TEST REPORT

APPLICANT	:	BLU Products, Inc.
PRODUCT NAME	:	Mobile Phone
MODEL NAME	:	G50 PLUS
BRAND NAME	:	BLU
FCC ID	:	YHLBLUG50PS
STANDARD(S)	:	47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E 47 CFR Part 27 Subpart L
RECEIPT DATE	:	2020-03-17
TEST DATE	:	2020-04-04 to 2020-04-20
ISSUE DATE	:	2020-04-21

Edited by: He Dekuan

He Dekuan (Rapporteur)

Approved by: Peng Huarui

Peng Huarui (Supervisor)

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MORLAB

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Change History		
Version	**Date**	**Reason for change**
1.0	2020-04-21	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	BLU Products, Inc.
Applicant Address:	10814 NW 33rd St # 100 Doral, FL 33172,USA
Manufacturer:	BLU Products, Inc.
Manufacturer Address:	10814 NW 33rd St # 100 Doral, FL 33172,USA

1.2. Equipment Under Test (EUT) Description

Product Name:	Mobile Phone	
Hardware Version:	FS169-MB-v0.3	
Software Version:	BLU-G0350WW-V10.0.03.00-GENERIC 04-03-2020 11:25	
Modulation Type:	GSM/GPRS Mode with GMSK Modulation EDGE Mode with 8PSK Modulation WCDMA Mode with QPSK Modulation HSDPA Mode with QPSK Modulation HSUPA Mode with QPSK Modulation	
Operating Frequency Range:	**GSM 850MHz:** Tx: 824MHz - 849MHz Rx: 869MHz - 894MHz **GSM 1900MHz:** Tx: 1850MHz - 1910MHz Rx: 1930MHz - 1990MHz	**WCDMA Band V** Tx: 824MHz - 849MHz Rx: 869MHz - 894MHz **WCDMA Band II** Tx: 1850MHz - 1910MHz Rx: 1930MHz - 1990MHz **WCDMA Band IV** Tx: 1710MHz - 1755MHz Rx: 2110MHz - 2155MHz

Antenna Type:	Fixed Internal	
Antenna Gain:	GSM 850:	-2.00 dBi
	GSM1900:	-1.20 dBi
	WCDMA Band V:	-2.00 dBi
	WCDMA Band II:	-1.20 dBi
	WCDMA Band IV:	-1.80 dBi
Accessory Information:	Battery	
	Brand Name:	BLU
	Model No.:	C906143400P
	Capacity:	4000mAh
	Rated Voltage:	3.85V
	Charge Limit:	4.40V
	AC Adapter 1	
	Brand Name:	BLU
	Model No.:	US-WW-2000
	Rated Input:	100-240V~50/60Hz 0.4A
	Rated Output:	5.0V⎓2000mA

Note 1: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula F(n)=824.2+0.2*(n-128), 128<=n<=251; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 190 (836.6MHz) and 251 (848.8MHz).

Note 2: The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula F(n)=1850.2+0.2*(n-512), 512<=n<=810; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

Note 3: The transmitter (Tx) frequency arrangement of the WCDMA Band V used by the EUT can be represented with the formula F(n)=826.4+0.2*(n-4132), 4132<=n<=4233; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 4132 (826.4MHz), 4182(836.4MHz) and 4233 (846.6MHz).

Note 4: The transmitter (Tx) frequency arrangement of the WCDMA Band II used by the EUT can be represented with the formula F(n)=1852.4+0.2*(n-9262), 9262<=n<=9538; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 9262 (1852.4MHz), 9400 (1880MHz) and 9538 (1907.6MHz).

Note 5: The transmitter (Tx) frequency arrangement of the WCDMA 1700MHz band used by the EUT can be represented with the formula F(n)=1712.4+0.2*(n-1312), 1312<=n<=1513; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 1312 (1712.4MHz), 1413 (1732.6MHz) and 1513 (1752.6MHz).

Note 6: All modes and data rates were considered and evaluated respectively by performing full test. Test modes are chosen to be reported as the worst case below:
GPRS mode and EDGE mode for GSM 850;
GPRS mode and EDGE mode for GSM 1900;
WCDMA mode for WCDMA band V;
WCDMA mode for WCDMA band II;
WCDMA mode for WCDMA band IV;

Note 7: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. Maximum ERP/EIRP and Emission Designator

System	Maximum ERP/EIRP（W）	Emission Designator
GSM850	0.839	248KGXW
EDGE850	0.161	246KG7W
GSM1900	0.723	252KGXW
EDGE1900	0.348	246KG7W
WCDMA Band V	0.068	4M17F9W
WCDMA Band II	0.126	4M17F9W
WCDMA Band IV	0.115	4M17F9W

1.4. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22, Part 24 and Part 27 for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 2 (10-1-12 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-12 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-12 Edition)	Personal Communications Services
4	47 CFR Part 27 (10-1-12 Edition)	Miscellaneous Wireless Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method determination/ Remark
1	2.1046	Conducted RF Output Power	Apr 15 to 19, 2020	Gao Mingzhou	PASS	No deviation
2	24.232(d), 27.50(d)(5)	Peak -Average Ratio	Apr 13 to 14, 2020	Gao Mingzhou	PASS	No deviation
3	2.1049	99% Occupied Bandwidth	Apr 13 to 14, 2020	Gao Mingzhou	PASS	No deviation
4	2.1055, 22.355, 24.235, 27.54	Frequency Stability	Mar 22, to Apr 7, 2020	Gao Mingzhou	PASS	No deviation
5	2.1051, 22.917(a), 24.238(a), 27.53(h), 27.53(m)(4)(a)(4)	Conducted Out of Band Emissions	Apr 13 to 14, 2020	Gao Mingzhou	PASS	No deviation
6	2.1051, 22.917(a), 24.238(a), 27.53(h) 27.53(m)(4)(a)(4)	Band Edge	Apr 13 to 14, 2020	Gao Mingzhou	PASS	No deviation
7	2.1051, 22.917(a), 24.238, 27.53(g)(h) 27.53(m)(4)(a)(4)	Transmitter Radiated Power (EIPR/ERP)	Apr 20, 2020	PengXuewei	PASS	No deviation
8	2.1051, 22.917(a), 24.238, 27.53(g)(h) 27.53(m)(4)(a)(4)	Radiated Out of Band Emissions	Apr 4, 2020	PengXuewei	PASS	No deviation

Note 1: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 and ANSI/TIA-603-E-2016.

Note 2: The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 26.5dB contains two parts that cable loss 16.5dB and Attenuator 10dB.

1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR Part 2, Part 22H , 24E & 27L Requirements

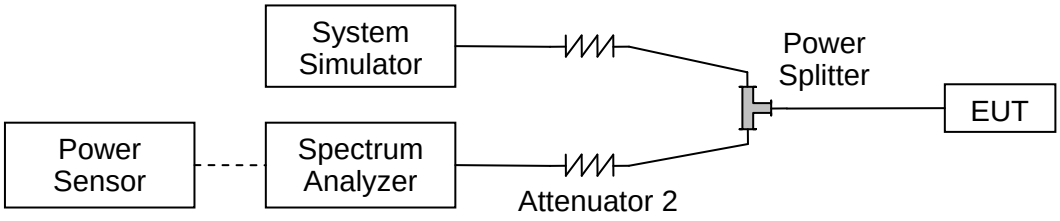
2.1. Conducted RF Output Power

2.1.1. Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

2.1.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

2.1.3. Test Results

GSM850	Average Power (dBm)		
TX Channel	**128**	**190**	**251**
Frequency (MHz)	**824.2**	**836.6**	**848.8**
GSM 1 Tx slot	33.25	33.39	33.26
GPRS 1 Tx slot	33.26	33.39	33.28
GPRS 2 Tx slots	31.21	31.27	31.10
GPRS 3 Tx slots	29.21	29.24	29.14
GPRS 4 Tx slots	26.97	26.92	26.90
EDGE 1 Tx slot	26.02	26.11	26.21
EDGE 2 Tx slots	24.82	24.87	24.91
EDGE 3 Tx slots	22.02	22.10	22.21
EDGE 4 Tx slots	19.16	19.28	19.34

GSM1900	Average Power (dBm)		
TX Channel	**512**	**661**	**810**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
GSM 1 Tx slot	29.78	29.79	29.66
GPRS 1 Tx slot	29.80	29.80	29.65
GPRS 2 Tx slots	27.53	27.62	27.51
GPRS 3 Tx slots	25.79	25.86	25.77
GPRS 4 Tx slots	23.84	23.71	23.55
EDGE 1 Tx slot	26.62	26.25	26.30
EDGE 2 Tx slots	24.12	24.42	24.48
EDGE 3 Tx slots	21.87	21.86	21.64
EDGE 4 Tx slots	18.12	18.21	18.37

WCDMA Band V	Average Power (dBm)		
TX Channel	**4132**	**4182**	**4233**
Frequency (MHz)	**826.4**	**836.4**	**846.6**
AMR 12.2Kbps	22.63	22.59	22.60
RMC 12.2Kbps	22.41	22.44	22.46
HSDPA Subtest-1	22.41	22.43	22.34
HSDPA Subtest-2	22.24	22.32	22.31
HSDPA Subtest-3	22.18	22.17	22.15
HSDPA Subtest-4	22.00	22.02	21.95
HSUPA Subtest-1	21.67	21.72	21.00
HSUPA Subtest-2	21.29	21.44	20.52
HSUPA Subtest-3	20.67	20.32	19.90
HSUPA Subtest-4	20.56	20.21	19.79
HSUPA Subtest-5	20.49	20.04	19.72

WCDMA Band II	Average Power (dBm)		
TX Channel	**9262**	**9400**	**9538**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**
AMR 12.2Kbps	22.25	22.36	22.29
RMC 12.2Kbps	22.15	22.21	22.18
HSDPA Subtest-1	22.03	22.05	22.20
HSDPA Subtest-2	21.95	21.96	22.03
HSDPA Subtest-3	21.85	21.87	21.90
HSDPA Subtest-4	21.73	21.73	21.74
HSUPA Subtest-1	21.61	21.58	21.55
HSUPA Subtest-2	21.28	21.25	21.27
HSUPA Subtest-3	21.16	21.13	21.20
HSUPA Subtest-4	20.98	21.00	20.97
HSUPA Subtest-5	20.73	20.72	20.75

WCDMA Band IV	Average Power (dBm)		
TX Channel	**1312**	**1413**	**1513**
Frequency (MHz)	**1712.4**	**1732.6**	**1752.6**
AMR 12.2Kbps	22.41	22.49	22.42
RMC 12.2Kbps	22.38	22.41	22.32
HSDPA Subtest-1	22.13	22.18	22.19
HSDPA Subtest-2	22.06	22.07	22.05
HSDPA Subtest-3	21.86	21.89	21.84
HSDPA Subtest-4	21.69	21.77	21.71
HSUPA Subtest-1	21.56	21.57	21.68
HSUPA Subtest-2	21.43	21.44	21.55
HSUPA Subtest-3	21.35	21.36	21.47
HSUPA Subtest-4	21.21	21.22	21.33
HSUPA Subtest-5	20.99	20.97	21.19

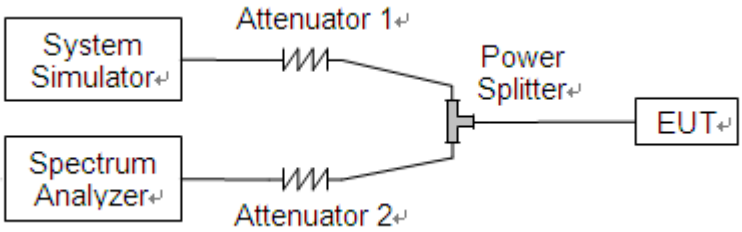
2.2. Peak to Average Ratio

2.2.1. Requirement

According to FCC 24.232(d) and 27.50(d), the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

2.2.2. Test Description

Test Setup:



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2.2.3. Test procedure

1 .For GSM/EDGE operating mode:

a. Set RBW=1MHz, VBW=3MHz, peak detector in spectrum analyzer.
b. Set EUT in maximum output power, and triggered the bust signal.
c. Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average ratio.

2. For UMTS operating mode:

a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

2.2.4. Test Result

The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

A. Test Verdict:

Band	Channel	Frequency (MHz)	Peak to Average ratio dB	Limit dB	Verdict
GSM 1900MHz	512	1850.2	0.005	13	PASS
	661	1880.0	0.006		PASS
	810	1909.8	0.008		PASS
EDGE 1900MHz	512	1850.2	0.003		PASS
	661	1880.0	0.009		PASS
	810	1909.8	0.007		PASS

Band	Channel	Frequency (MHz)	Peak to Average ratio dB	Limit dB	Verdict
WCDMA Band II	9262	1852.4	3.04	13	PASS
	9400	1880.0	3.01		PASS
	9538	1907.6	2.95		PASS
WCDMA Band IV	1312	1712.4	3.08		PASS
	1413	1732.6	3.04		PASS
	1513	1752.6	3.05		PASS

GSM 1900MHz CH512 1850.2MHz

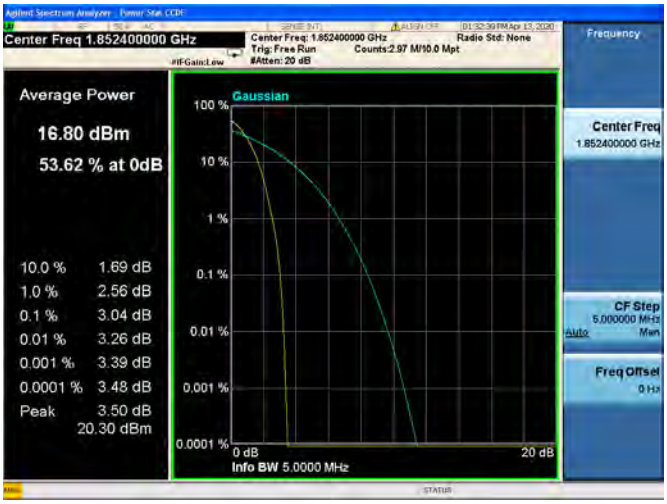
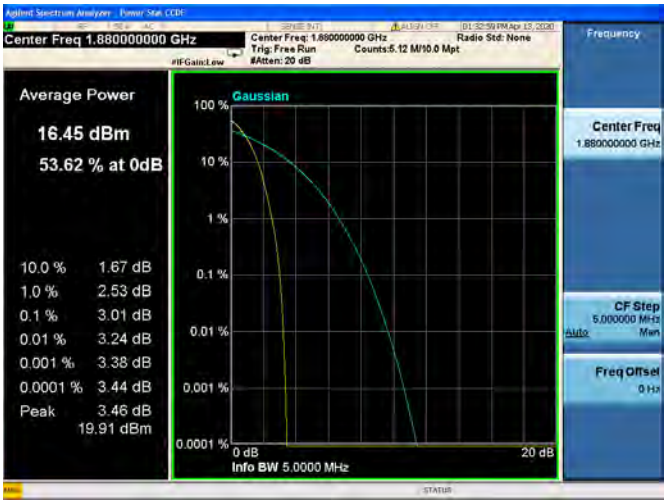
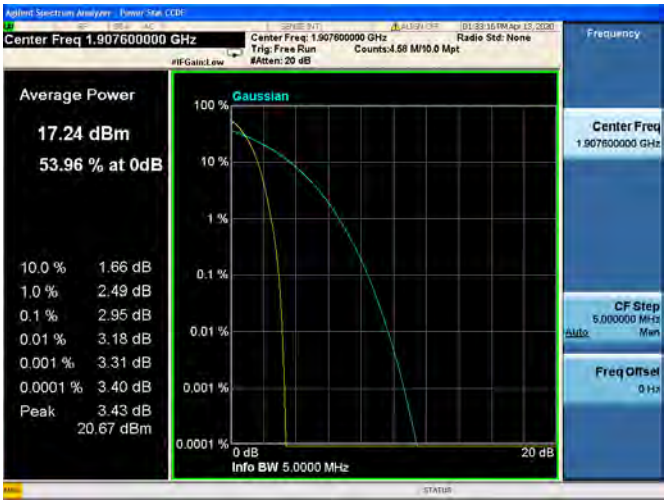
GSM 1900MHz CH661 1880.0MHz

GSM 1900MHz CH810 1909.8MHz

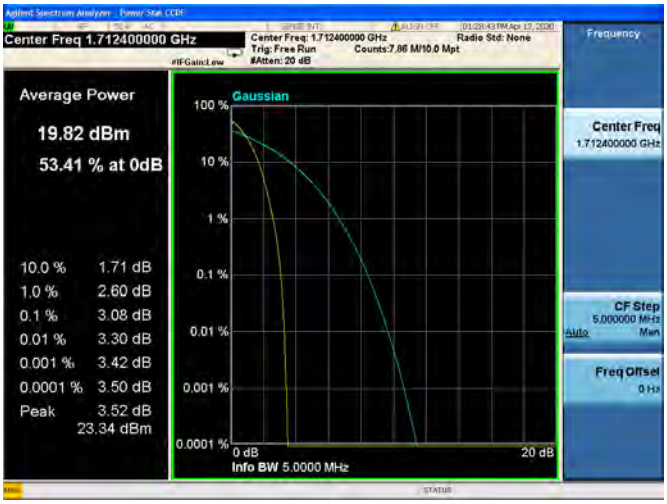
EDGE 1900MHz CH512 1850.2MHz

EDGE 1900MHz CH661 1880.0MHz

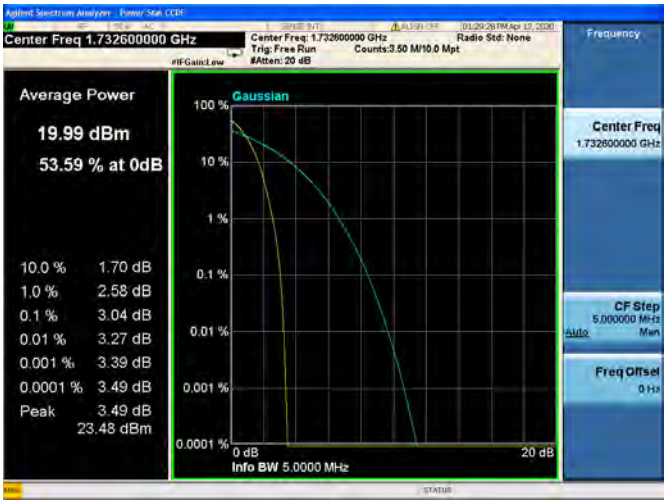
EDGE 1900MHz CH810 1909.8MHz

WCDMA Band II CH9262 1852.4MHz	WCDMA Band II CH9400 1880.0MHz
	
WCDMA Band II CH9538 1907.6MHz	
	

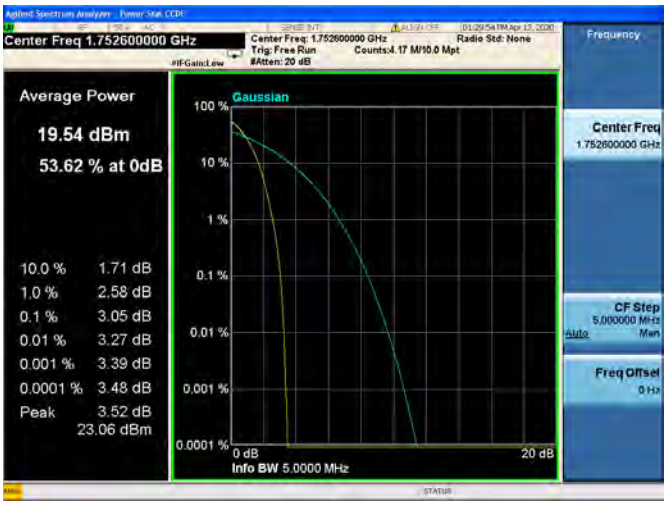
WCDMA Band IV CH1312 1712.4MHz



WCDMA Band IV CH1413 1732.6MHz



WCDMA Band IV CH1513 1752.6MHz



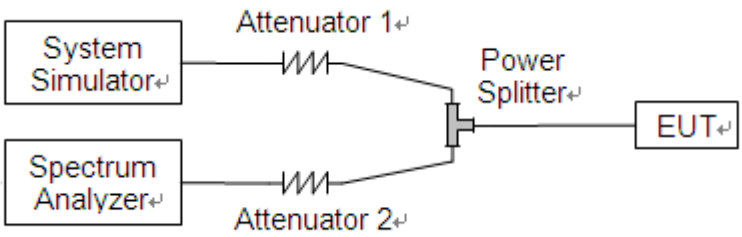
2.3. 99% Occupied Bandwidth

2.3.1. Requirement

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission. Occupied bandwidth is also known as the 99% emission bandwidth.

