REPORT No.: SZ18110268W06

TEST REPORT

APPLICANT	:	Nubia Technology Co.,Ltd
PRODUCT NAME	:	NX619J
MODEL NAME	:	NX619J
BRAND NAME	:	NUBIA
FCC ID	:	2AHJO-NX619J
STANDARD(S)	:	47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E 47 CFR Part 27 Subpart L
RECEIPT DATE	:	2018-11-22
TEST DATE	:	2018-12-01 to 2019-01-18
ISSUE DATE	:	2019-01-18

Edited by: Zeng Xiaoying (Rapporteur)

Approved by: Peng Huarui (Supervisor)

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MORLAB

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DIRECTORY

1. Technical Information ····· 4
1.1. Applicant and Manufacturer Information ····· 4
1.2. Equipment Under Test (EUT) Description ····· 4
1.3. Test Standards and Results ····· 7
1.4. Environmental Conditions ····· 9
2. 47 CFR Part 2, Part 22H , 24E&27L Requirements ····· 10
2.1. Conducted RF Output Power ····· 10
2.2. Peak to Average Ratio ····· 17
2.3. 99% Occupied Bandwidth ····· 26
2.4. Frequency Stability ····· 32
2.5. Conducted Out of Band Emissions ····· 37
2.6. Band Edge ····· 45
2.7. Transmitter Radiated Power (EIRP/ERP) ····· 49
2.8. Radiated Out of Band Emissions ····· 74
Annex A Test Uncertainty ····· 120
Annex B Testing Laboratory Information ····· 121

Change History		
Version	**Date**	**Reason for change**
1.0	2019-01-18	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Nubia Technology Co.,Ltd
Applicant Address:	10/F, Tower A, Hans Innovation Mansion, North Ring Rd., No.9018, High-Tech Park, Nanshan District, Shenzhen, China
Manufacturer:	Nubia Technology Co.,Ltd
Manufacturer Address:	10/F, Tower A, Hans Innovation Mansion, North Ring Rd., No.9018, High-Tech Park, Nanshan District, Shenzhen, China

1.2. Equipment Under Test (EUT) Description

Product Name:	NX619J
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	NX619J_V1AMB
Software Version:	NX619J_ENCommon_V1.07
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: 824.20 - 848.80MHz Rx: 869.20 - 893.80MHz **GSM 1900MHz:** Tx: 1850.20 - 1909.80MHz Rx: 1930.20 - 1989.80MHz **WCDMA Band V** Tx: 826.4 - 846.6MHz Rx: 871.4 - 891.6MHz **WCDMA Band II** Tx: 1852.4 - 1907.6MHz Rx: 1932.4 - 1987.6MHz

Operating Frequency Range:	**WCDMA Band IV** Tx: 1712.4 – 1752.6MHz Rx: 2112.4 - 2152.6MHz	
Antenna Type:	PIFA Antenna	
Antenna Gain:	Top Antenna	
	GSM 850:	1.31 dBi
	GSM1900:	1.48 dBi
	WCDMA Band V:	1.31 dBi
	WCDMA Band II:	1.48 dBi
	WCDMA Band IV:	1.39 dBi
	Bottom Antenna	
	GSM 850:	1.30 dBi
	GSM1900:	1.44 dBi
	WCDMA Band V:	1.30 dBi
	WCDMA Band II:	1.44 dBi
	WCDMA Band IV:	1.33 dBi
Accessory Information:	Battery	
	Brand Name:	ATL
	Model No.:	Li3937T44P6h886639
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	3800mAh
	Rated Voltage:	3.85V
	Charge Limit:	4.4V
	AC Adapter 1	
	Brand Name:	CHENYANG
	Model No.:	CYNBY090200-A00
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V ～ 50/60Hz 0.5A
	Rated Output:	5V⎓3.0A; 9V⎓2.0A;12V⎓1.5A
	AC Adapter 2	
	Brand Name:	XINSPOWER
	Model No.:	Q183
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V ～ 50/60Hz 0.5A
	Rated Output:	3.6~6V⎓3.0A; 6~9V⎓2.0A; 9~12V⎓1.5A

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
	Top Antenna	Bottom Antenna	
GSM850	1.368	1.439	249KGXW
EDGE850	1.294	1.374	249KG7W
GSM1900	1.208	1.300	246KGXW
EDGE1900	1.219	1.153	250KG7W
WCDMA Band V	0.142	0.196	4M14F9W
WCDMA Band II	0.175	0.167	4M13F9W
WCDMA Band IV	0.135	0.195	4M16F9W

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
1	2.1046	Conducted RF Output Power	Dec 26, 2018	Gao Mingzhou	PASS
2	24.232(d), 27.50(d)	Peak - Average Ratio	Dec 01&03, 2018 Jan 18, 2019	Gao Mingzhou	PASS
3	2.1049	99% Occupied Bandwidth	Dec 01&03, 2018 Jan 18, 2019	Gao Mingzhou	PASS
4	2.1055, 22.355, 24.235, 27.54	Frequency Stability	Jan 17, 2019	Gao Mingzhou	PASS
5	2.1051, 22.917(a), 24.238(a), 27.53(h)	Conducted Out of Band Emissions	Jan 16&18, 2019	Gao Mingzhou	PASS
6	2.1051, 22.917(a), 24.238(a), 27.53(h)	Band Edge	Dec 01&03, 2018 Jan 18, 2019	Gao Mingzhou	PASS
7	22.913(a), 24.232(a)	Transmitter Radiated Power (EIPR/ERP)	Jan 10, 2019	Wang Dalong	PASS
8	2.1051, 22.917(a), 24.238(a), 27.53(h)	Radiated Out of Band Emissions	Jan 10&11, 2019	Wang Dalong	PASS

Note 1: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 (Oct 27, 2017) 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

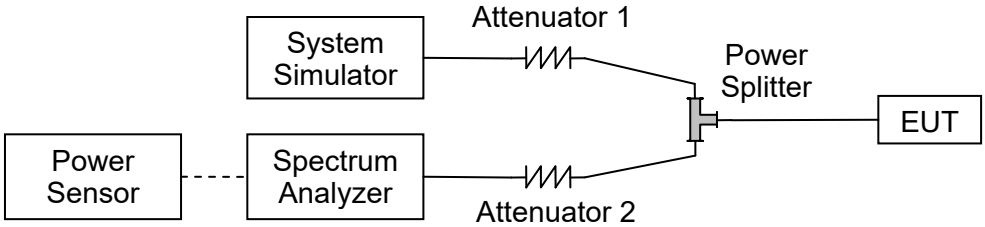
2.1. Conducted RF Output Power

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

Top Antenna

GSM850	Average Power (dBm)		
TX Channel	**128**	**190**	**251**
Frequency (MHz)	**824.2**	**836.6**	**848.8**
GSM 1 Tx slot	31.67	31.55	31.49
GPRS 1 Tx slot	31.75	31.62	31.57
GPRS 2 Tx slots	30.48	30.41	30.48
GPRS 3 Tx slots	28.47	28.44	28.32
GPRS 4 Tx slots	27.39	27.29	27.27
EDGE 1 Tx slot	26.77	26.11	26.65
EDGE 2 Tx slots	24.16	23.98	24.07
EDGE 3 Tx slots	22.05	21.85	21.90
EDGE 4 Tx slots	21.45	21.18	21.28

GSM1900	Average Power (dBm)		
TX Channel	**512**	**661**	**810**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
GSM 1 Tx slot	31.67	31.55	31.49
GPRS 1 Tx slot	31.75	31.62	31.57
GPRS 2 Tx slots	30.48	30.41	30.48
GPRS 3 Tx slots	28.47	28.44	28.32
GPRS 4 Tx slots	27.39	27.29	27.27
EDGE 1 Tx slot	26.77	26.11	26.65
EDGE 2 Tx slots	24.16	23.98	24.07
EDGE 3 Tx slots	22.05	21.85	21.90
EDGE 4 Tx slots	21.45	21.18	21.28

WCDMA Band V	Average Power (dBm)		
TX Channel	**4132**	**4182**	**4233**
Frequency (MHz)	**826.4**	**836.4**	**846.6**
AMR 12.2Kbps	22.68	22.67	22.59
RMC 12.2Kbps	22.85	22.87	22.67
HSDPA Subtest-1	21.21	21.37	21.28
HSDPA Subtest-2	21.27	21.38	21.16
HSDPA Subtest-3	20.71	20.91	20.66
HSDPA Subtest-4	20.74	20.88	20.67
HSUPA Subtest-1	21.32	21.35	21.34
HSUPA Subtest-2	19.42	19.55	19.34
HSUPA Subtest-3	20.41	20.57	20.33
HSUPA Subtest-4	19.43	19.57	19.32
HSUPA Subtest-5	21.32	21.36	21.33
HSPA+ (16QAM) Subtest-1	21.22	21.29	21.26

WCDMA Band II	Average Power (dBm)		
TX Channel	**9262**	**9400**	**9538**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**
AMR 12.2Kbps	17.03	17.25	16.91
RMC 12.2Kbps	17.20	17.46	17.18
HSDPA Subtest-1	16.35	16.74	16.51
HSDPA Subtest-2	16.35	16.63	16.49
HSDPA Subtest-3	15.82	16.13	16.02
HSDPA Subtest-4	15.80	16.19	15.95
HSUPA Subtest-1	16.39	16.71	16.62
HSUPA Subtest-2	14.43	14.73	14.65
HSUPA Subtest-3	15.39	15.73	15.60
HSUPA Subtest-4	14.38	14.73	14.60
HSUPA Subtest-5	16.39	16.73	16.59
HSPA+ (16QAM) Subtest-1	17.16	17.32	17.25

WCDMA Band IV	Average Power (dBm)		
TX Channel	**1312**	**1413**	**1513**
Frequency (MHz)	**1712.4**	**1732.6**	**1752.6**
AMR 12.2Kbps	19.29	19.32	19.05
RMC 12.2Kbps	19.30	19.35	19.06
HSDPA Subtest-1	17.89	17.74	17.67
HSDPA Subtest-2	17.79	17.64	17.69
HSDPA Subtest-3	17.26	17.18	17.17
HSDPA Subtest-4	17.27	17.15	17.17
HSUPA Subtest-1	17.99	17.86	17.88
HSUPA Subtest-2	16.00	15.88	15.87
HSUPA Subtest-3	16.98	16.85	16.86
HSUPA Subtest-4	16.02	15.88	15.90
HSUPA Subtest-5	17.85	17.84	17.86
HSPA+ (16QAM) Subtest-1	17.87	17.88	17.91

Bottom Antenna

GSM850	Average Power (dBm)		
TX Channel	**128**	**190**	**251**
Frequency (MHz)	**824.2**	**836.6**	**848.8**
GSM 1 Tx slot	32.99	32.88	33.09
GPRS 1 Tx slot	33.02	32.89	33.16
GPRS 2 Tx slots	30.29	30.20	30.19
GPRS 3 Tx slots	28.40	28.38	28.29
GPRS 4 Tx slots	27.22	27.15	27.16
EDGE 1 Tx slot	27.06	26.87	26.93
EDGE 2 Tx slots	23.98	23.78	23.84
EDGE 3 Tx slots	21.87	21.66	21.70
EDGE 4 Tx slots	21.20	21.02	21.09

GSM1900	Average Power (dBm)		
TX Channel	**512**	**661**	**810**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
GSM 1 Tx slot	29.22	29.12	28.94
GPRS 1 Tx slot	29.21	29.11	28.97
GPRS 2 Tx slots	26.46	26.59	26.38
GPRS 3 Tx slots	24.39	24.49	24.33
GPRS 4 Tx slots	23.60	23.72	23.36
EDGE 1 Tx slot	25.20	25.25	24.95
EDGE 2 Tx slots	21.88	21.95	21.71
EDGE 3 Tx slots	20.02	20.11	19.85
EDGE 4 Tx slots	18.90	18.97	18.74

WCDMA Band V	Average Power (dBm)		
TX Channel	**4132**	**4182**	**4233**
Frequency (MHz)	**826.4**	**836.4**	**846.6**
AMR 12.2Kbps	24.20	24.23	24.04
RMC 12.2Kbps	24.02	24.28	24.09
HSDPA Subtest-1	23.05	23.06	22.95
HSDPA Subtest-2	23.06	23.11	22.98
HSDPA Subtest-3	22.57	22.63	22.51
HSDPA Subtest-4	22.58	22.63	22.48
HSUPA Subtest-1	23.08	23.09	22.97
HSUPA Subtest-2	21.03	21.12	20.96
HSUPA Subtest-3	22.06	22.10	21.99
HSUPA Subtest-4	21.05	21.09	21.01
HSUPA Subtest-5	23.05	23.10	22.94
HSPA+ (16QAM) Subtest-1	22.69	22.75	22.69

WCDMA Band II	Average Power (dBm)		
TX Channel	**9262**	**9400**	**9538**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**
AMR 12.2Kbps	22.18	22.43	22.20
RMC 12.2Kbps	22.22	22.44	22.26
HSDPA Subtest-1	21.87	22.21	22.04
HSDPA Subtest-2	21.85	22.14	22.04
HSDPA Subtest-3	21.34	21.63	21.53
HSDPA Subtest-4	21.31	21.66	21.54
HSUPA Subtest-1	21.48	21.84	21.72
HSUPA Subtest-2	19.46	19.81	19.75
HSUPA Subtest-3	20.51	20.85	20.72
HSUPA Subtest-4	19.49	19.83	19.71
HSUPA Subtest-5	21.48	21.82	21.71
HSPA+ (16QAM) Subtest-1	21.63	21.53	21.63

WCDMA Band IV	Average Power (dBm)		
TX Channel	**1312**	**1413**	**1513**
Frequency (MHz)	**1712.4**	**1732.6**	**1752.6**
AMR 12.2Kbps	22.90	22.93	22.65
RMC 12.2Kbps	22.91	22.95	22.67
HSDPA Subtest-1	22.56	22.60	22.38
HSDPA Subtest-2	22.36	22.39	22.18
HSDPA Subtest-3	21.86	21.89	21.84
HSDPA Subtest-4	21.68	21.67	21.63
HSUPA Subtest-1	21.19	21.10	21.03
HSUPA Subtest-2	19.20	19.06	18.97
HSUPA Subtest-3	20.22	20.09	20.02
HSUPA Subtest-4	18.66	18.61	18.48
HSUPA Subtest-5	21.20	21.05	20.97
HSPA+ (16QAM) Subtest-1	21.06	21.12	21.10

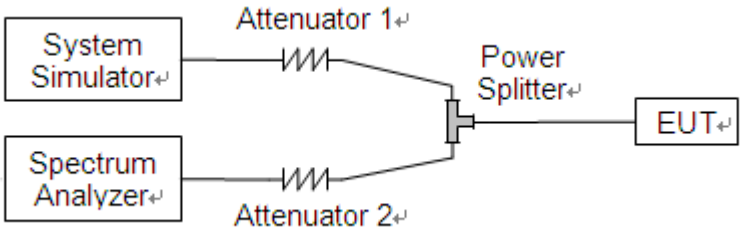
2.2. Peak to Average Ratio

2.2.1. Requirement

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

2.2.2. 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.

2.2.3. 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 850MHz	128	824.2	0.264	13	PASS
	190	836.6	0.120		PASS
	251	848.8	0.163		PASS
GSM 1900MHz	512	1850.2	0.128		PASS
	661	1880.0	0.171		PASS
	810	1909.8	0.017		PASS
EDGE 850MHz	128	824.2	0.004		PASS
	190	836.6	0.010		PASS
	251	848.8	0.006		PASS
EDGE 1900MHz	512	1850.2	0.094		PASS
	661	1880.0	0.013		PASS
	810	1909.8	0.012		PASS

Band	Channel	Frequency (MHz)	Peak to Average ratio dB	Limit dB	Verdict
WCDMA Band V	4132	826.4	3.07	13	PASS
	4182	836.4	2.82		PASS
	4233	846.6	2.93		PASS
WCDMA Band II	9262	1852.4	2.62		PASS
	9400	1880.0	2.92		PASS
	9538	1907.6	3.10		PASS
WCDMA Band IV	1312	1712.4	2.93		PASS
	1413	1732.6	2.97		PASS
	1513	1752.6	3.72		PASS

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

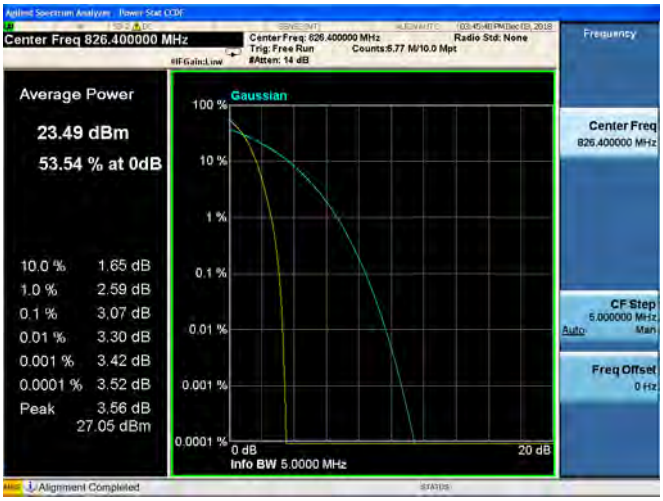
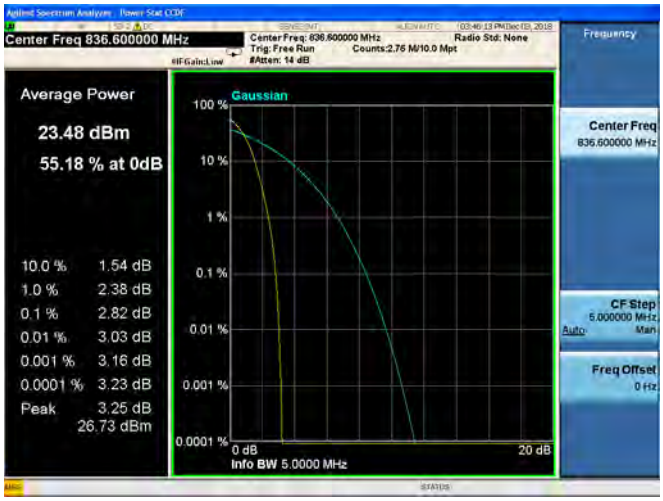
EDGE 850MHz CH190 836.6MHz

