	29.01	28.85	0.2000	0.2028	0.1954
GPRS 4 Tx slots	26.93	26.97	26.83	0.1256	0.1268	0.1227
EDGE 1 Tx slot	26.91	27.04	27.14	0.1250	0.1288	0.1318
EDGE 2 Tx slots	24.17	24.33	24.34	0.0665	0.0690	0.0692
EDGE 3 Tx slots	22.61	22.74	22.46	0.0465	0.0479	0.0449
EDGE 4 Tx slots	21.25	21.36	21.27	0.0340	0.0348	0.0341

GSM1900	Burst Average Power (dBm)			EIRP(W)		
TX Channel	512	661	810			
Frequency (MHz)	1850.2	1880	1909.8	L	M	H
GSM 1 Tx slot	29.88	29.89	30.01	0.7499	0.7516	0.7727
GPRS 1 Tx slot	29.67	29.83	30.00	0.7145	0.7413	0.7709
GPRS 2 Tx slots	28.14	28.32	28.24	0.5023	0.5236	0.5140
GPRS 3 Tx slots	26.46	26.33	26.51	0.3412	0.3311	0.3451
GPRS 4 Tx slots	24.52	24.28	24.45	0.2183	0.2065	0.2148
EDGE 1 Tx slot	26.61	26.56	26.51	0.3532	0.3491	0.3451
EDGE 2 Tx slots	23.84	23.80	23.63	0.1866	0.1849	0.1778
EDGE 3 Tx slots	21.86	21.93	21.77	0.1183	0.1202	0.1159
EDGE 4 Tx slots	21.04	20.93	20.96	0.0979	0.0955	0.0962

Band		WCDMA V			ERP(W)		
TX Channel		4132	4182	4233			
Rx Channel		4357	4407	4458			
Frequency (MHz)		826.4	836.4	846.6	L	M	H
3GPP Rel 99	AMR 12.2Kbps	22.35	22.25	22.31	0.0438	0.0428	0.0434
3GPP Rel 99	RMC 12.2Kbps	22.40	22.39	22.45	0.0443	0.0442	0.0448
3GPP Rel 6	HSDPA Subtest-1	21.66	21.58	21.54	0.0373	0.0366	0.0363
3GPP Rel 6	HSDPA Subtest-2	21.76	21.82	21.70	0.0382	0.0387	0.0377
3GPP Rel 6	HSDPA Subtest-3	21.00	21.25	21.20	0.0321	0.0340	0.0336
3GPP Rel 6	HSDPA Subtest-4	21.12	21.31	21.08	0.0330	0.0344	0.0327
3GPP Rel 8	DC-HSDPA Subtest-1	21.50	21.80	21.79	0.0360	0.0385	0.0385
3GPP Rel 8	DC-HSDPA Subtest-2	21.47	21.81	21.81	0.0357	0.0386	0.0386
3GPP Rel 8	DC-HSDPA Subtest-3	21.16	21.15	21.60	0.0333	0.0332	0.0368
3GPP Rel 8	DC-HSDPA Subtest-4	21.07	21.20	21.37	0.0326	0.0336	0.0349
3GPP Rel 6	HSUPA Subtest-1	21.59	21.68	21.58	0.0367	0.0375	0.0366
3GPP Rel 6	HSUPA Subtest-2	19.58	19.59	19.64	0.0231	0.0232	0.0234
3GPP Rel 6	HSUPA Subtest-3	20.52	20.74	20.62	0.0287	0.0302	0.0294
3GPP Rel 6	HSUPA Subtest-4	19.59	19.77	19.74	0.0232	0.0242	0.0240
3GPP Rel 6	HSUPA Subtest-5	21.60	21.60	21.80	0.0368	0.0368	0.0385
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	19.80	19.85	19.74	0.0243	0.0246	0.0240

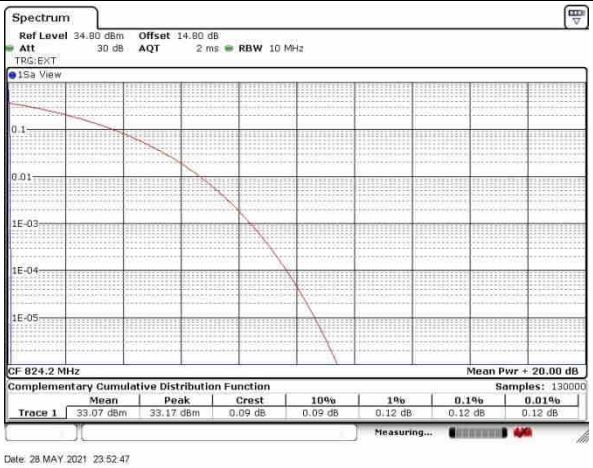
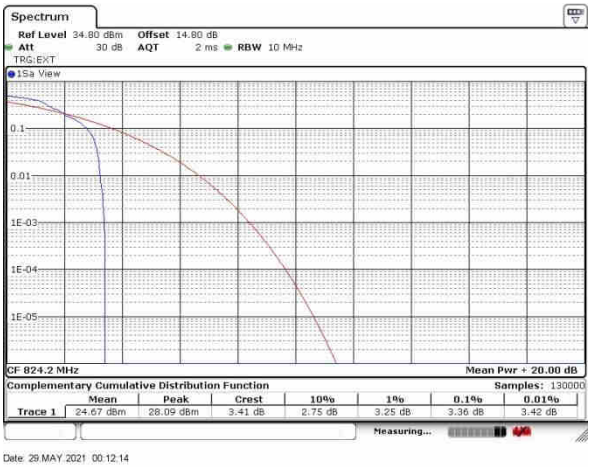
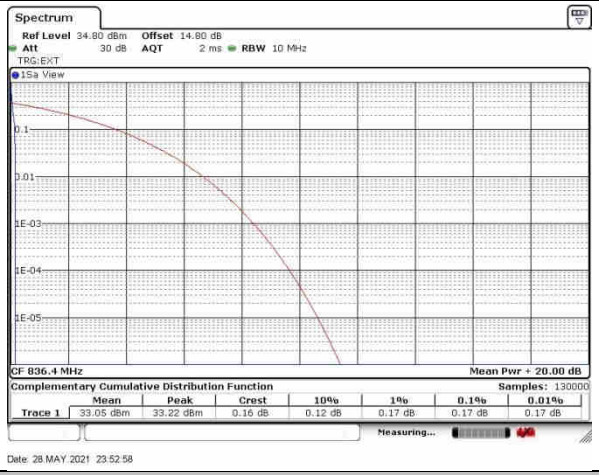
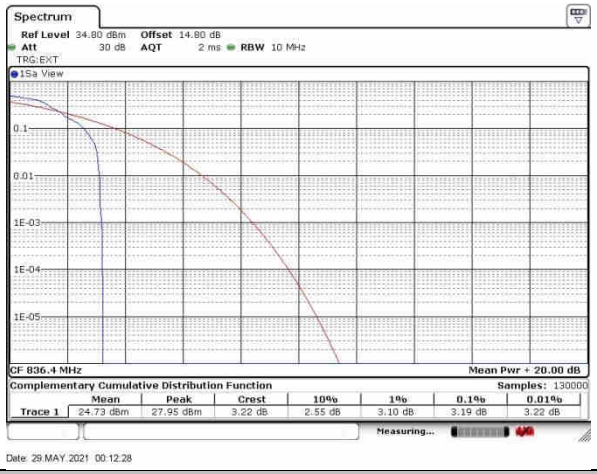
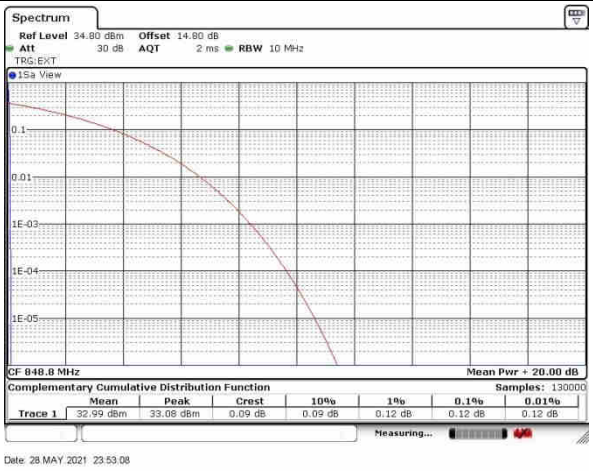
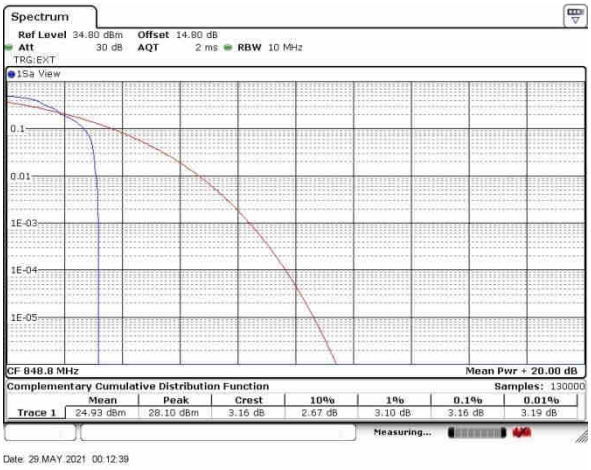
Band		WCDMA II			EIRP(W)		
TX Channel		9262	9400	9538			
Rx Channel		9662	9800	9938			
Frequency (MHz)		1852.4	1880	1907.6	L	M	H
3GPP Rel 99	AMR 12.2Kbps	22.71	22.85	22.91	0.1439	0.1486	0.1507
3GPP Rel 99	RMC 12.2Kbps	22.78	22.89	22.93	0.1462	0.1500	0.1514
3GPP Rel 6	HSDPA Subtest-1	21.66	21.57	21.81	0.1130	0.1107	0.1169
3GPP Rel 6	HSDPA Subtest-2	21.65	21.73	21.80	0.1127	0.1148	0.1167
3GPP Rel 6	HSDPA Subtest-3	21.03	21.18	21.02	0.0977	0.1012	0.0975
3GPP Rel 6	HSDPA Subtest-4	21.05	21.21	21.01	0.0982	0.1019	0.0973
3GPP Rel 8	DC-HSDPA Subtest-1	21.46	21.81	21.54	0.1079	0.1169	0.1099
3GPP Rel 8	DC-HSDPA Subtest-2	21.60	21.80	21.49	0.1114	0.1167	0.1086
3GPP Rel 8	DC-HSDPA Subtest-3	21.22	21.25	21.23	0.1021	0.1028	0.1023
3GPP Rel 8	DC-HSDPA Subtest-4	21.11	21.18	21.10	0.0995	0.1012	0.0993
3GPP Rel 6	HSUPA Subtest-1	21.70	21.65	21.70	0.1140	0.1127	0.1140
3GPP Rel 6	HSUPA Subtest-2	19.51	19.65	19.62	0.0689	0.0711	0.0706
3GPP Rel 6	HSUPA Subtest-3	20.64	20.69	20.54	0.0893	0.0904	0.0873
3GPP Rel 6	HSUPA Subtest-4	19.60	19.70	19.61	0.0703	0.0719	0.0705
3GPP Rel 6	HSUPA Subtest-5	21.70	21.70	21.60	0.1140	0.1140	0.1114
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	19.83	19.82	19.89	0.0741	0.0740	0.0752