2.3.2. Test Description

Test Setup:



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2.3.3. Test Result

The lowest, middle and highest channels are selected to perform testing to record the 99% occupied bandwidth.

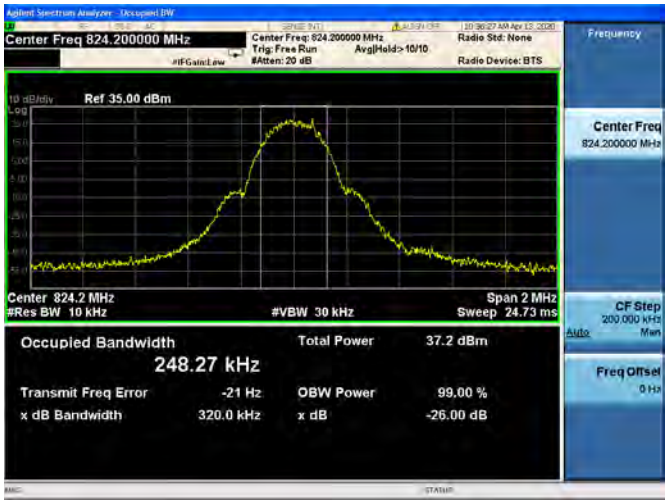
GSM Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)
GSM 850MHz	128	824.2	248.27	320.0
	190	836.6	244.36	321.2
	251	848.8	242.13	307.8
GSM 1900MHz	512	1850.2	239.37	317.5
	661	1880.0	251.82	318.8
	810	1909.8	243.50	317.4
EDGE 850MHz	128	824.2	244.52	318.8
	190	836.6	245.59	308.2
	251	848.8	243.12	315.5
EDGE 1900MHz	512	1850.2	246.24	310.9
	661	1880.0	242.53	316.0
	810	1909.8	241.60	313.1

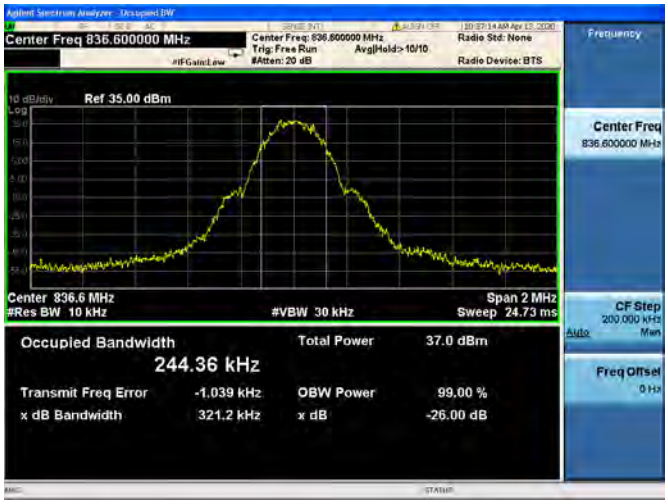
WCDMA Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
WCDMA Band V	4132	826.4	4.160	4.659
	4183	836.4	4.170	4.655
	4233	846.6	4.141	4.668
WCDMA Band II	9262	1852.4	4.155	4.673
	9400	1880.0	4.173	4.663
	9538	1907.6	4.167	4.652
WCDMA Band IV	1312	1712.4	4.153	4.656
	1413	1732.6	4.158	4.656
	1513	1752.6	4.169	4.660

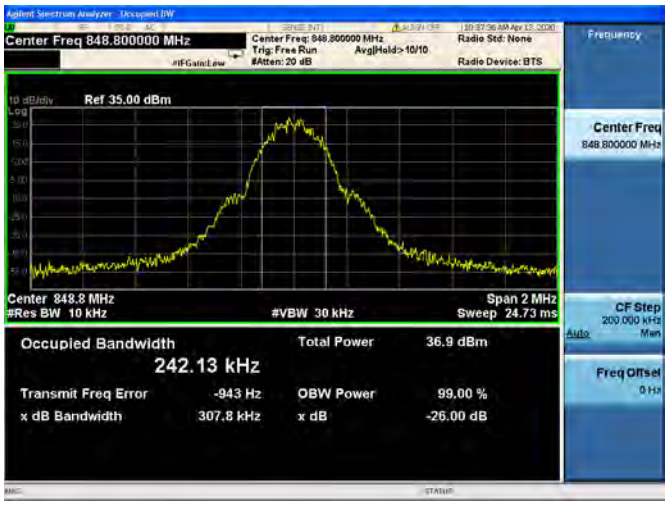
GSM 850MHz CH128 824.2MHz



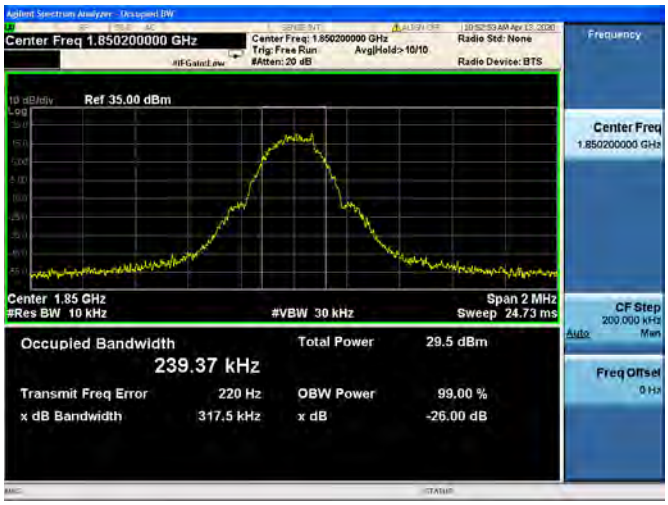
GSM 850MHz CH190 836.6MHz



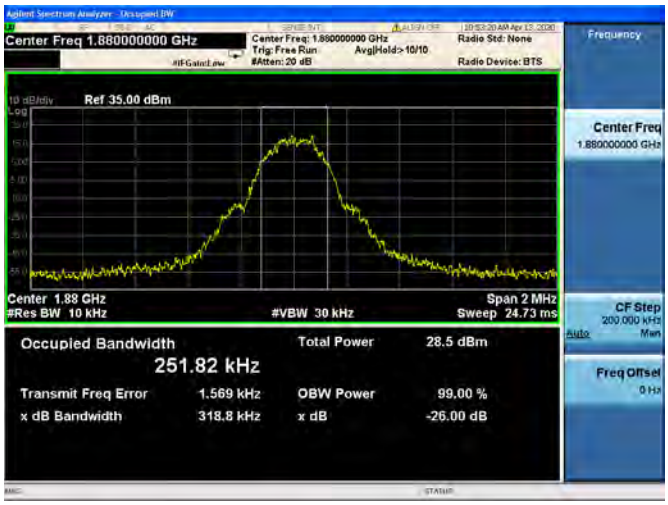
GSM 850MHz CH251 848.8MHz



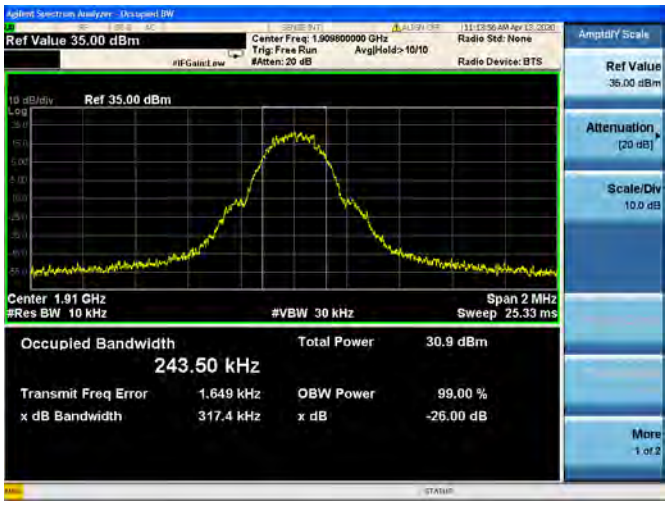
GSM 1900MHz CH512 1850.2MHz



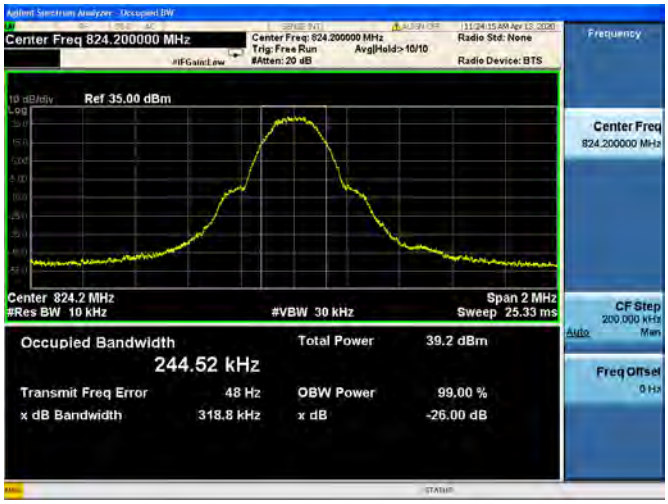
GSM 1900MHz CH661 1880.0MHz



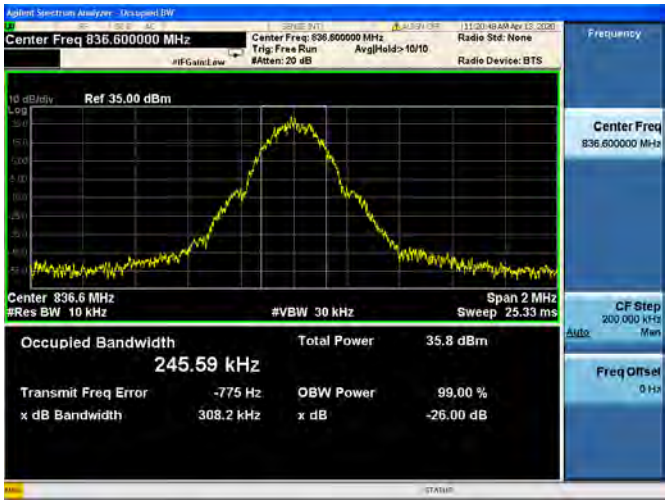
GSM 1900MHz CH810 1909.8MHz



EDGE 850MHz CH128 824.2MHz

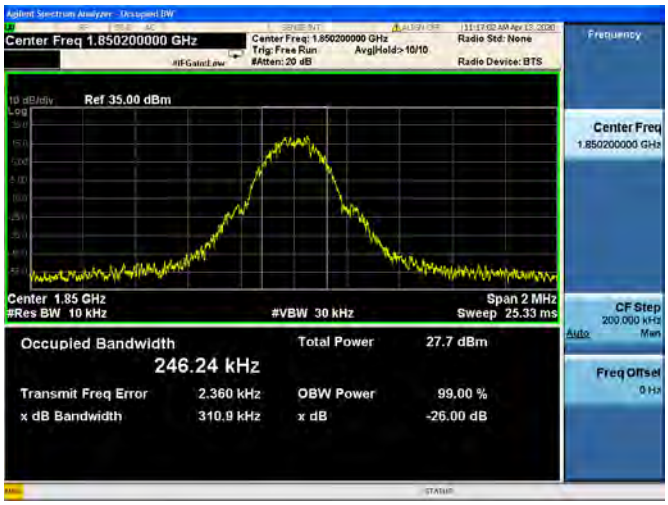


EDGE 850MHz CH190 836.6MHz

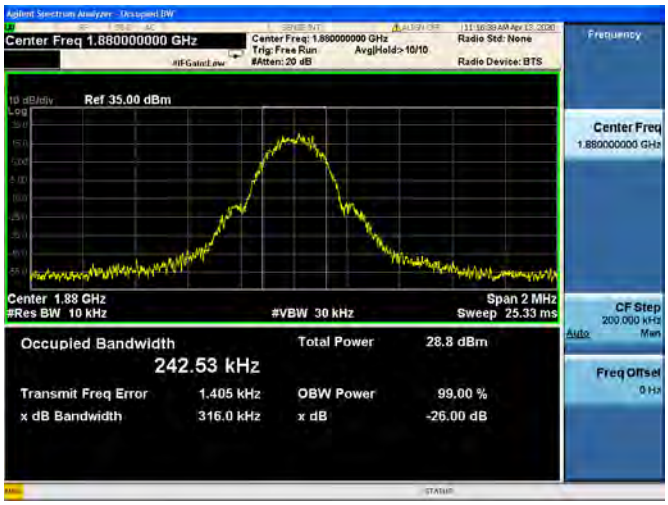


EDGE 850MHz CH251 848.8MHz

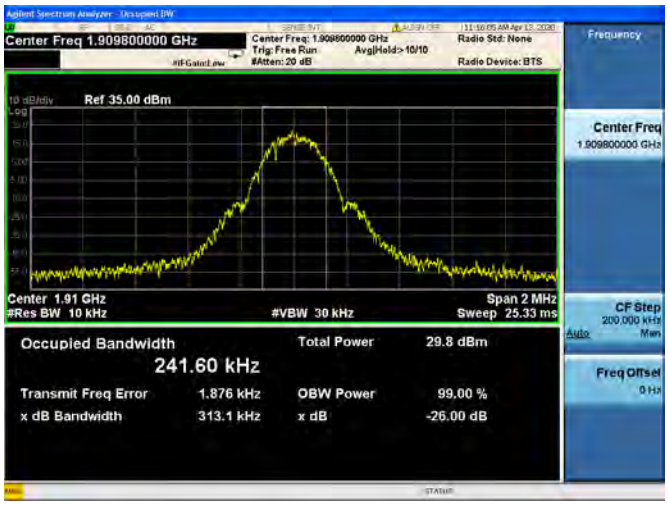
EDGE 1900MHz CH512 1850.2MHz



EDGE 1900MHz CH661 1880.0MHz



EDGE 1900MHz CH810 1909.8MHz

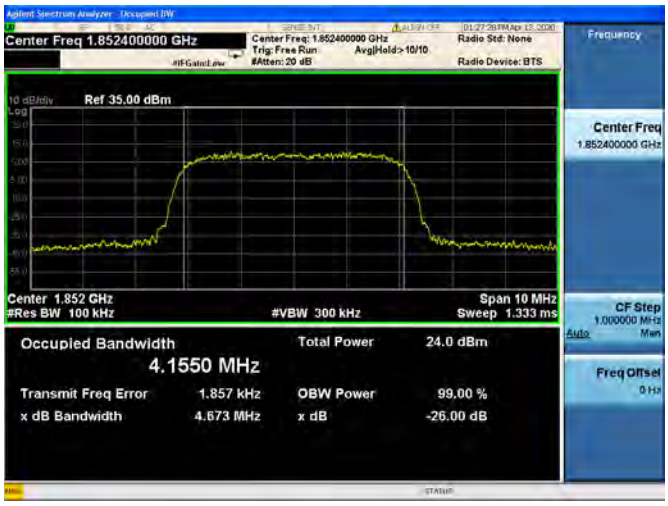


WCDMA Band V CH4132 826.4MHz

WCDMA Band V CH4183 836.4MHz

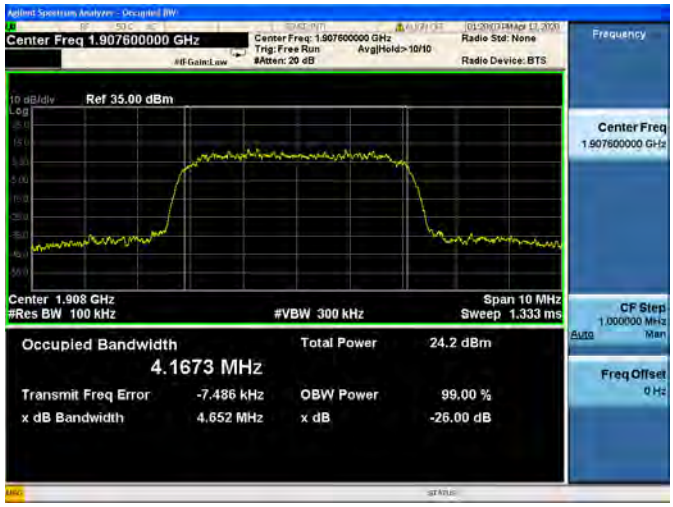
WCDMA Band V CH4233 846.6MHz

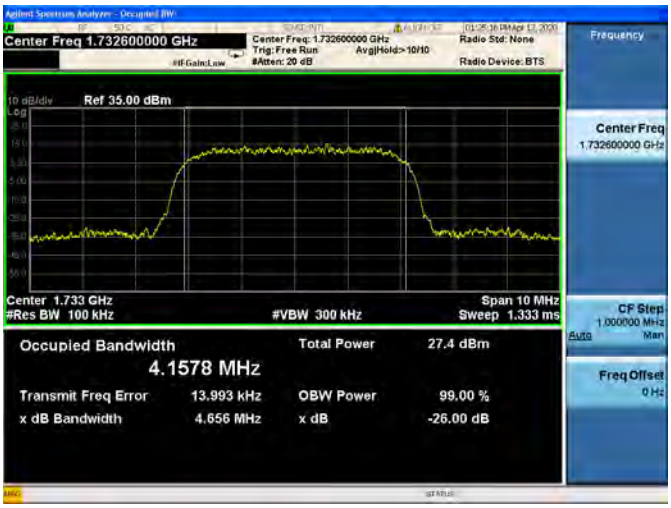
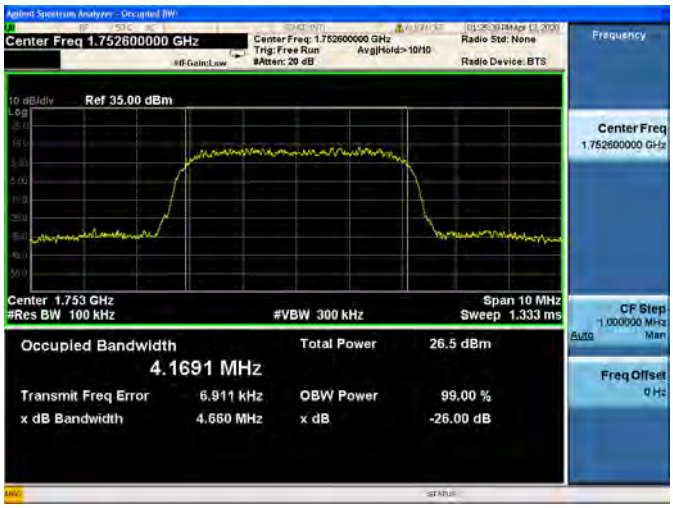
WCDMA Band II CH9262 1852.4MHz



WCDMA Band II CH9400 1880.0MHz

WCDMA Band II CH9538 1907.6MHz



WCDMA Band IV CH1312 1712.4MHz	WCDMA Band IV CH1413 1732.6MHz
	
WCDMA Band IV CH1513 1752.6MHz	
	

2.4. Frequency Stability

2.4.1. Requirement

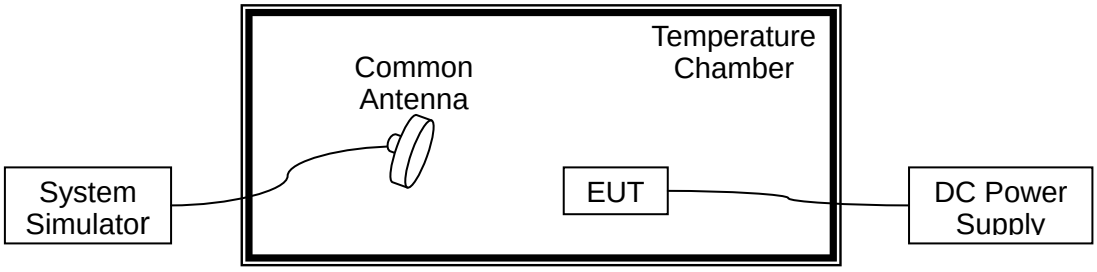
According to FCC section 22.355, 24.235 and 27.54 the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(a) The temperature is varied from 0°C to +50°C at intervals of not more than 10°C.