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 CH4182 836.4MHz
	
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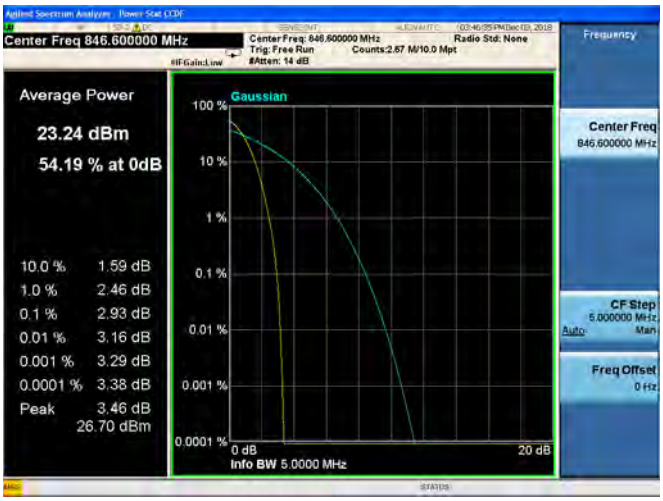
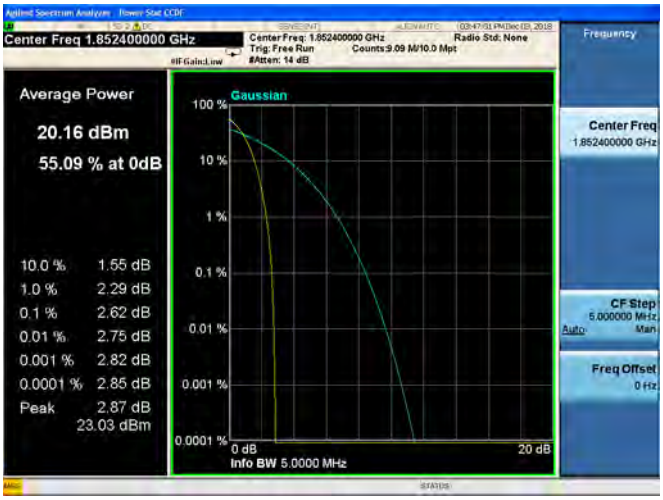
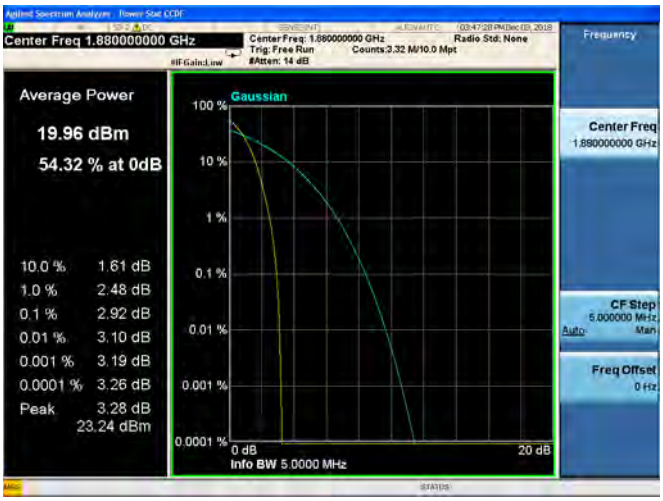
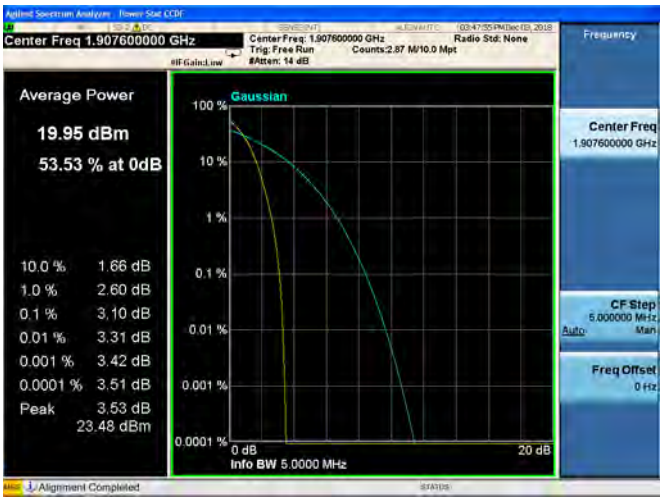
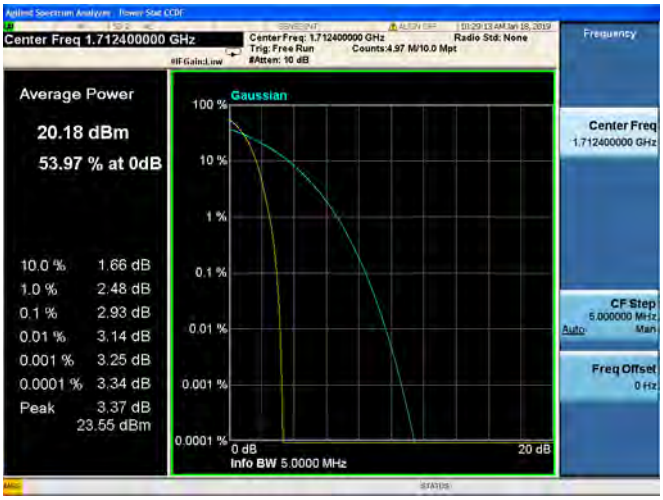
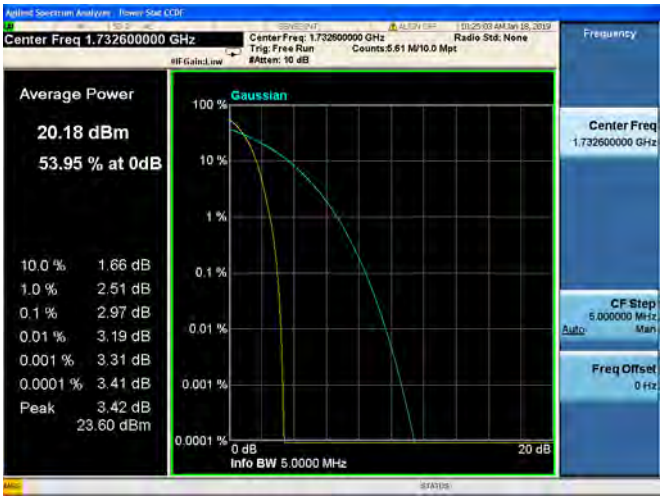
	

WCDMA Band II CH9262 1852.4MHz	WCDMA Band II CH9400 1880.0MHz
	
WCDMA Band II CH9538 1907.6MHz	
	

WCDMA Band IV CH1312 1712.4MHz



WCDMA Band IV CH1413 1732.6MHz



WCDMA Band IV CH1513 1752.6MHz

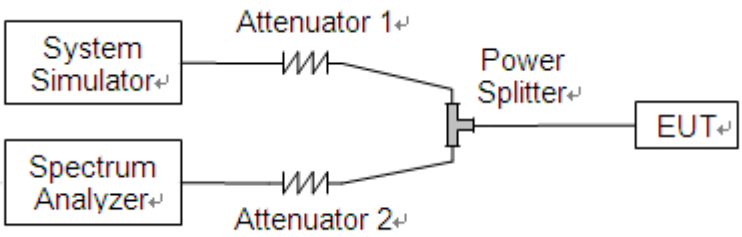
2.3. 99% Occupied Bandwidth

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:



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.

2.3.3. Test Result

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

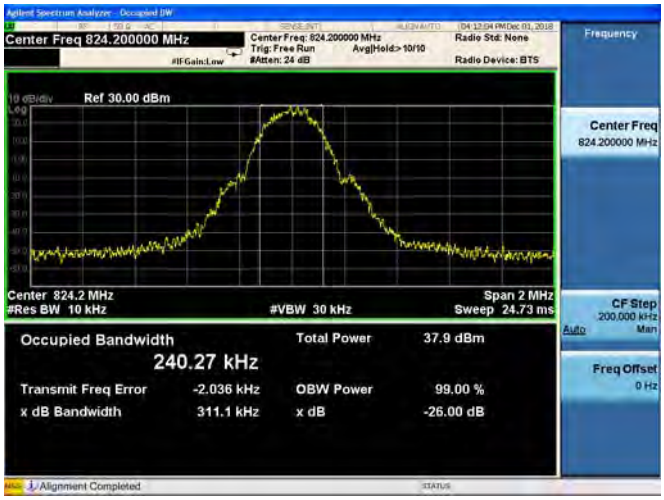
GSM Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)
GSM 850MHz	128	824.2	240.27	311.1
	190	836.6	248.95	308.1
	251	848.8	243.68	306.3
GSM 1900MHz	512	1850.2	245.70	312.5
	661	1880.0	245.48	316.6
	810	1909.8	244.25	317.8
EDGE 850MHz	128	824.2	245.75	313.5
	190	836.6	248.98	315.5
	251	848.8	245.78	319.3
EDGE 1900MHz	512	1850.2	244.06	318.3
	661	1880.0	245.02	316.0
	810	1909.8	250.32	320.2

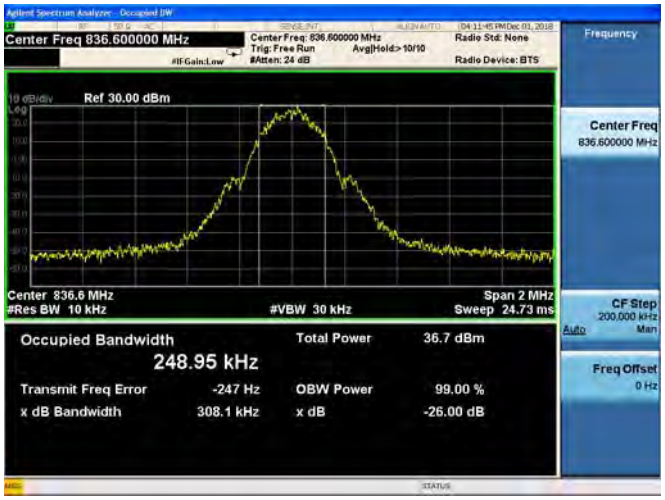
WCDMA Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
WCDMA Band V	4132	826.4	4.120	4.674
	4182	836.4	4.139	4.690
	4233	846.6	4.118	4.688
WCDMA Band II	9262	1852.4	4.116	4.700
	9400	1880.0	4.122	4.695
	9538	1907.6	4.132	4.684
WCDMA Band IV	1312	1712.4	4.159	4.646
	1413	1732.6	4.148	4.672
	1513	1752.6	4.154	4.672

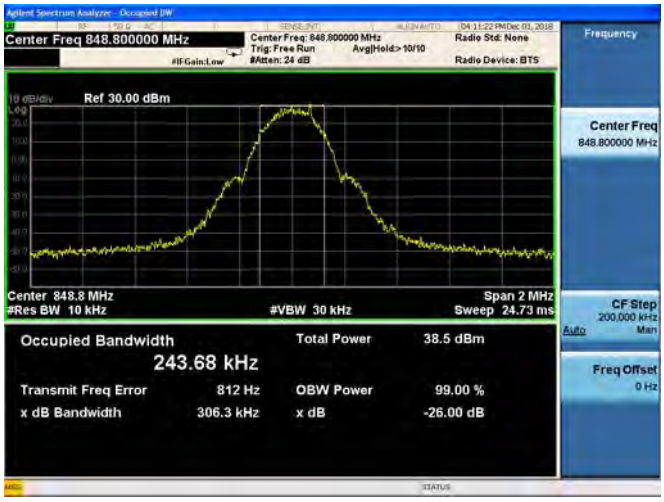
GSM 850MHz CH128 824.2MHz



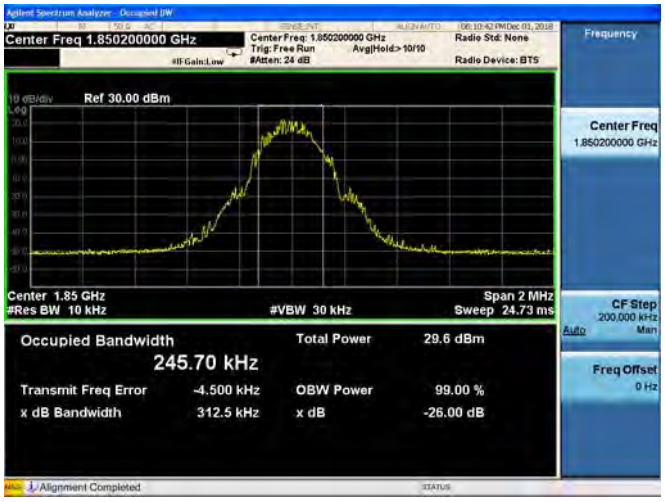
GSM 850MHz CH190 836.6MHz



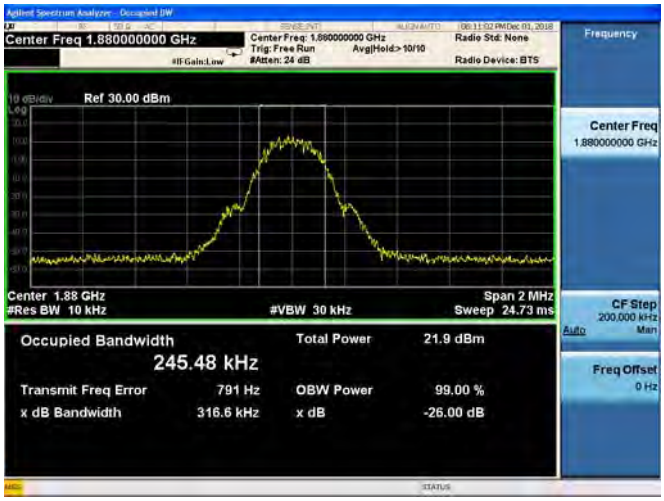
GSM 850MHz CH251 848.8MHz



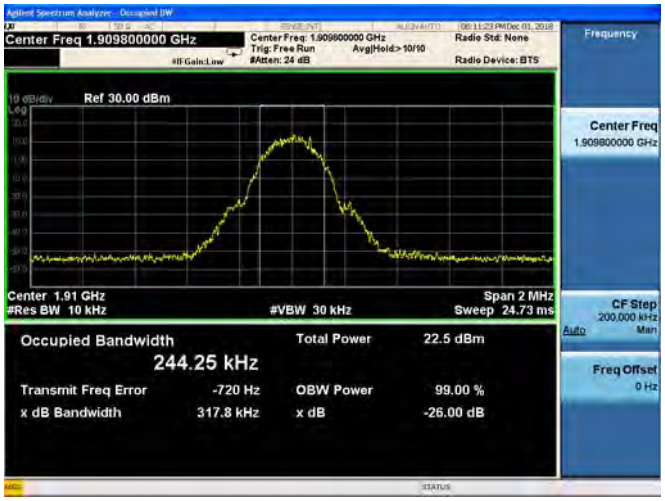
GSM 1900MHz CH512 1850.2MHz



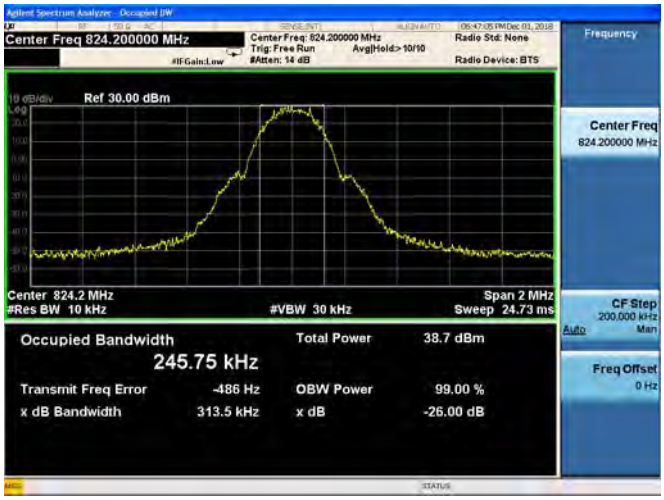
GSM 1900MHz CH661 1880.0MHz



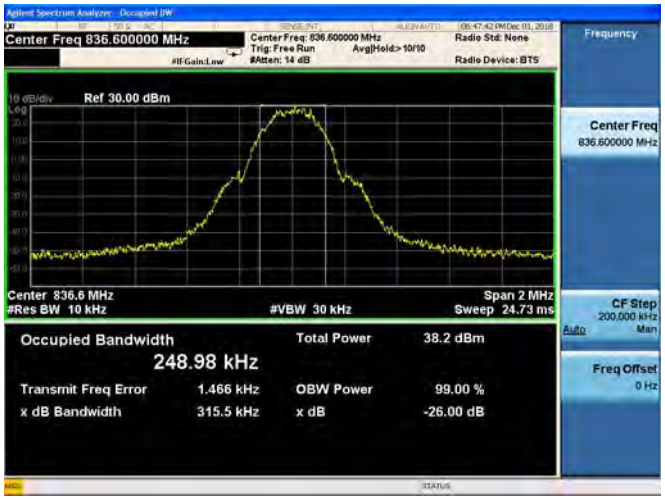
GSM 1900MHz CH810 1909.8MHz



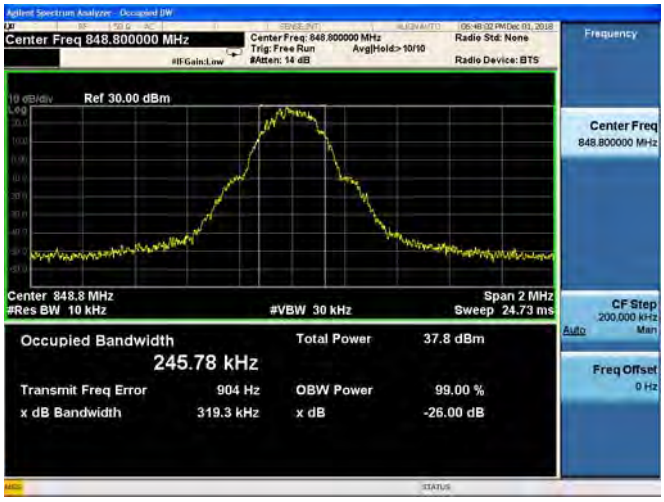
EDGE 850MHz CH128 824.2MHz



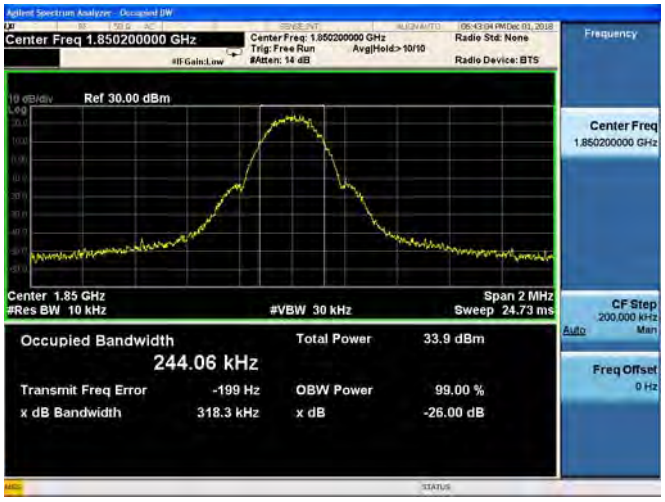
EDGE 850MHz CH190 836.6MHz



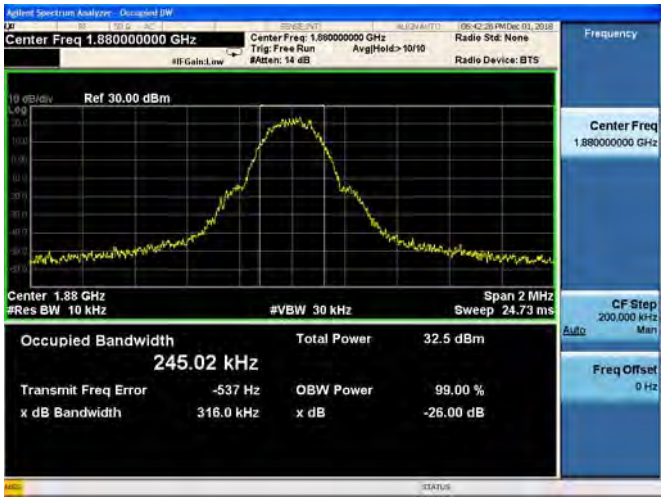
EDGE 850MHz CH251 848.8MHz



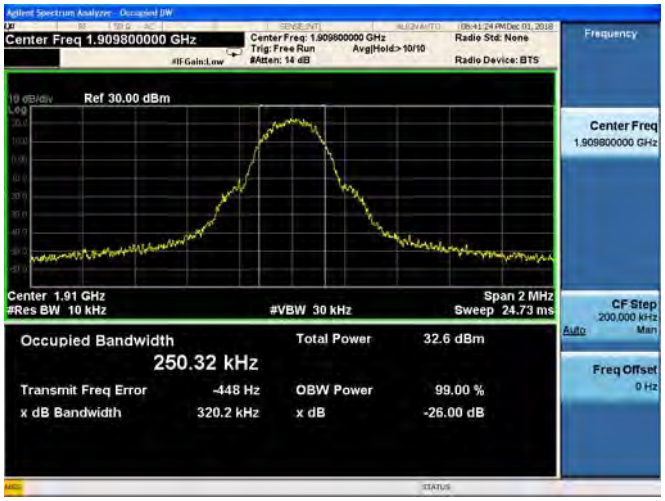
EDGE 1900MHz CH512 1850.2MHz



EDGE 1900MHz CH661 1880.0MHz



EDGE 1900MHz CH810 1909.8MHz



WCDMA Band V CH4132 826.4MHz

WCDMA Band V CH4182 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

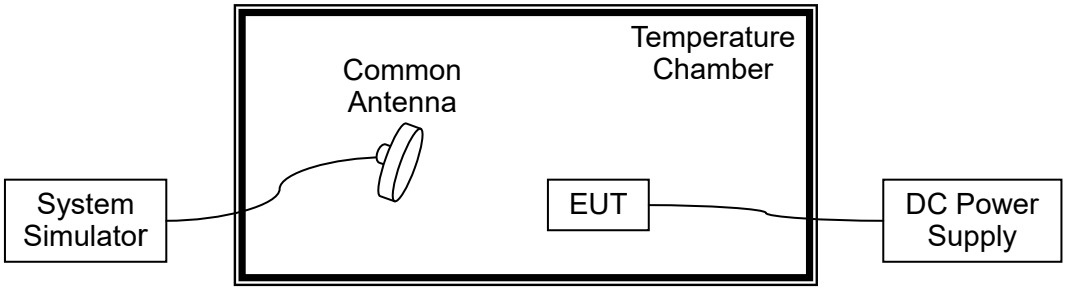
According to FCC section 22.355, 24.235 and 27.54 the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(a) The temperature is varied from -30°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

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)	13	0.016	PASS
100		-30	-34	-0.041	
100		-20	-5	-0.006	
100		-10	-46	-0.055	
100		0	-64	-0.077	
100		+10	75	0.090	
100		+20	33	0.039	
100		+30	41	0.049	
100		+40	73	0.087	
100		+50	39	0.047	
115	4.43	+20	-55	-0.066	
85	3.27	+20	-62	-0.074	

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)	31	0.016	PASS
100		-30	65	0.035	
100		-20	-3	-0.002	
100		-10	24	0.013	
100		0	-63	-0.034	
100		+10	-18	-0.010	
100		+20	56	0.030	
100		+30	84	0.045	
100		+40	32	0.017	
100		+50	21	0.011	
115	4.43	+20	-43	-0.023	
85	3.27	+20	62	0.033	

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)	21	0.025	PASS
100		-30	-49	-0.059	
100		-20	-13	-0.016	
100		-10	-69	-0.082	
100		0	-35	-0.042	
100		+10	38	0.045	
100		+20	42	0.050	
100		+30	37	0.044	
100		+40	26	0.031	
100		+50	35	0.042	
115	4.43	+20	-35	-0.042	
85	3.27	+20	-62	-0.074	

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)	24	0.013	PASS
100		-30	73	0.039	
100		-20	-12	-0.006	
100		-10	31	0.016	
100		0	-37	-0.020	
100		+10	-24	-0.013	
100		+20	44	0.023	
100		+30	76	0.040	
100		+40	42	0.022	
100		+50	31	0.016	
115	4.43	+20	-38	-0.020	
85	3.27	+20	58	0.031	