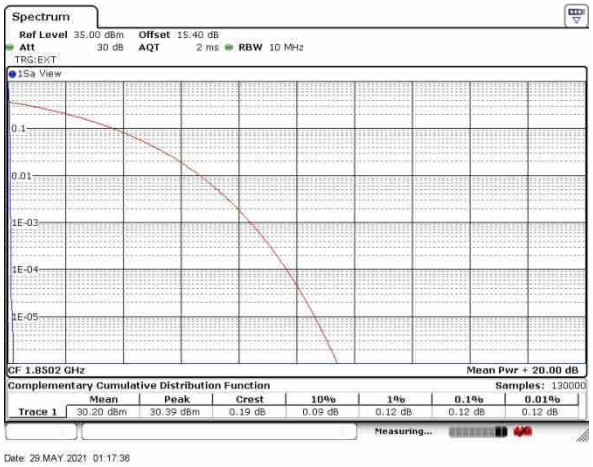
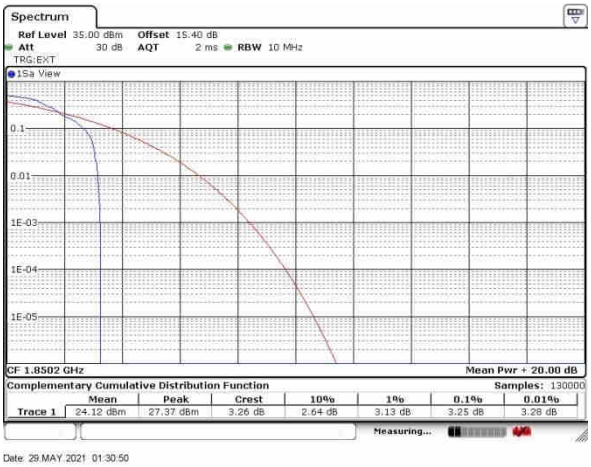
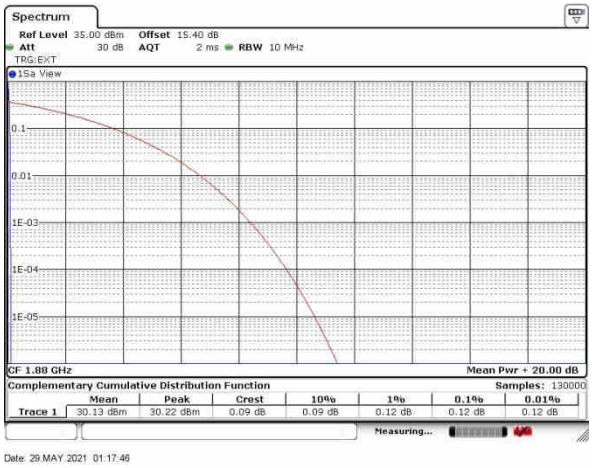
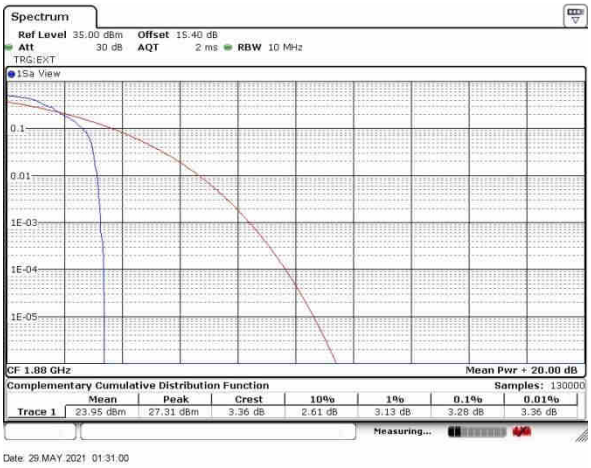
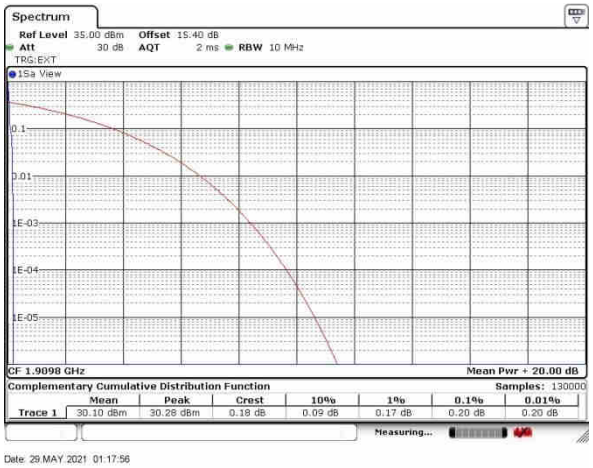
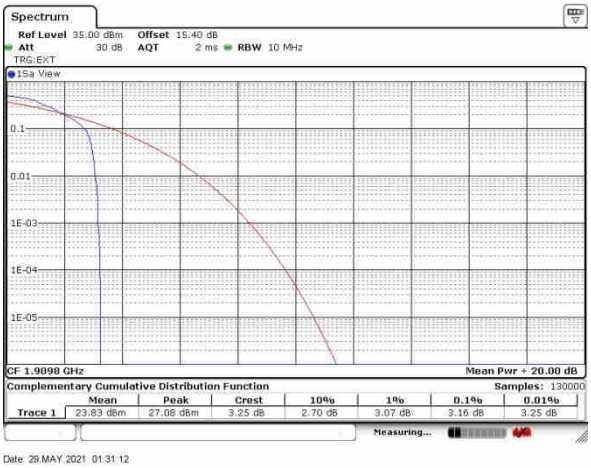
GSM

Peak-to-Average Ratio

Mode	GSM850		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.12	3.36	PASS
Middle CH	0.17	3.19	
Highest CH	0.12	3.16	

Mode	GSM1900		Limit: 13dB
Mod.	GSM	EDGE class 8	Result
Lowest CH	0.12	3.25	PASS
Middle CH	0.12	3.28	
Highest CH	0.20	3.16	

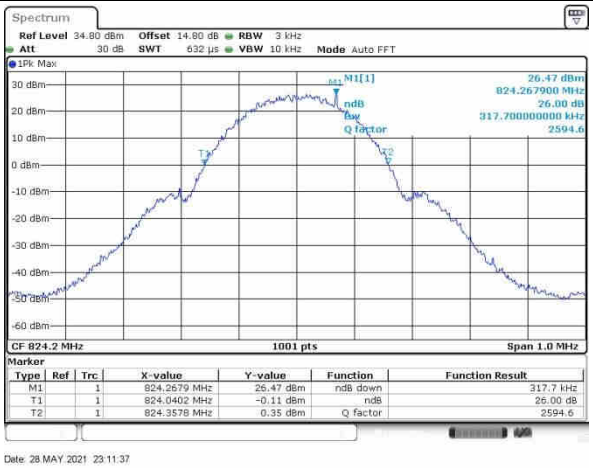
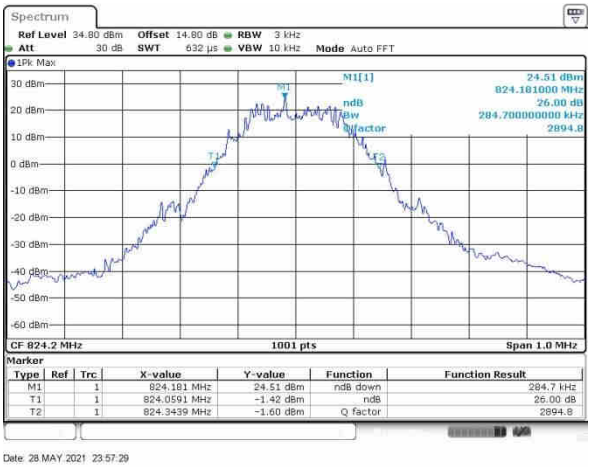
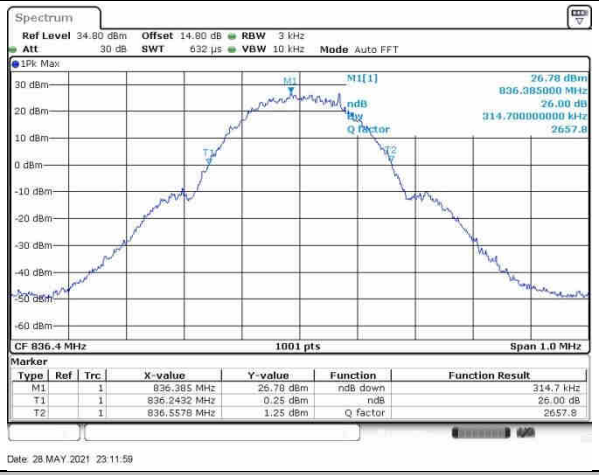
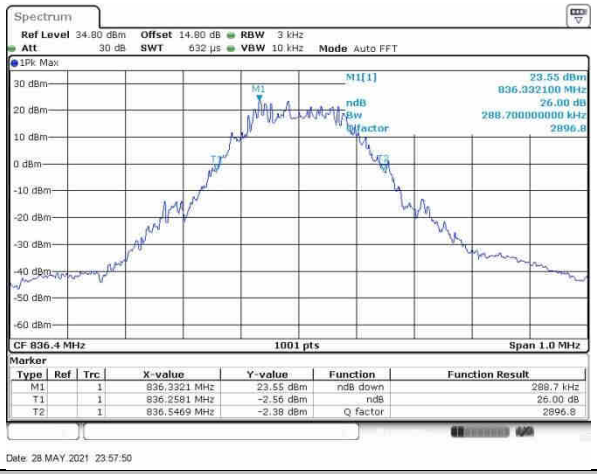
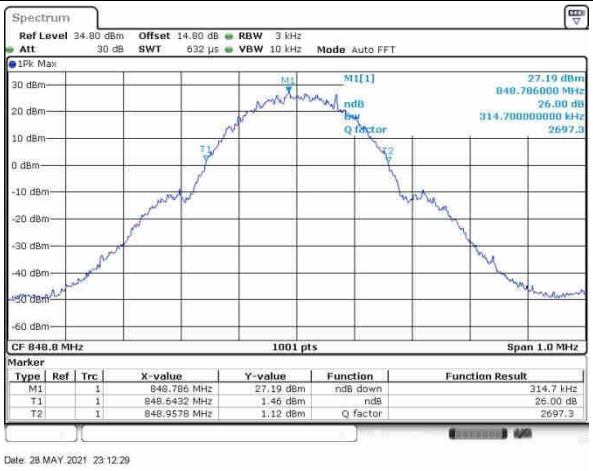
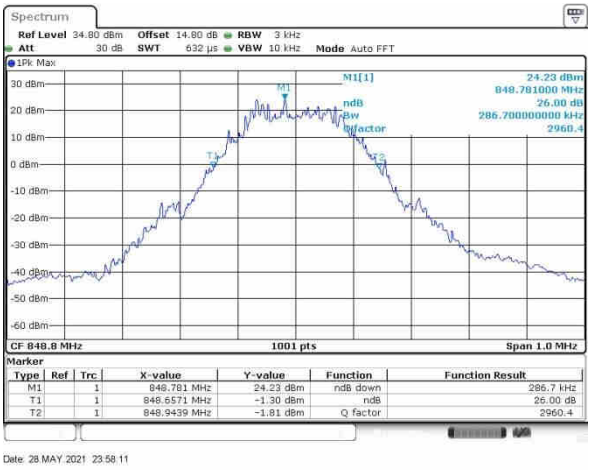
GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