(b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.4.2. Test Description

Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS via a Common Antenna.

2.4.3. Test Result

The nominal, highest and lowest extreme voltages are separately 3.85VDC, 4.40VDC and 3.50VDC, which are specified by the applicant; the normal temperature here used is 20°C.

A. Test Verdict:

GSM 850MHz, Channel 190, Frequency 836.6MHz Limit =±2.5ppm					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	3.85	+20(Ref)	23	0.027	PASS
100		0	-27	-0.032	
100		+10	15	0.018	
100		+20	25	0.030	
100		+30	75	0.090	
100		+40	64	0.077	
100		+55	-47	-0.056	
115	4.40	+20	-6	-0.007	
85	3.50	+20	-71	-0.085	

GSM 1900MHz, Channel 661, Frequency 1880.0MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	3.85	+20(Ref)	97	0.052	PASS
100		0	-29	-0.015	
100		+10	-53	-0.028	
100		+20	42	0.022	
100		+30	73	0.039	
100		+40	31	0.016	
100		+55	16	0.009	
115	4.40	+20	16	0.009	
85	3.50	+20	-58	-0.031	

EDGE 850MHz, Channel 190, Frequency 836.6MHz Limit =±2.5ppm					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	3.85	+20(Ref)	25	0.030	PASS
100		0	-25	-0.030	
100		+10	54	0.065	
100		+20	15	0.018	
100		+30	26	0.031	
100		+40	25	0.030	
100		+55	86	0.046	
115	4.40	+20	-36	-0.043	
85	3.50	+20	-47	-0.056	

EDGE 1900MHz, Channel 661, Frequency 1880.0MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	3.85	+20(Ref)	42	0.022	PASS
100		0	-85	-0.045	
100		+10	-84	-0.045	
100		+20	27	0.014	
100		+30	84	0.045	
100		+40	16	0.009	
100		+55	32	0.038	
115	4.40	+20	16	0.009	
85	3.50	+20	-25	-0.013	

WCDMA Band V, Channel 4182, Frequency 836.4MHz Limit =±2.5ppm					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	3.85	+20(Ref)	31	0.037	PASS
100		0	-35	-0.042	
100		+10	32	0.038	
100		+20	16	0.019	
100		+30	26	0.031	
100		+40	47	0.056	
100		+55	-37	-0.020	
115	4.40	+20	-65	-0.078	
85	3.50	+20	-35	-0.042	

WCDMA Band II, Channel 9400, Frequency 1880.0MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	3.85	+20(Ref)	25	0.013	PASS
100		0	-37	-0.020	
100		+10	-26	-0.014	
100		+20	86	0.046	
100		+30	83	0.044	
100		+40	52	0.028	
100		+55	-39	-0.023	
115	4.40	+20	43	0.023	
85	3.50	+20	-86	-0.046	

WCDMA Band IV, Channel 1413, Frequency 1732.6MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	3.85	+20(Ref)	-54	-0.031	PASS
100		0	-53	-0.031	
100		+10	-39	-0.023	
100		+20	-64	-0.037	
100		+30	-37	-0.021	
100		+40	67	0.039	
100		+55	43	0.023	
115	4.40	+20	15	0.009	
85	3.50	+20	-54	-0.031	

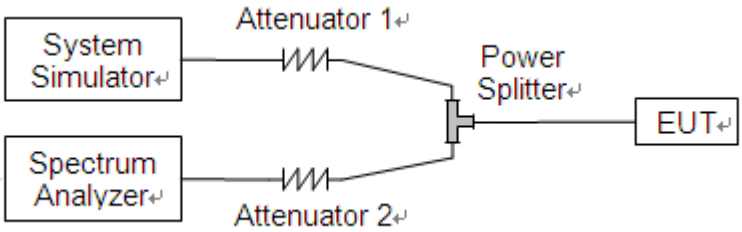
2.5. Conducted Out of Band Emissions

2.5.1. Requirement

According to FCC section 22.917(a), 24.238(a) and 27.53(h) the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

2.5.2. Test Description

Test Setup:

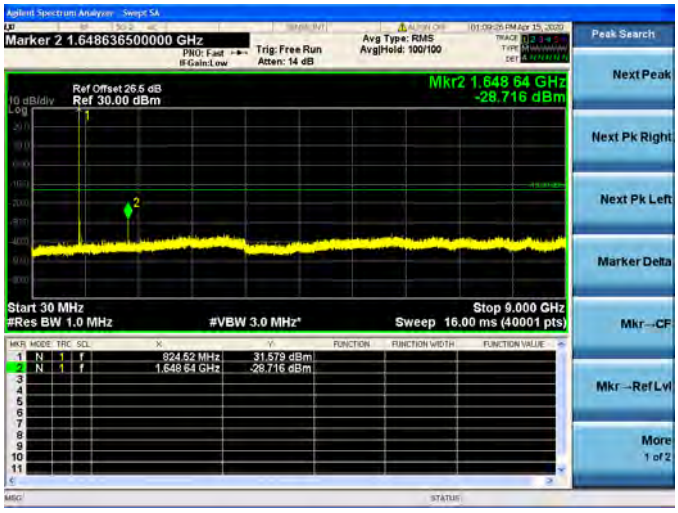


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

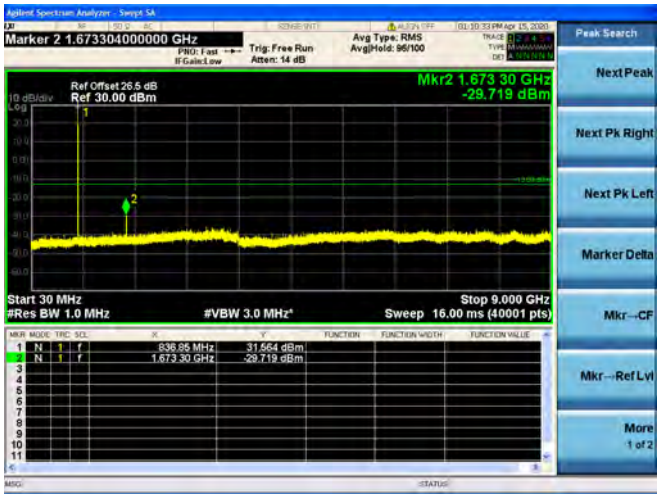
2.5.3. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

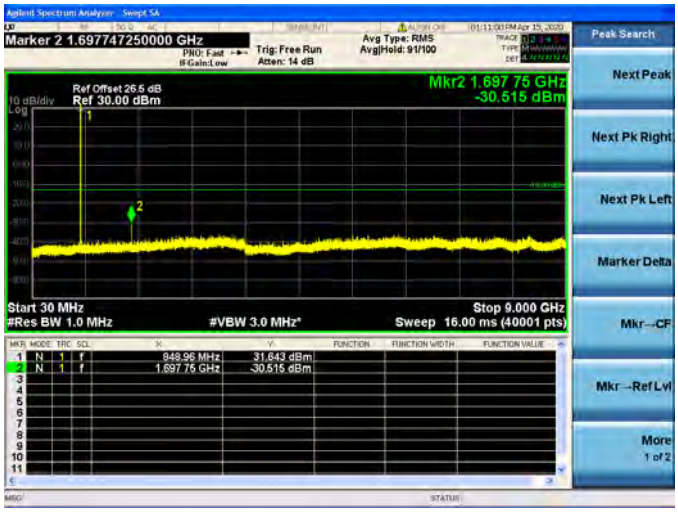
GSM 850MHz CH128 824.2MHz



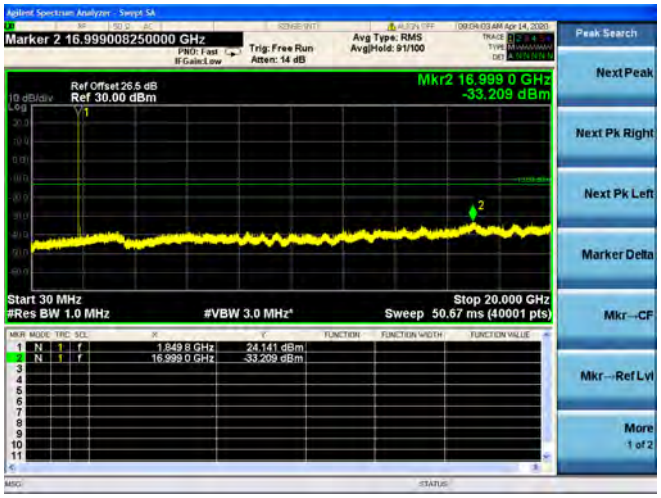
GSM 850MHz CH190 836.6MHz



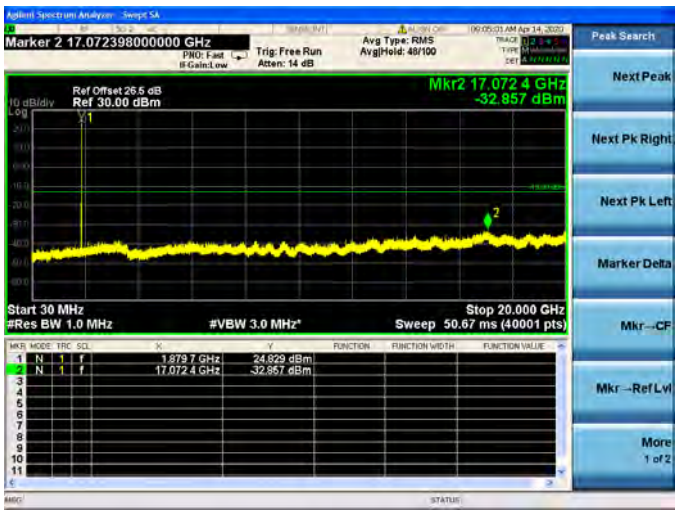
GSM 850MHz CH251 848.8MHz



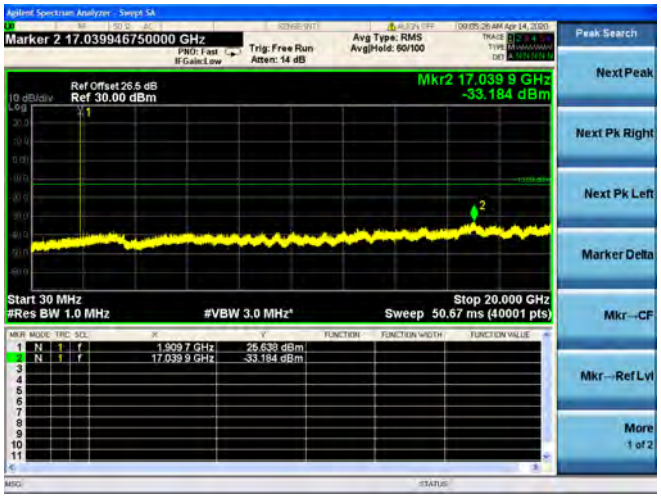
GSM 1900MHz CH512 1850.2MHz

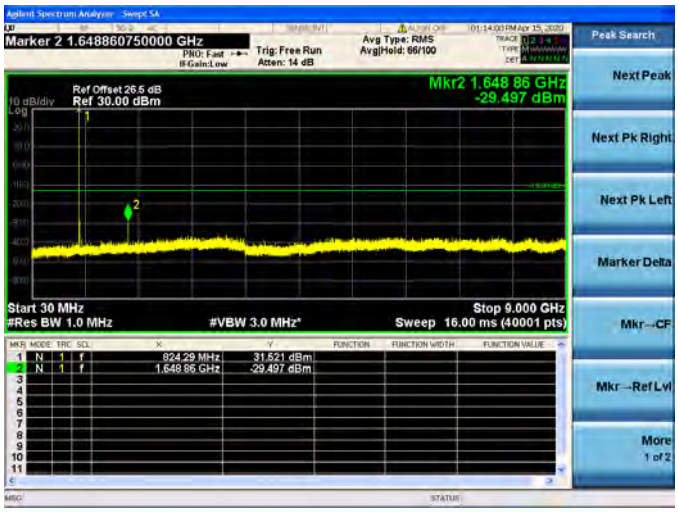
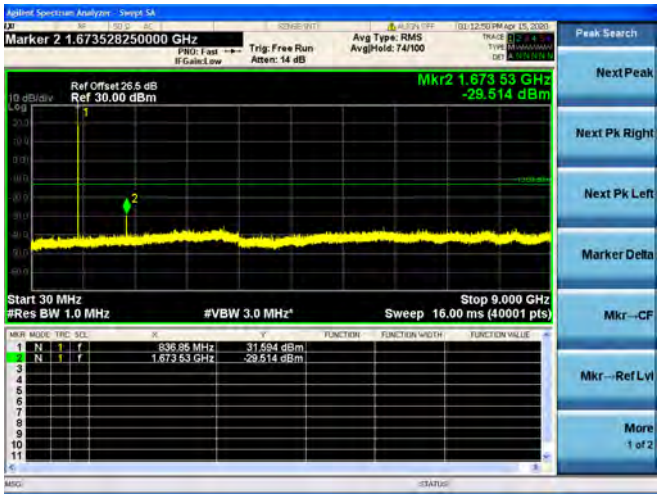
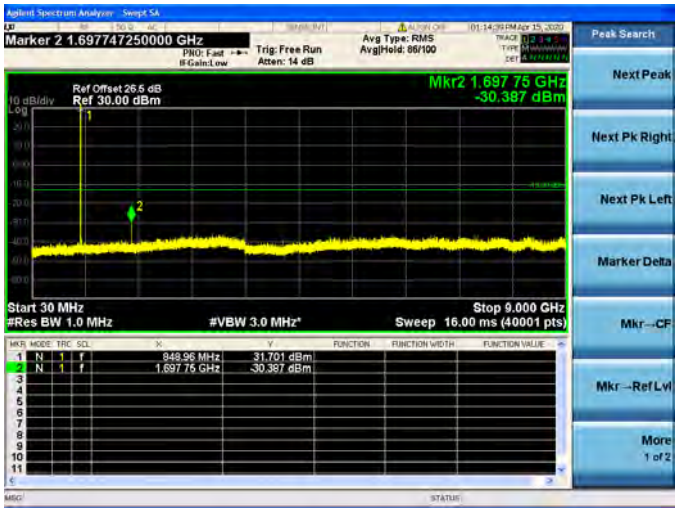


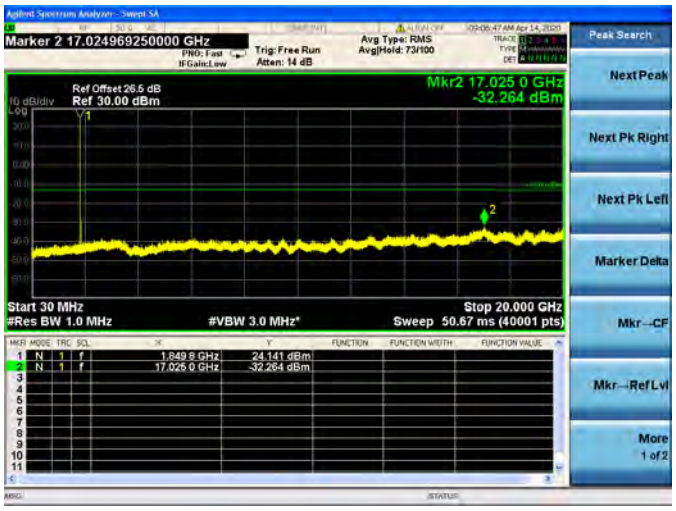
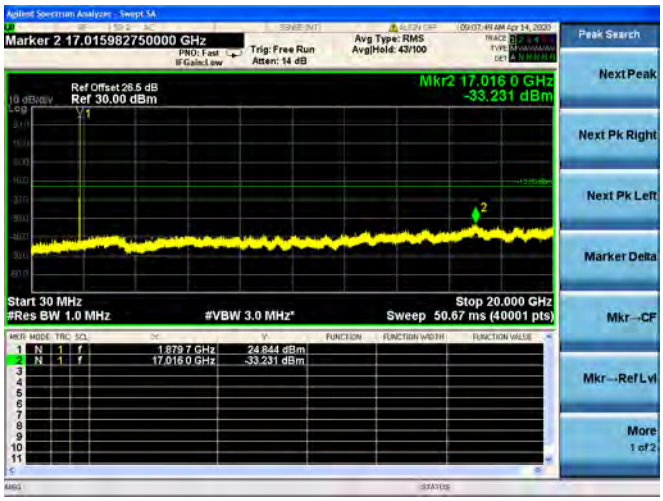
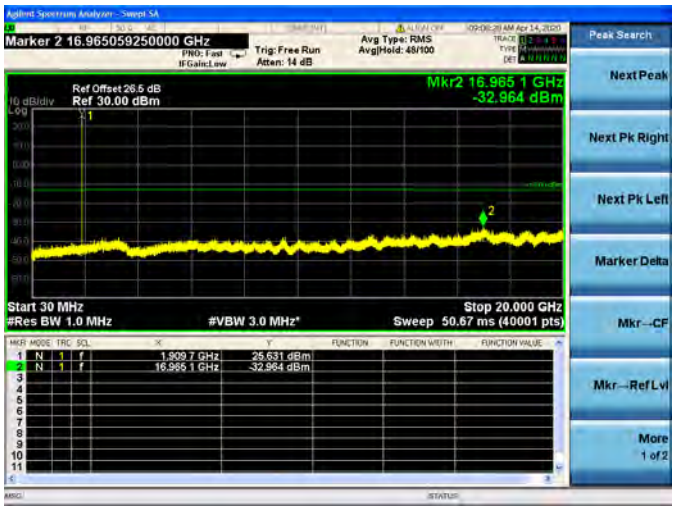
GSM 1900MHz CH661 1880.0MHz



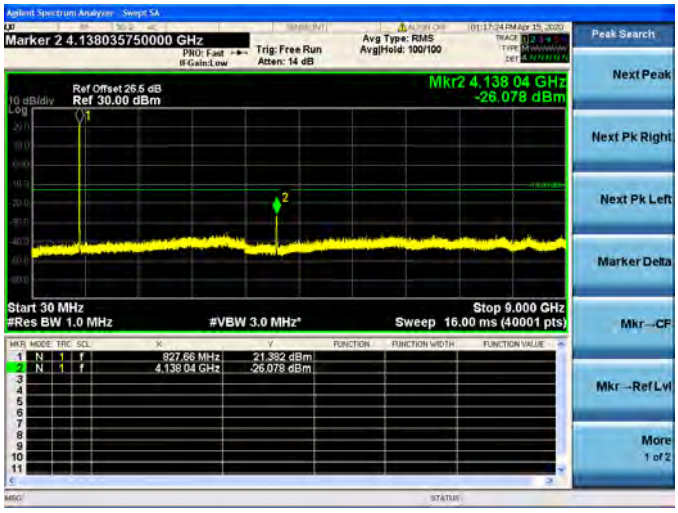
GSM 1900MHz CH810 1909.8MHz



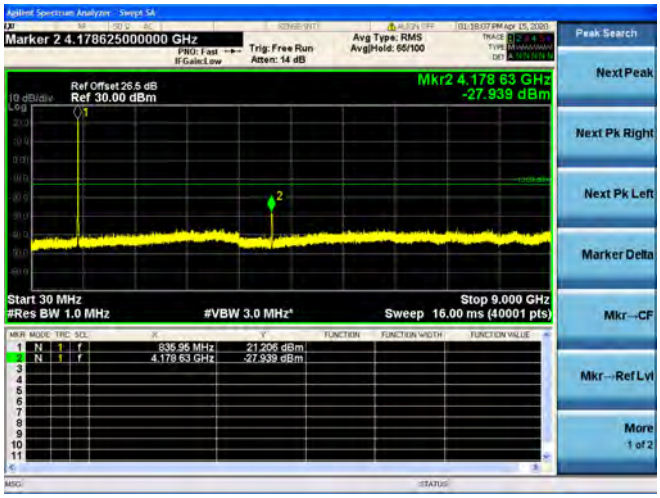
EDGE 850MHz CH128 824.2MHz	EDGE 850MHz CH190 836.6MHz
	