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		-30	-33	-0.040	
100		-20	-59	-0.071	
100		-10	-28	-0.034	
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		+50	62	0.074	
115	4.43	+20	-65	-0.078	
85	3.27	+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)	31	0.016	PASS
100		-30	65	0.035	
100		-20	-63	-0.034	
100		-10	42	0.022	
100		0	-46	-0.024	
100		+10	-74	-0.039	
100		+20	15	0.008	
100		+30	18	0.010	
100		+40	24	0.013	
100		+50	53	0.028	
115	4.43	+20	-85	-0.045	
85	3.27	+20	74	0.039	

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)	75	0.043	PASS
100		-30	31	0.018	
100		-20	-65	-0.038	
100		-10	-35	-0.020	
100		0	-29	-0.017	
100		+10	-65	-0.038	
100		+20	69	0.040	
100		+30	35	0.020	
100		+40	22	0.013	
100		+50	35	0.020	
100		+60	35	0.020	
115	4.43	+20	-76	-0.044	
85	3.27	+20	75	0.043	

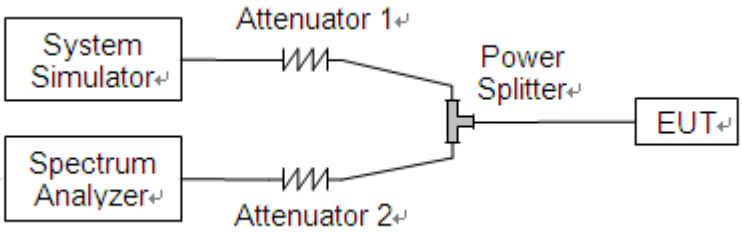
2.5. Conducted Out of Band Emissions

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:

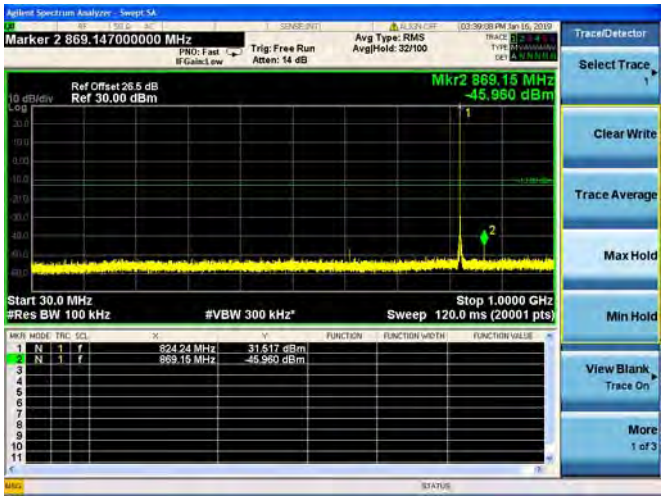


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

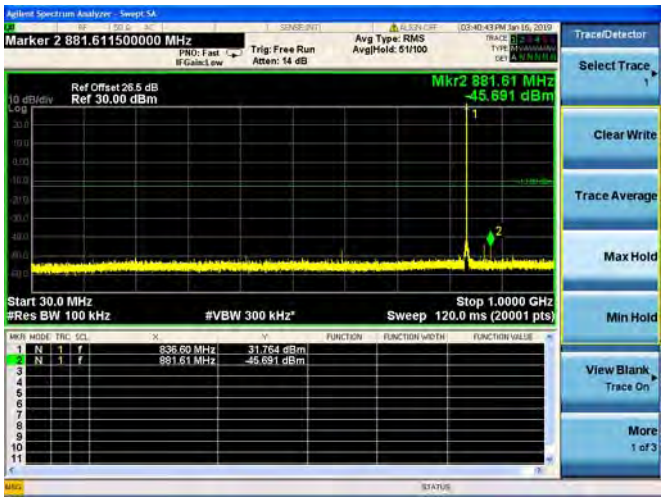
2.5.3. Test Result

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.