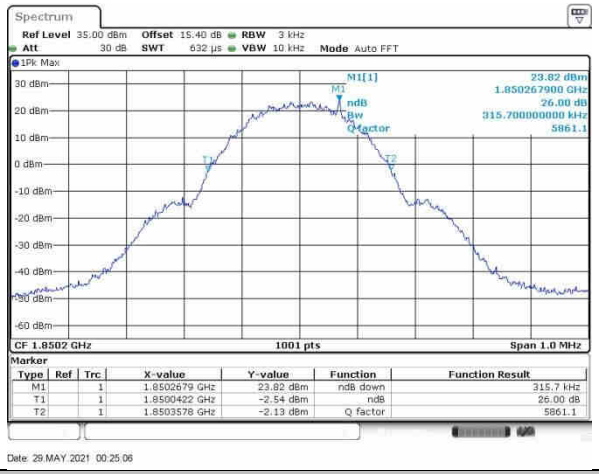
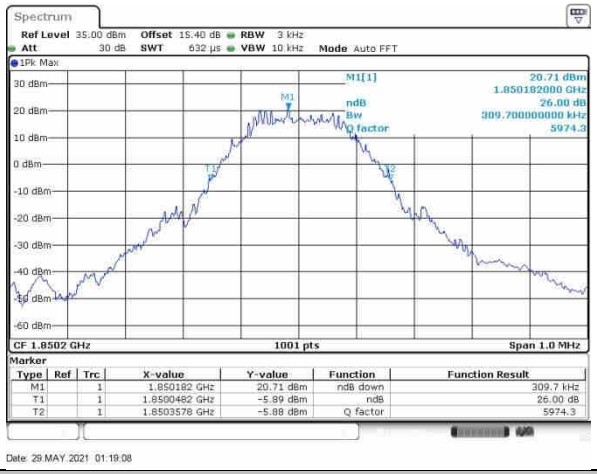
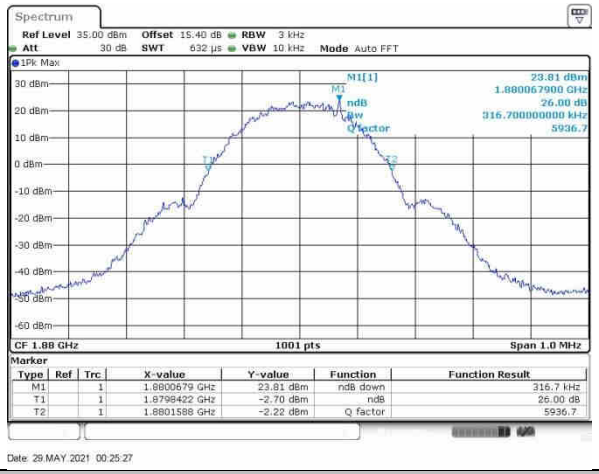
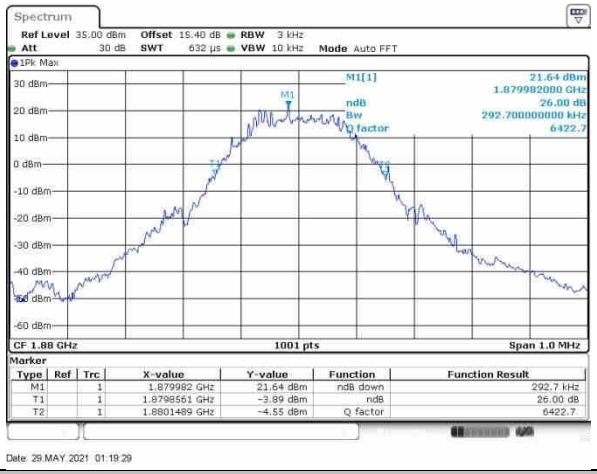
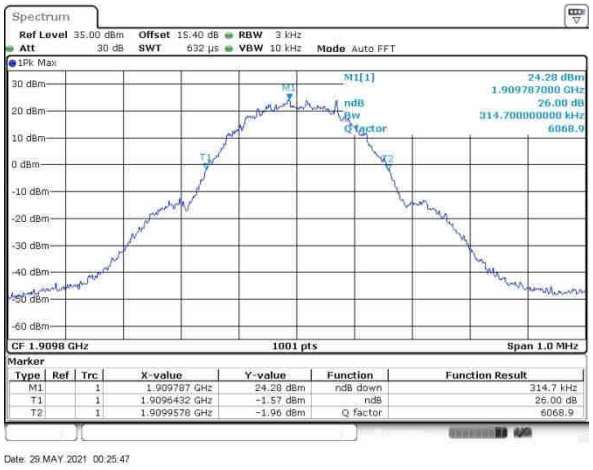
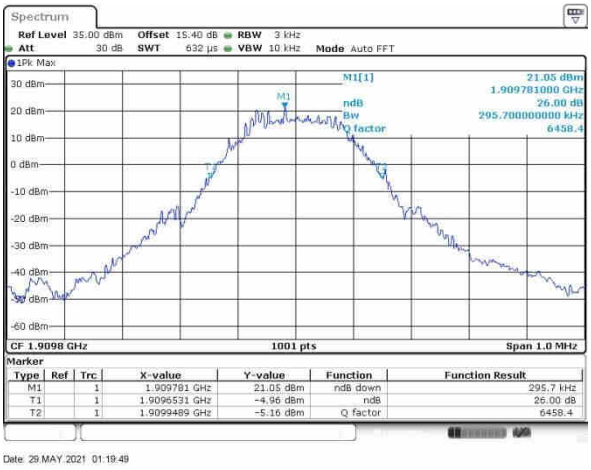
GSM1900 (GSM)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

26dB Bandwidth

Mode	GSM850(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.32	0.28
Middle CH	0.31	0.29
Highest CH	0.31	0.29

Mode	GSM1900(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.32	0.31
Middle CH	0.32	0.29
Highest CH	0.31	0.30

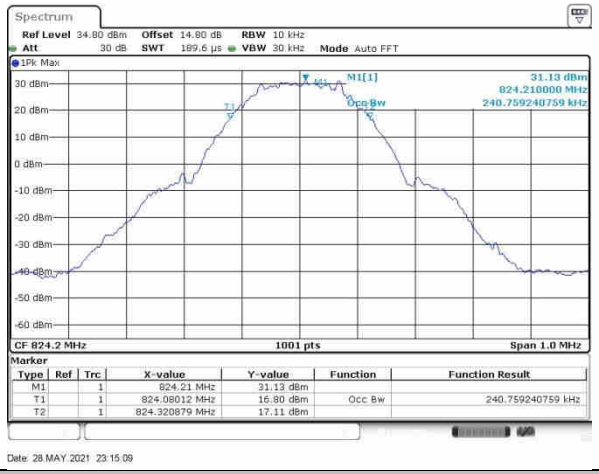
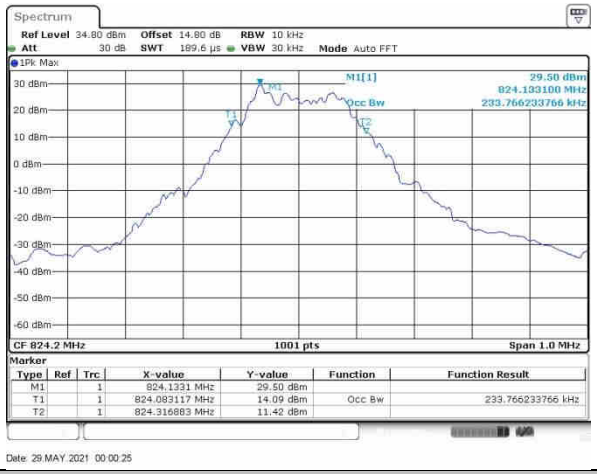
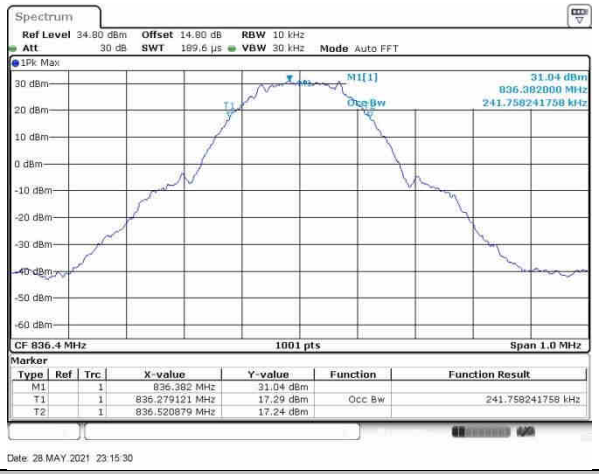
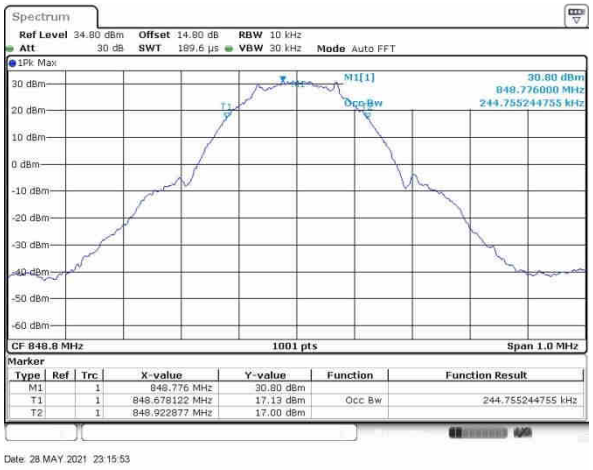
GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

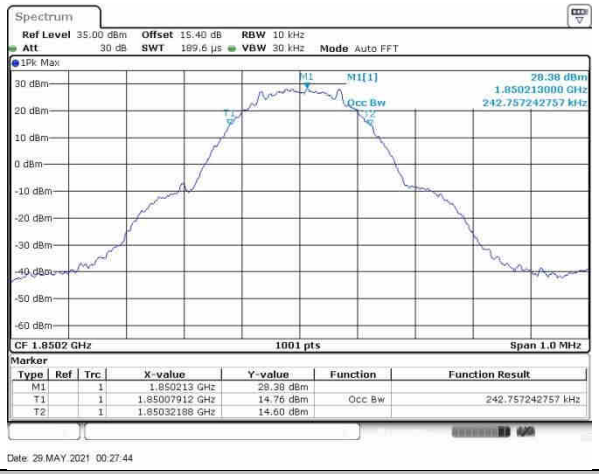
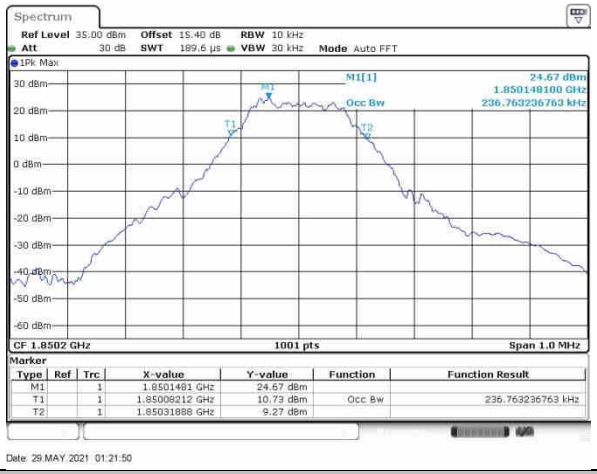
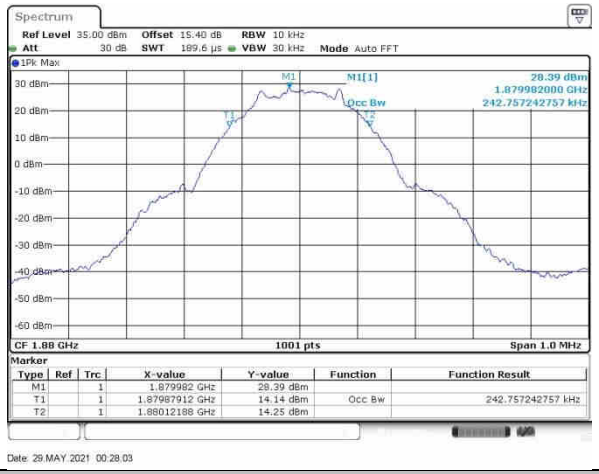
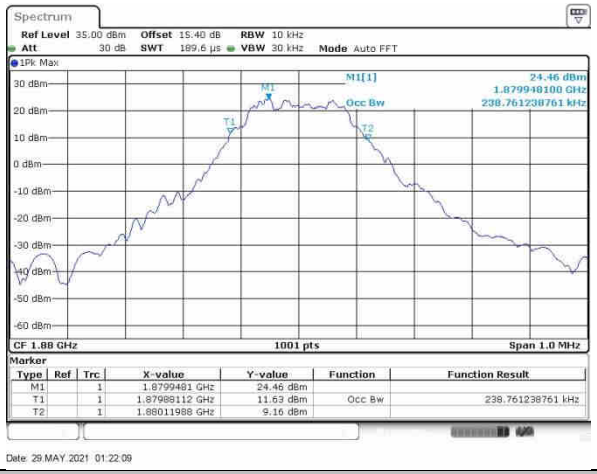
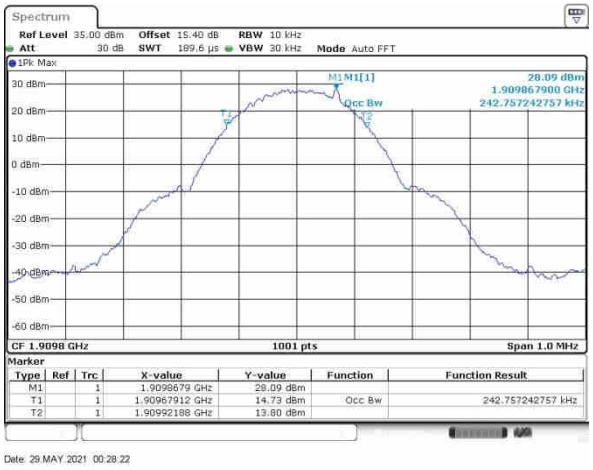
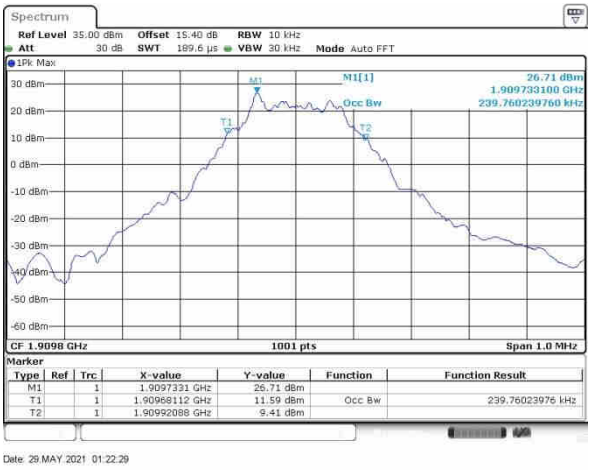
GSM1900 (GSM)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

Occupied Bandwidth

Mode	GSM850(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.241	0.234
Middle CH	0.242	0.232
Highest CH	0.245	0.235

Mode	GSM1900(MHz)	
Mod.	GSM	EDGE class 8
Lowest CH	0.243	0.237
Middle CH	0.243	0.239
Highest CH	0.243	0.240