EDGE 850MHz CH251 848.8MHz	
	

EDGE 1900MHz CH512 1850.2MHz	EDGE 1900MHz CH661 1880.0MHz
	
EDGE 1900MHz CH810 1909.8MHz	
	

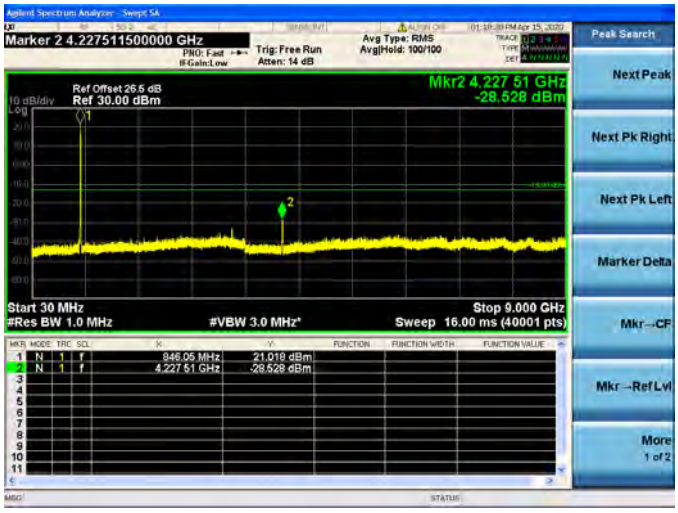
WCDMA Band V CH4132 826.4MHz



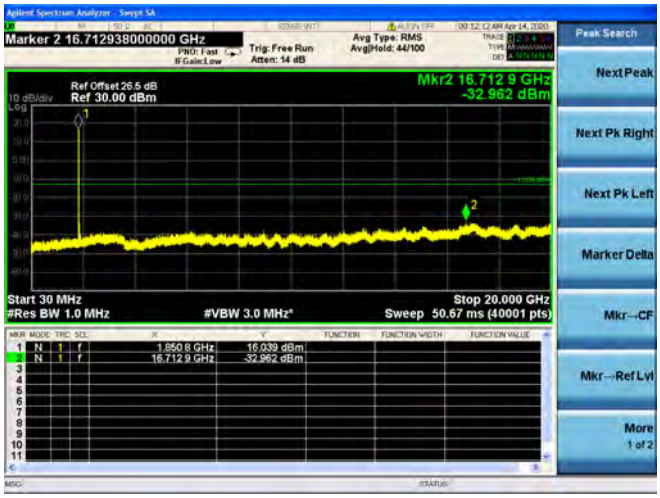
WCDMA Band V CH4183 836.4MHz



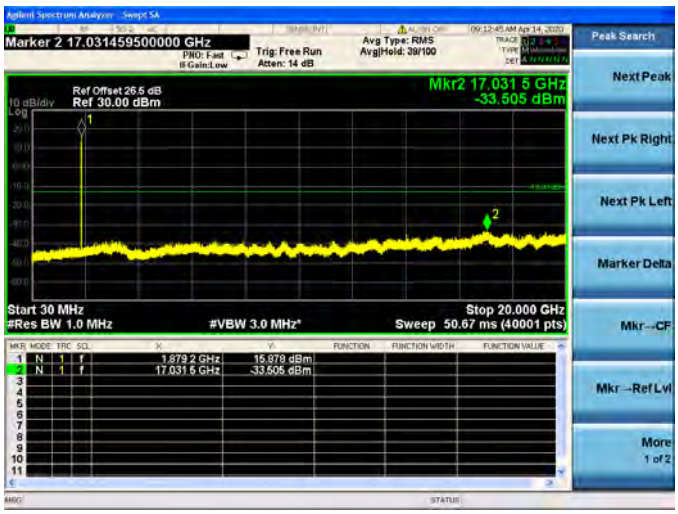
WCDMA Band V CH4233 846.6MHz



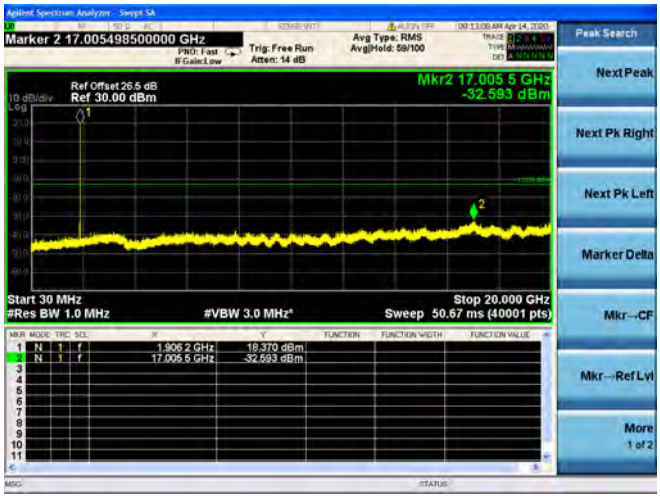
WCDMA Band II CH9262 1852.4MHz

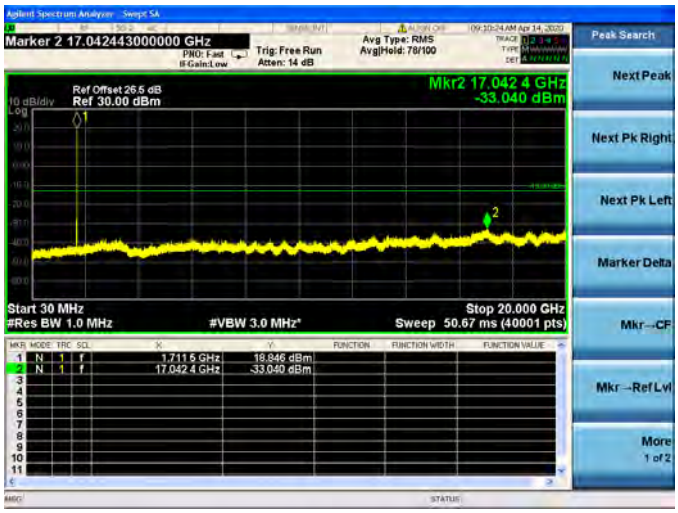
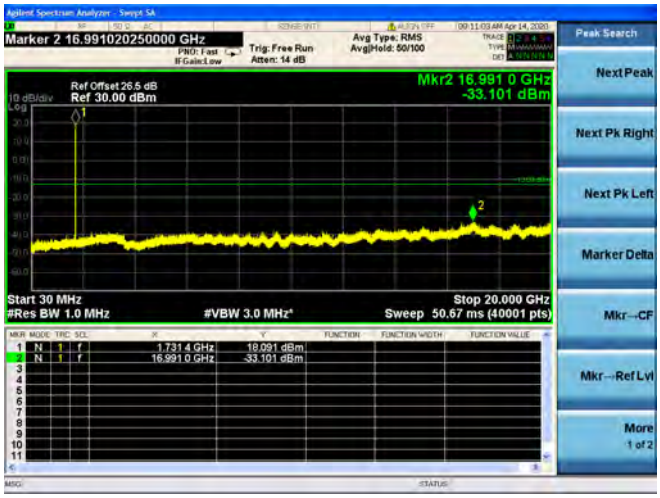
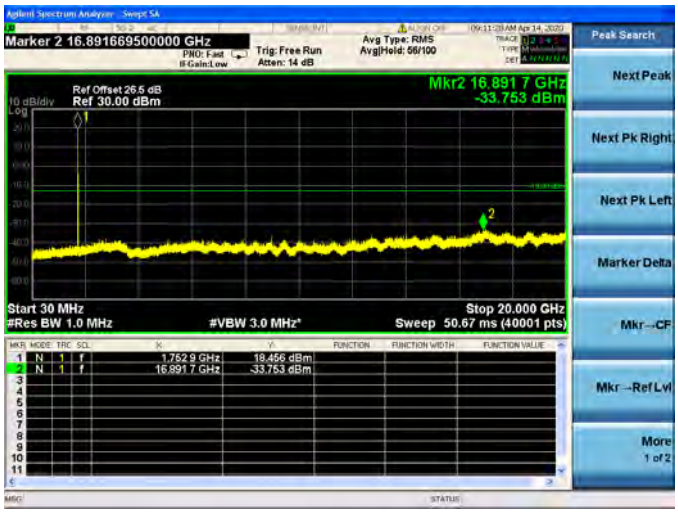


WCDMA Band II CH9400 1880.0MHz



WCDMA Band II CH9538 1907.6MHz



WCDMA Band IV CH1312 1712.4MHz	WCDMA Band IV CH1413 1732.6MHz
	
WCDMA Band IV CH1513 1752.6MHz	
	

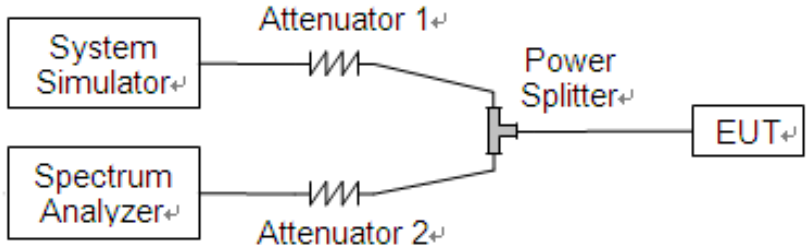
2.6. Band Edge

2.6.1. Requirement

According to FCC section 22.917(b), 24.238(b) and 27.53(h) in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

2.6.2. Test Description

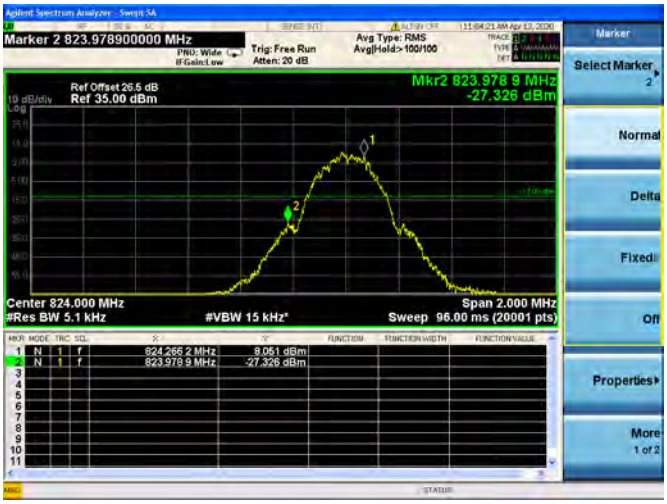
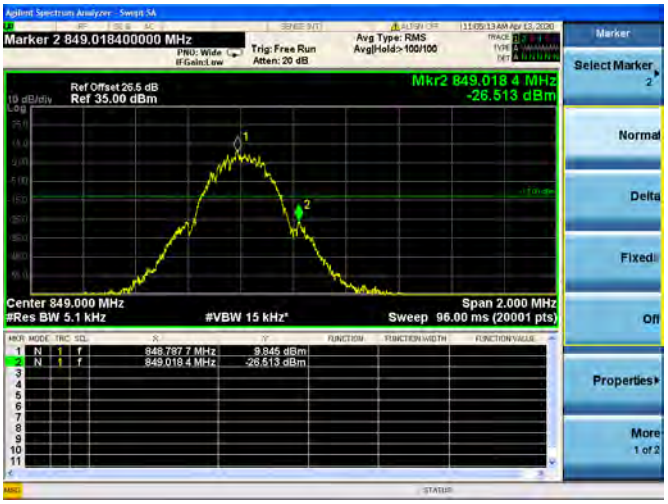
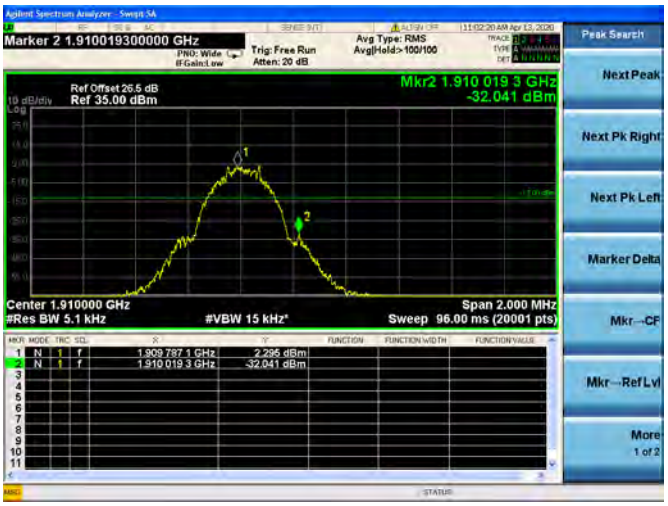
Test Setup:

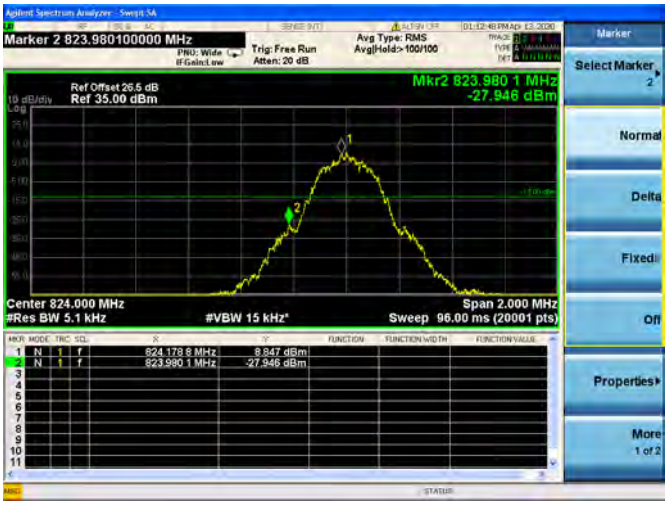
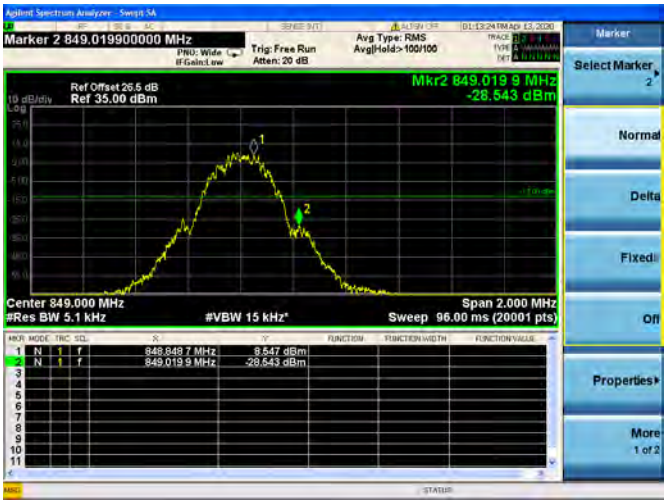
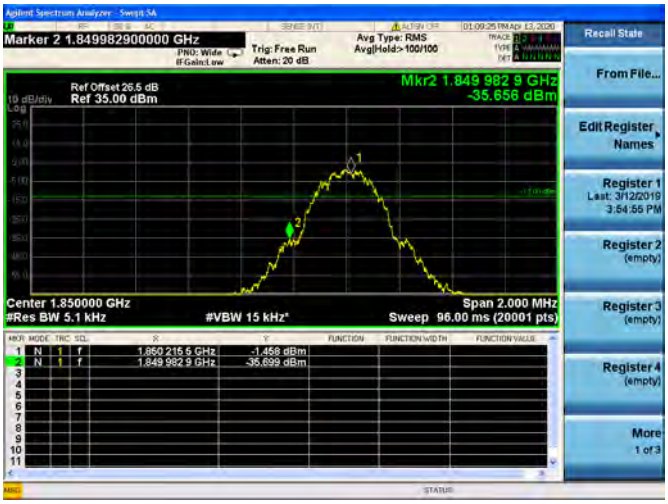
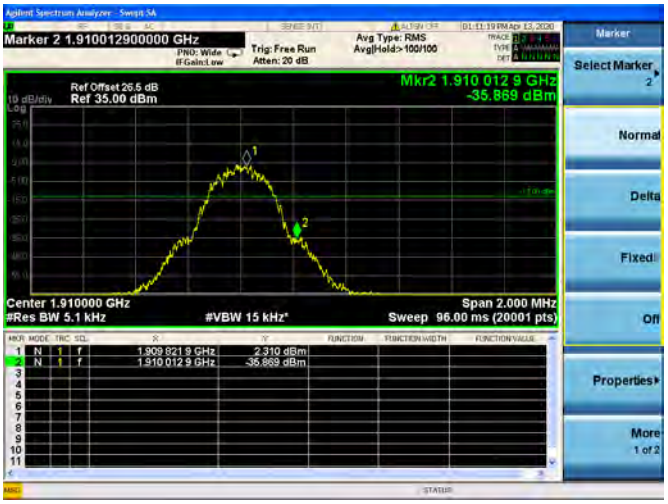


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

2.6.3. Test Result

The lowest and highest channels are tested to verify the band edge emissions.

GSM 850MHz CH128 824.2MHz	GSM 850MHz CH251 848.8MHz
	
GSM 1900MHz CH512 1850.2MHz	**GSM 1900MHz CH810 1909.8MHz**
	

EDGE 850MHz CH128 824.2MHz	EDGE 850MHz CH251 848.8MHz
	
EDGE 1900MHz CH512 1850.2MHz	**EDGE 1900MHz CH810 1909.8MHz**
	

WCDMA Band V CH4132 826.4MHz

WCDMA Band V CH4233 846.6MHz

WCDMA Band II CH9262 1852.4MHz

WCDMA Band II CH9538 1907.6MHz

WCDMA Band IV CH1312 1712.4MHz	WCDMA Band IV CH1513 1752.6MHz

2.7. Transmitter Radiated Power (EIRP/ERP)

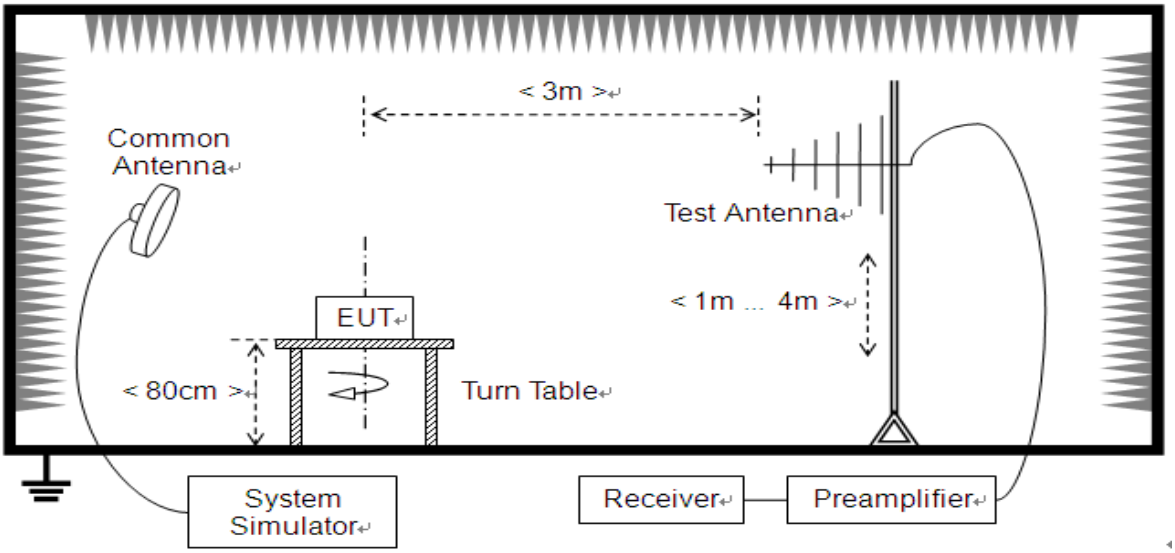
2.7.1. Requirement

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
According to FCC section 24.232, the broadband PCS mobile station is limited to 2 Watts e.i.r.p. peak power.
According to FCC section 27.50, mobile, and portable (hand-held) stations is limited to 1 Watts e.i.r.p. peak power.