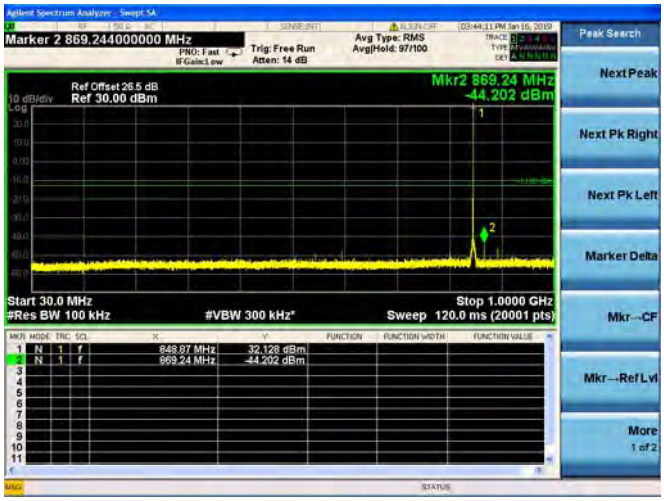
GSM 850MHz CH128 824.2MHz



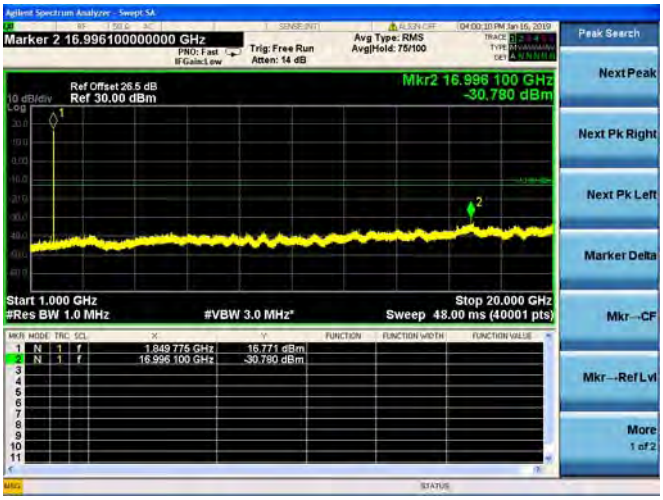
GSM 850MHz CH190 836.6MHz



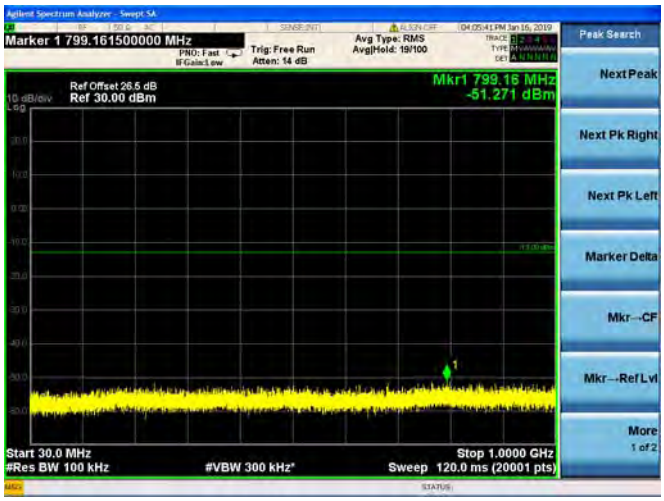
GSM 850MHz CH251 848.8MHz

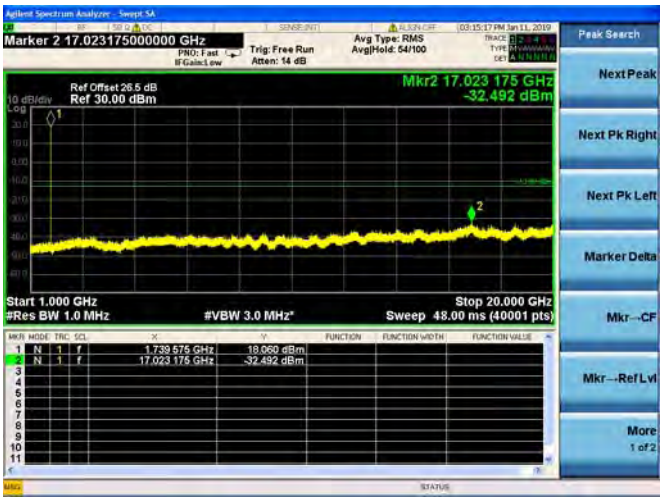


GSM 1900MHz CH521 1850.2MHz

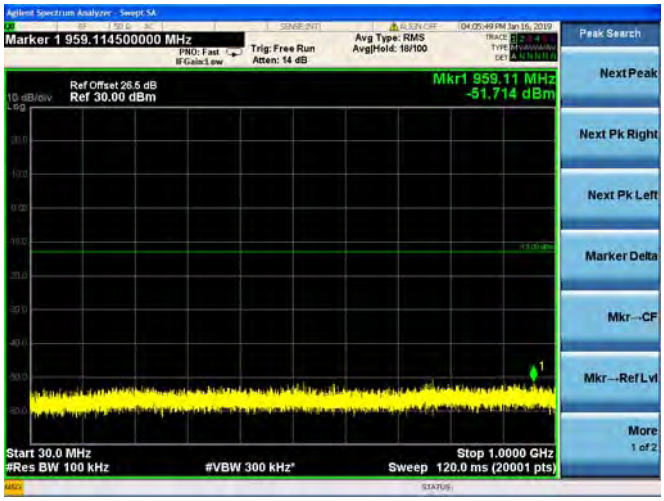


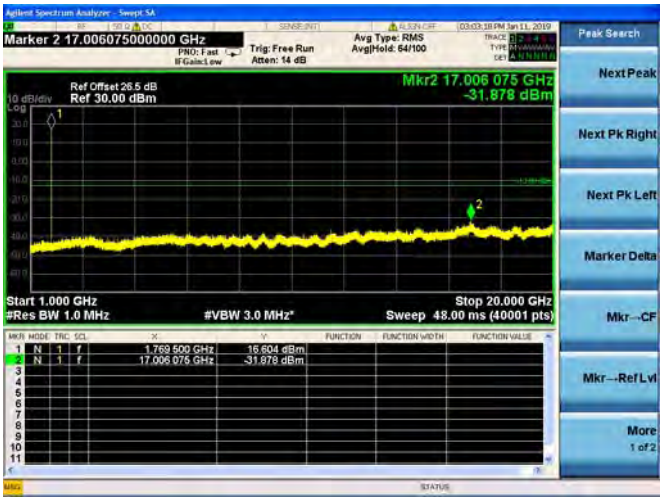
GSM 1900MHz CH661 1880.0MHz



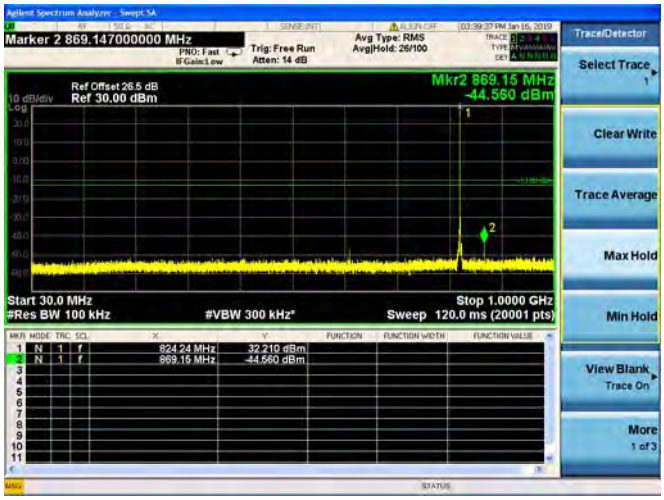


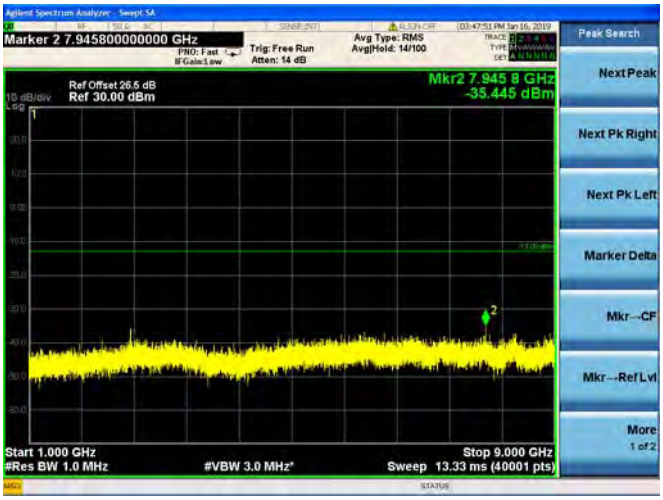
GSM 1900MHz CH810 1909.8MHz



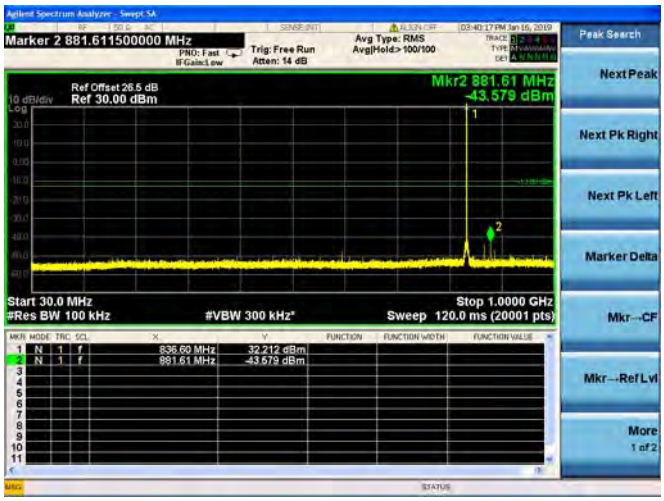


EDGE 850MHz CH128 824.2MHz

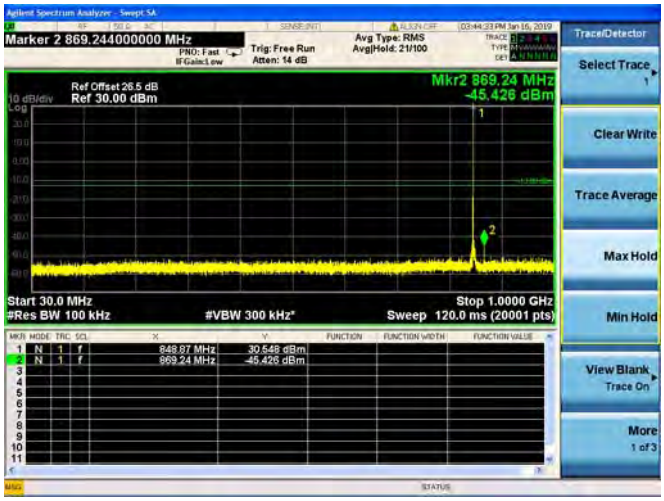


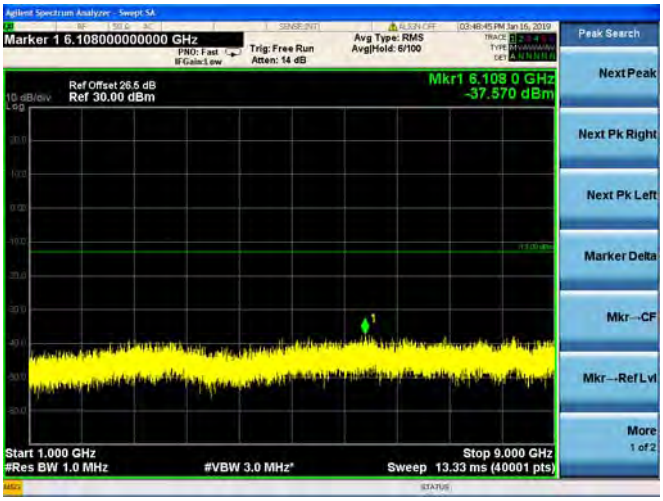


EDGE 850MHz CH190 836.6MHz

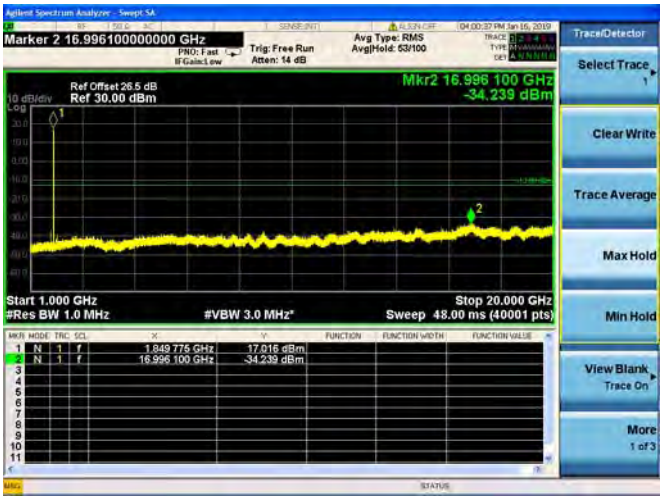


EDGE 850MHz CH251 848.8MHz

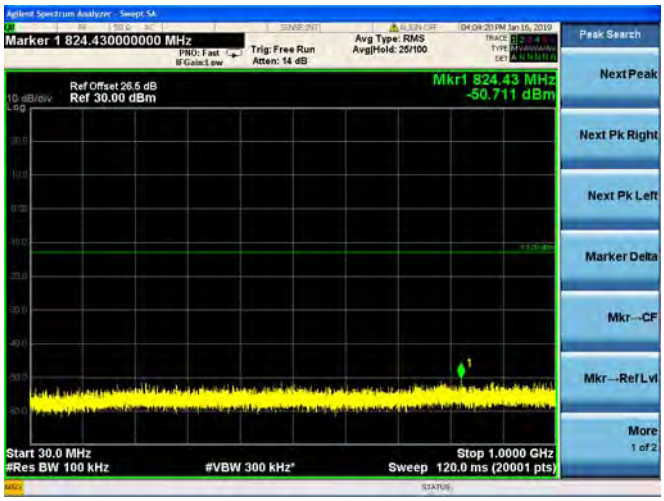


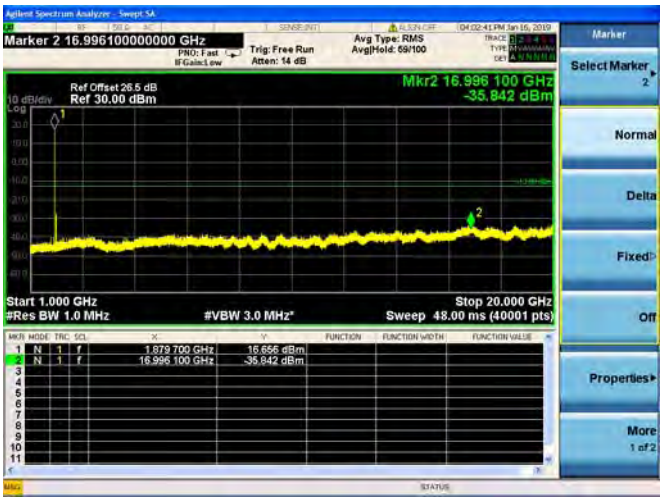


EDGE 1900MHz CH521 1850.2MHz

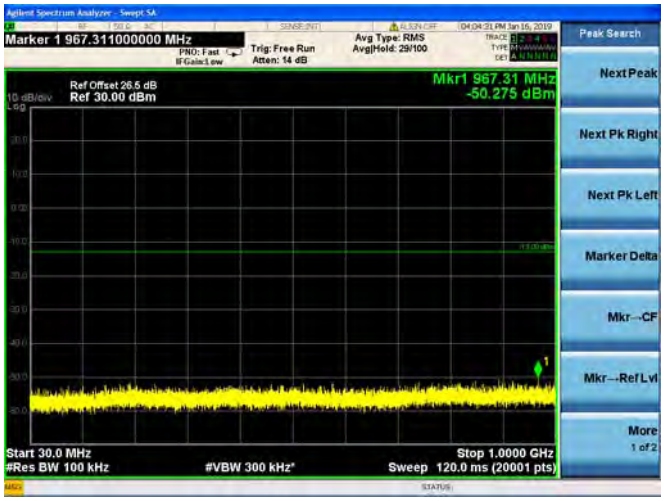


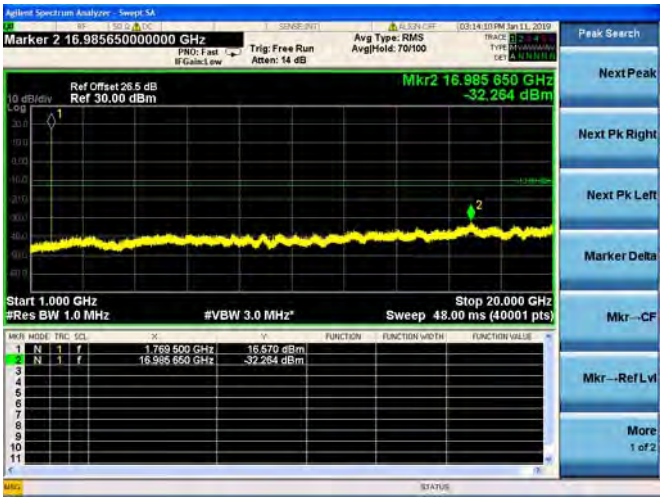
EDGE 1900MHz CH661 1880.0MHz



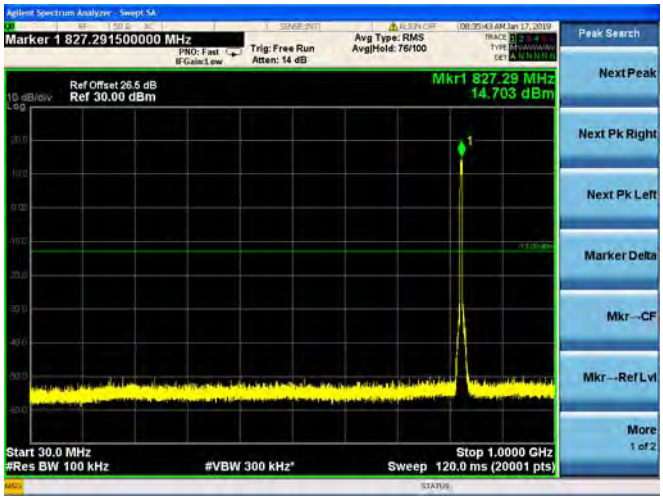


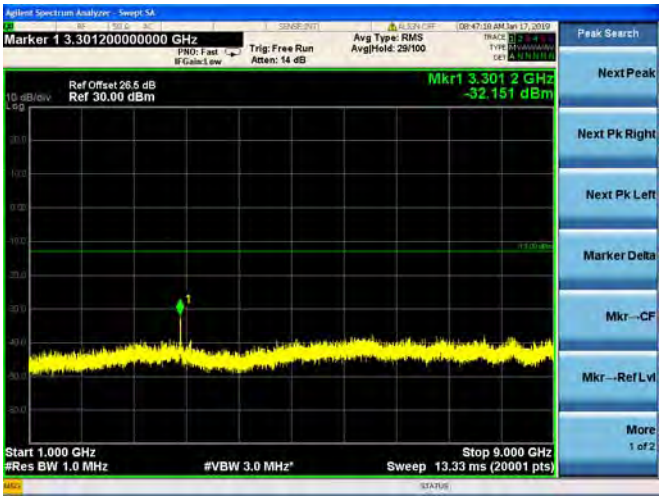
EDGE 1900MHz CH810 1909.8MHz



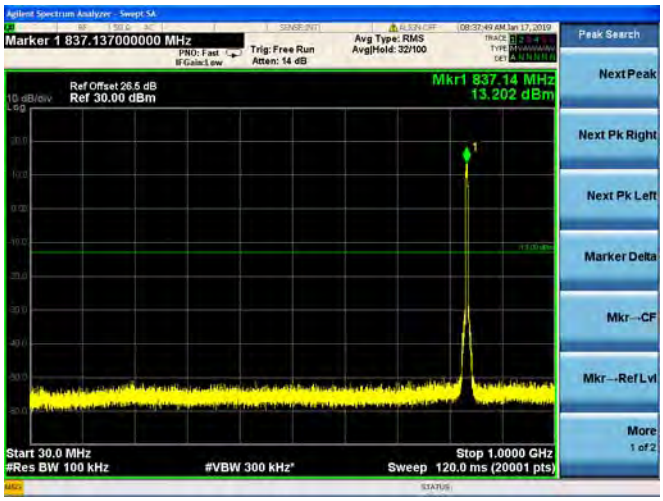


WCDMA Band V CH4132 826.4MHz

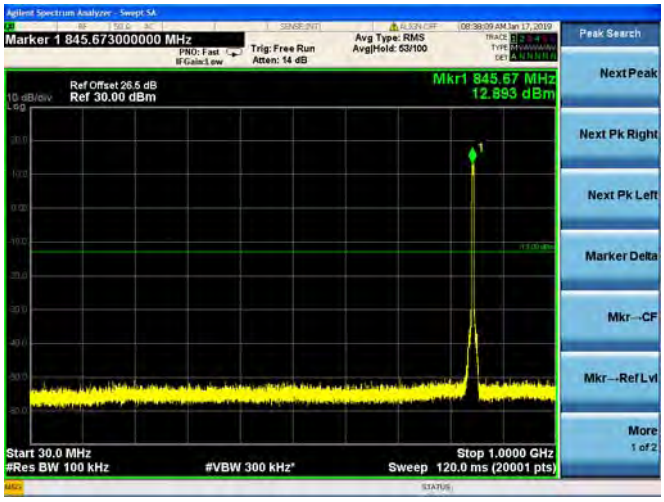




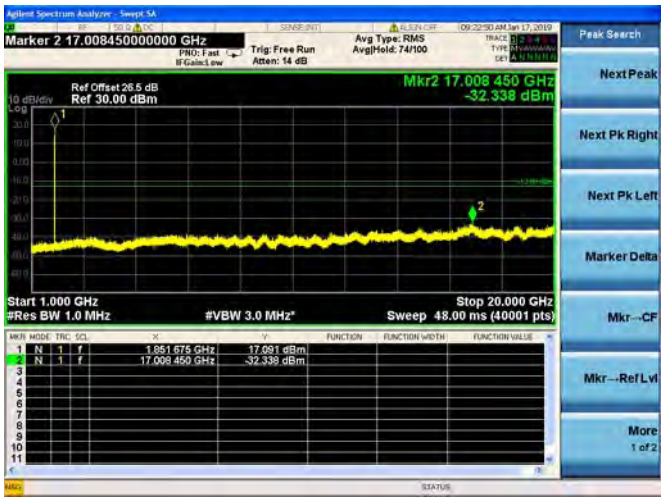
WCDMA Band V CH4182 836.4MHz



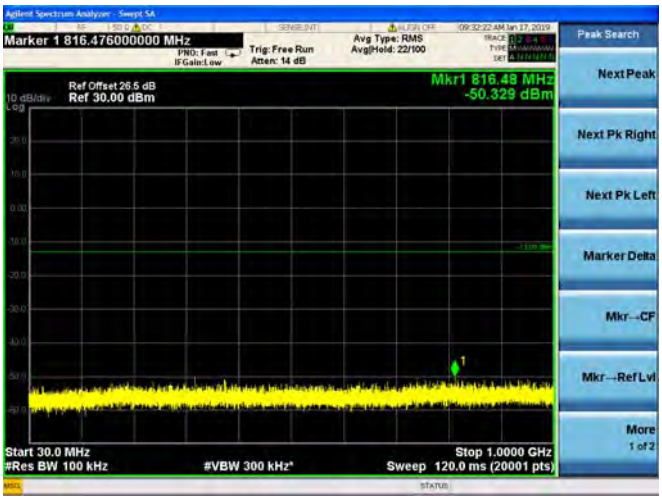
WCDMA Band V CH4233 846.6MHz

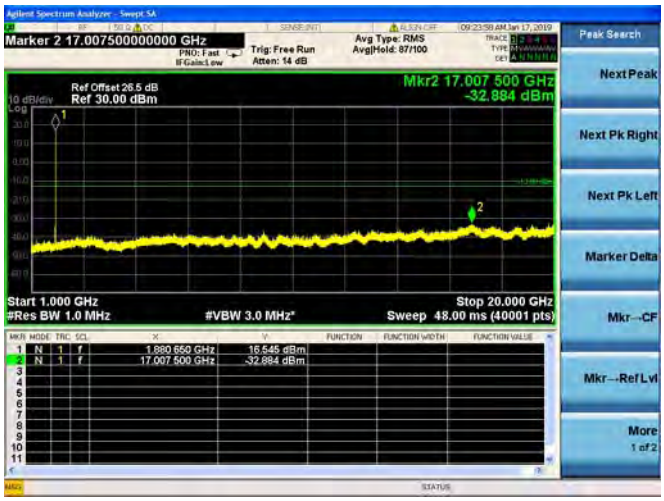


WCDMA Band II CH9262 1852.4MHz

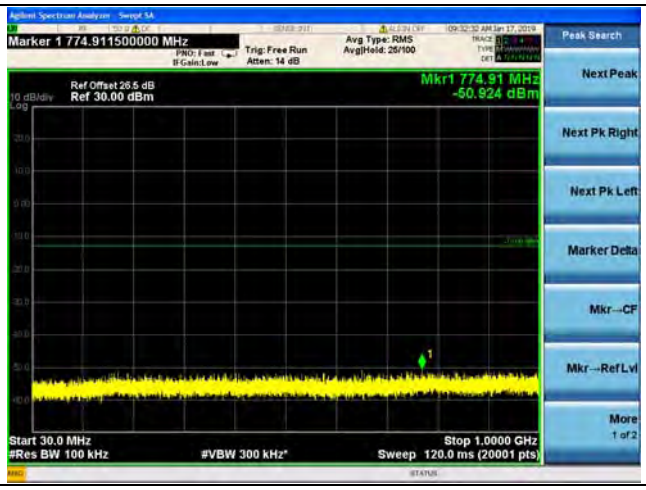


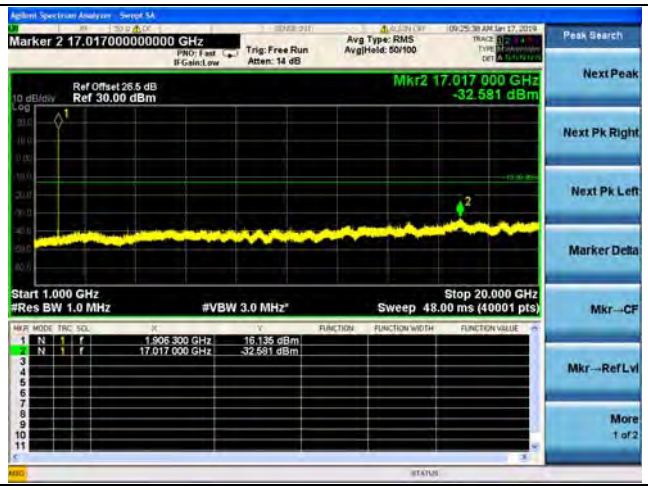
WCDMA Band II CH9400 1880.0MHz



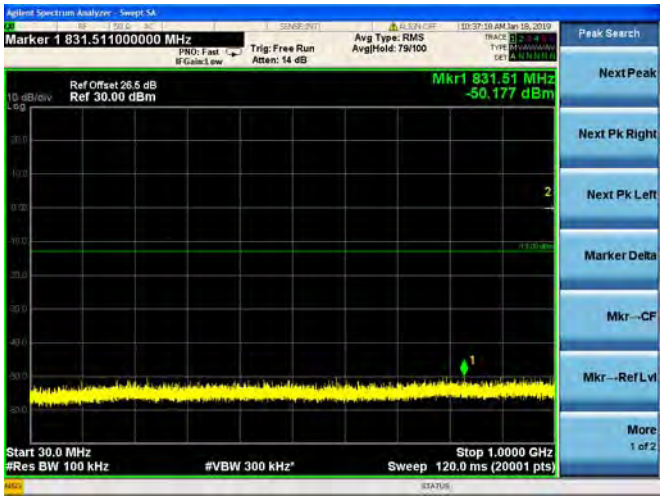


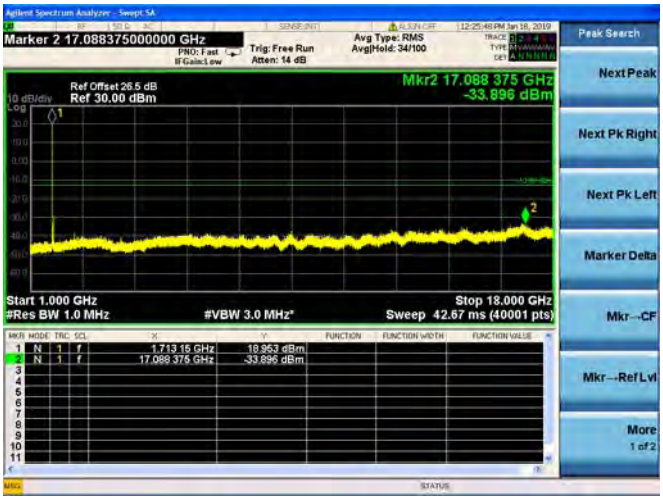
WCDMA Band II CH9538 1907.6MHz



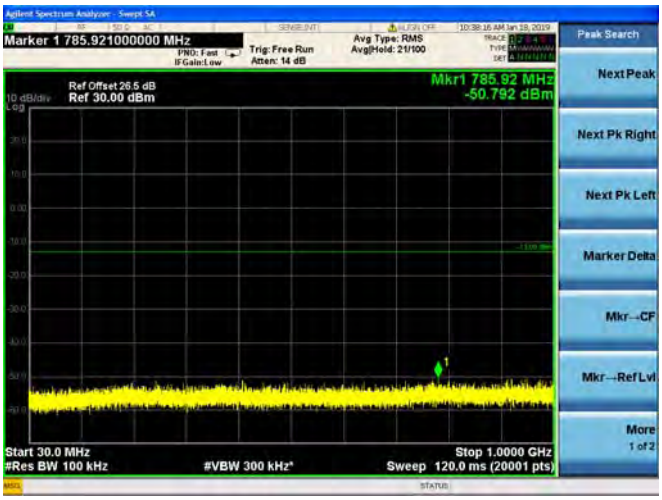


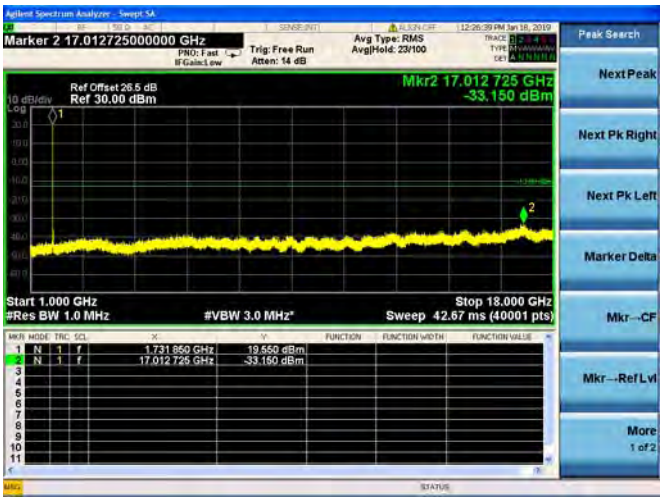
WCDMA Band IV CH1312 1712.4MHz



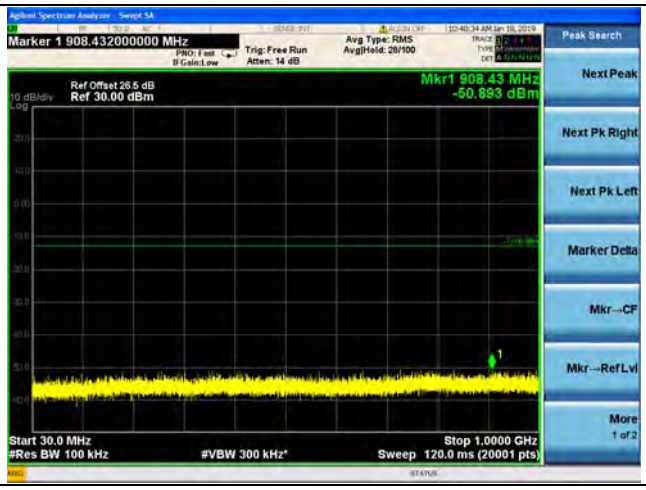


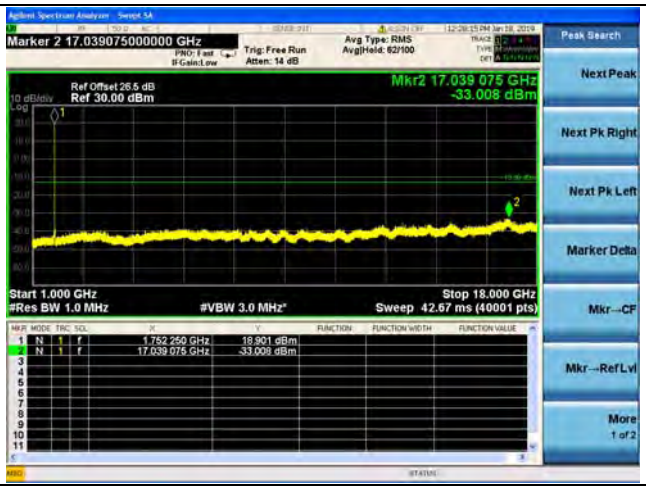
WCDMA Band IV CH1413 1732.6MHz





WCDMA Band IV CH1513 1752.6MHz





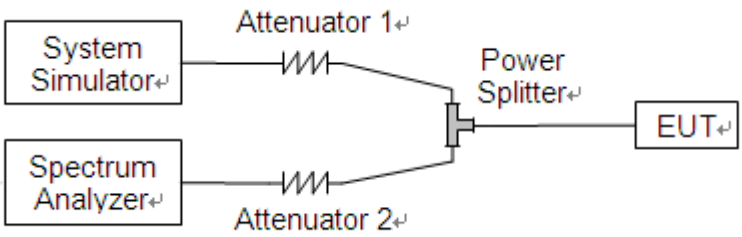
2.6. Band Edge

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

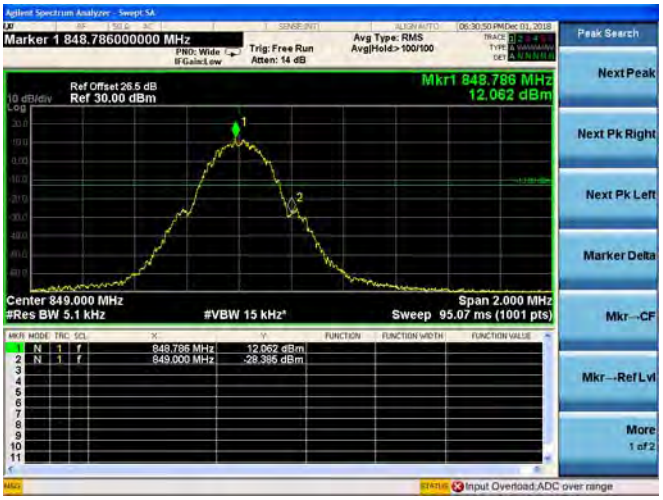
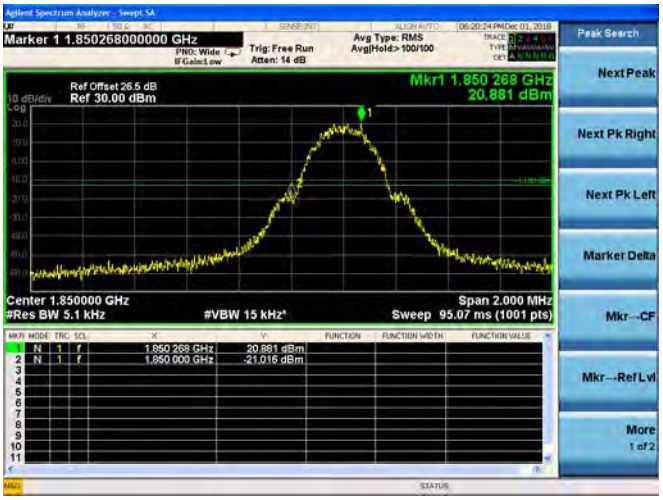
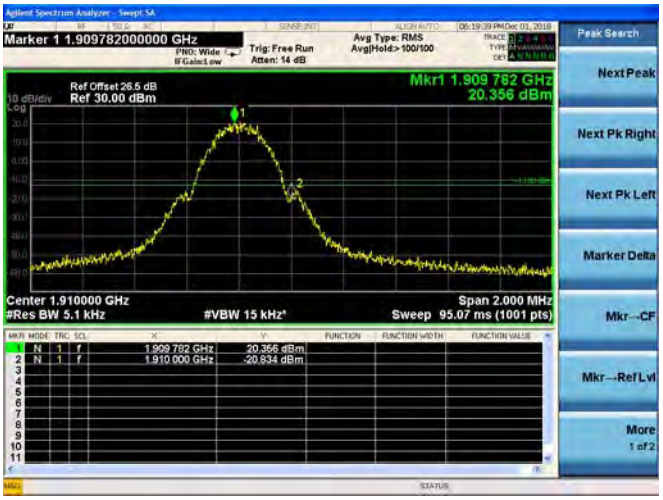
Test Setup:



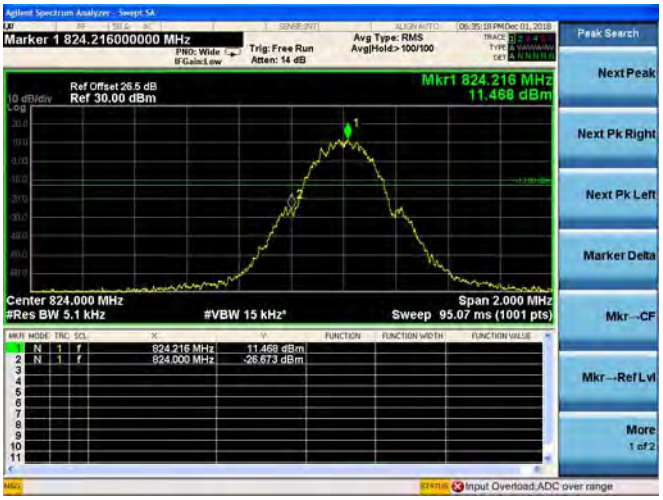
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum 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.