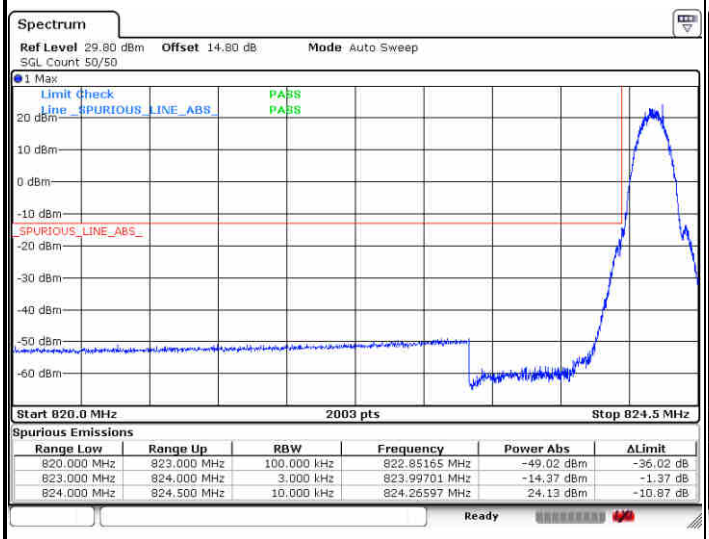
GSM850 (GSM)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

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

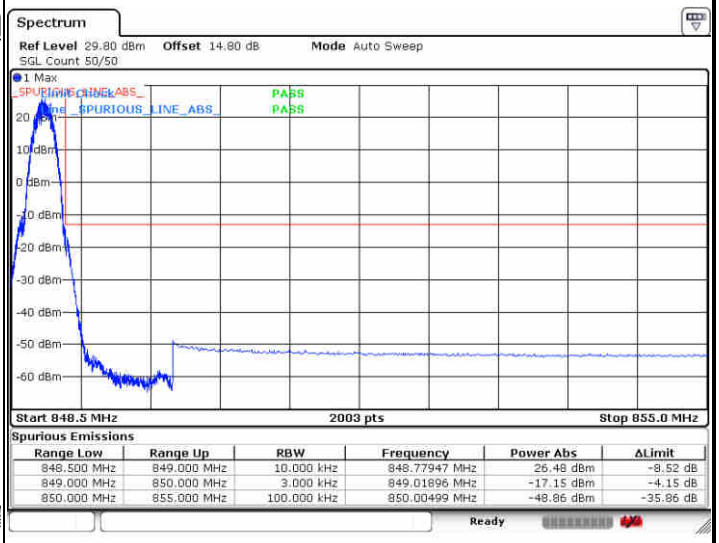
Conducted Band Edge

GSM850 (GSM)

Lowest Band Edge

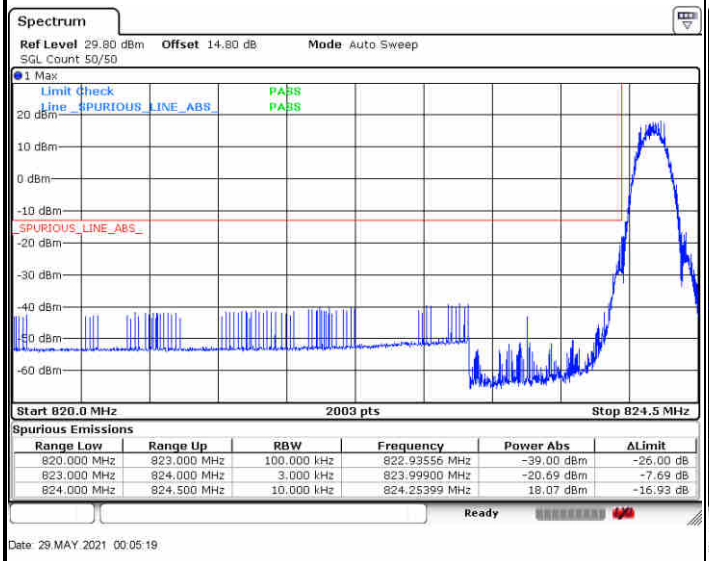


Highest Band Edge

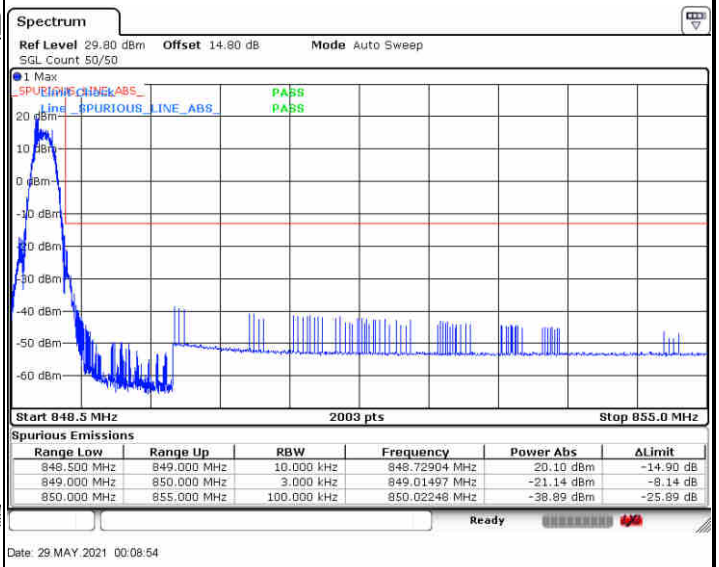


GSM850 (EDGE class 8)

Lowest Band Edge

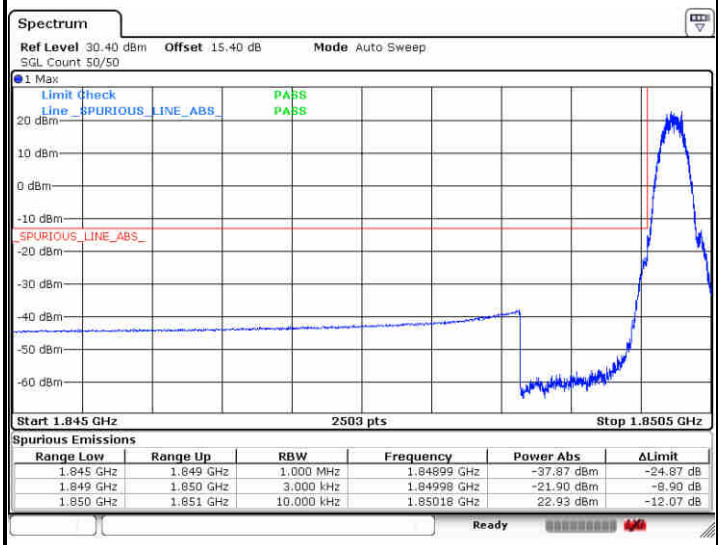


Highest Band Edge



GSM1900 (GSM)

Lowest Band Edge



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84899 GHz	-37.87 dBm	-24.87 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.84998 GHz	-21.90 dBm	-8.90 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85018 GHz	22.93 dBm	-12.07 dB

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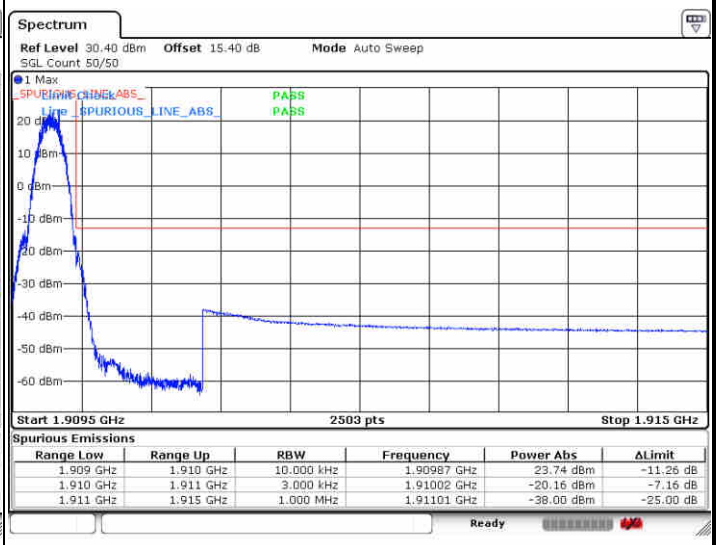
Highest Band Edge



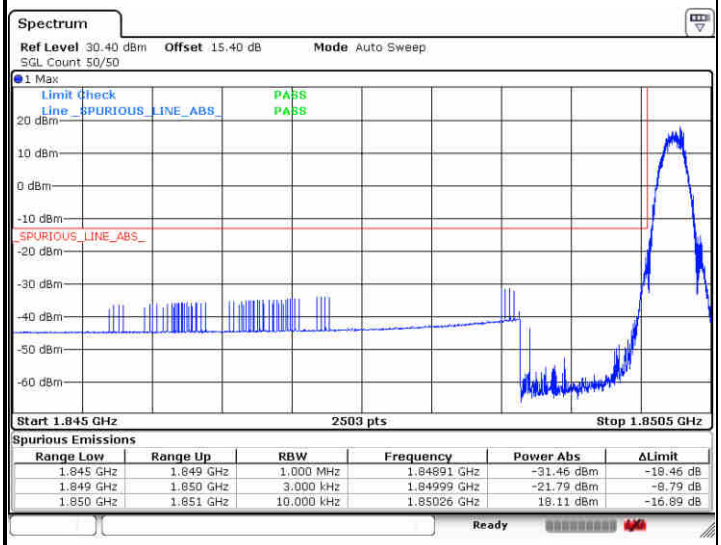
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90987 GHz	23.74 dBm	-11.26 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91002 GHz	-20.16 dBm	-7.16 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91101 GHz	-38.00 dBm	-25.00 dB

Date: 29.MAY.2021 01:14:37

GSM1900 (EDGE class 8)

Lowest Band Edge

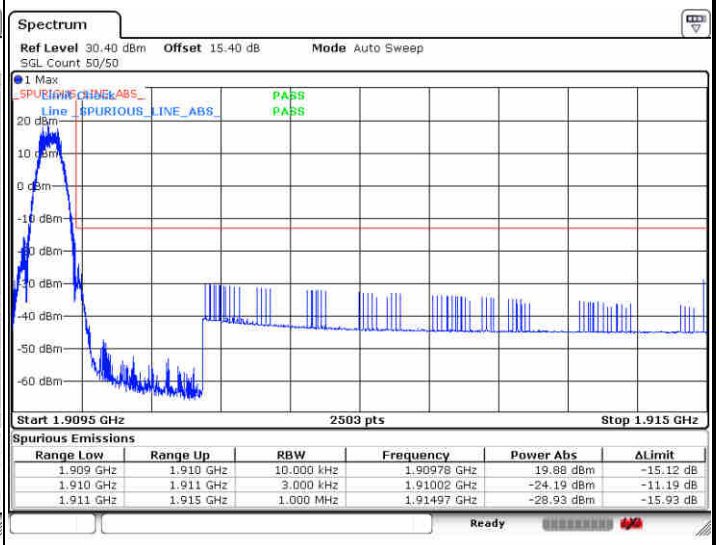


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84891 GHz	-31.46 dBm	-18.46 dB
1.849 GHz	1.850 GHz	3.000 kHz	1.84999 GHz	-21.79 dBm	-8.79 dB
1.850 GHz	1.851 GHz	10.000 kHz	1.85026 GHz	18.11 dBm	-16.89 dB

Date: 29.MAY.2021 01:25:39

Highest Band Edge



Spurious Emissions

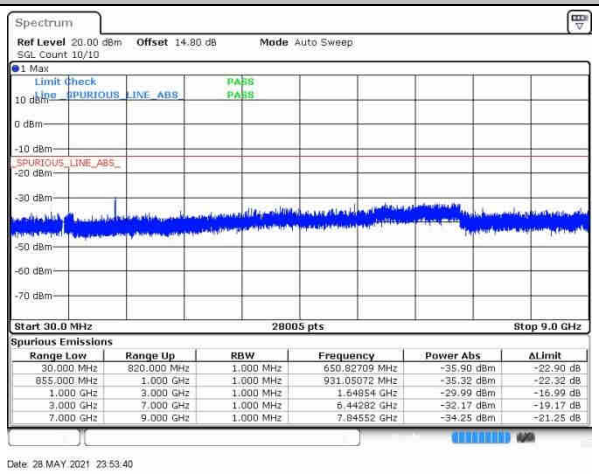
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.909 GHz	1.910 GHz	10.000 kHz	1.90978 GHz	19.88 dBm	-15.12 dB
1.910 GHz	1.911 GHz	3.000 kHz	1.91002 GHz	-24.19 dBm	-11.19 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91497 GHz	-28.93 dBm	-15.93 dB