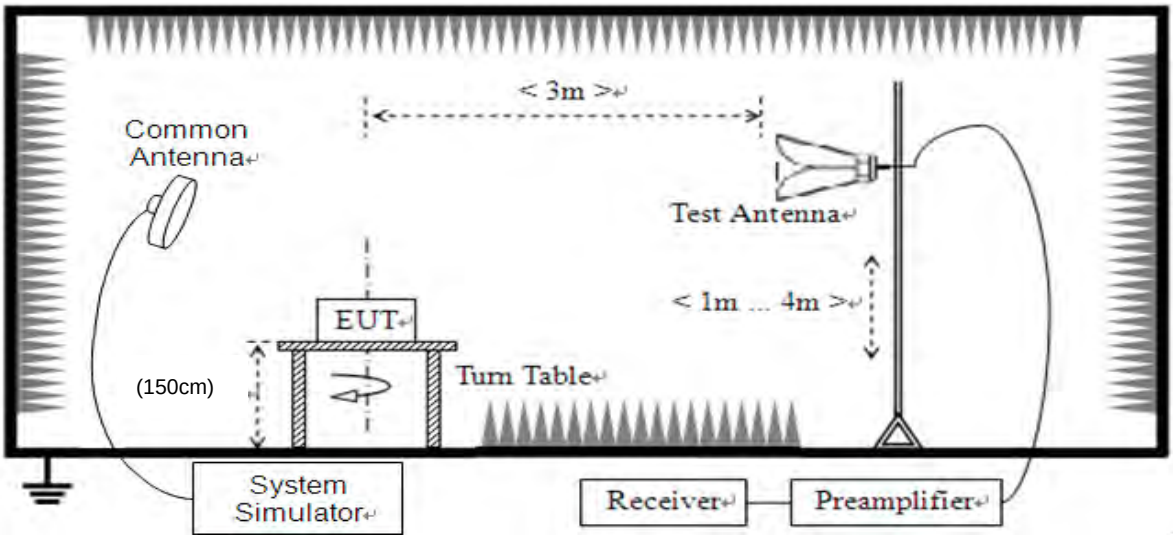
2.7.2. Test Description

Test Setup:

1) Below1GHz



2) Above 1GHz



The EUT is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM850MHz band Power Control Level (PCL) = 5/19 and Power Class = 4, GSM1900MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded. Please refer to section 2.1.3 of this report.

- Step size (dB): 3dB

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

2.7.3. Test Result

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

The substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST_TX} - P_{SUBST_RX} - L_{SUBST_CABLES} + G_{SUBST_TX_ANT}$

$A_{TOT} = L_{CABLES} + A_{SUBST}$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST_TX_ANT}$ is substitution antenna gain.

A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of A_{TOT}.

GSM Test verdict:

Band	Channel	Frequency (MHz)	PCL	Measured ERP		Limit		Verdict
				dBm	W	dBm	W	
GSM 850MHz	128	824.20	5	29.10	0.813	38.5	7	PASS
	190	836.60	5	29.24	0.839			PASS
	251	848.80	5	29.11	0.815			PASS
GPRS 850MHz	128	824.20	5	29.11	0.815	38.5	7	PASS
	190	836.60	5	29.24	0.839			PASS
	251	848.80	5	29.13	0.818			PASS
EDGE 850MHz	128	824.20	5	21.87	0.154	38.5	7	PASS
	190	836.60	5	21.96	0.157			PASS
	251	848.80	5	22.06	0.161			PASS

Note 1: For the GPRS and EDGE model, all the slots were tested and just the worst data were recorded in this report.

Note 2: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.

Band	Channel	Frequency (MHz)	PCL	Measured EIRP		Limit		Verdict
				dBm	W	dBm	W	
GSM 1900MHz	512	1850.2	0	28.58	0.721	33	2	PASS
	661	1880.0	0	28.59	0.723			PASS
	810	1909.8	0	28.46	0.701			PASS
GPRS 1900MHz	512	1850.2	0	28.60	0.724	33	2	PASS
	661	1880.0	0	28.60	0.724			PASS
	810	1909.8	0	28.45	0.700			PASS
EDGE 1900MHz	512	1850.2	0	25.42	0.348	33	2	PASS
	661	1880.0	0	25.05	0.320			PASS
	810	1909.8	0	25.10	0.324			PASS

Note 1: For the GPRS and EDGE model, all the slots were tested and just the worst data were recorded in this report.

Note 2: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.

WCDMA Test verdict:

Band	Channel	Frequency (MHz)	Measured ERP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band V	4132	826.4	18.26	0.067	38.5	7	PASS
	4182	836.4	18.29	0.067			PASS
	4233	846.6	18.31	0.068			PASS
HSDPA Band V	4132	826.4	18.26	0.067	38.5	7	PASS
	4182	836.4	18.28	0.067			PASS
	4233	846.6	18.19	0.066			PASS
HSUPA Band V	4132	826.4	17.52	0.056	38.5	7	PASS
	4182	836.4	17.57	0.057			PASS
	4233	846.6	16.85	0.048			PASS
Note: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.							

Band	Channel	Frequency (MHz)	Measured EIRP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band II	9262	1852.4	20.95	0.124	33	2	PASS
	9400	1880.0	21.01	0.126			PASS
	9538	1907.6	20.98	0.125			PASS
HSDPA Band II	9262	1852.4	20.83	0.121	33	2	PASS
	9400	1880.0	20.85	0.122			PASS
	9538	1907.6	21.00	0.126			PASS
HSUPA Band II	9262	1852.4	20.41	0.110	33	2	PASS
	9400	1880.0	20.38	0.109			PASS
	9538	1907.6	20.35	0.108			PASS
Note: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.							

Band	Channel	Frequency (MHz)	Measured EIRP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band IV	1312	1712.4	20.58	0.114	30	1	PASS
	1413	1732.6	20.61	0.115			PASS
	1513	1752.6	20.52	0.113			PASS
HSDPA Band IV	1312	1712.4	20.33	0.108	30	1	PASS
	1413	1732.6	20.38	0.109			PASS
	1513	1752.6	20.39	0.109			PASS
HSUPA Band IV	1312	1712.4	19.76	0.095	30	1	PASS
	1413	1732.6	19.77	0.095			PASS
	1513	1752.6	19.88	0.097			PASS

Note: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.

2.8. Radiated Out of Band Emissions

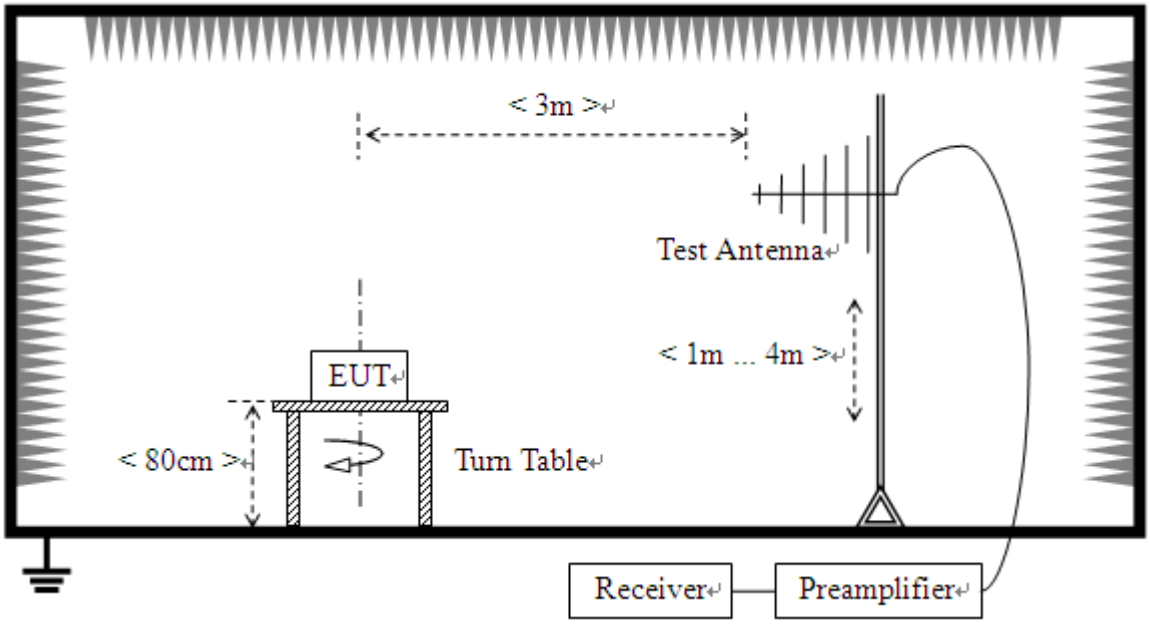
2.8.1. Requirement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

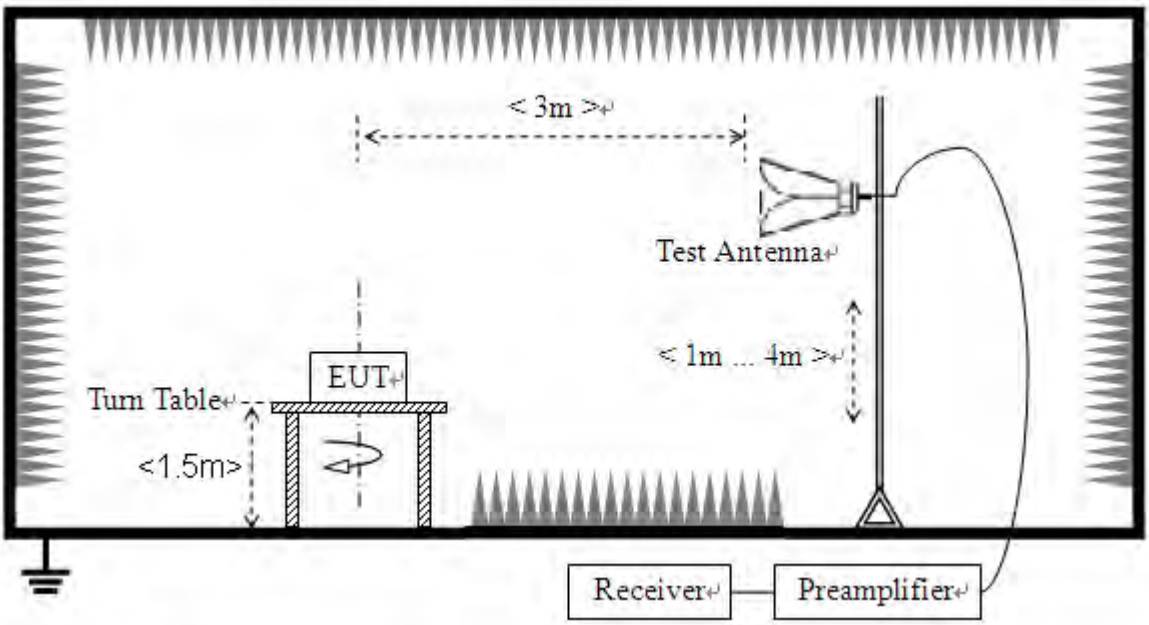
2.8.2. Test Description

Test Setup:

1) Below1GHz



2) Above 1GHz



The EUT is located in a 3m Full-Anechoic Chamber, the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM850MHz band Power Control Level (PCL) = 5/19 and Power Class = 4, GSM1900MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded. Please refer to section 2.1.3 of this report.

- Step size (dB): 3dB

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) and a Horn one (used for above 3 GHz), it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

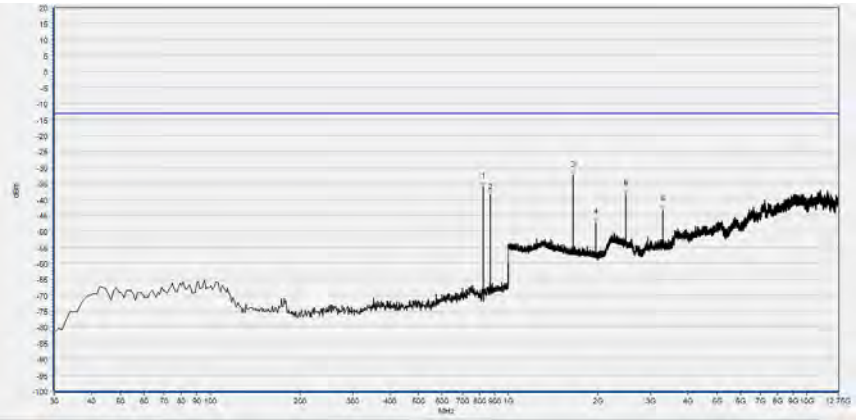
2.8.3. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions. The power of the EUT transmitting frequency should be ignored.

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical		
GSM 850MHz	128	824.2	< -25	< -25	-13	PASS
	190	836.6	< -25	< -25		PASS
	251	848.8	< -25	< -25		PASS
GSM 1900MHz	512	1850.2	< -25	< -25	-13	PASS
	661	1880.0	< -25	< -25		PASS
	810	1909.8	< -25	< -25		PASS
EDGE 850MHz	128	824.2	< -25	< -25	-13	PASS
	190	836.6	< -25	< -25		PASS
	251	848.8	< -25	< -25		PASS
EDGE 1900MHz	512	1850.2	< -25	< -25	-13	PASS
	661	1880.0	< -25	< -25		PASS
	810	1909.8	< -25	< -25		PASS
WCDMA Band V	4132	826.4	< -25	< -25	-13	PASS
	4183	836.4	< -25	< -25		PASS
	4233	846.6	< -25	< -25		PASS
WCDMA Band II	9262	1852.4	< -25	< -25	-13	PASS
	9400	1880.0	< -25	< -25		PASS
	9538	1907.6	< -25	< -25		PASS
WCDMA Band IV	1312	1712.4	< -25	< -25	-13	PASS
	1413	1732.6	< -25	< -25		PASS
	1513	1752.6	< -25	< -25		PASS

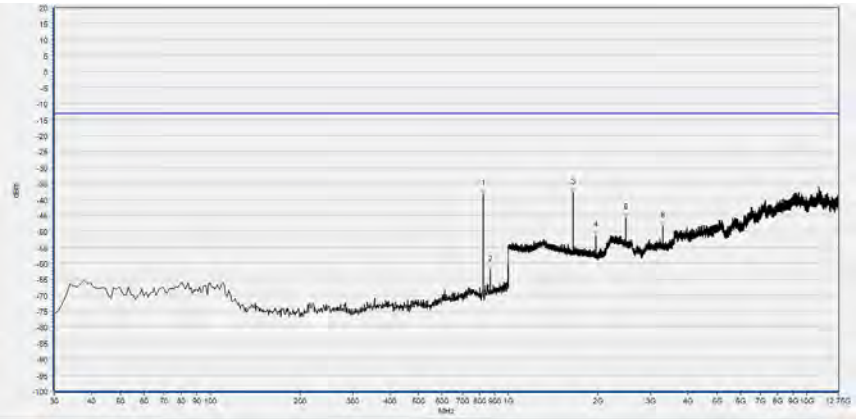
Note 1: All test mode and condition mentioned were considered and evaluated respectively by performing full test, only the worst data were recorded and reported.

Note 2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.



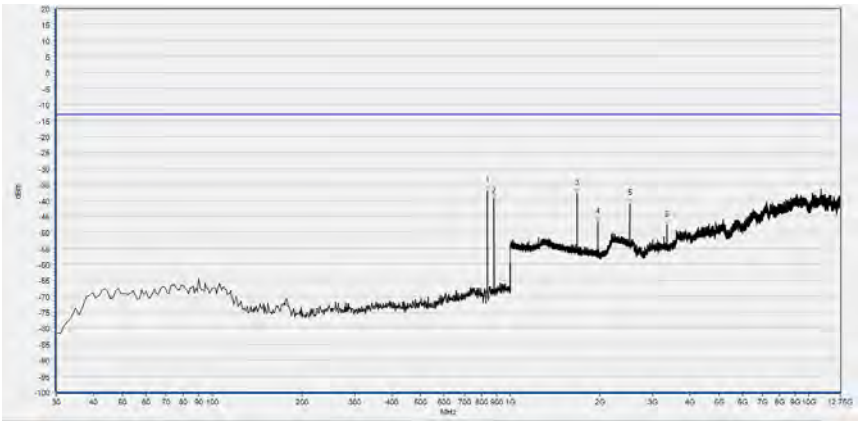
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	824.430	-36.08	-13.00	Horizontal	NA
2	869.050	-38.60	-13.00	Horizontal	NA
3	1647.939	-32.47	-13.00	Horizontal	PASS
4	1959.744	-47.25	-13.00	Horizontal	PASS
5	2471.949	-38.26	-13.00	Horizontal	PASS
6	3295.863	-43.34	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 128, Horizontal)



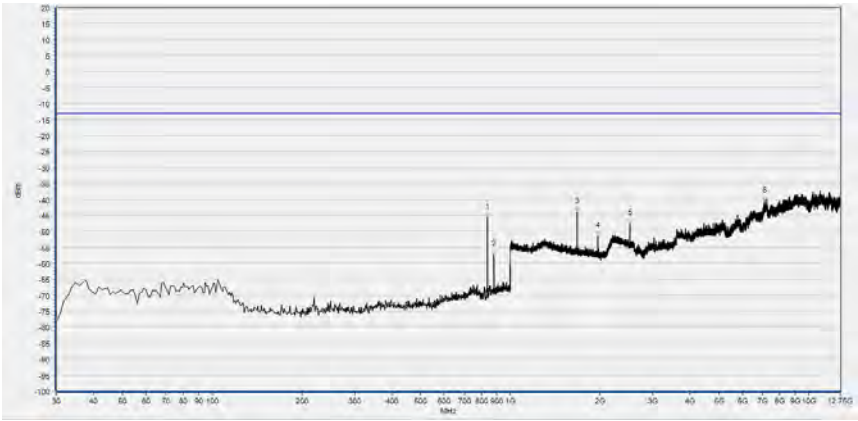
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	824.430	-38.26	-13.00	Vertical	NA
2	869.050	-62.08	-13.00	Vertical	NA
3	1648.579	-37.90	-13.00	Vertical	PASS
4	1959.744	-51.31	-13.00	Vertical	PASS
5	2472.589	-45.78	-13.00	Vertical	PASS
6	3295.863	-48.32	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 128, Vertical)



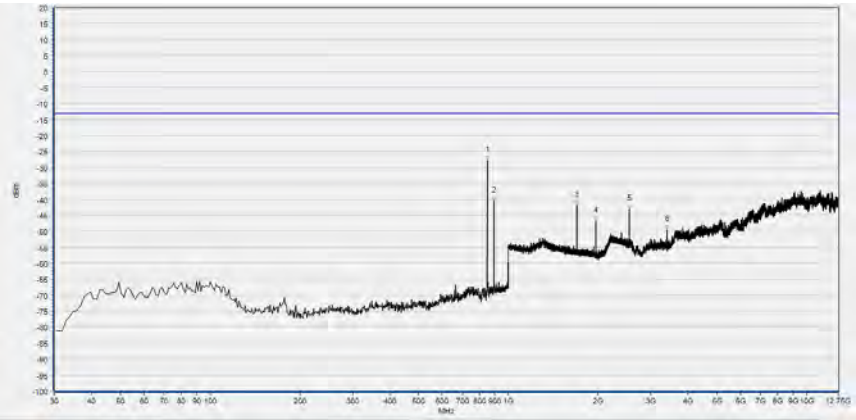
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	836.070	-36.90	-13.00	Horizontal	NA
2	881.660	-39.52	-13.00	Horizontal	NA
3	1672.909	-37.81	-13.00	Horizontal	PASS
4	1959.744	-46.90	-13.00	Horizontal	PASS
5	2509.724	-41.01	-13.00	Horizontal	PASS
6	3345.699	-47.81	-13.00	Horizontal	PASS