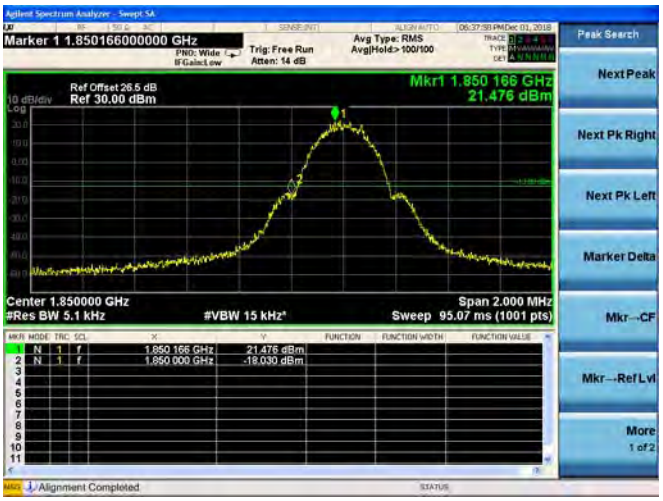
GSM 850MHz CH128 824.2MHz	GSM 850MHz CH251 848.8MHz
	
GSM 1900MHz CH521 1850.2MHz	**GSM 1900MHz CH810 1909.8MHz**
	

EDGE 850MHz CH128 824.2MHz



EDGE 850MHz CH251 848.8MHz

EDGE 1900MHz CH521 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)

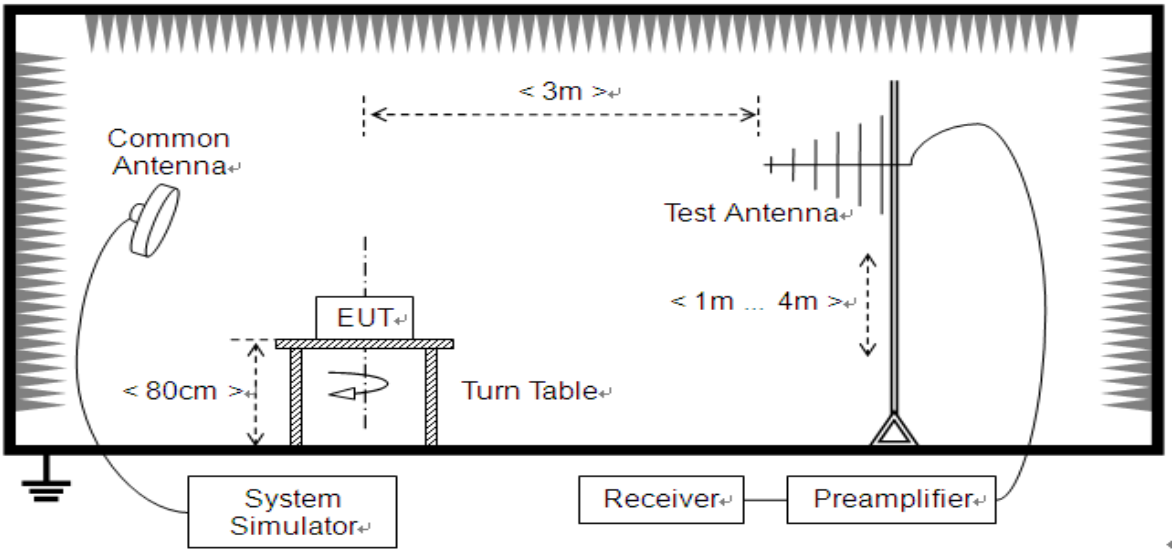
2.7.1. Requirement

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.

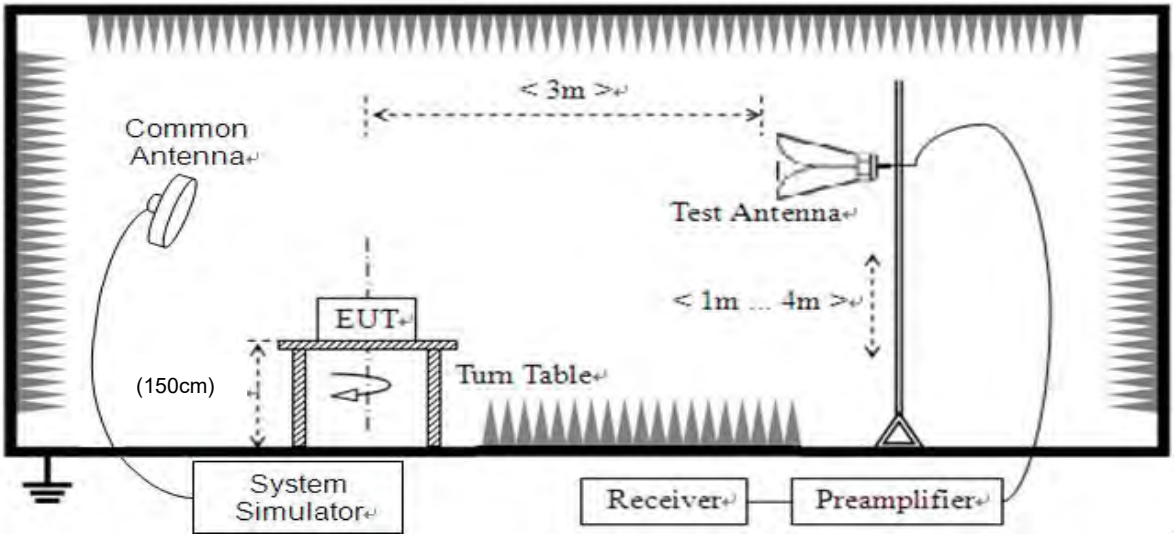
2.7.2. Test Description

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}.

Top Antenna

GSM Test verdict:

Band	Channel	Frequency (MHz)	PCL	Measured ERP		Limit		Verdict
				dBm	W	dBm	W	
GSM 850MHz	128	824.20	5	30.02	1.005	38.5	7	PASS
	190	836.60	5	29.50	0.891			PASS
	251	848.80	5	29.01	0.796			PASS
GPRS 850MHz	128	824.20	5	31.36	1.368	38.5	7	PASS
	190	836.60	5	30.75	1.189			PASS
	251	848.80	5	29.94	0.986			PASS
EDGE 850MHz	128	824.20	5	31.12	1.294	38.5	7	PASS
	190	836.60	5	30.10	1.023			PASS
	251	848.80	5	28.87	0.771			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	27.65	0.582	33	2	PASS
	661	1880.0	0	28.49	0.706			PASS
	810	1909.8	0	29.25	0.841			PASS
GPRS 1900MHz	512	1850.2	0	28.86	0.769	33	2	PASS
	661	1880.0	0	30.82	1.208			PASS
	810	1909.8	0	28.20	0.661			PASS
EDGE 1900MHz	512	1850.2	0	30.86	1.219	33	2	PASS
	661	1880.0	0	30.51	1.125			PASS
	810	1909.8	0	29.69	0.931			PASS

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

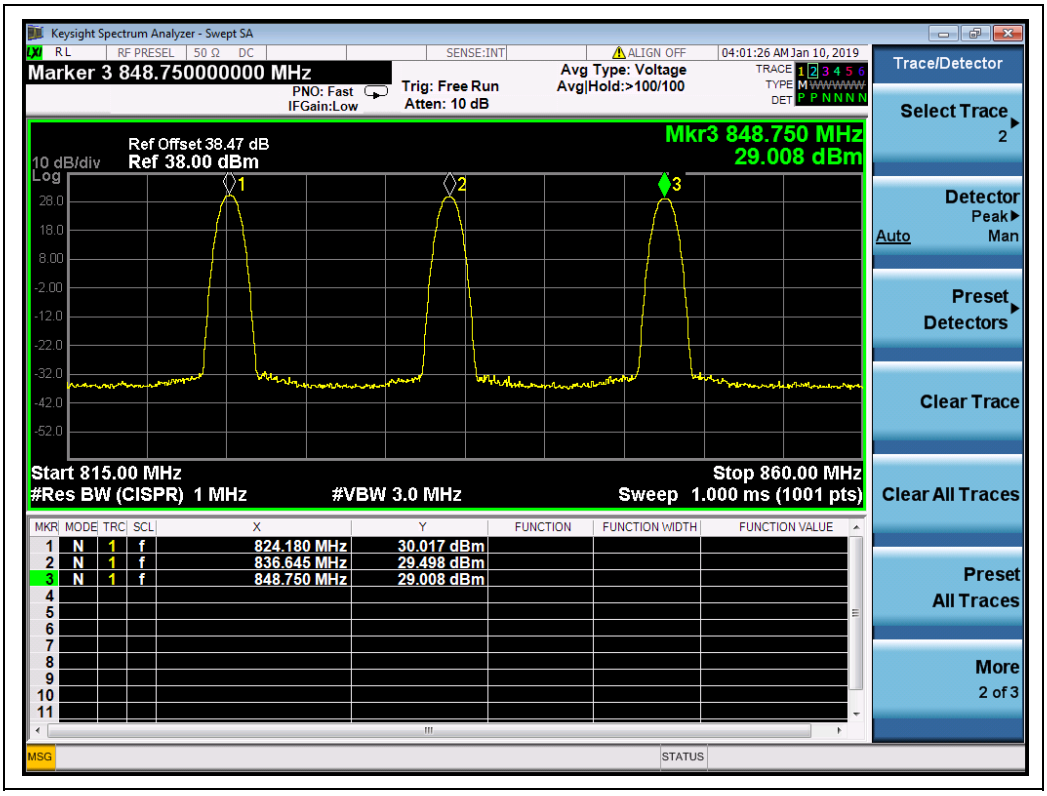
Note 2: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.

WCDMA Test verdict:

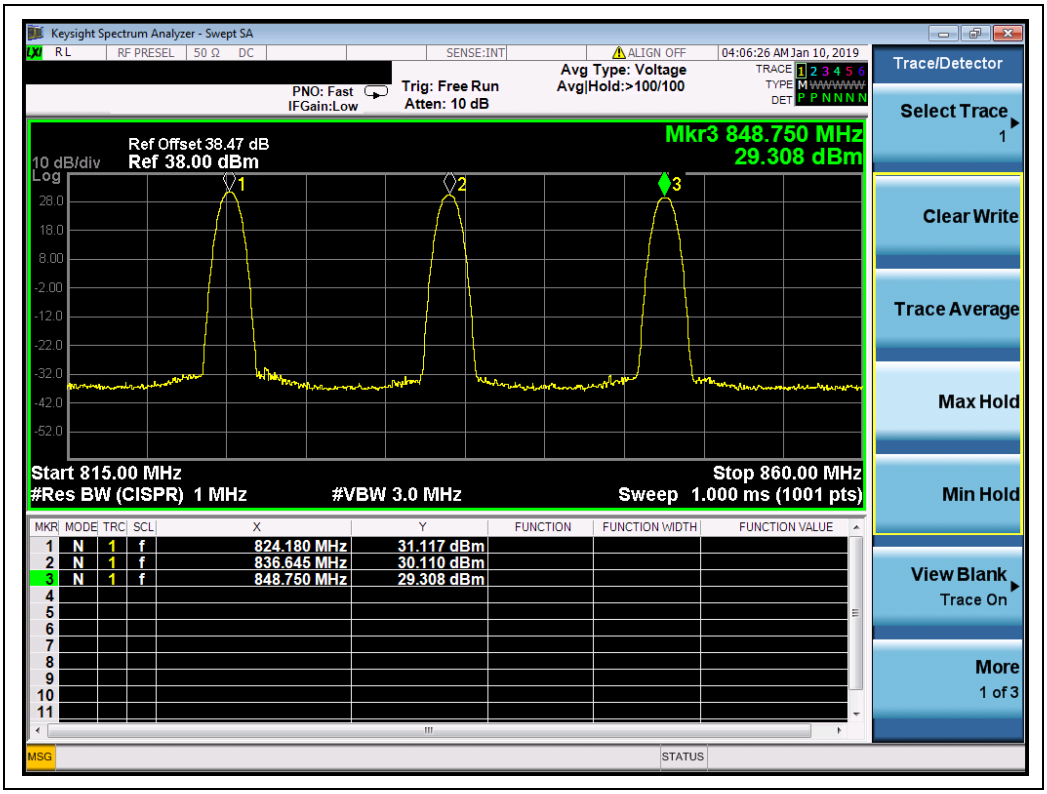
Band	Channel	Frequency (MHz)	Measured ERP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band V	4132	826.4	20.16	0.104	38.5	7	PASS
	4182	836.4	21.53	0.142			PASS
	4233	846.6	21.52	0.142			PASS
HSDPA Band V	4132	826.4	18.86	0.077	38.5	7	PASS
	4182	836.4	20.35	0.108			PASS
	4233	846.6	20.35	0.108			PASS
HSUPA Band V	4132	826.4	19.41	0.087	38.5	7	PASS
	4182	836.4	20.76	0.119			PASS
	4233	846.6	21.18	0.131			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	22.25	0.168	33	2	PASS
	9400	1880.0	22.44	0.175			PASS
	9538	1907.6	23.60	0.229			PASS
HSDPA Band II	9262	1852.4	20.47	0.111	33	2	PASS
	9400	1880.0	20.78	0.120			PASS
	9538	1907.6	20.31	0.107			PASS
HSUPA Band II	9262	1852.4	22.33	0.171	33	2	PASS
	9400	1880.0	22.91	0.195			PASS
	9538	1907.6	21.86	0.153			PASS
Note: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.							

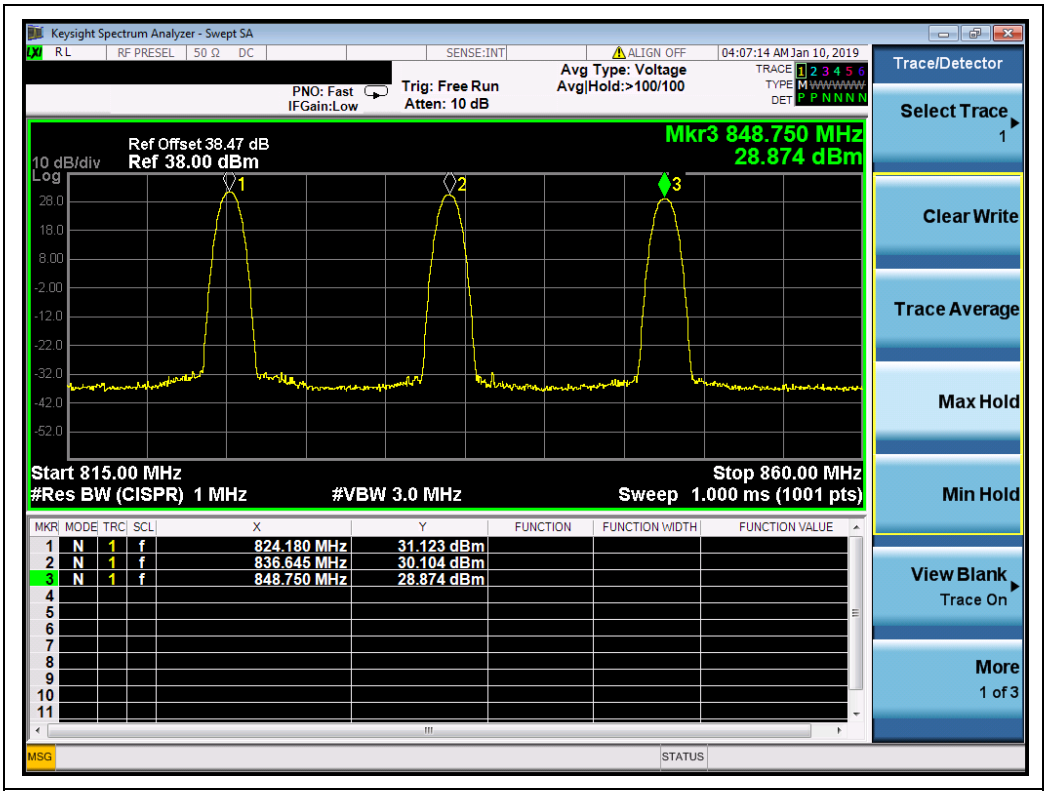
Band	Channel	Frequency (MHz)	Measured EIRP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band IV	1312	1712.4	21.15	0.130	30	1	PASS
	1413	1732.6	21.30	0.135			PASS
	1513	1752.6	19.53	0.090			PASS
HSDPA Band IV	1312	1712.4	19.14	0.082	30	1	PASS
	1413	1732.6	19.87	0.097			PASS
	1513	1752.6	19.61	0.091			PASS
HSUPA Band IV	1312	1712.4	18.85	0.077	30	1	PASS
	1413	1732.6	20.49	0.112			PASS
	1513	1752.6	19.41	0.087			PASS
Note: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.							



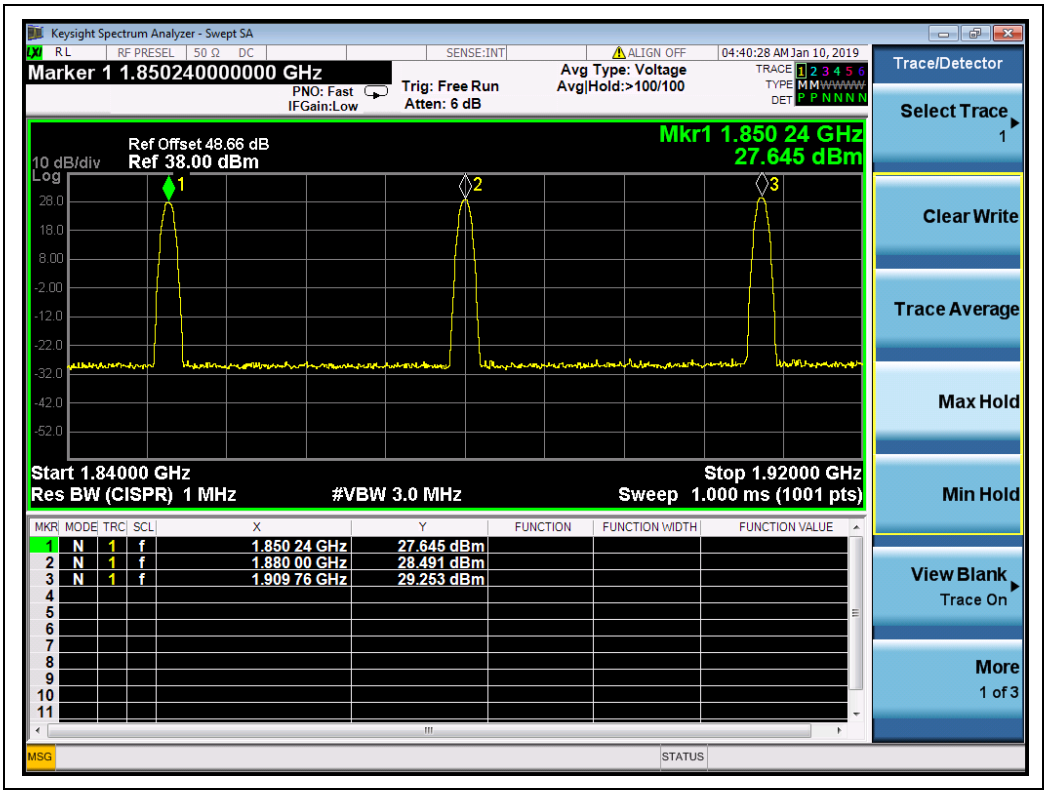
(GSM 850MHz, Channel = 128, 190, 251)



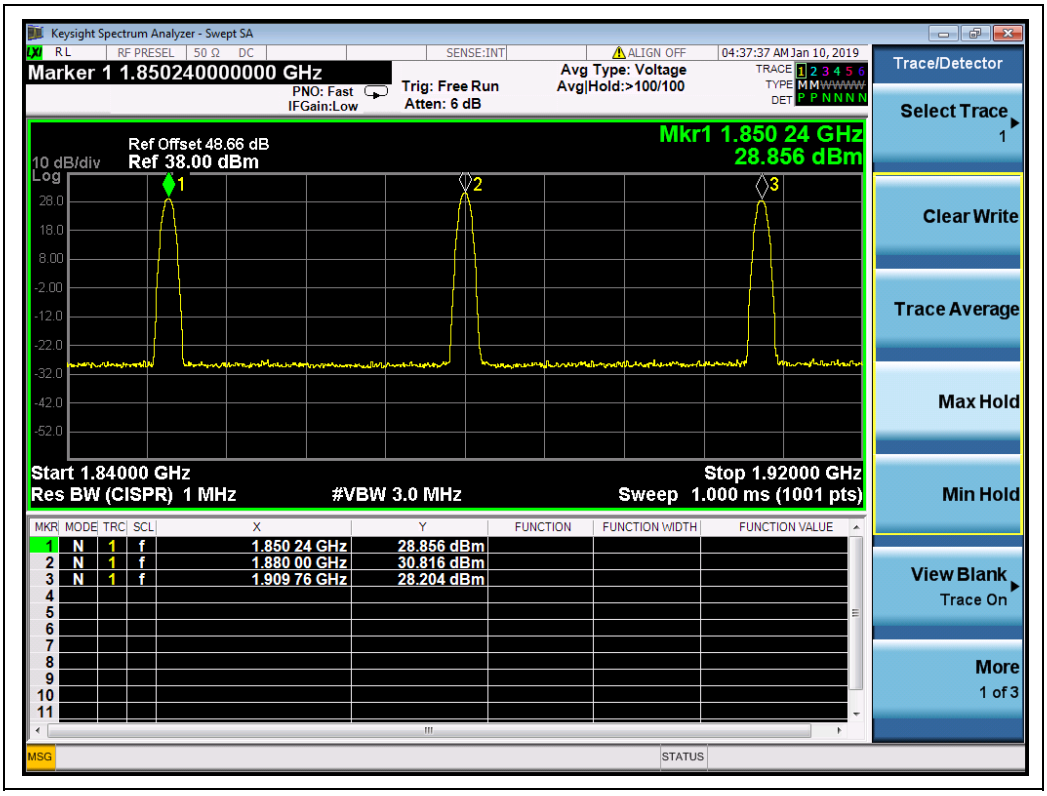
(GPRS 850MHz, Channel = 128, 190, 251)