Date: 29.MAY.2021 01:28:36

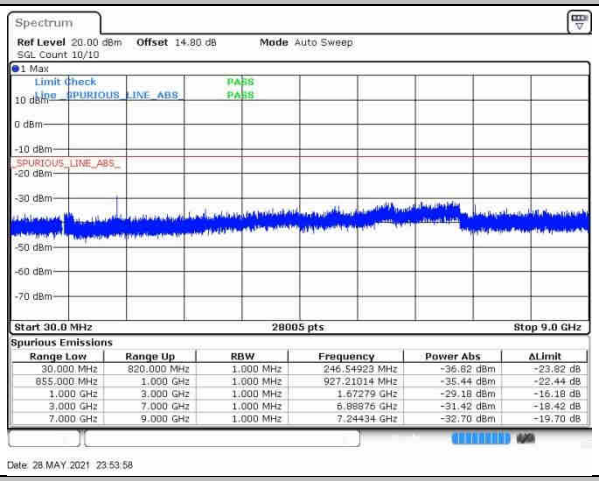
Conducted Spurious Emission

GSM850 (GSM)

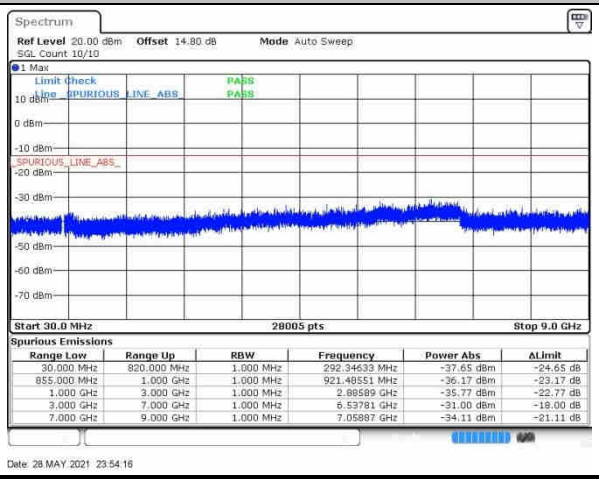
Lowest Channel



Middle Channel

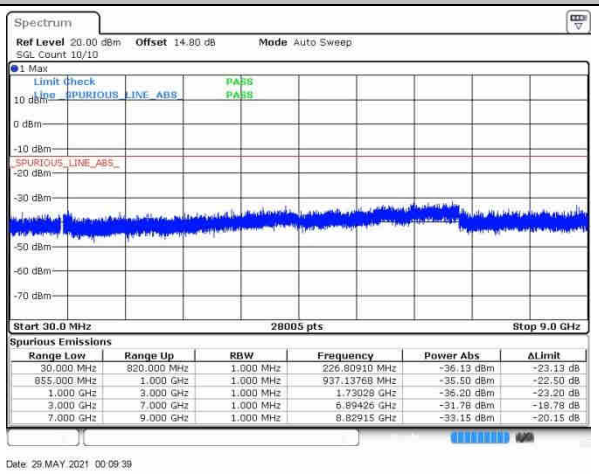


Highest Channel

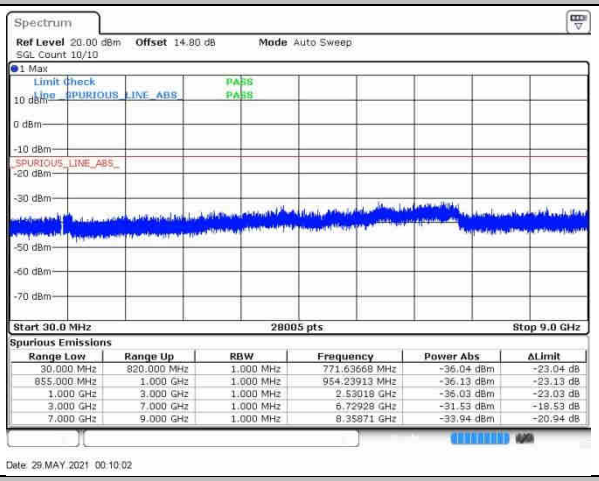


GSM850 (EDGE class 8)

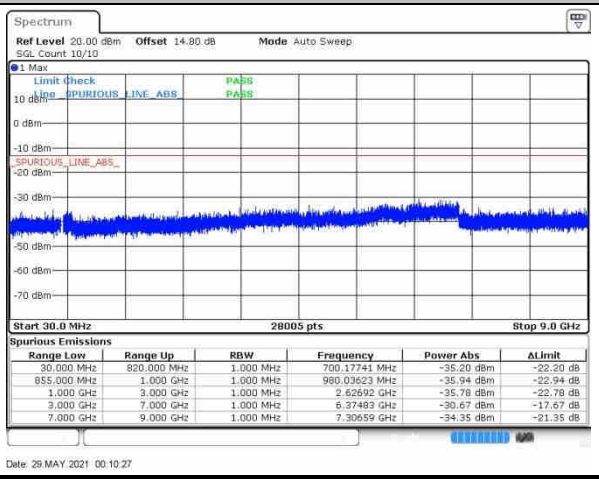
Lowest Channel



Middle Channel

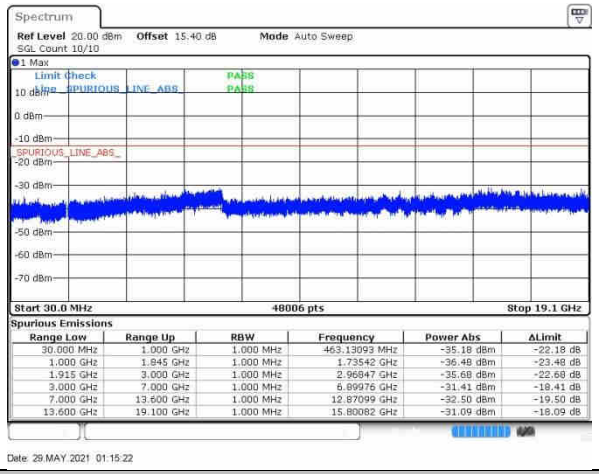


Highest Channel



GSM1900 (GSM)

Lowest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	463.13093 MHz	-35.18 dBm	-22.18 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.73542 GHz	-36.48 dBm	-23.48 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.96847 GHz	-35.68 dBm	-22.68 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.89976 GHz	-31.41 dBm	-18.41 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.87099 GHz	-32.50 dBm	-19.50 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.80082 GHz	-31.09 dBm	-18.09 dB

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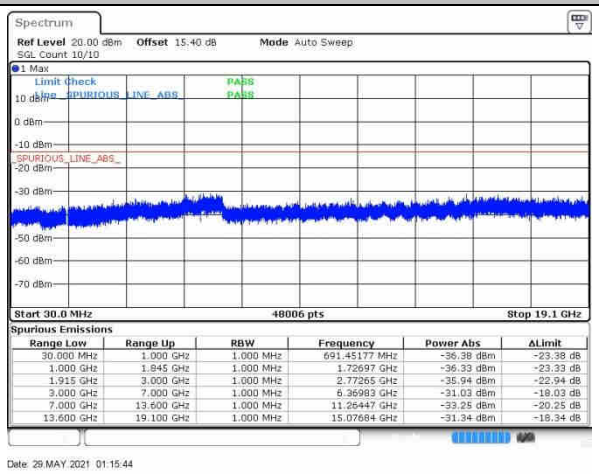
Middle Channel

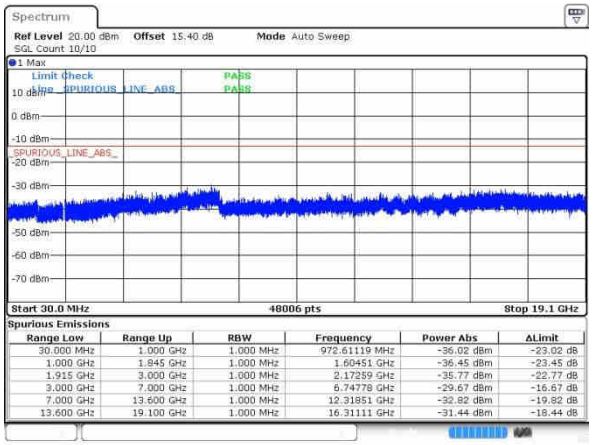


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	691.45177 MHz	-36.38 dBm	-23.38 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.72697 GHz	-36.33 dBm	-23.33 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.77265 GHz	-35.94 dBm	-22.94 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.36983 GHz	-31.03 dBm	-18.03 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.26447 GHz	-33.25 dBm	-20.25 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.07684 GHz	-31.34 dBm	-18.34 dB

Date: 29.MAY.2021 01:15:44

Highest Channel



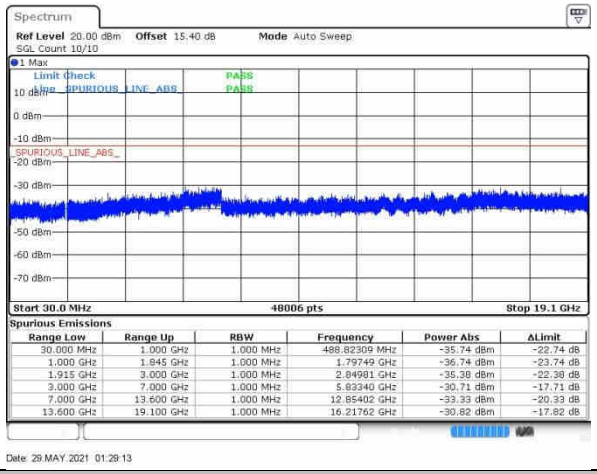
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	972.61119 MHz	-36.02 dBm	-23.02 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.60451 GHz	-36.45 dBm	-23.45 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.17259 GHz	-35.77 dBm	-22.77 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.74778 GHz	-29.67 dBm	-16.67 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.31851 GHz	-32.82 dBm	-19.82 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.31111 GHz	-31.44 dBm	-18.44 dB

Date: 29.MAY.2021 01:16:04

GSM1900 (EDGE class 8)

Lowest Channel

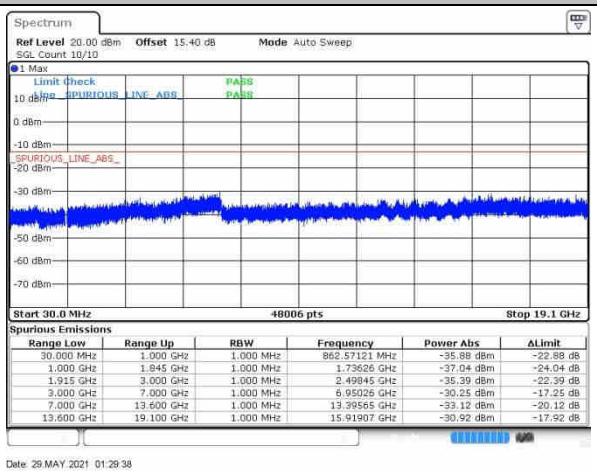


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	488.82309 MHz	-35.74 dBm	-22.74 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.79749 GHz	-36.74 dBm	-23.74 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.84981 GHz	-35.38 dBm	-22.38 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.83340 GHz	-30.71 dBm	-17.71 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.85402 GHz	-33.33 dBm	-20.33 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.21762 GHz	-30.82 dBm	-17.82 dB

Date: 29.MAY.2021 01:29:13

Middle Channel

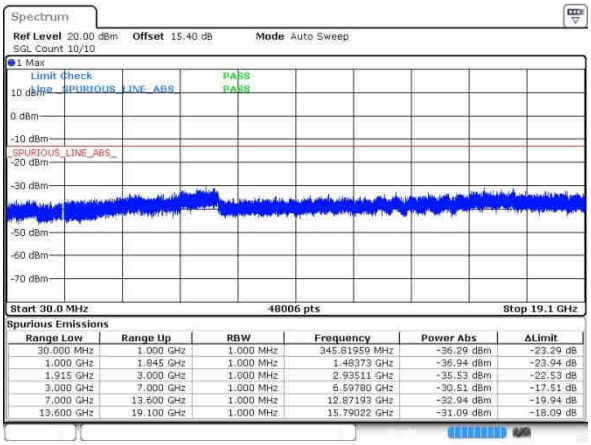


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	862.57121 MHz	-35.88 dBm	-22.88 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.73626 GHz	-37.04 dBm	-24.04 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.49845 GHz	-35.39 dBm	-22.39 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.95026 GHz	-30.25 dBm	-17.25 dB
7.000 GHz	13.600 GHz	1.000 MHz	13.39565 GHz	-33.12 dBm	-20.12 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.91907 GHz	-30.92 dBm	-17.92 dB