(GSM850MHz, Channel = 190, Horizontal)



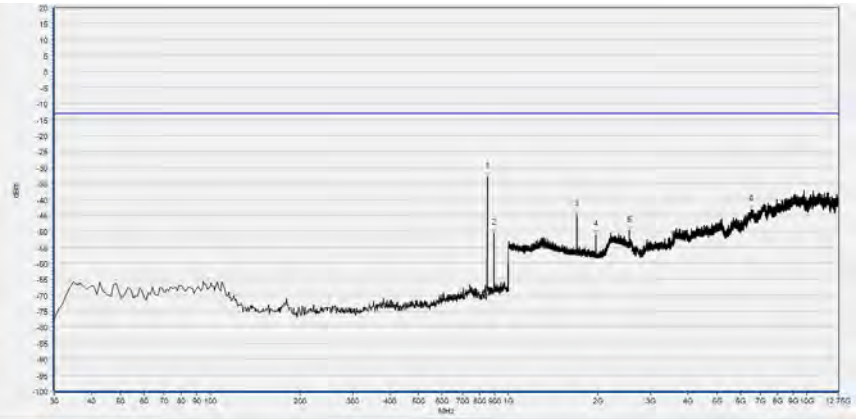
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	837.040	-45.68	-13.00	Vertical	NA
2	881.660	-57.36	-13.00	Vertical	NA
3	1672.909	-44.00	-13.00	Vertical	PASS
4	1959.744	-51.55	-13.00	Vertical	PASS
5	2509.724	-47.44	-13.00	Vertical	PASS
6	7105.574	-40.67	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 190, Vertical)



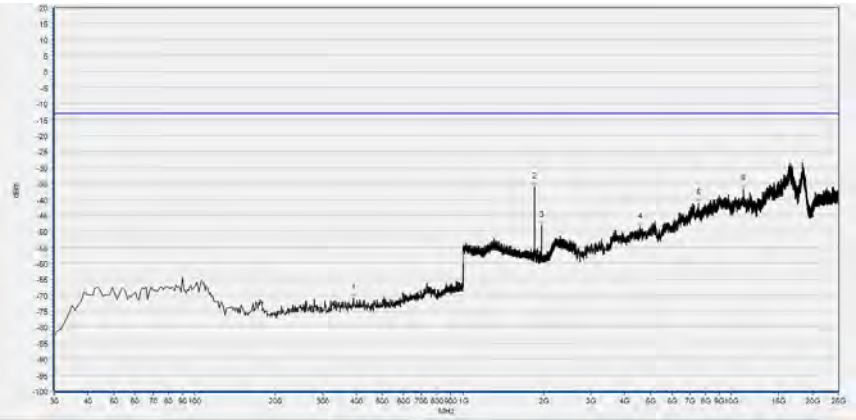
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	848.680	-27.91	-13.00	Horizontal	NA
2	893.300	-40.57	-13.00	Horizontal	NA
3	1697.239	-41.86	-13.00	Horizontal	PASS
4	1959.744	-46.91	-13.00	Horizontal	PASS
5	2546.218	-43.06	-13.00	Horizontal	PASS
6	3395.536	-49.39	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 251, Horizontal)



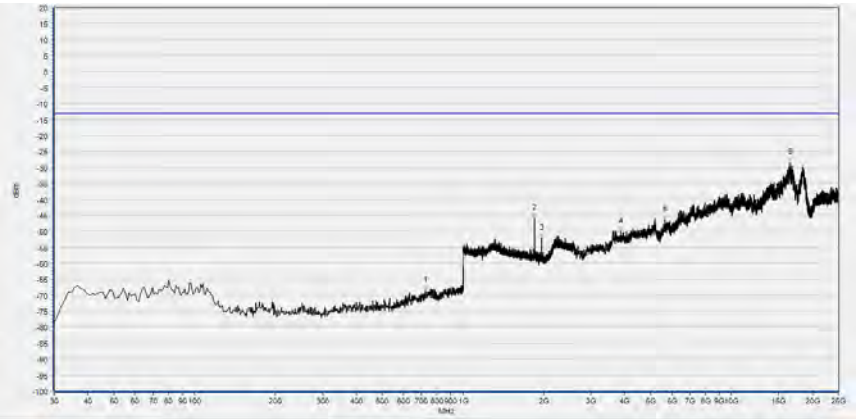
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	848.680	-32.92	-13.00	Vertical	NA
2	894.270	-50.58	-13.00	Vertical	NA
3	1697.239	-44.83	-13.00	Vertical	PASS
4	1959.744	-50.98	-13.00	Vertical	PASS
5	2546.218	-49.76	-13.00	Vertical	PASS
6	6511.229	-43.15	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 251, Vertical)



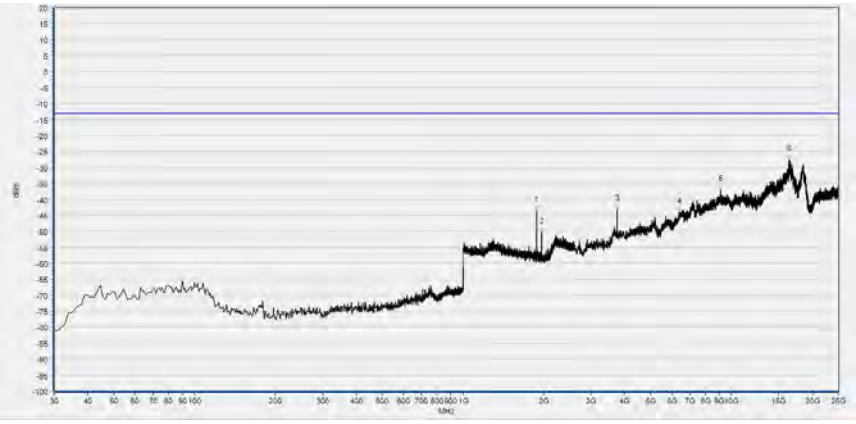
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	390.840	-70.97	-13.00	Horizontal	PASS
2	1850.260	-36.20	-13.00	Horizontal	NA
3	1959.744	-48.20	-13.00	Horizontal	NA
4	4579.705	-48.62	-13.00	Horizontal	PASS
5	7520.749	-41.17	-13.00	Horizontal	PASS
6	11113.548	-36.85	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 512, Horizontal)



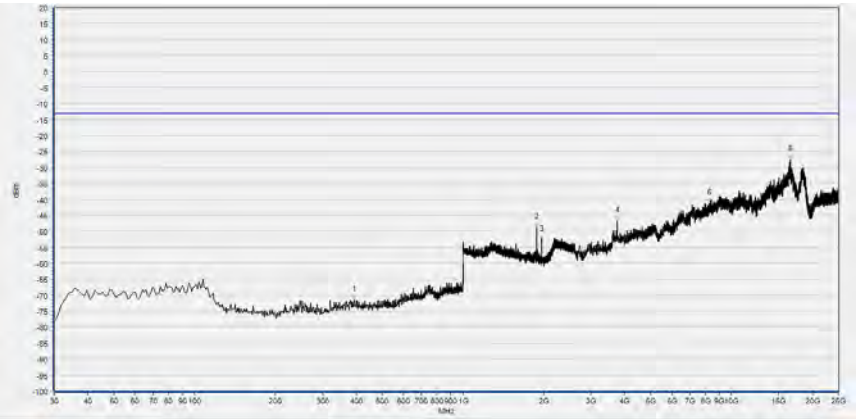
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	725.490	-68.53	-13.00	Vertical	PASS
2	1850.260	-45.86	-13.00	Vertical	NA
3	1959.744	-52.13	-13.00	Vertical	NA
4	3870.922	-50.14	-13.00	Vertical	PASS
5	5667.321	-46.27	-13.00	Vertical	PASS
6	16547.554	-28.54	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 512, Vertical)



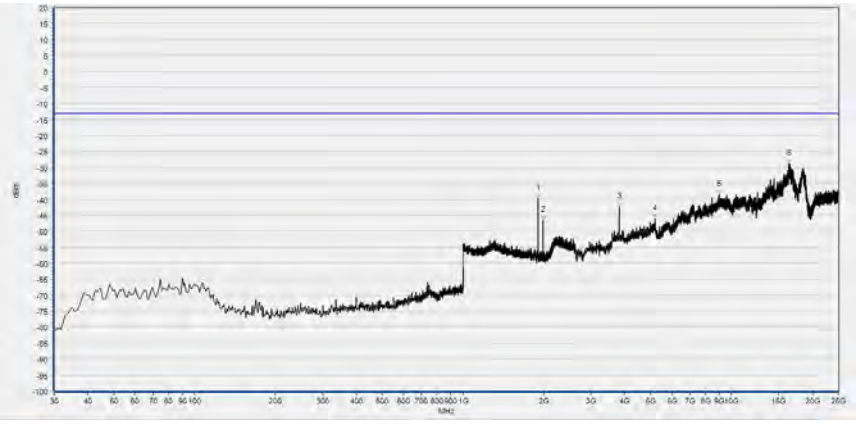
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	1879.712	-43.40	-13.00	Horizontal	NA
2	1959.744	-50.44	-13.00	Horizontal	NA
3	3760.938	-42.96	-13.00	Horizontal	PASS
4	6392.399	-44.01	-13.00	Horizontal	PASS
5	9137.916	-37.06	-13.00	Horizontal	PASS
6	16425.350	-27.66	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 661, Horizontal)



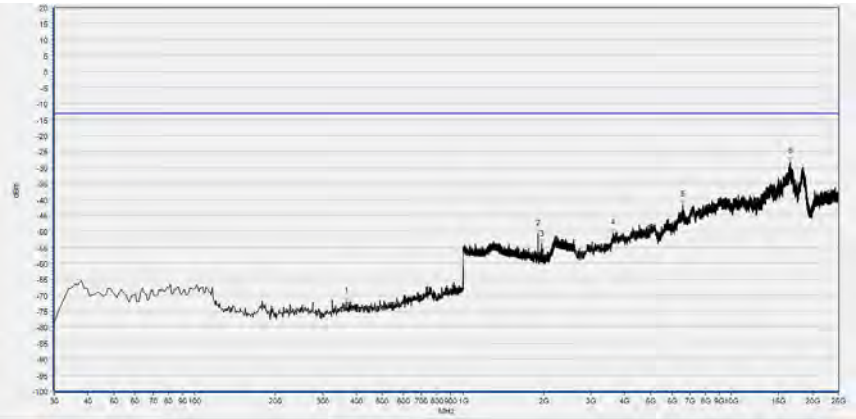
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	393.750	-71.47	-13.00	Vertical	PASS
2	1879.712	-48.85	-13.00	Vertical	NA
3	1960.384	-52.69	-13.00	Vertical	NA
4	3760.938	-46.92	-13.00	Vertical	PASS
5	8274.341	-41.33	-13.00	Vertical	PASS
6	16555.701	-27.69	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 661, Vertical)



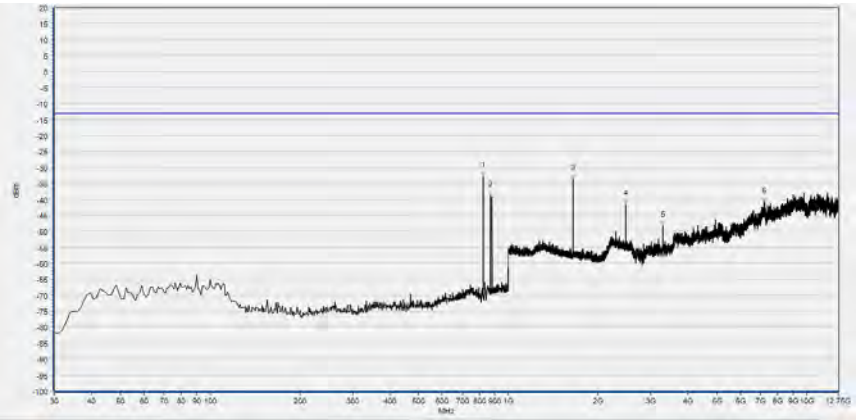
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	1909.804	-39.58	-13.00	Horizontal	NA
2	1989.836	-46.60	-13.00	Horizontal	NA
3	3817.967	-42.31	-13.00	Horizontal	PASS
4	5182.579	-46.09	-13.00	Horizontal	PASS
5	9023.859	-38.53	-13.00	Horizontal	PASS
6	16437.570	-28.93	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 810, Horizontal)



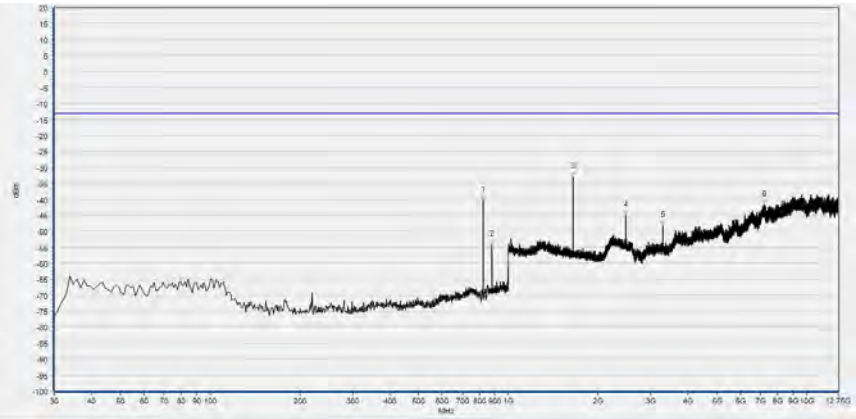
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	367.560	-72.11	-13.00	Vertical	PASS
2	1909.804	-50.76	-13.00	Vertical	NA
3	1959.744	-53.91	-13.00	Vertical	NA
4	3630.587	-50.62	-13.00	Vertical	PASS
5	6587.925	-41.76	-13.00	Vertical	PASS
6	16563.848	-28.36	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 810, Vertical)



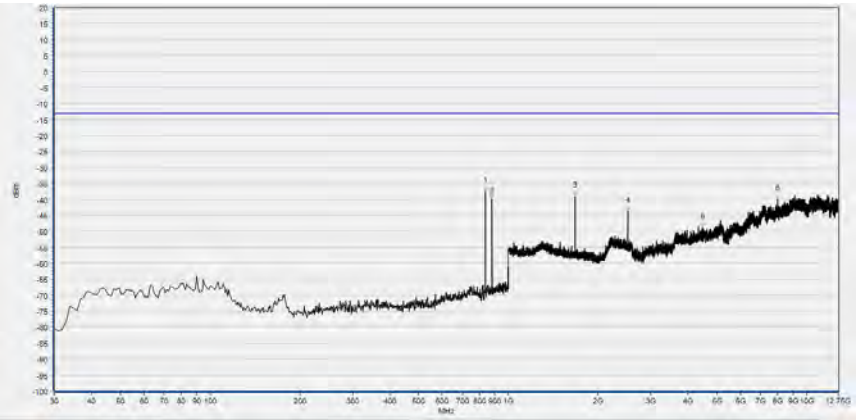
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	824.430	-32.75	-13.00	Horizontal	NA
2	869.050	-38.75	-13.00	Horizontal	NA
3	1647.939	-33.65	-13.00	Horizontal	PASS
4	2472.589	-41.52	-13.00	Horizontal	PASS
5	3295.863	-48.25	-13.00	Horizontal	PASS
6	7201.555	-40.80	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 128, Horizontal)



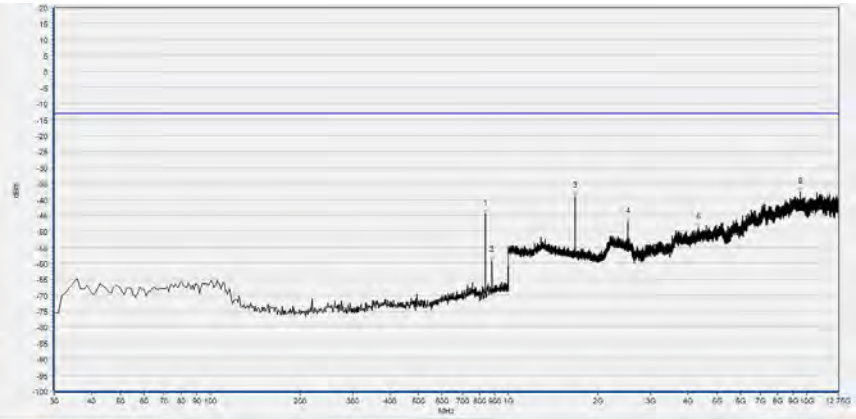
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	824.430	-40.42	-13.00	Vertical	NA
2	881.660	-54.19	-13.00	Vertical	NA
3	1648.579	-33.04	-13.00	Vertical	PASS
4	2472.589	-45.08	-13.00	Vertical	PASS
5	3297.709	-48.14	-13.00	Vertical	PASS
6	7201.555	-41.64	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 128, Vertical)



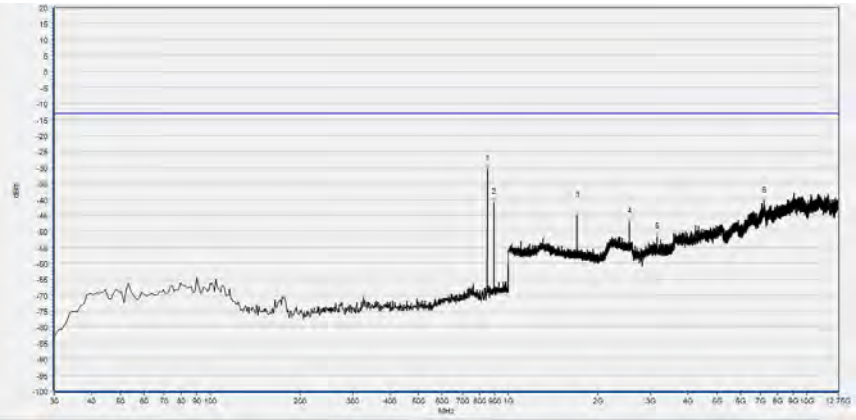
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	837.040	-37.38	-13.00	Horizontal	NA
2	881.660	-39.94	-13.00	Horizontal	NA
3	1672.909	-38.95	-13.00	Horizontal	PASS
4	2509.724	-43.77	-13.00	Horizontal	PASS
5	4490.089	-48.88	-13.00	Horizontal	PASS
6	7995.245	-39.93	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 190, Horizontal)



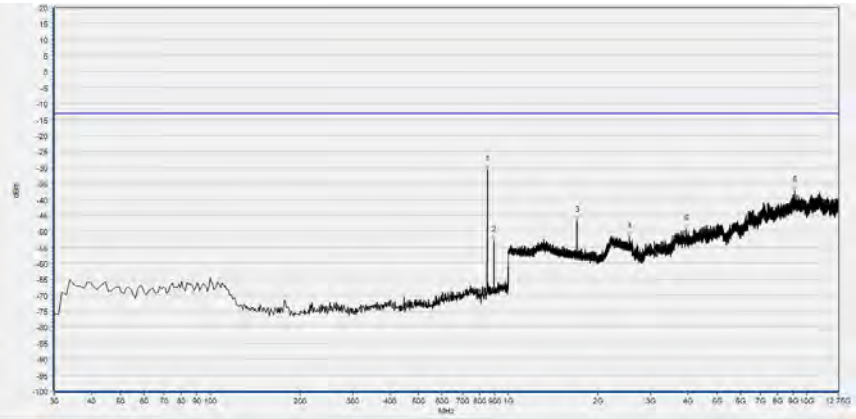
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	837.040	-44.68	-13.00	Vertical	NA
2	881.660	-59.04	-13.00	Vertical	NA
3	1672.909	-39.03	-13.00	Vertical	PASS
4	2509.724	-46.96	-13.00	Vertical	PASS
5	4329.505	-48.90	-13.00	Vertical	PASS
6	9547.554	-37.55	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 190, Vertical)