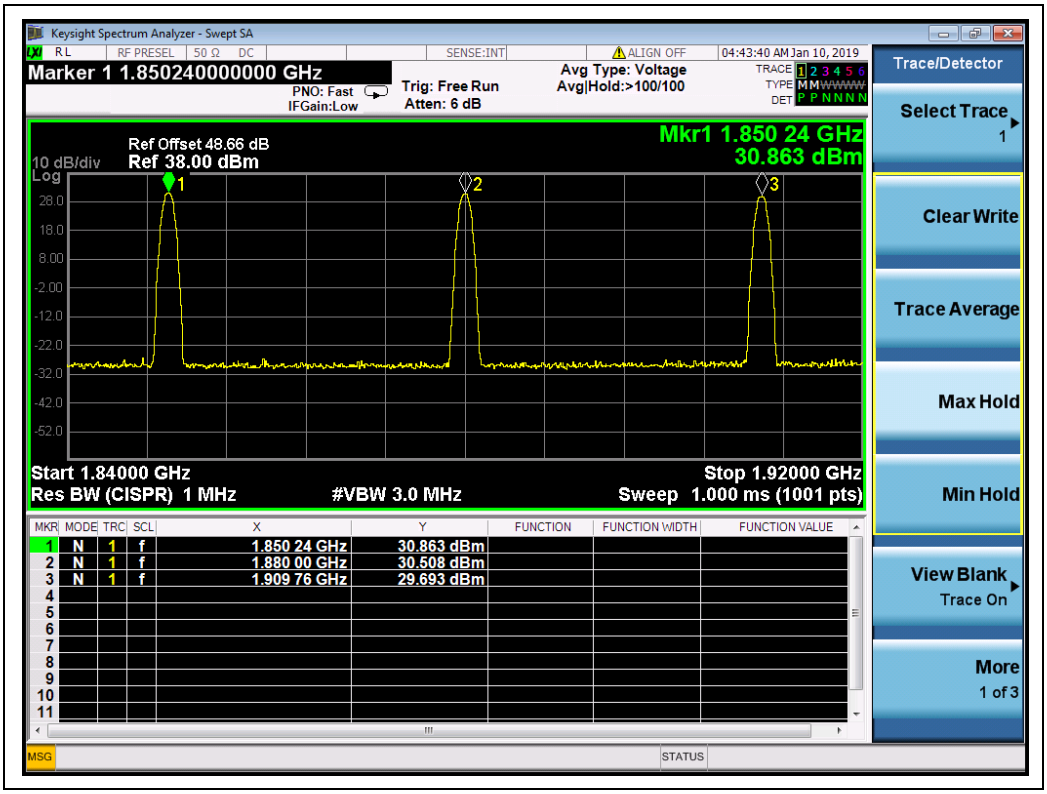
(EDGE 850MHz, Channel = 128, 190, 251)



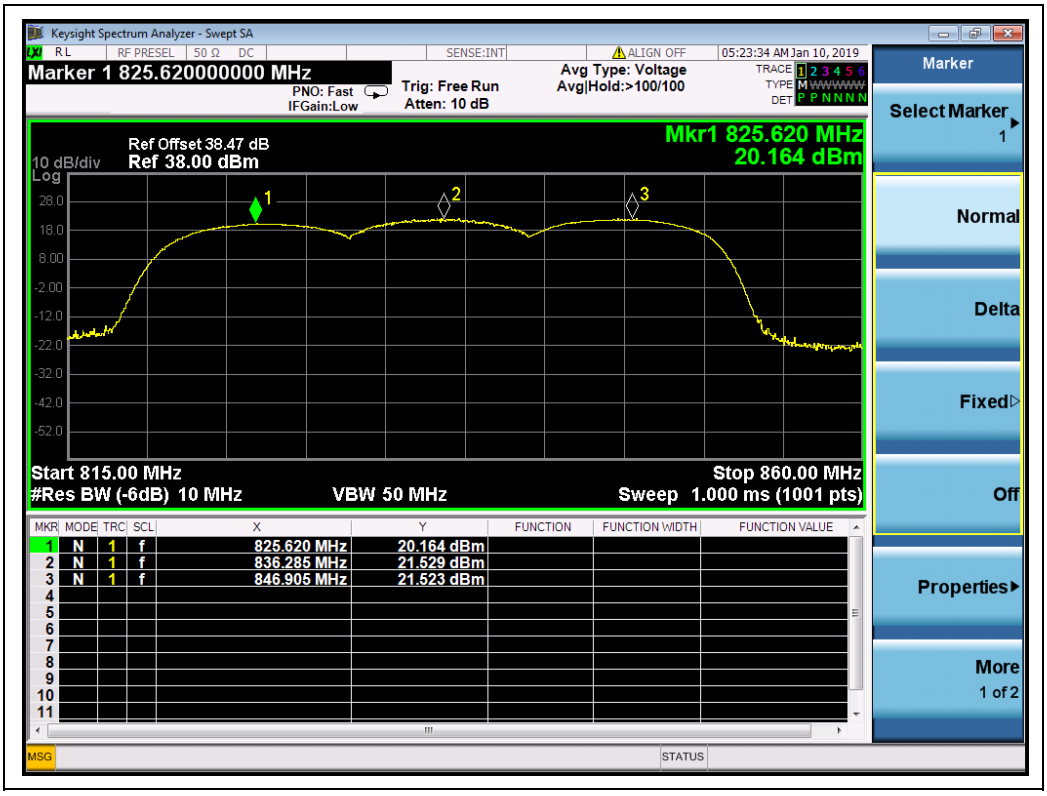
(GSM 1900MHz, Channel = 512, 661, 810)



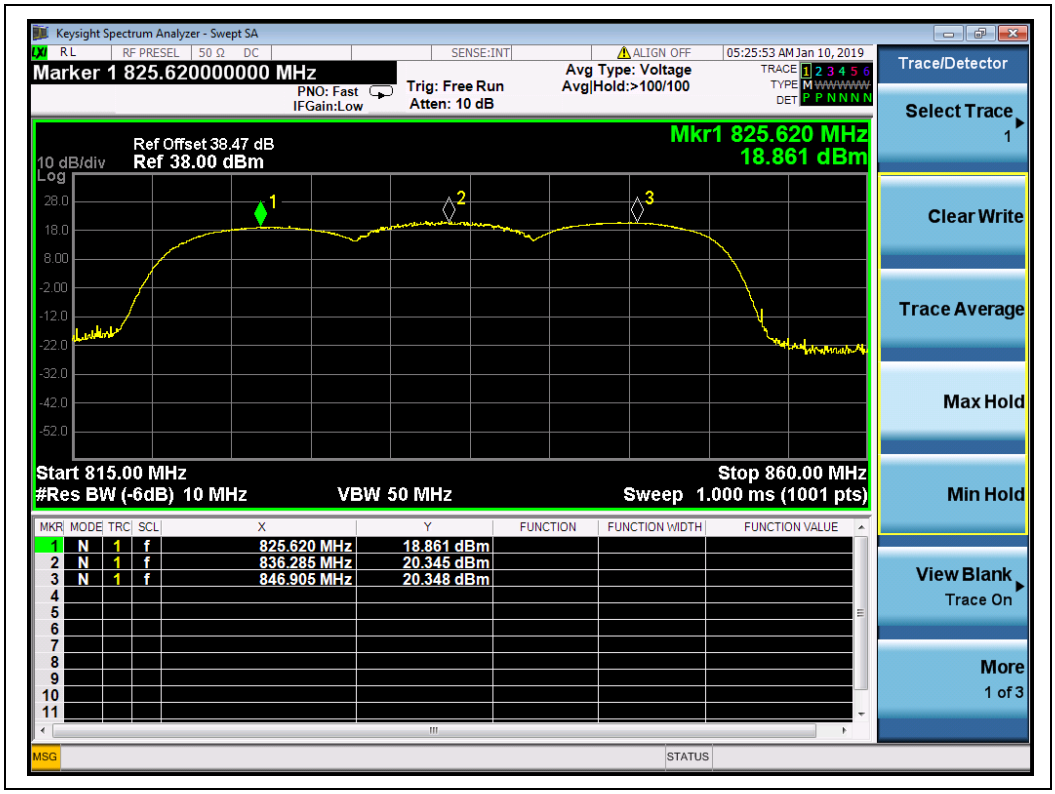
(GPRS 1900MHz, Channel = 512, 661, 810)



(EDGE 1900MHz, Channel = 512, 661, 810)



(WCDMA Band V, Channel = 4132, 4182, 4233)



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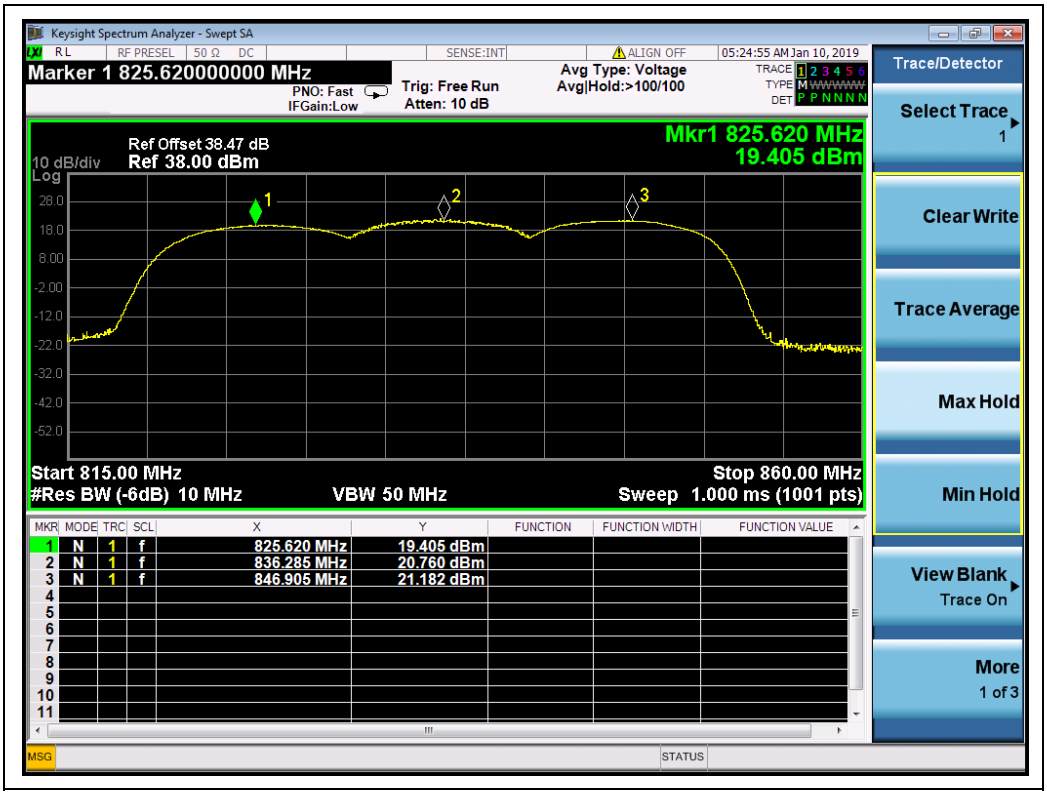

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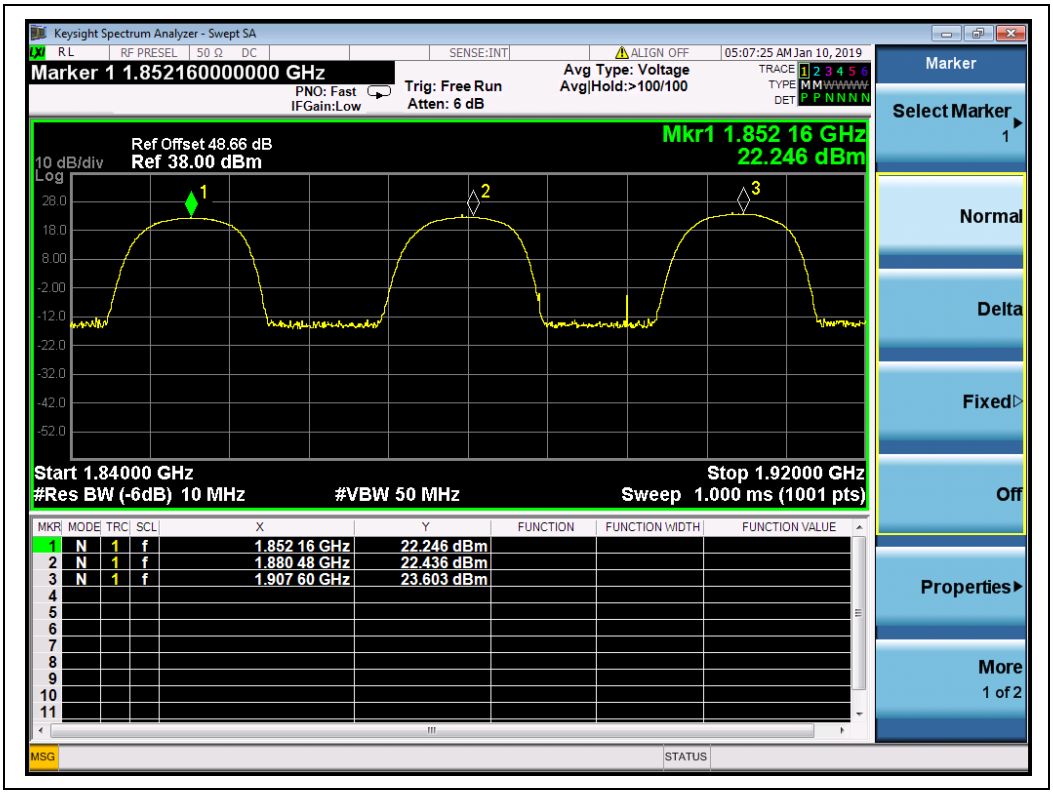
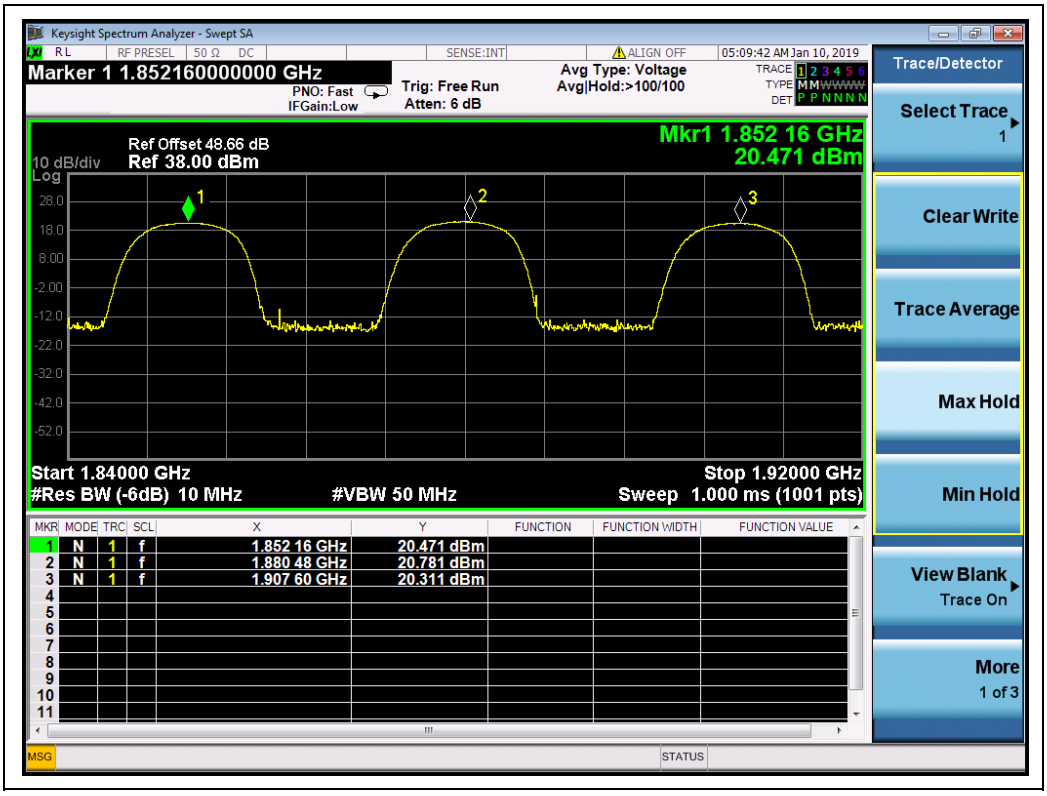
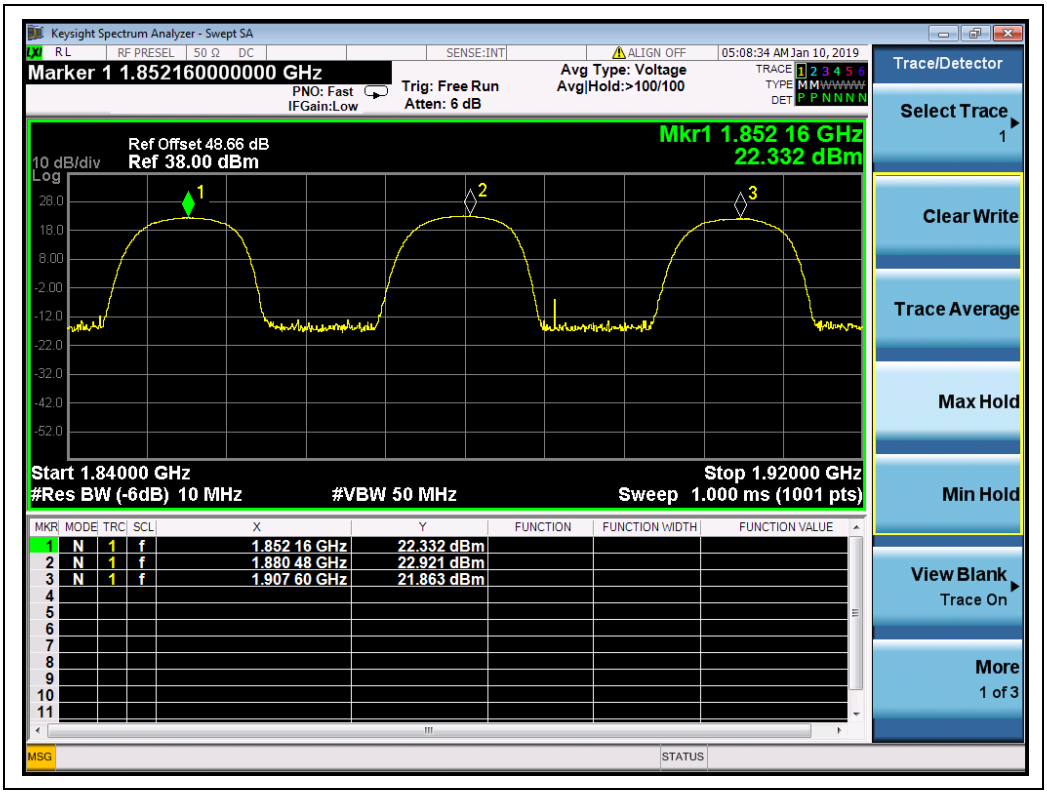


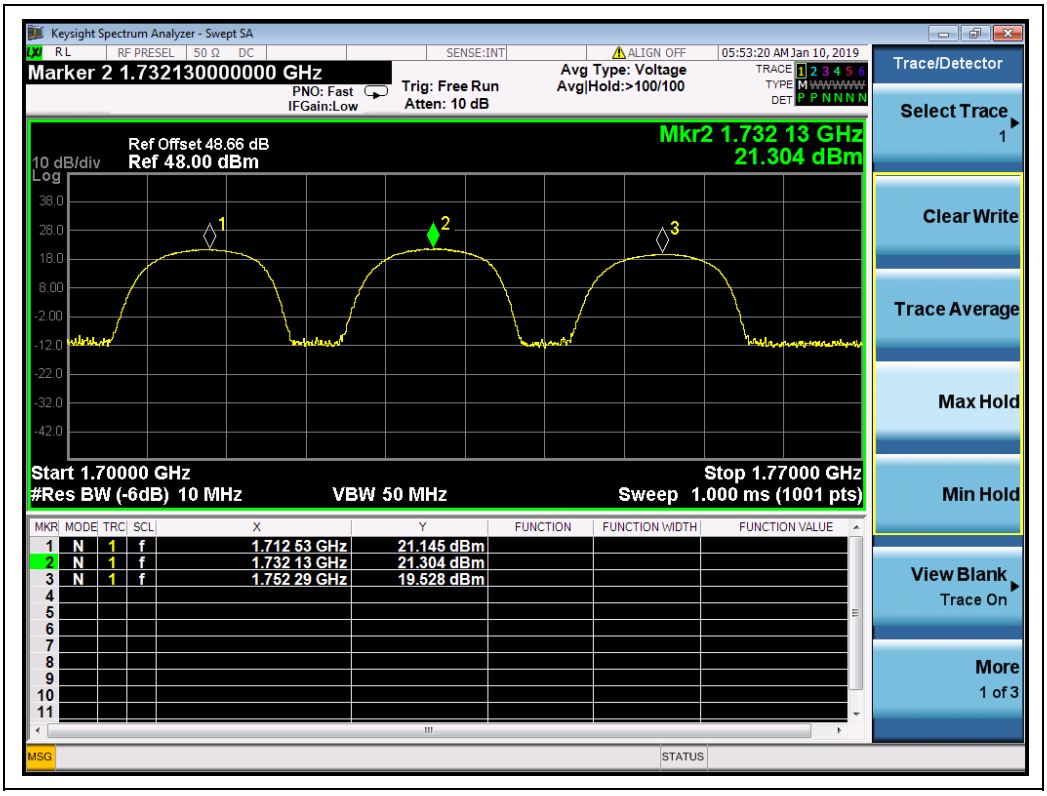
(WCDMA Band II, Channel = 9262, 9400, 9538)