Date: 29.MAY.2021 01:29:38

Highest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	345.81959 MHz	-36.29 dBm	-23.29 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.48373 GHz	-36.94 dBm	-23.94 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.93511 GHz	-35.53 dBm	-22.53 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.59780 GHz	-30.51 dBm	-17.51 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.87193 GHz	-32.94 dBm	-19.94 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.79022 GHz	-31.09 dBm	-18.09 dB

Date: 29.MAY.2021 01:29:59

Frequency Stability

Test Conditions	Middle Channel	GSM850 (GSM)	GSM850 (EDGE class 8)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0015	0.0109	PASS
40	Normal Voltage	0.0019	0.0152	
30	Normal Voltage	0.0118	0.0067	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0111	0.0135	
0	Normal Voltage	0.0061	0.0137	
-10	Normal Voltage	0.0133	0.0167	
-20	Normal Voltage	0.0134	0.0033	
-30	Normal Voltage	0.0116	0.0133	
20	Maximum Voltage	0.0079	0.0124	
20	Normal Voltage	0.0112	0.0220	
20	Battery End Point	0.0177	0.0020	

Note: Normal Voltage = 4.2V. ; Battery End Point (BEP) =3.8V. ; Maximum Voltage =4.43 V

Test Conditions	Middle Channel	GSM1900 (GSM)	GSM1900 (EDGE class 8)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0052	0.0159	PASS
40	Normal Voltage	0.0029	0.0137	
30	Normal Voltage	0.0121	0.0035	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0139	0.0107	
0	Normal Voltage	0.0137	0.0127	
-10	Normal Voltage	0.0029	0.0137	
-20	Normal Voltage	0.0032	0.0155	
-30	Normal Voltage	0.0109	0.0127	
20	Maximum Voltage	0.0054	0.0018	
20	Normal Voltage	0.0013	0.0136	
20	Battery End Point	0.0125	0.0037	

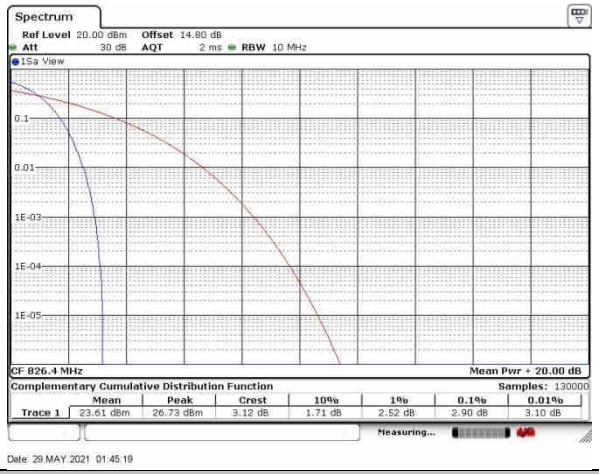
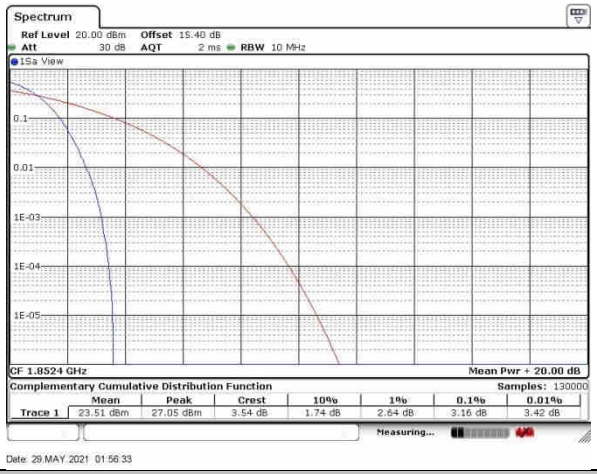
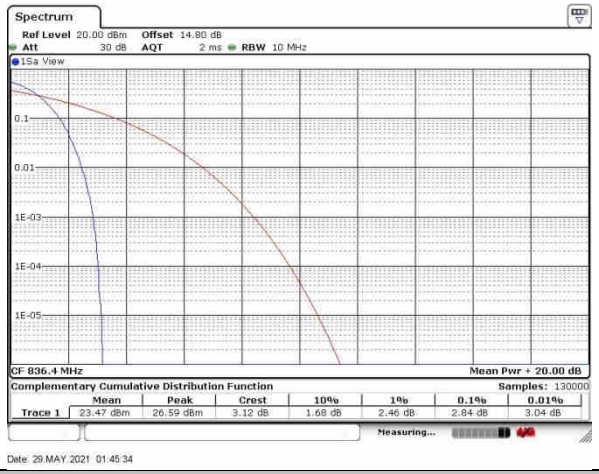
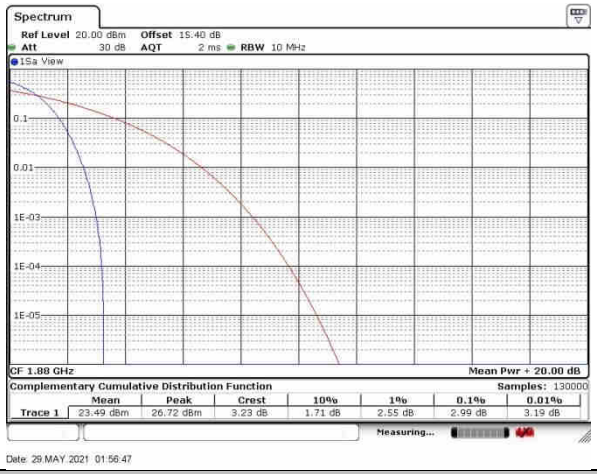
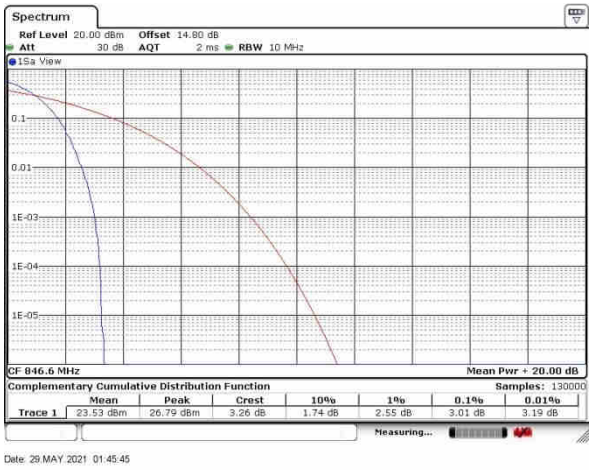
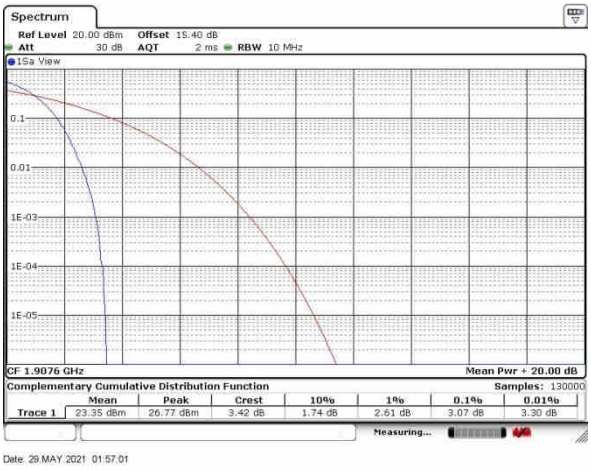
Note:

1. Normal Voltage = 4.2V. ; Battery End Point (BEP) =3.8V. ; Maximum Voltage =4.43V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

WCDMA

Peak-to-Average Ratio

Mode	WCDMA Band V	WCDMA Band II	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	2.90	3.16	PASS
Middle CH	2.84	2.99	
Highest CH	3.01	3.07	

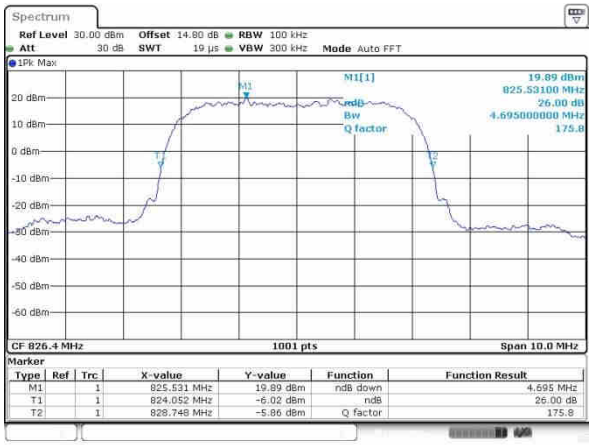
WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest Channel	**Highest Channel**
	

26dB Bandwidth

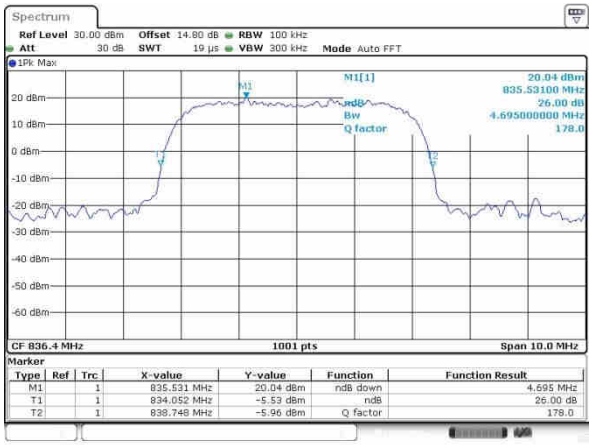
Mode	WCDMA Band V	WCDMA Band II
Mod.	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.70	4.71
Middle CH	4.70	4.70
Highest CH	4.70	4.70

WCDMA Band V (RMC 12.2Kbps)

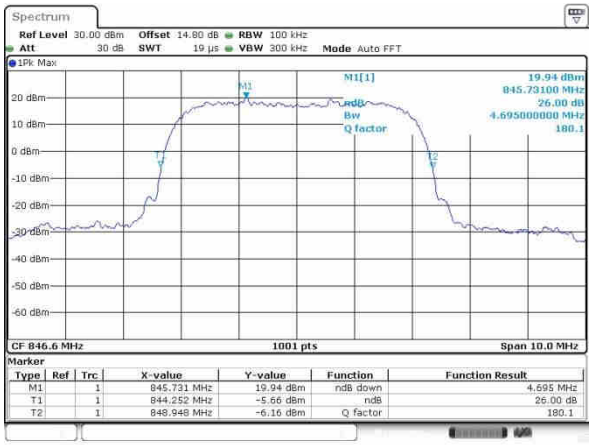
Lowest Channel



Middle Channel

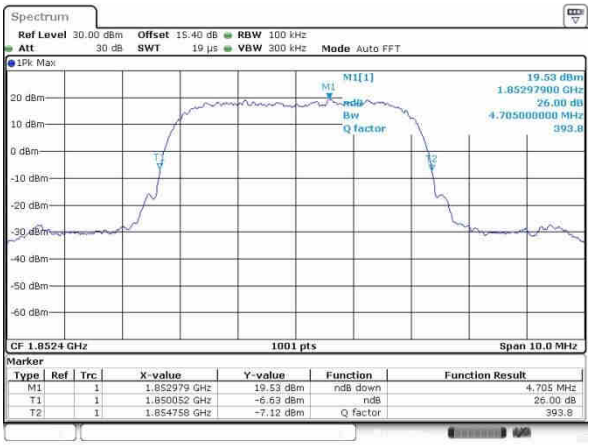


Highest Channel

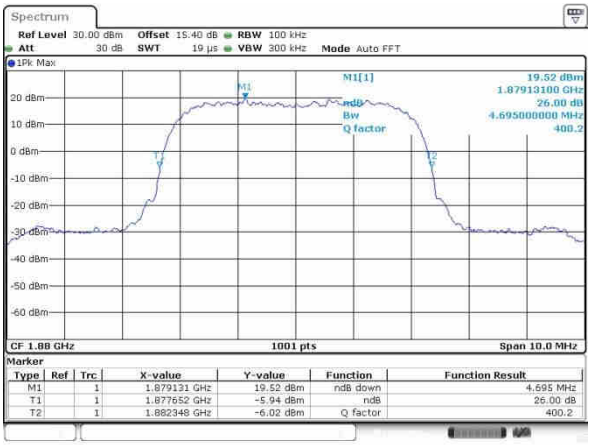


WCDMA Band II (RMC 12.2Kbps)