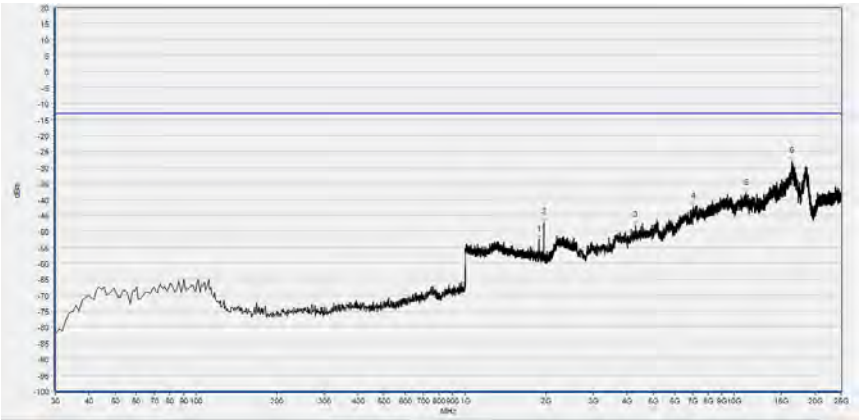
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	848.680	-30.39	-13.00	Horizontal	NA
2	893.300	-41.08	-13.00	Horizontal	NA
3	1697.879	-45.00	-13.00	Horizontal	PASS
4	2546.218	-46.99	-13.00	Horizontal	PASS
5	3151.891	-51.76	-13.00	Horizontal	PASS
6	7181.251	-40.53	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 251, Horizontal)



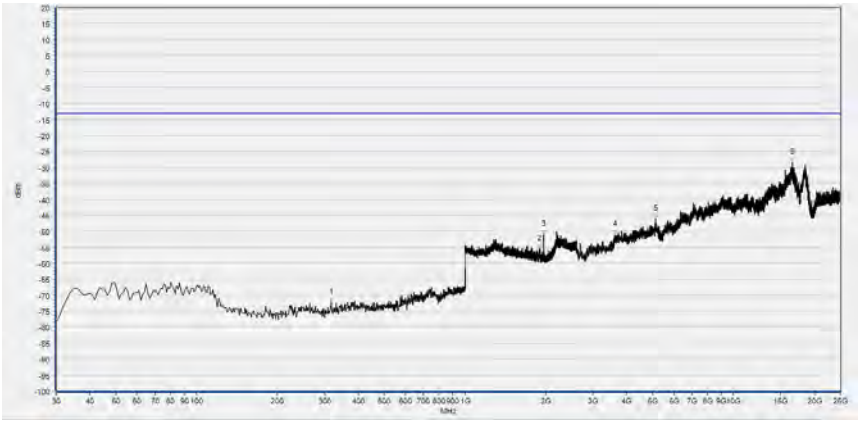
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	848.680	-30.75	-13.00	Vertical	NA
2	894.270	-52.92	-13.00	Vertical	NA
3	1697.879	-46.54	-13.00	Vertical	PASS
4	2546.218	-51.67	-13.00	Vertical	PASS
5	3956.656	-49.26	-13.00	Vertical	PASS
6	9100.873	-37.23	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 251, Vertical)



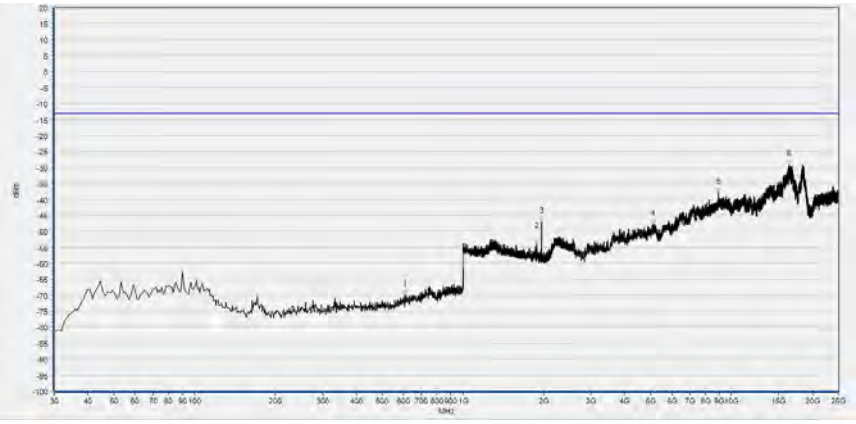
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	1850.712	-52.56	-13.00	Horizontal	NA
2	1930.744	-47.15	-13.00	Horizontal	NA
3	4306.783	-48.16	-13.00	Horizontal	PASS
4	7068.594	-42.39	-13.00	Horizontal	PASS
5	11056.519	-38.14	-13.00	Horizontal	PASS
6	16392.762	-27.99	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 512, Horizontal)



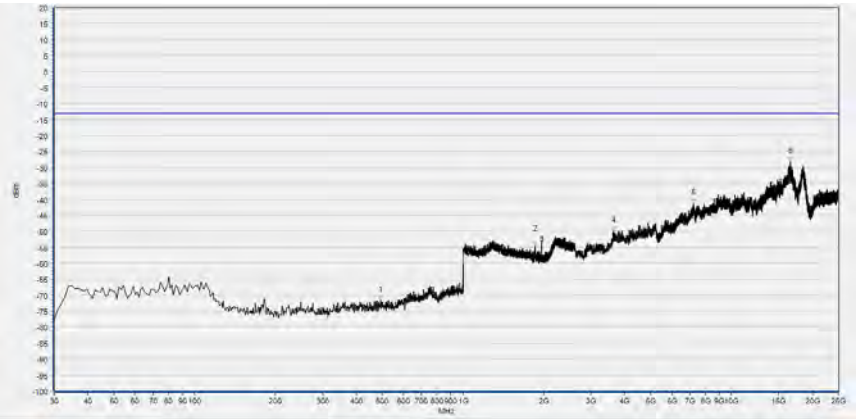
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	317.120	-72.24	-13.00	Vertical	PASS
2	1850.920	-55.59	-13.00	Vertical	NA
3	1930.744	-51.17	-13.00	Vertical	NA
4	3626.514	-51.05	-13.00	Vertical	PASS
5	5129.624	-46.22	-13.00	Vertical	PASS
6	16547.554	-28.46	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 512, Vertical)



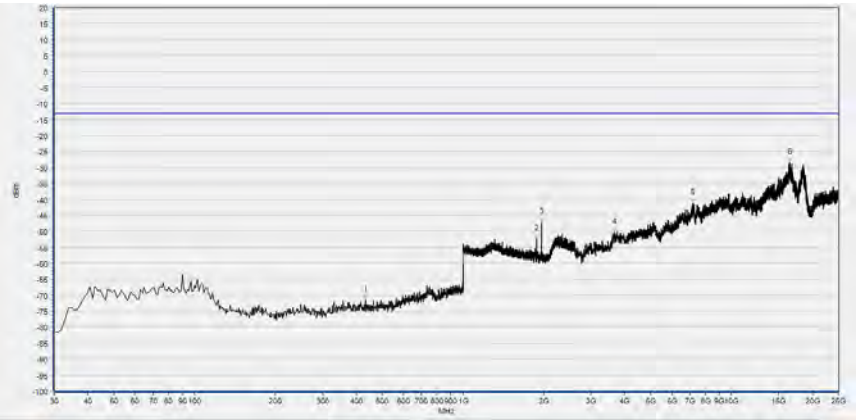
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	608.120	-69.93	-13.00	Horizontal	PASS
2	1879.712	-54.00	-13.00	Horizontal	NA
3	1959.744	-47.03	-13.00	Horizontal	NA
4	5101.109	-47.60	-13.00	Horizontal	PASS
5	8934.243	-37.91	-13.00	Horizontal	PASS
6	16400.909	-29.15	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 661, Horizontal)



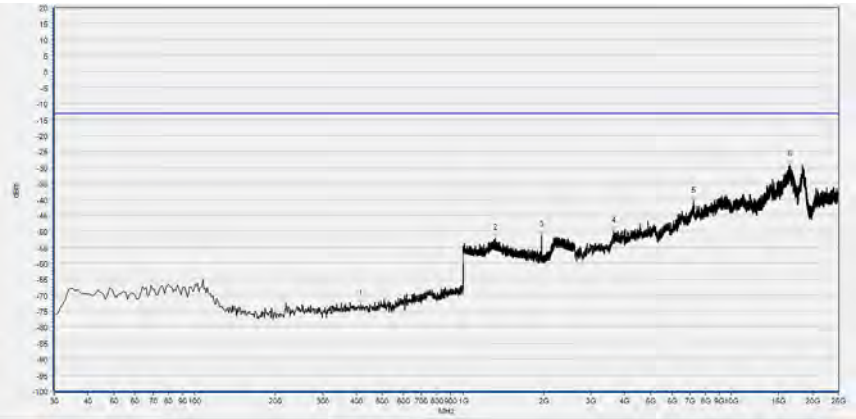
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	494.630	-71.66	-13.00	Vertical	PASS
2	1854.102	-54.57	-13.00	Vertical	NA
3	1959.744	-52.85	-13.00	Vertical	NA
4	3642.808	-49.94	-13.00	Vertical	PASS
5	7239.680	-41.25	-13.00	Vertical	PASS
6	16563.848	-28.31	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 661, Vertical)



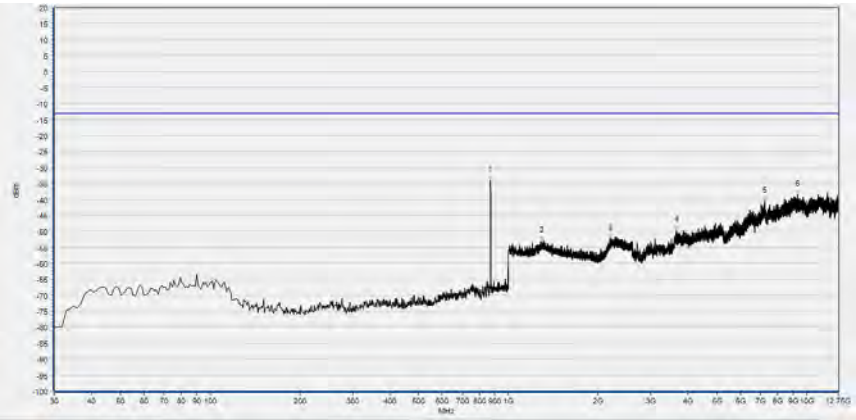
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	433.520	-71.50	-13.00	Horizontal	PASS
2	1909.712	-52.39	-13.00	Horizontal	NA
3	1989.744	-47.17	-13.00	Horizontal	NA
4	3667.249	-50.28	-13.00	Horizontal	PASS
5	7162.284	-41.14	-13.00	Horizontal	PASS
6	16531.260	-28.40	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 810, Horizontal)



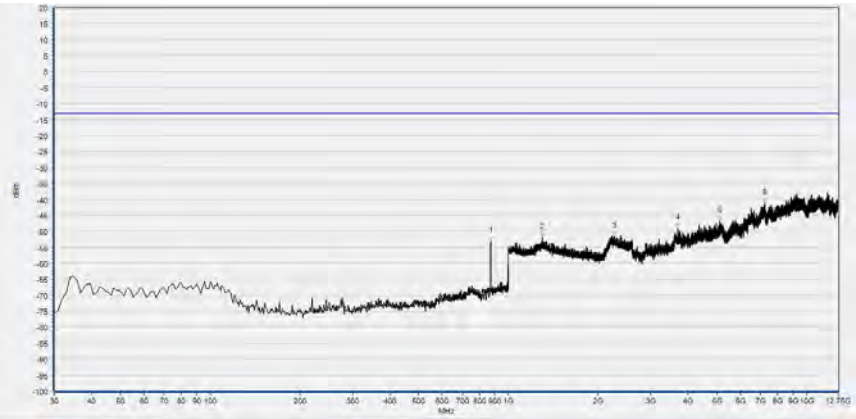
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	417.030	-72.82	-13.00	Vertical	PASS
2	1319.488	-52.20	-13.00	Vertical	PASS
3	1909.744	-51.31	-13.00	Vertical	NA
4	3642.808	-50.05	-13.00	Vertical	PASS
5	7219.313	-40.67	-13.00	Vertical	PASS
6	16527.187	-29.18	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 810, Vertical)



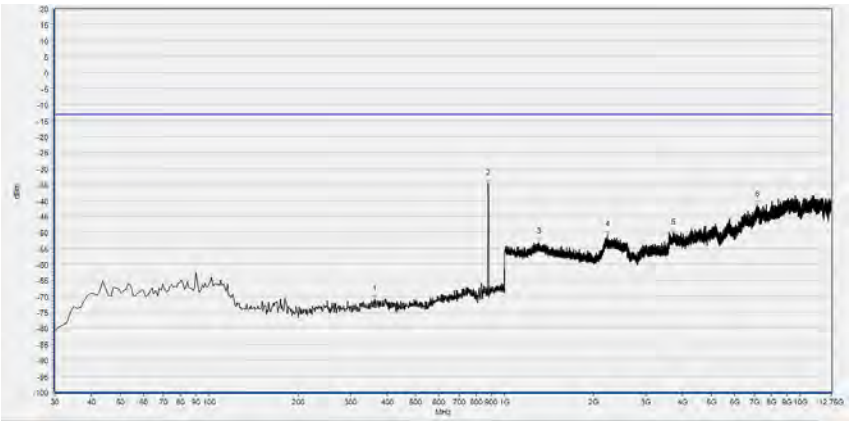
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	870.990	-33.98	-13.00	Horizontal	NA
2	1295.798	-53.04	-13.00	Horizontal	PASS
3	2195.998	-52.34	-13.00	Horizontal	PASS
4	3652.100	-49.66	-13.00	Horizontal	PASS
5	7244.008	-40.66	-13.00	Horizontal	PASS
6	9342.671	-38.59	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4132, Horizontal)



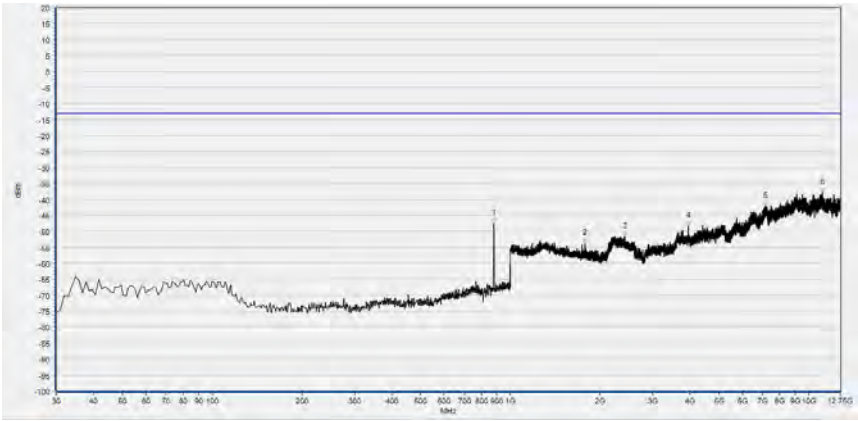
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	872.930	-53.04	-13.00	Vertical	NA
2	1299.640	-51.88	-13.00	Vertical	PASS
3	2260.024	-51.59	-13.00	Vertical	PASS
4	3690.862	-49.15	-13.00	Vertical	PASS
5	5119.504	-46.85	-13.00	Vertical	PASS
6	7251.391	-41.26	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4132, Vertical)



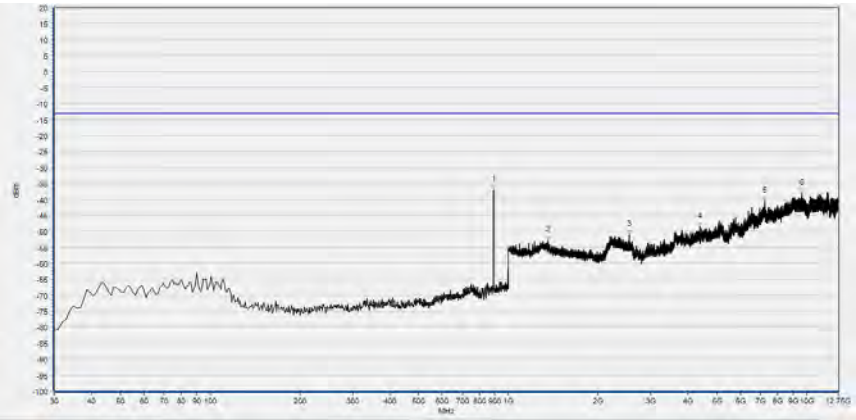
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	361.740	-70.93	-13.00	Horizontal	PASS
2	878.750	-34.64	-13.00	Horizontal	NA
3	1303.481	-53.05	-13.00	Horizontal	PASS
4	2229.932	-50.93	-13.00	Horizontal	PASS
5	3720.395	-50.11	-13.00	Horizontal	PASS
6	7155.410	-41.50	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4183, Horizontal)



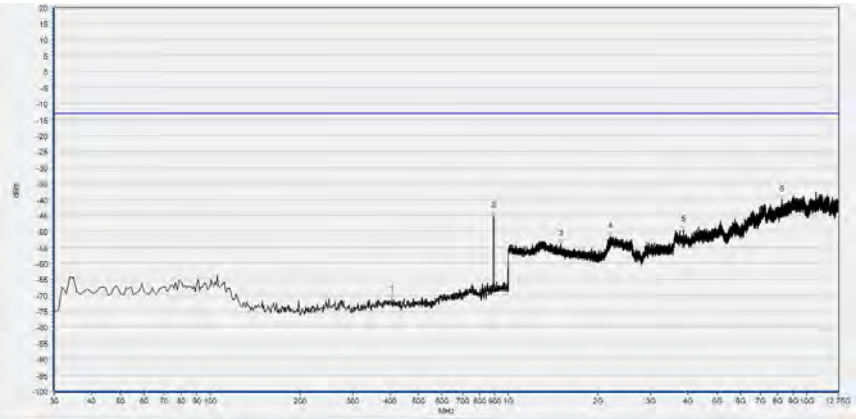
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	880.690	-47.52	-13.00	Vertical	NA
2	1779.192	-53.74	-13.00	Vertical	PASS
3	2421.369	-51.72	-13.00	Vertical	PASS
4	3951.118	-48.42	-13.00	Vertical	PASS
5	7153.564	-42.18	-13.00	Vertical	PASS
6	11134.934	-37.96	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4183, Vertical)



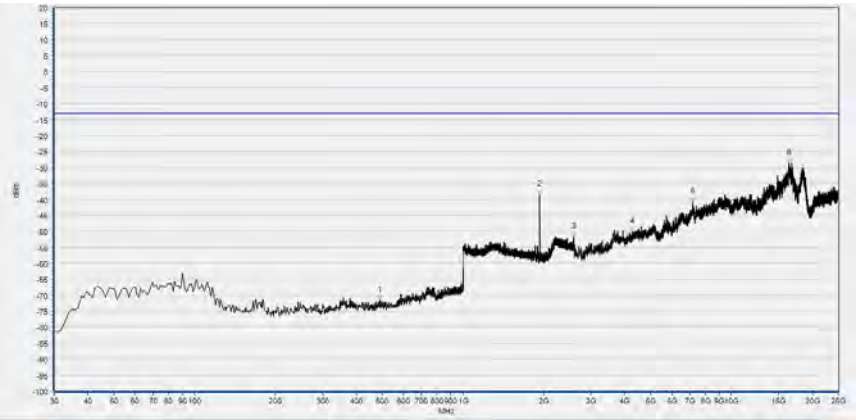
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	892.330	-36.94	-13.00	Horizontal	NA
2	1354.702	-52.87	-13.00	Horizontal	PASS
3	2543.017	-51.17	-13.00	Horizontal	PASS
4	4384.879	-48.60	-13.00	Horizontal	PASS
5	7242.162	-40.57	-13.00	Horizontal	PASS
6	9626.923	-38.13	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4233, Horizontal)