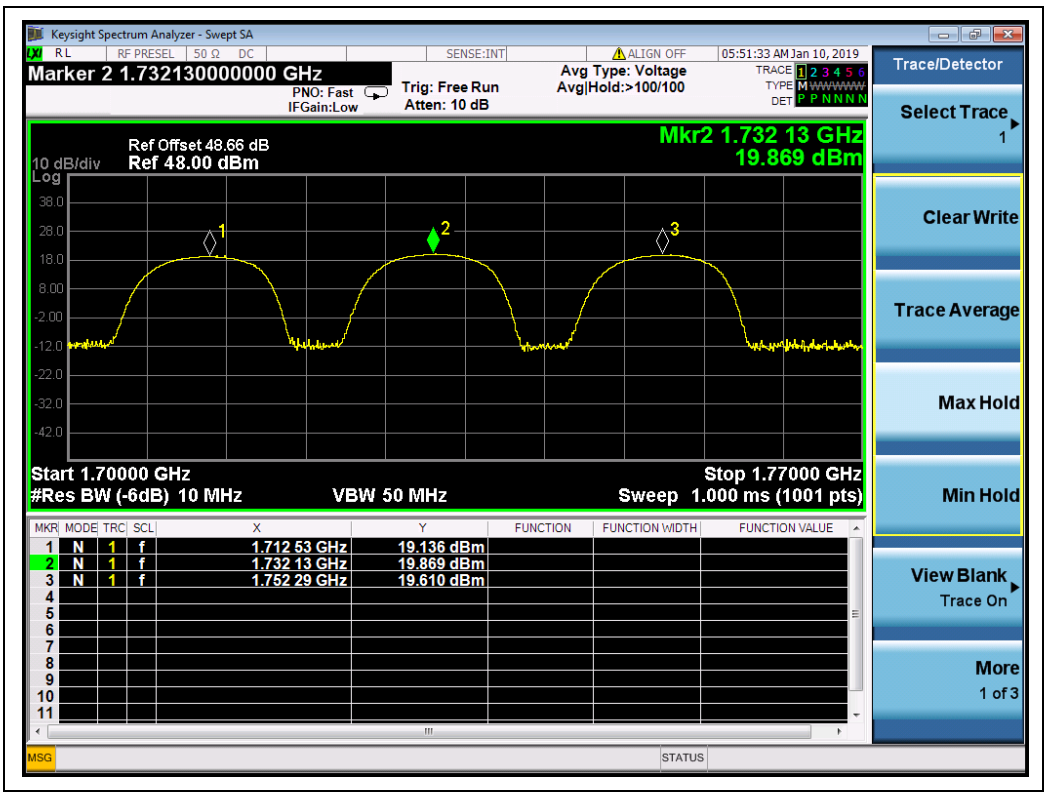
(HSDPA Band II, Channel = 9262, 9400, 9538)



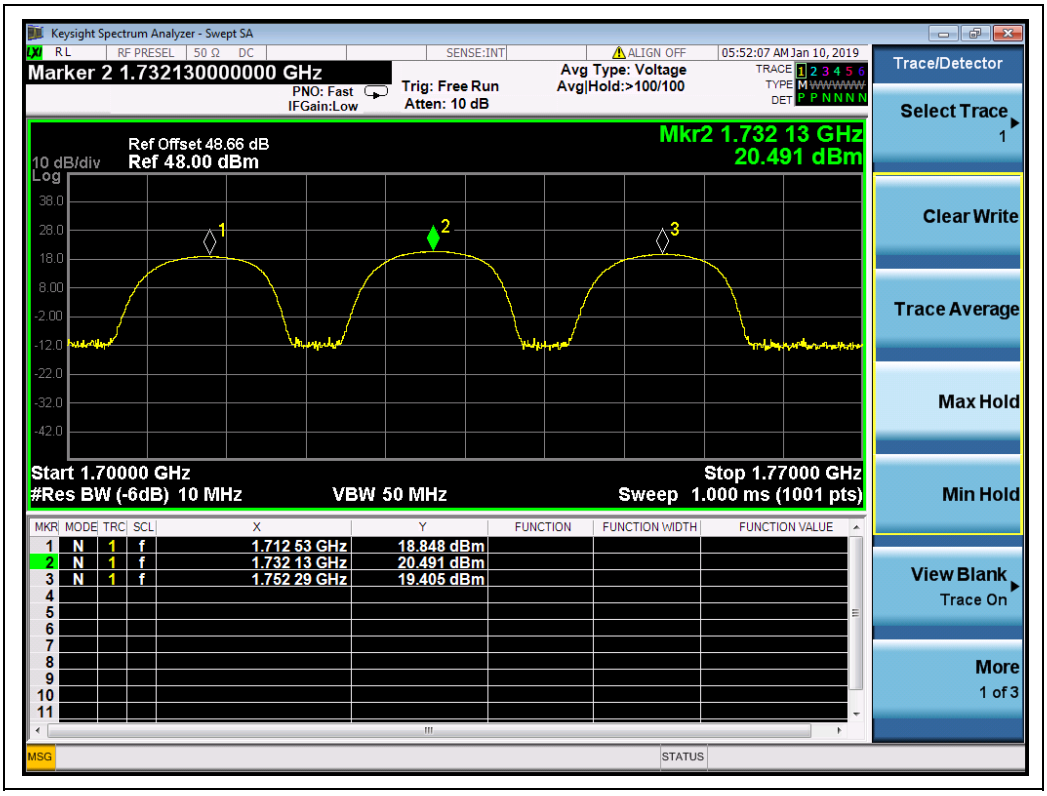
(HSUPA Band II, Channel = 9262, 9400, 9538)



(WCDMA Band IV, Channel = 1312, 1413, 1513)



(HSDPA Band IV, Channel = 1312, 1413, 1513)



(HSUPA Band IV, Channel = 1312, 1413, 1513)

Bottom Antenna

GSM Test verdict:

Band	Channel	Frequency (MHz)	PCL	Measured ERP		Limit		Verdict
				dBm	W	dBm	W	
GSM 850MHz	128	824.20	5	31.58	1.439	38.5	7	PASS
	190	836.60	5	30.95	1.245			PASS
	251	848.80	5	30.02	1.005			PASS
GPRS 850MHz	128	824.20	5	31.04	1.271	38.5	7	PASS
	190	836.60	5	30.91	1.233			PASS
	251	848.80	5	30.37	1.089			PASS
EDGE 850MHz	128	824.20	5	31.38	1.374	38.5	7	PASS
	190	836.60	5	30.80	1.202			PASS
	251	848.80	5	29.87	0.971			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	31.14	1.300	33	2	PASS
	661	1880.0	0	30.08	1.019			PASS
	810	1909.8	0	28.12	0.649			PASS
GPRS 1900MHz	512	1850.2	0	27.89	0.615	33	2	PASS
	661	1880.0	0	29.09	0.811			PASS
	810	1909.8	0	29.76	0.946			PASS
EDGE 1900MHz	512	1850.2	0	29.68	0.929	33	2	PASS
	661	1880.0	0	30.62	1.153			PASS
	810	1909.8	0	30.17	1.040			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.

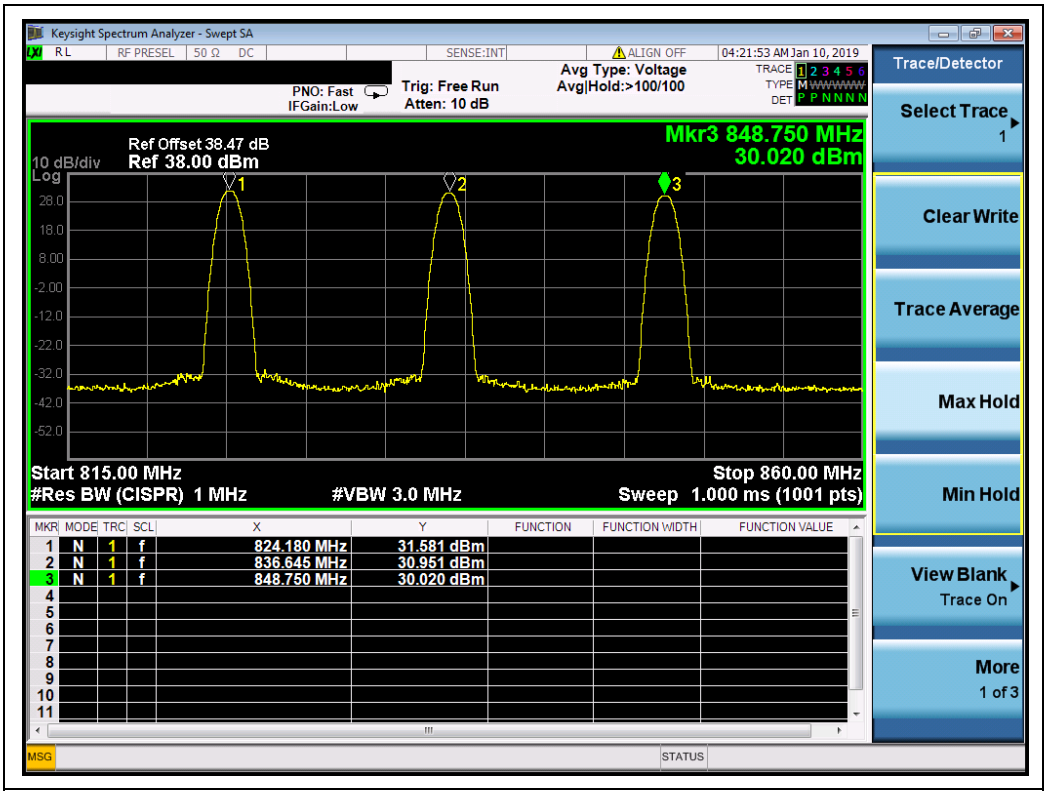
WCDMA Test verdict:

Band	Channel	Frequency (MHz)	Measured ERP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band V	4132	826.4	21.92	0.156	38.5	7	PASS
	4182	836.4	22.92	0.196			PASS
	4233	846.6	22.18	0.165			PASS
HSDPA Band V	4132	826.4	20.84	0.121	38.5	7	PASS
	4182	836.4	21.92	0.156			PASS
	4233	846.6	20.98	0.125			PASS
HSUPA Band V	4132	826.4	18.84	0.077	38.5	7	PASS
	4182	836.4	19.47	0.089			PASS
	4233	846.6	20.74	0.119			PASS
Note: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.							

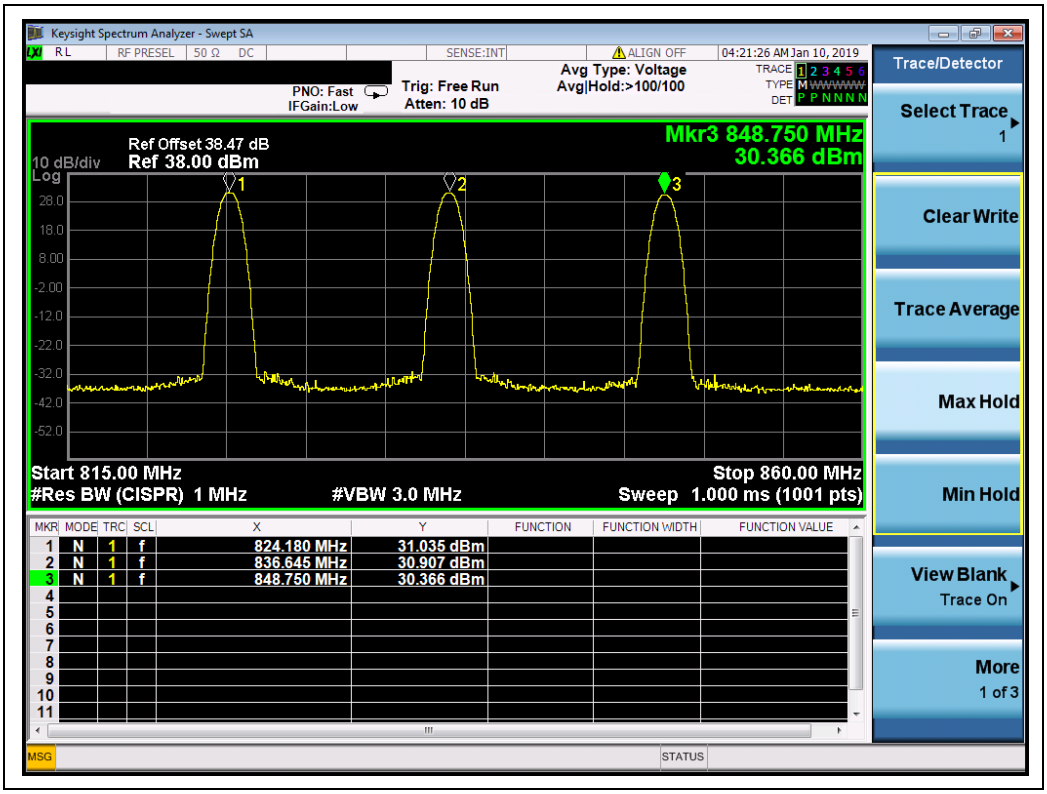
Band	Channel	Frequency (MHz)	Measured EIRP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band II	9262	1852.4	22.24	0.167	33	2	PASS
	9400	1880.0	21.77	0.150			PASS
	9538	1907.6	21.49	0.141			PASS
HSDPA Band II	9262	1852.4	20.34	0.108	33	2	PASS
	9400	1880.0	20.45	0.111			PASS
	9538	1907.6	20.69	0.117			PASS
HSUPA Band II	9262	1852.4	21.73	0.149	33	2	PASS
	9400	1880.0	21.88	0.154			PASS
	9538	1907.6	21.36	0.137			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	21.22	0.132	30	1	PASS
	1413	1732.6	22.89	0.195			PASS
	1513	1752.6	19.34	0.086			PASS
HSDPA Band IV	1312	1712.4	21.43	0.139	30	1	PASS
	1413	1732.6	20.01	0.100			PASS
	1513	1752.6	19.09	0.081			PASS
HSUPA Band IV	1312	1712.4	19.04	0.080	30	1	PASS
	1413	1732.6	20.98	0.125			PASS
	1513	1752.6	19.14	0.082			PASS

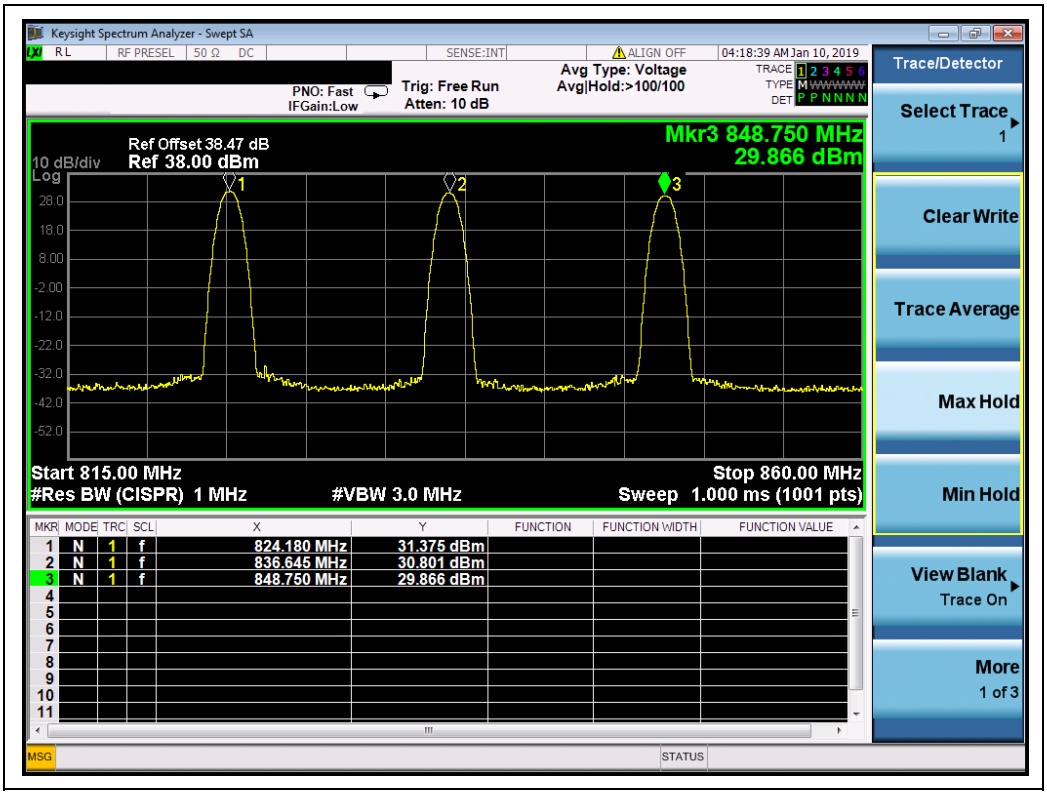
Note: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.



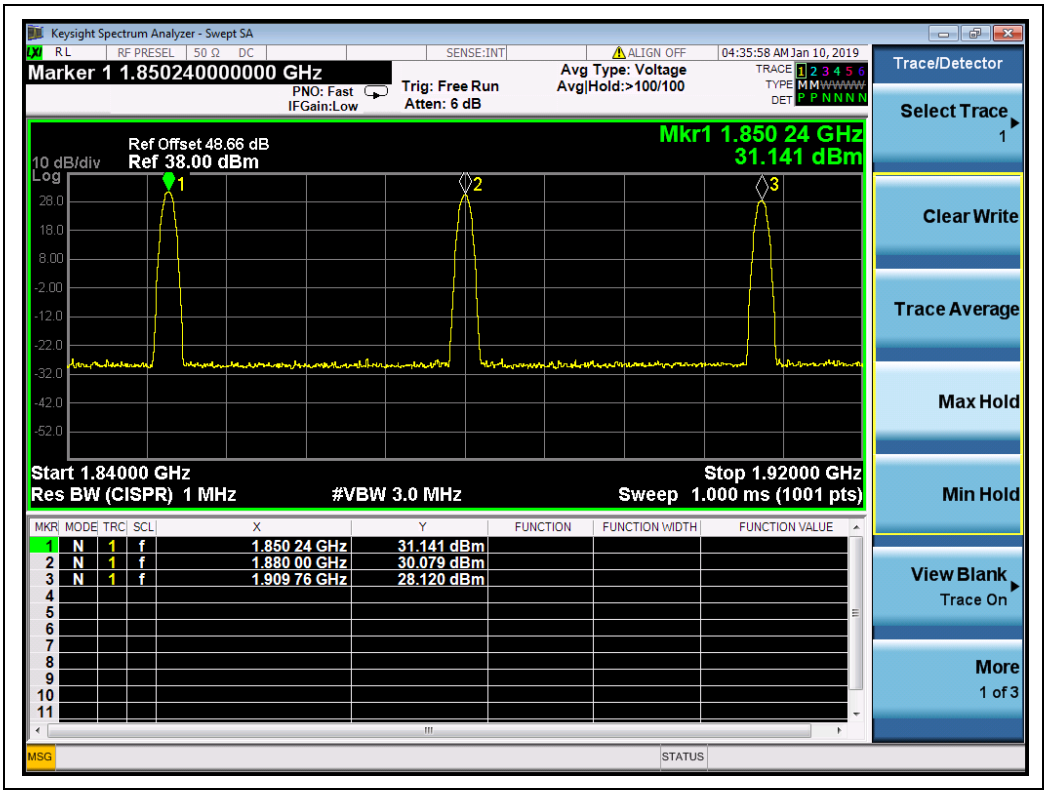
(GSM 850MHz, Channel = 128, 190, 251)