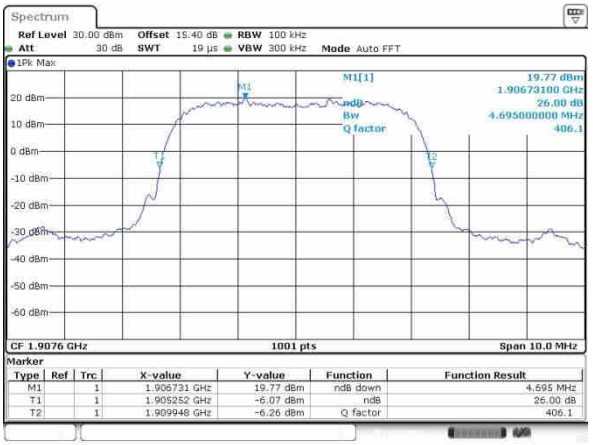
Lowest Channel



Middle Channel

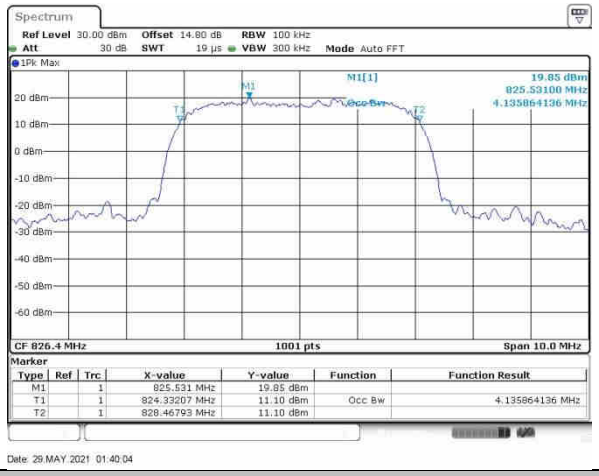
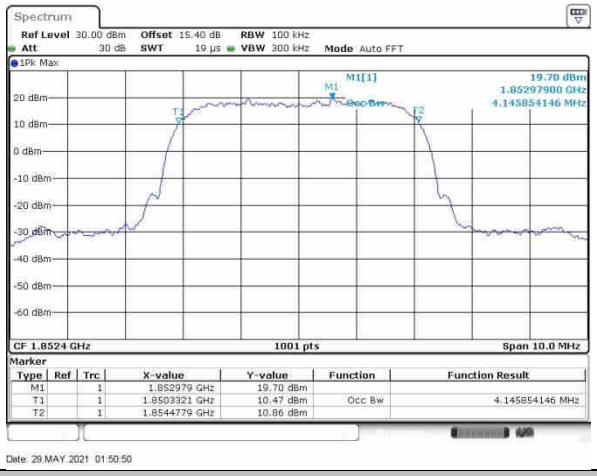
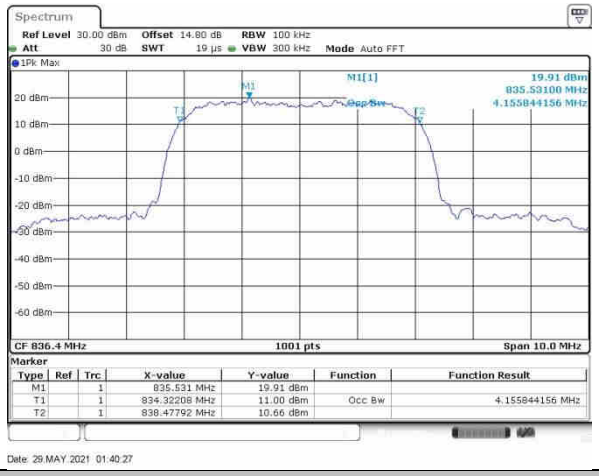
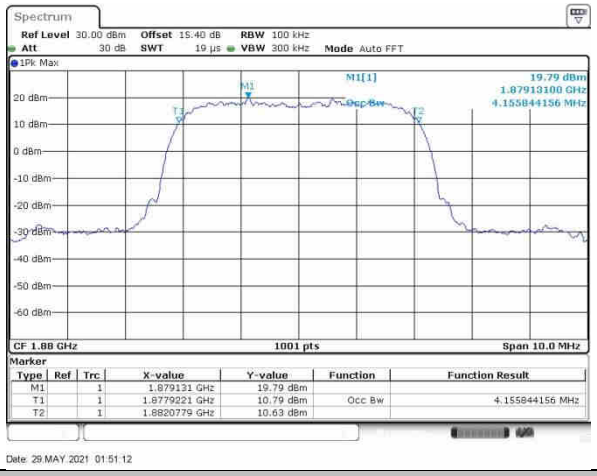
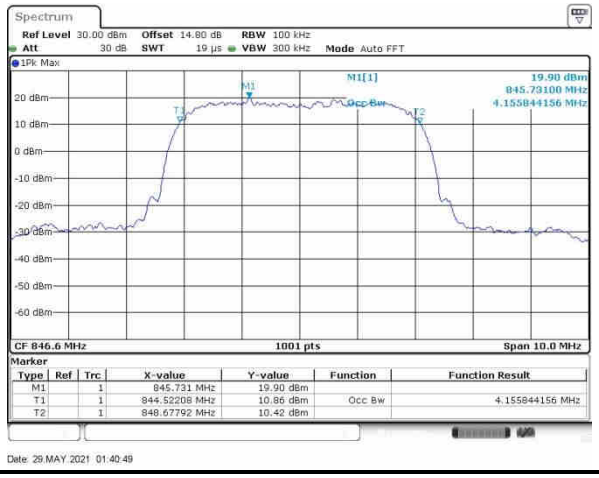
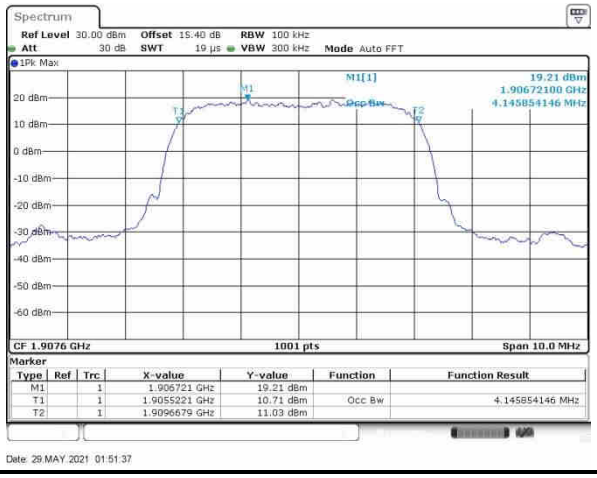


Highest Channel



Occupied Bandwidth

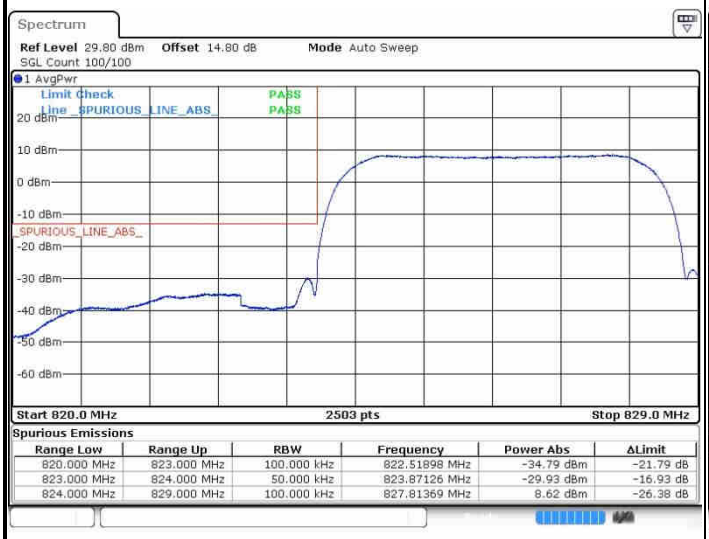
Mode	WCDMA Band V	WCDMA Band II
Mod.	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.14	4.15
Middle CH	4.16	4.16
Highest CH	4.16	4.15

WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Middle Channel	**Middle Channel**
	
Highest 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	822.51898 MHz	-34.79 dBm	-21.79 dB
823.000 MHz	824.000 MHz	50.000 kHz	823.87126 MHz	-29.93 dBm	-16.93 dB
824.000 MHz	829.000 MHz	100.000 kHz	827.81369 MHz	8.62 dBm	-26.38 dB

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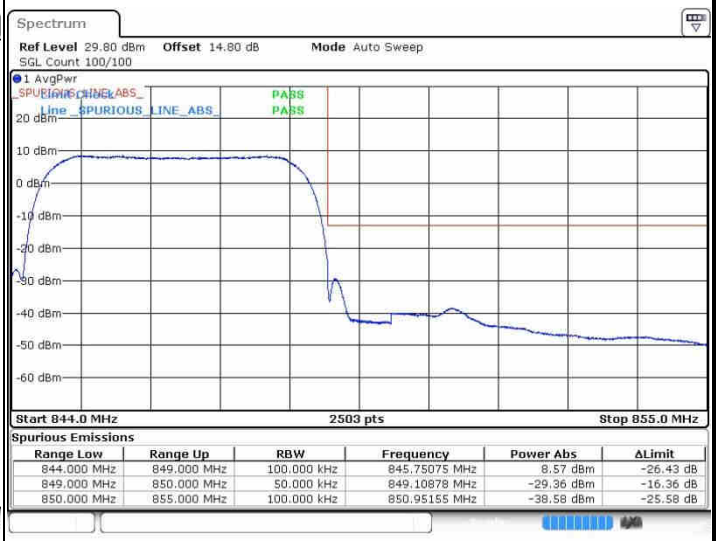
Highest Band Edge



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
844.000 MHz	849.000 MHz	100.000 kHz	845.75075 MHz	8.57 dBm	-26.43 dB
849.000 MHz	850.000 MHz	50.000 kHz	849.10878 MHz	-29.36 dBm	-16.36 dB
850.000 MHz	855.000 MHz	100.000 kHz	850.95155 MHz	-38.58 dBm	-25.58 dB

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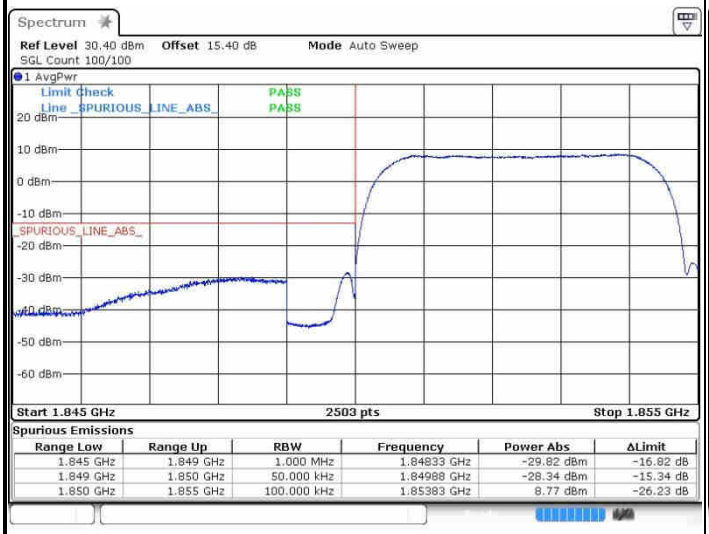
WCDMA Band II (RMC 12.2Kbps)

Lowest Band Edge



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.845 GHz	1.849 GHz	1.000 MHz	1.84833 GHz	-29.82 dBm	-16.82 dB
1.849 GHz	1.850 GHz	50.000 kHz	1.84988 GHz	-28.34 dBm	-15.34 dB
1.850 GHz	1.855 GHz	100.000 kHz	1.85383 GHz	8.77 dBm	-26.23 dB

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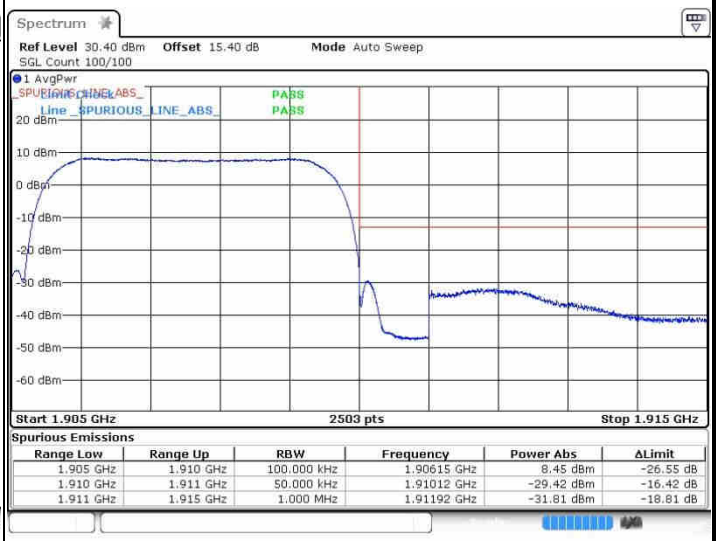
Highest Band Edge