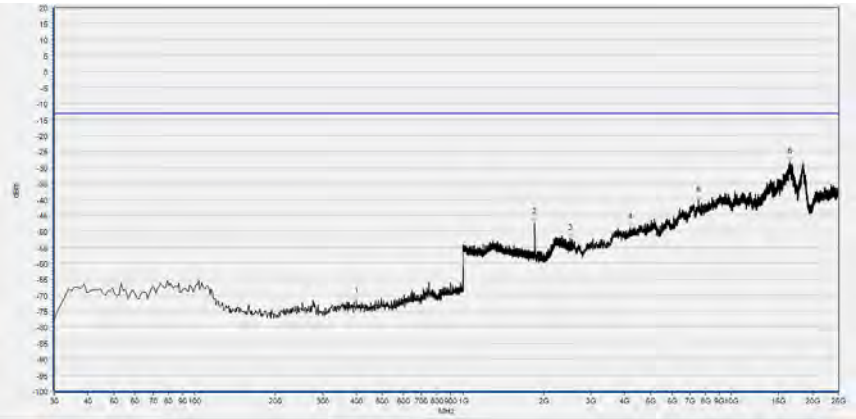
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	407.330	-71.49	-13.00	Vertical	NA
2	892.330	-45.16	-13.00	Vertical	PASS
3	1502.601	-54.04	-13.00	Vertical	PASS
4	2197.279	-51.84	-13.00	Vertical	PASS
5	3871.749	-49.39	-13.00	Vertical	PASS
6	8257.347	-40.11	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4233, Vertical)



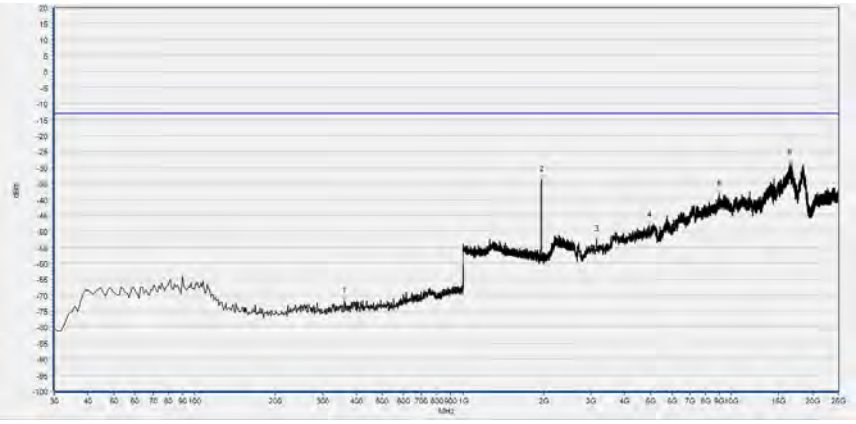
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	490.750	-71.58	-13.00	Horizontal	PASS
2	1933.493	-38.44	-13.00	Horizontal	NA
3	2587.195	-51.79	-13.00	Horizontal	PASS
4	4274.195	-50.14	-13.00	Horizontal	PASS
5	7174.504	-40.83	-13.00	Horizontal	PASS
6	16413.130	-28.63	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9262, Horizontal)



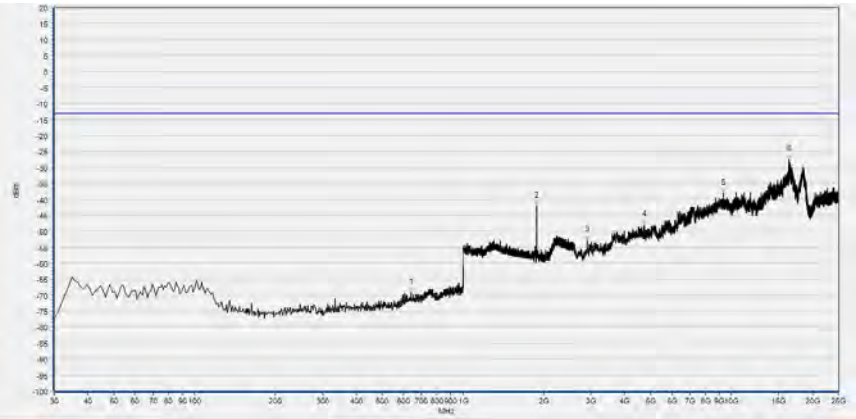
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	401.510	-71.85	-13.00	Vertical	PASS
2	1851.541	-47.22	-13.00	Vertical	NA
3	2507.163	-52.13	-13.00	Vertical	PASS
4	4188.652	-48.83	-13.00	Vertical	PASS
5	7549.264	-40.43	-13.00	Vertical	PASS
6	16486.452	-28.27	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9262, Vertical)



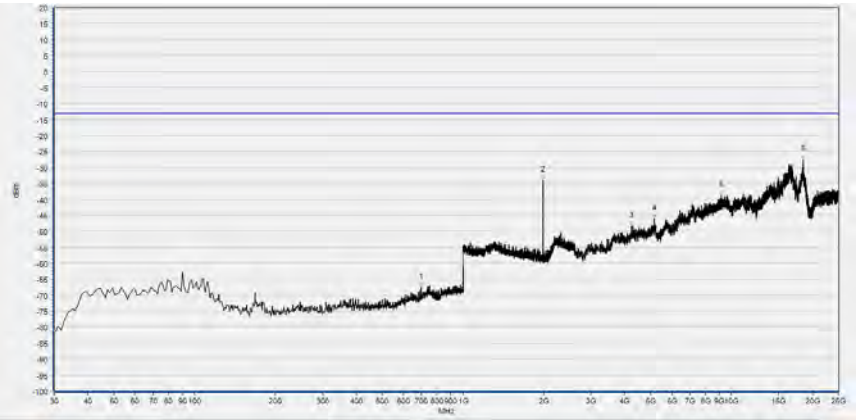
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	361.740	-71.80	-13.00	Horizontal	PASS
2	1959.744	-33.86	-13.00	Horizontal	NA
3	3149.918	-52.71	-13.00	Horizontal	PASS
4	4950.391	-48.12	-13.00	Horizontal	PASS
5	8991.271	-38.41	-13.00	Horizontal	PASS
6	16462.011	-28.73	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9400, Horizontal)



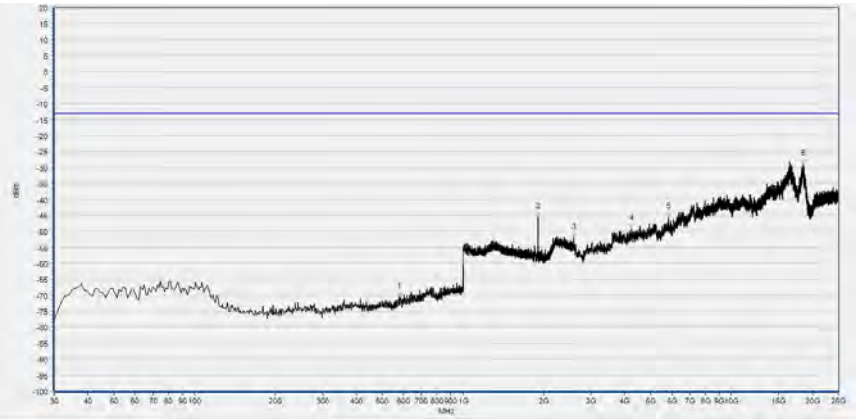
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	641.100	-69.09	-13.00	Vertical	PASS
2	1879.072	-42.14	-13.00	Vertical	NA
3	2905.510	-52.80	-13.00	Vertical	PASS
4	4750.791	-48.04	-13.00	Vertical	PASS
5	9321.222	-38.09	-13.00	Vertical	PASS
6	16437.570	-27.70	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9400, Vertical)



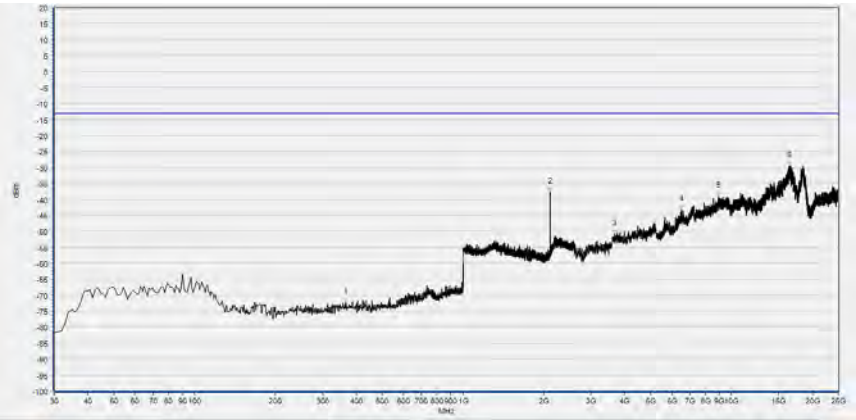
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	699.300	-67.56	-13.00	Horizontal	PASS
2	1986.635	-34.18	-13.00	Horizontal	NA
3	4245.681	-48.40	-13.00	Horizontal	PASS
4	5166.285	-46.11	-13.00	Horizontal	PASS
5	9162.357	-38.88	-13.00	Horizontal	PASS
6	18531.333	-27.68	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9538, Horizontal)



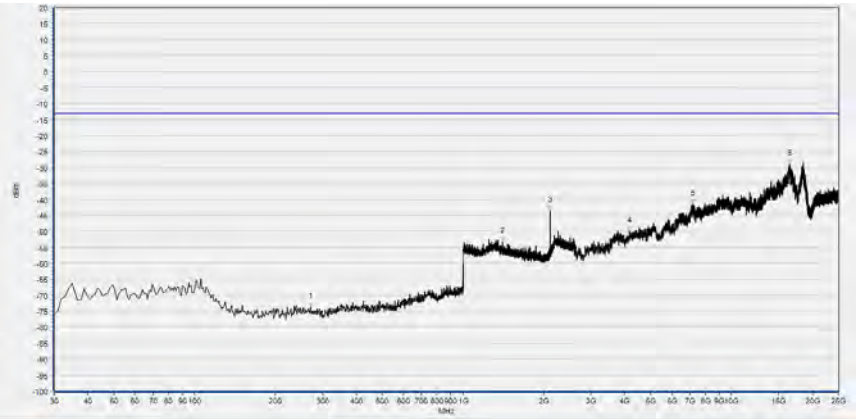
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	578.050	-70.57	-13.00	Vertical	PASS
2	1908.523	-45.55	-13.00	Vertical	NA
3	2585.914	-52.00	-13.00	Vertical	PASS
4	4249.755	-49.18	-13.00	Vertical	PASS
5	5826.187	-45.47	-13.00	Vertical	PASS
6	18510.966	-28.87	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9538, Vertical)



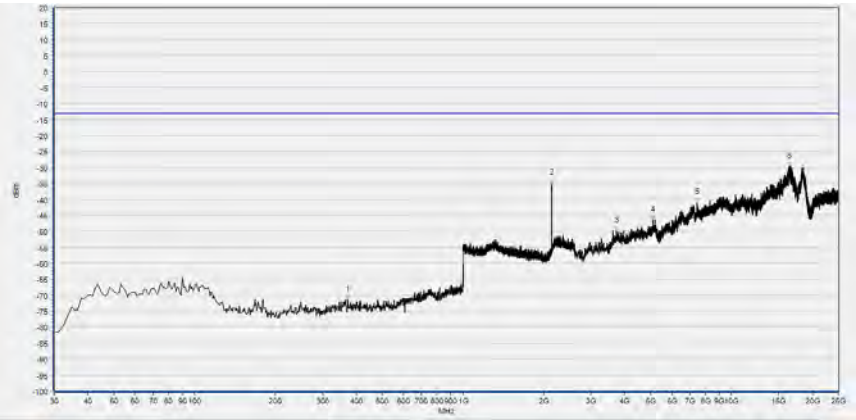
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	366.590	-72.31	-13.00	Horizontal	PASS
2	2110.844	-37.56	-13.00	Horizontal	NA
3	3659.102	-50.84	-13.00	Horizontal	PASS
4	6530.897	-43.28	-13.00	Horizontal	PASS
5	8942.390	-39.08	-13.00	Horizontal	PASS
6	16380.542	-29.59	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1312, Horizontal)



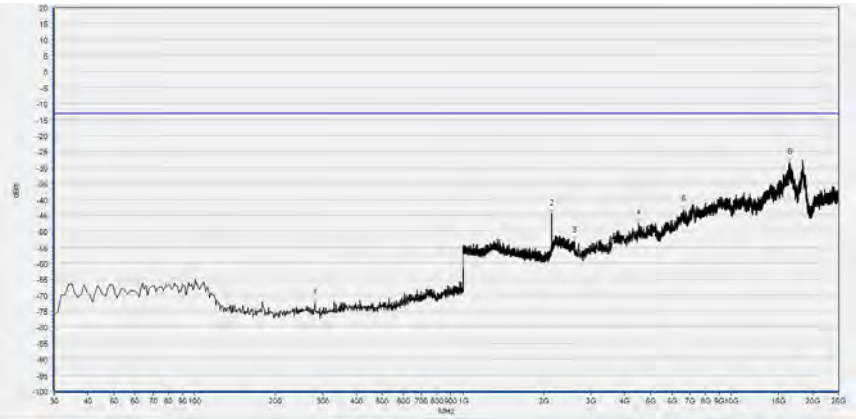
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	270.560	-73.63	-13.00	Vertical	PASS
2	1404.002	-53.35	-13.00	Vertical	PASS
3	2113.405	-43.37	-13.00	Vertical	NA
4	4168.285	-50.01	-13.00	Vertical	PASS
5	7174.504	-41.46	-13.00	Vertical	PASS
6	16453.864	-28.97	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1312, Vertical)



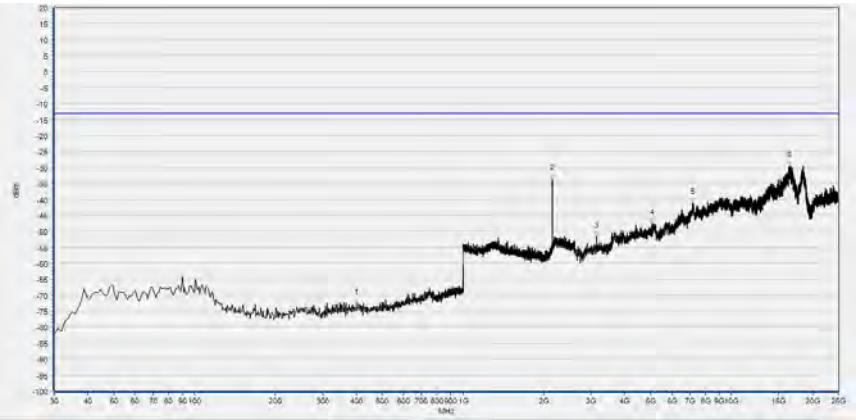
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	373.380	-71.50	-13.00	Horizontal	PASS
2	2139.016	-35.00	-13.00	Horizontal	NA
3	3724.277	-49.92	-13.00	Horizontal	PASS
4	5088.889	-46.68	-13.00	Horizontal	PASS
5	7439.280	-41.09	-13.00	Horizontal	PASS
6	16409.056	-29.81	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1413, Horizontal)



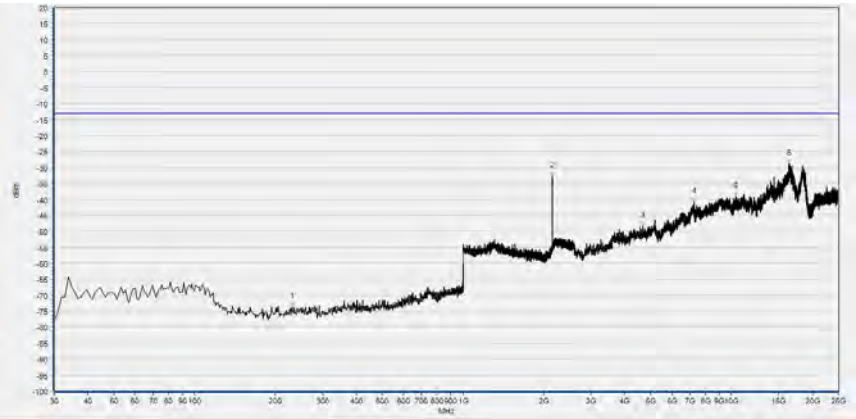
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	281.230	-72.47	-13.00	Vertical	PASS
2	2139.016	-44.54	-13.00	Vertical	NA
3	2597.439	-53.04	-13.00	Vertical	PASS
4	4514.530	-47.58	-13.00	Vertical	PASS
5	6632.733	-43.33	-13.00	Vertical	PASS
6	16535.334	-28.56	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1413, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	400.540	-72.59	-13.00	Horizontal	PASS
2	2153.101	-33.72	-13.00	Horizontal	NA
3	3145.845	-51.61	-13.00	Horizontal	PASS
4	5060.375	-47.50	-13.00	Horizontal	PASS
5	7162.284	-41.11	-13.00	Horizontal	PASS
6	16437.570	-29.71	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1513, Horizontal)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	231.760	-73.62	-13.00	Vertical	PASS
2	2151.180	-32.70	-13.00	Vertical	PASS
3	4677.469	-48.46	-13.00	Vertical	PASS
4	7255.974	-40.87	-13.00	Vertical	PASS
5	10384.397	-39.12	-13.00	Vertical	PASS
6	16433.497	-28.90	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1513, Vertical)

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test items	Uncertainty
Output Power	±2.22dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77 dB
Radiated Emission	±2.95dB

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Power Splitter	NW521	1506A	Weinschel	2020.04.15	2021.04.14
Attenuator 1	(N/A.)	10dB	Resnet	2020.04.15	2021.04.14
Attenuator 2	(N/A.)	3dB	Resnet	2020.04.15	2021.04.14
EXA Signal Analzyer	MY51511149	N9020A	Agilent	2019.07.29	2020.07.28
Wireless synthesizer	MY48364176	8960 -E5515C	Agilent	2020.04.16	2021.04.15
RF cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial cable	CB02	RF02	Morlab	N/A	N/A
SMA connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Temperature Chamber	(N/A)	HUT705P	CHONGQING HANBA EXPERIMENTAL EQUIPMENT CO.,LTD	2020.03.25	2021.03.24
Computer	T430i	Think Pad	Lenovo	N/A	N/A

4.2 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
System Simulator	152038	CMW500	R&S	2020.01.13	2021.01.12
Receiver	MY54130016	N9038A	Agilent	2019.07.29	2020.07.28
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2019.05.24	2022.05.23
Coaxial cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
1-18GHz pre-Amplifier	S020180L3203	N/A	Dongsheng	2019.07.29	2020.07.28
18-26.5GHz pre-Amplifier	S10M100L3802	N/A	Dongsheng	2019.07.29	2020.07.28
Notch Filter	N/A	WRCG-GSM 850	Wainwright	2019.12.01	2020.11.30
Notch Filter	N/A	WRCG-GSM 1900	Wainwright	2019.12.01	2020.11.30
Notch Filter	N/A	WRCGV-W Band V	Wainwright	2019.12.01	2020.11.30
Notch Filter	N/A	WRCGV-W Band II	Wainwright	2019.12.01	2020.11.30
Notch Filter	N/A	WRCGV-W Band IV	Wainwright	2019.12.01	2020.11.30
Anechoic Chamber	N/A	9m*6m*6m	CRT	2019.07.13	2022.07.12

END OF REPORT