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.905 GHz	1.910 GHz	100.000 kHz	1.90615 GHz	8.45 dBm	-26.55 dB
1.910 GHz	1.911 GHz	50.000 kHz	1.91012 GHz	-29.42 dBm	-16.42 dB
1.911 GHz	1.915 GHz	1.000 MHz	1.91192 GHz	-31.81 dBm	-18.81 dB

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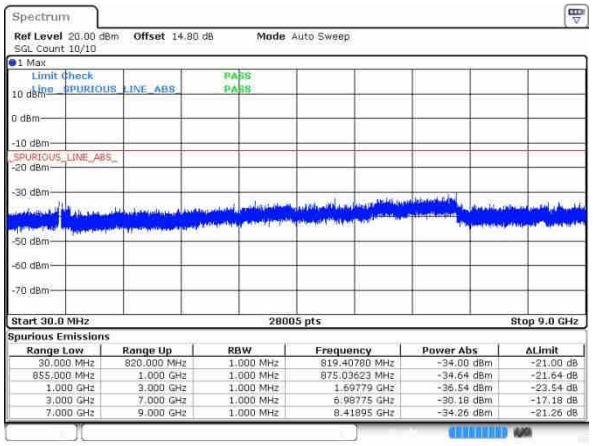
Conducted Spurious Emission

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	819.40780 MHz	-34.00 dBm	-21.00 dB
855.000 MHz	1.000 GHz	1.000 MHz	875.03623 MHz	-34.64 dBm	-21.64 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.69779 GHz	-36.54 dBm	-23.54 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98775 GHz	-30.18 dBm	-17.18 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.41895 GHz	-34.26 dBm	-21.26 dB

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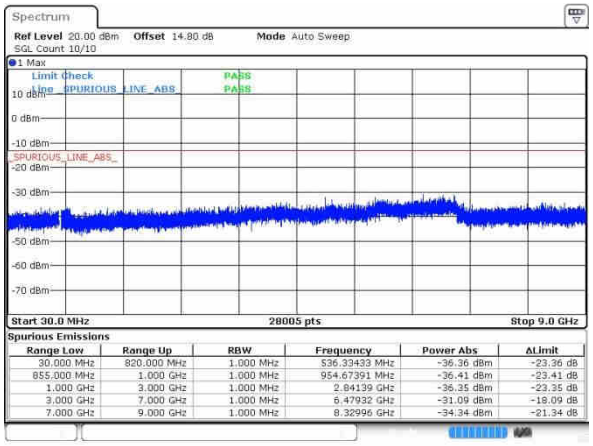
Middle Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	536.33433 MHz	-36.36 dBm	-23.36 dB
855.000 MHz	1.000 GHz	1.000 MHz	954.67391 MHz	-36.41 dBm	-23.41 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.84139 GHz	-36.35 dBm	-23.35 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.47932 GHz	-31.09 dBm	-18.09 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.32996 GHz	-34.34 dBm	-21.34 dB

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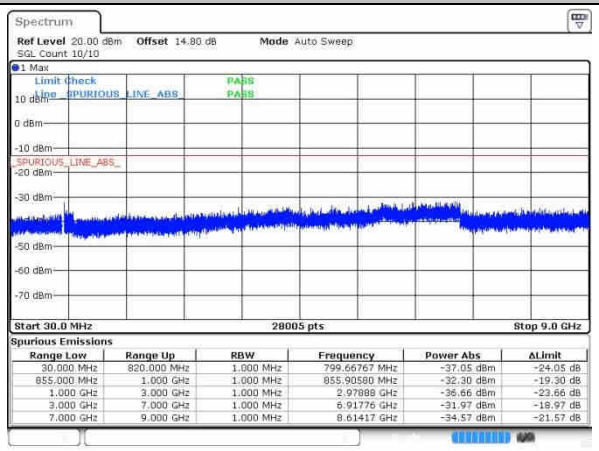
Highest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	799.66767 MHz	-37.05 dBm	-24.05 dB
855.000 MHz	1.000 GHz	1.000 MHz	855.90580 MHz	-32.30 dBm	-19.30 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.97888 GHz	-36.66 dBm	-23.66 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.91776 GHz	-31.97 dBm	-18.97 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.61417 GHz	-34.57 dBm	-21.57 dB

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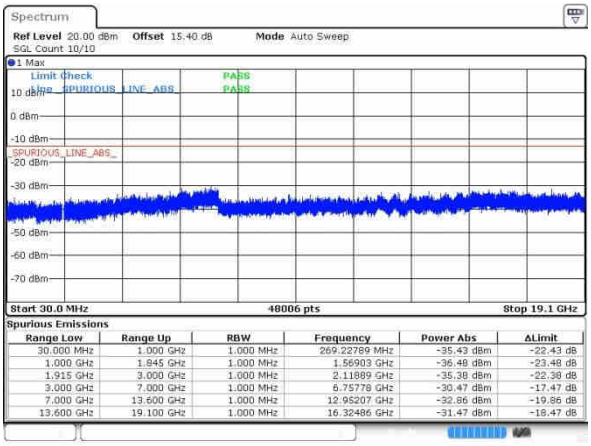
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel

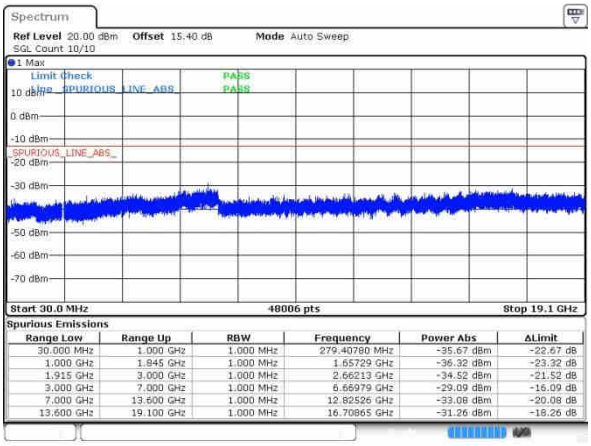


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	269.22789 MHz	-35.43 dBm	-22.43 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.56903 GHz	-36.48 dBm	-23.48 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.11889 GHz	-35.38 dBm	-22.38 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.75778 GHz	-30.47 dBm	-17.47 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.95207 GHz	-32.86 dBm	-19.86 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.32486 GHz	-31.47 dBm	-18.47 dB

Date: 29.MAY.2021 01:54:22

Middle Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	279.40780 MHz	-35.67 dBm	-22.67 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.65729 GHz	-36.32 dBm	-23.32 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.66213 GHz	-34.52 dBm	-21.52 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.66979 GHz	-29.09 dBm	-16.09 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.82526 GHz	-33.08 dBm	-20.08 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.70865 GHz	-31.26 dBm	-18.26 dB

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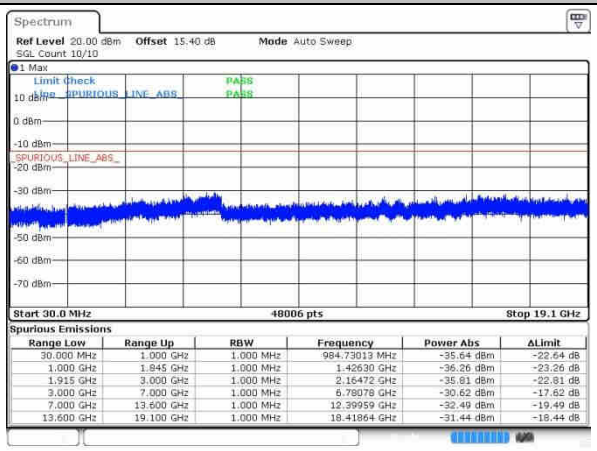
Highest Channel



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	984.73013 MHz	-35.64 dBm	-22.64 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.42630 GHz	-36.26 dBm	-23.26 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.16472 GHz	-35.81 dBm	-22.81 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.78078 GHz	-30.62 dBm	-17.62 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.39959 GHz	-32.49 dBm	-19.49 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.41864 GHz	-31.44 dBm	-18.44 dB

Date: 29.MAY.2021 01:55:28

Frequency Stability

Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2KbpsRMC 12.2Kbps)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0064	PASS
40	Normal Voltage	0.0208	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0127	
0	Normal Voltage	0.0161	
-10	Normal Voltage	0.0013	
-20	Normal Voltage	0.0203	
-30	Normal Voltage	0.0025	
20	Maximum Voltage	0.0004	
20	Normal Voltage	0.0103	
20	Battery End Point	0.0057	

Note: Normal Voltage = 4.2V；Battery End Point (BEP) =3.8V；Maximum Voltage =4.43V

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0019	PASS
40	Normal Voltage	0.0107	
30	Normal Voltage	0.0122	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0132	
0	Normal Voltage	0.0047	
-10	Normal Voltage	0.0118	
-20	Normal Voltage	0.0123	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0029	
20	Normal Voltage	0.0052	
20	Battery End Point	0.0017	

Note:

1. Normal Voltage = 4.2V；Battery End Point (BEP) =3.8V；Maximum Voltage =4.43V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

GSM850 (GSM)								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-47.95	-13	-34.95	-54.92	1.58	10.70	H
	2510	-34.32	-13	-21.32	-42.57	2.10	12.50	H
	3348	-58.77	-13	-45.77	-67.66	2.86	13.90	H
	4182	-58.62	-13	-45.62	-66.31	3.46	13.30	H
	1672	-39.91	-13	-26.91	-46.88	1.58	10.70	V
	2510	-40.49	-13	-27.49	-48.74	2.10	12.50	V
	3348	-58.20	-13	-45.20	-67.09	2.86	13.90	V
	4182	-61.00	-13	-48.00	-68.69	3.46	13.30	V

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

GSM850 (EDGE 1 Tx slots)								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-40.46	-13	-27.46	-47.43	1.58	10.70	H
	2510	-33.51	-13	-20.51	-41.76	2.10	12.50	H
	3348	-59.39	-13	-46.39	-68.28	2.86	13.90	H
	4182	-58.16	-13	-45.16	-65.85	3.46	13.30	H
	1672	-39.60	-13	-26.60	-46.57	1.58	10.70	V
	2510	-35.09	-13	-22.09	-43.34	2.10	12.50	V
	3348	-58.07	-13	-45.07	-66.96	2.86	13.90	V
	4182	-61.03	-13	-48.03	-68.72	3.46	13.30	V

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

GSM1900 (GSM)								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3480	-51.24	-13	-38.24	-63.50	2.641	14.90	H
	5220	-52.34	-13	-39.34	-64.20	2.94	14.80	H
	7524	-53.69	-13	-40.69	-63.46	3.39	13.16	H
	3480	-56.88	-13	-43.88	-69.14	2.64	14.90	V
	5220	-52.26	-13	-39.26	-64.12	2.94	14.80	V
	7524	-53.20	-13	-40.20	-62.97	3.39	13.16	V

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

GSM1900 (EDGE 1 Tx slots)								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3759	-51.05	-13	-38.05	-63.31	2.641	14.90	H
	5640	-57.24	-13	-44.24	-69.10	2.94	14.80	H
	7524	-55.27	-13	-42.27	-65.04	3.39	13.16	H
	9396	-53.44	-13	-40.44	-63.92	4.00	14.48	H
	11280	-48.03	-13	-35.03	-57.54	4.23	13.74	H
	3759	-53.74	-13	-40.74	-66.00	2.64	14.90	V
	5640	-57.96	-13	-44.96	-69.82	2.94	14.80	V
	7524	-55.48	-13	-42.48	-65.25	3.39	13.16	V
	9396	-53.53	-13	-40.53	-64.01	4.00	14.48	V
	11280	-49.92	-13	-36.92	-59.43	4.23	13.74	V

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

WCDMA Band V(RMC 12.2Kbps)								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-60.24	-13	-47.24	-67.21	1.58	10.70	H
	2508	-59.22	-13	-46.22	-67.47	2.102	12.50	H
	3348	-59.17	-13	-46.17	-68.06	2.856	13.90	H
	1672	-62.12	-13	-49.12	-69.09	1.58	10.70	V
	2508	-58.23	-13	-45.23	-66.48	2.10	12.50	V
	3348	-59.31	-13	-46.31	-68.20	2.86	13.90	V

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

WCDMA Band II(RMC 12.2Kbps)								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3759	-56.40	-13	-43.40	-68.66	2.64	14.90	H
	5640	-54.52	-13	-41.52	-66.38	2.94	14.80	H
	7524	-52.02	-13	-39.02	-61.79	3.39	13.16	H
	3759	-56.27	-13	-43.27	-68.53	2.64	14.90	V
	5640	-55.04	-13	-42.04	-66.90	2.94	14.80	V
	7524	-52.30	-13	-39.30	-62.07	3.39	13.16	V

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