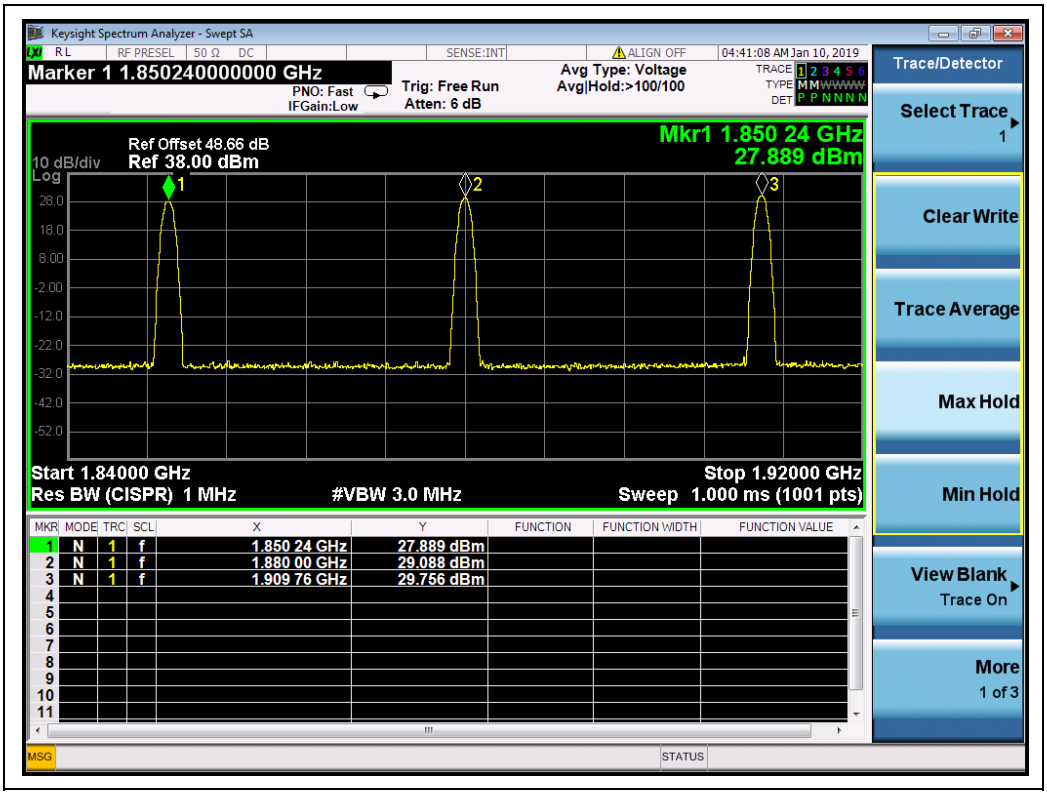
(GPRS 850MHz, Channel = 128, 190, 251)



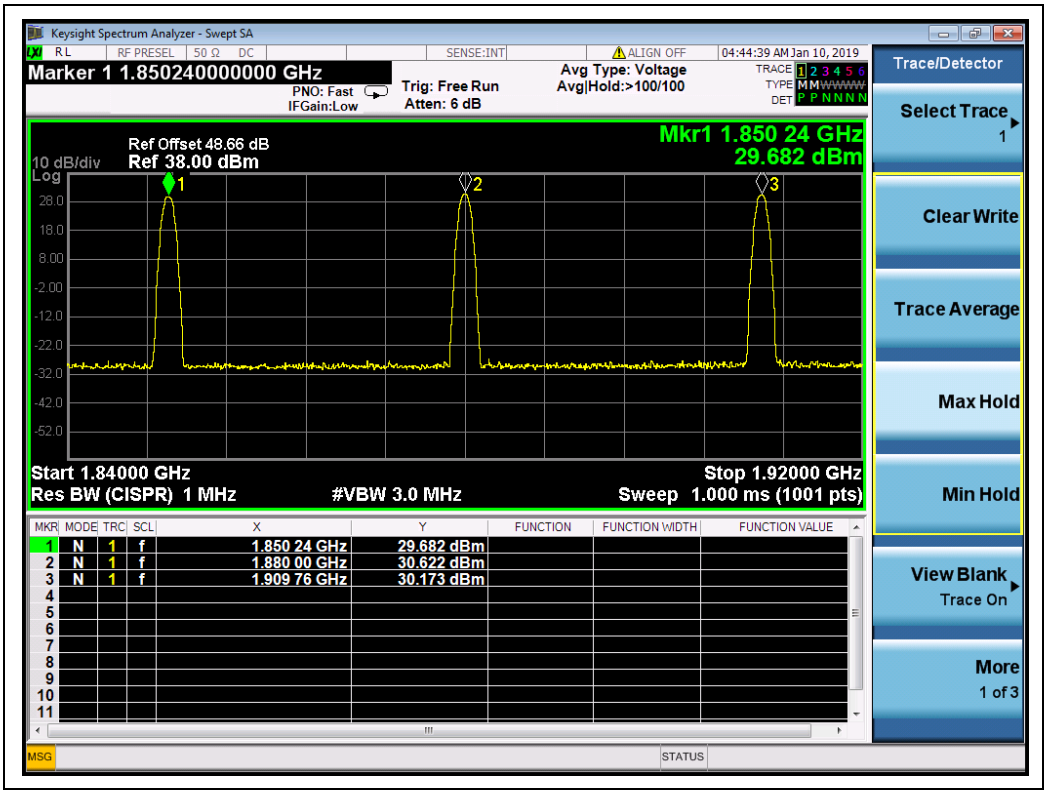
(EDGE 850MHz, Channel = 128, 190, 251)



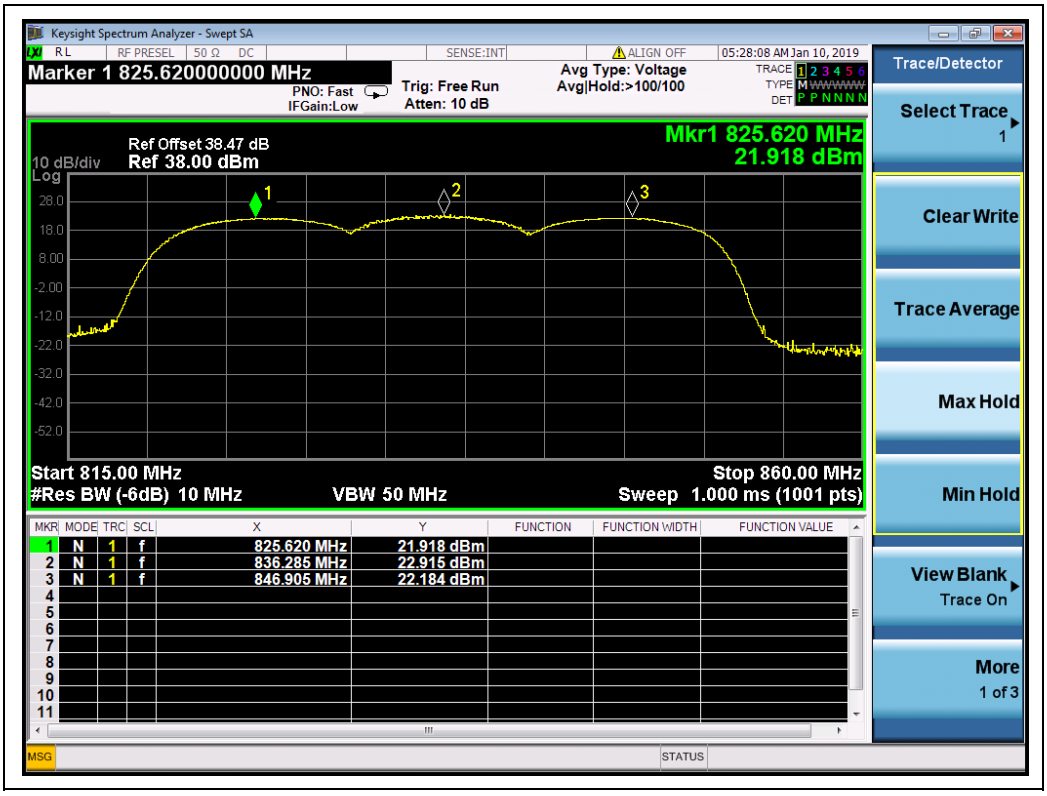
(GSM 1900MHz, Channel = 512, 661, 810)



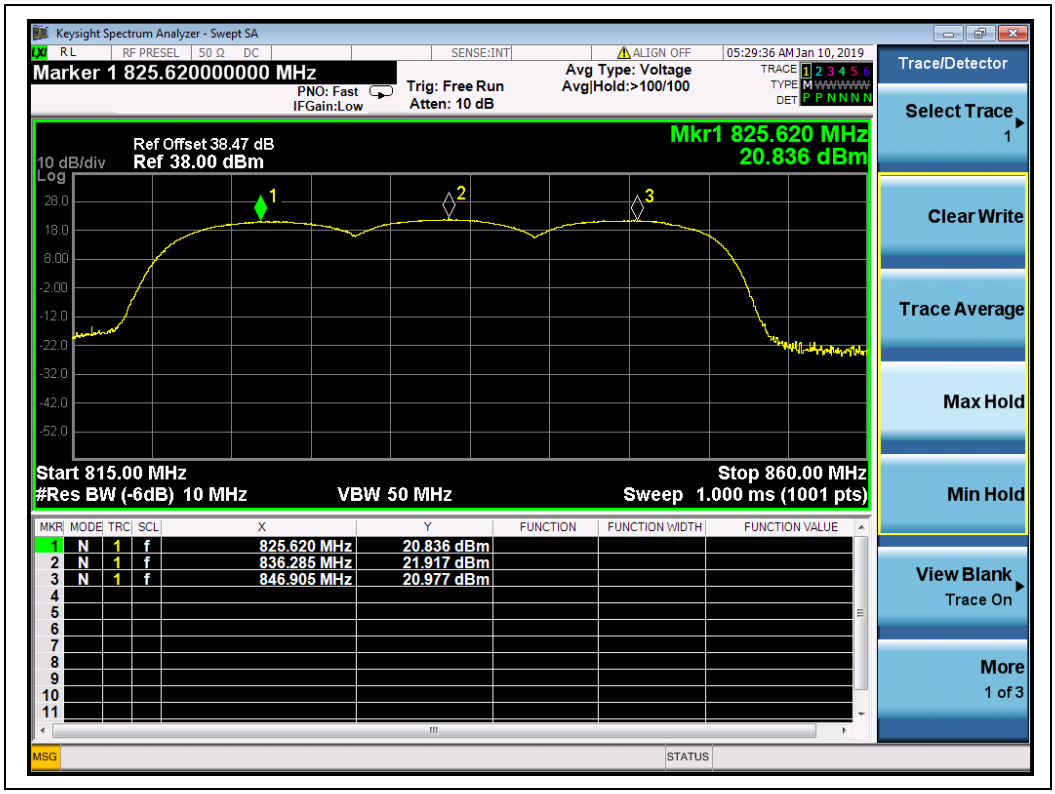
(GPRS 1900MHz, Channel = 512, 661, 810)



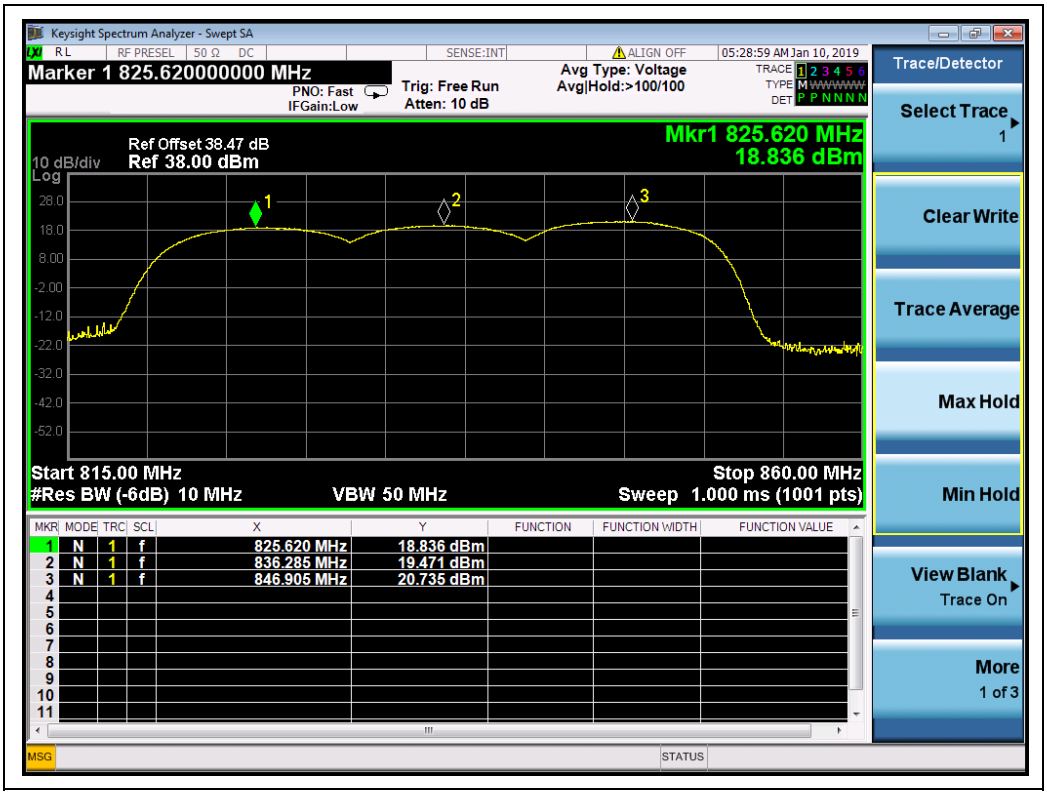
(EDGE 1900MHz, Channel = 512, 661, 810)



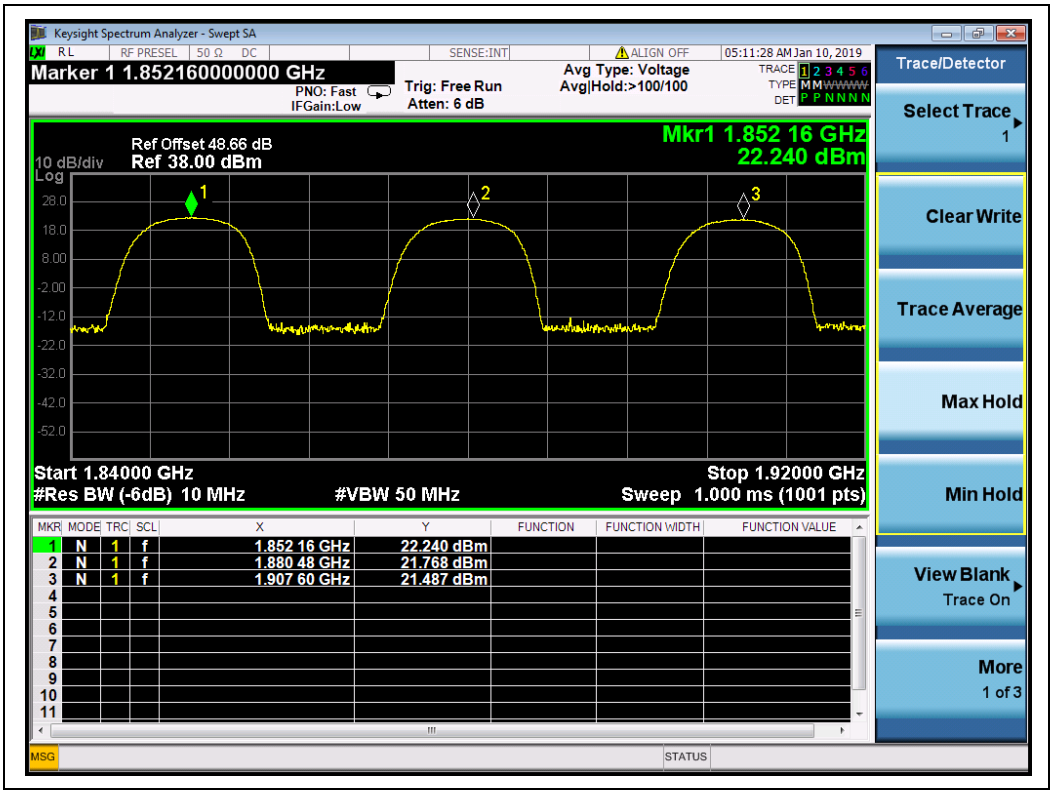
(WCDMA Band V, Channel = 4132, 4182, 4233)



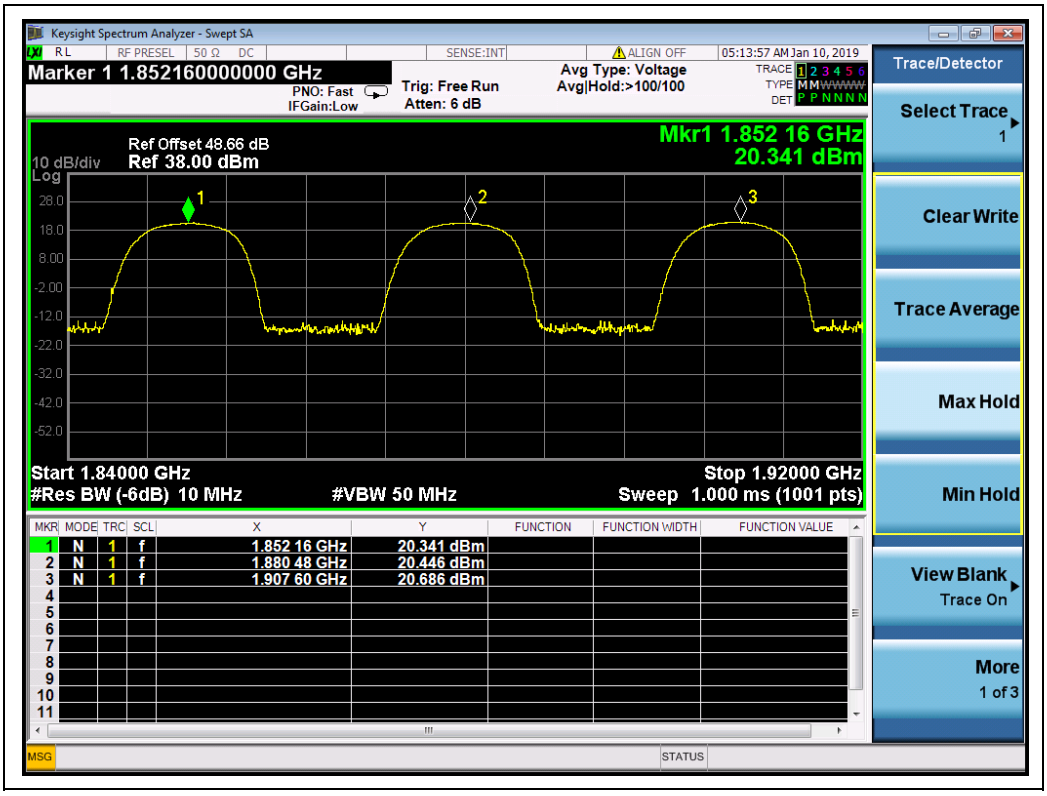
(HSDPA Band V, Channel = 4132, 4182, 4233)



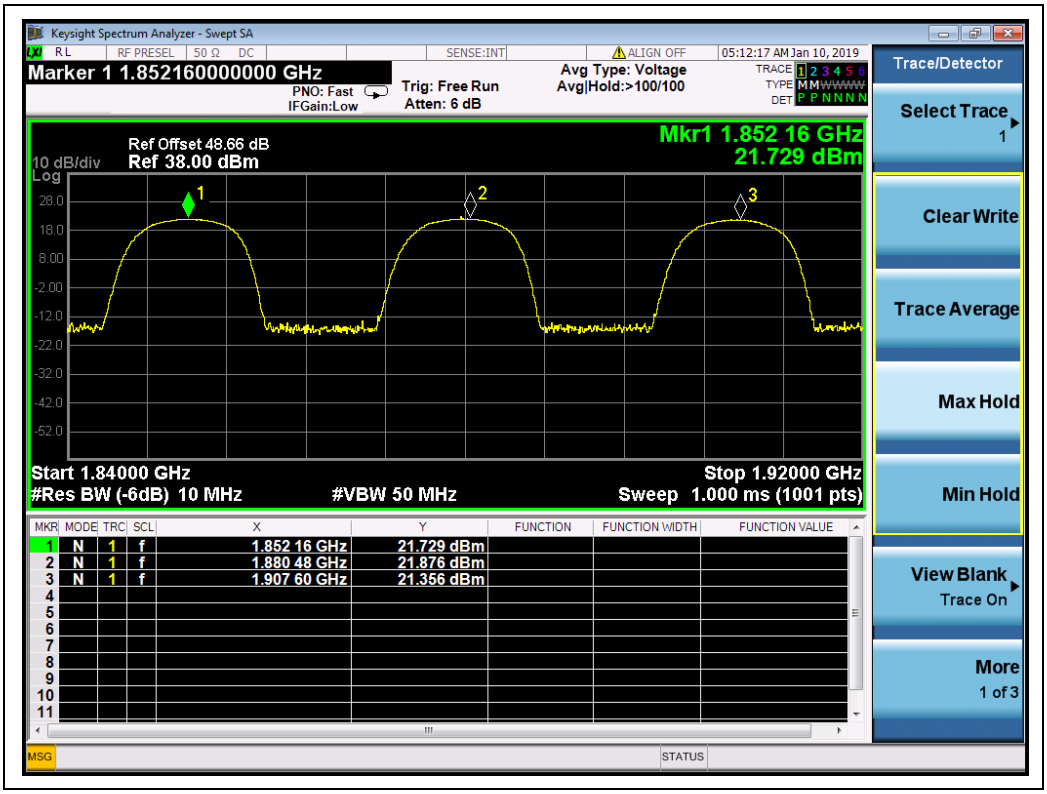
(HSUPA Band V, Channel = 4132, 4182, 4233)



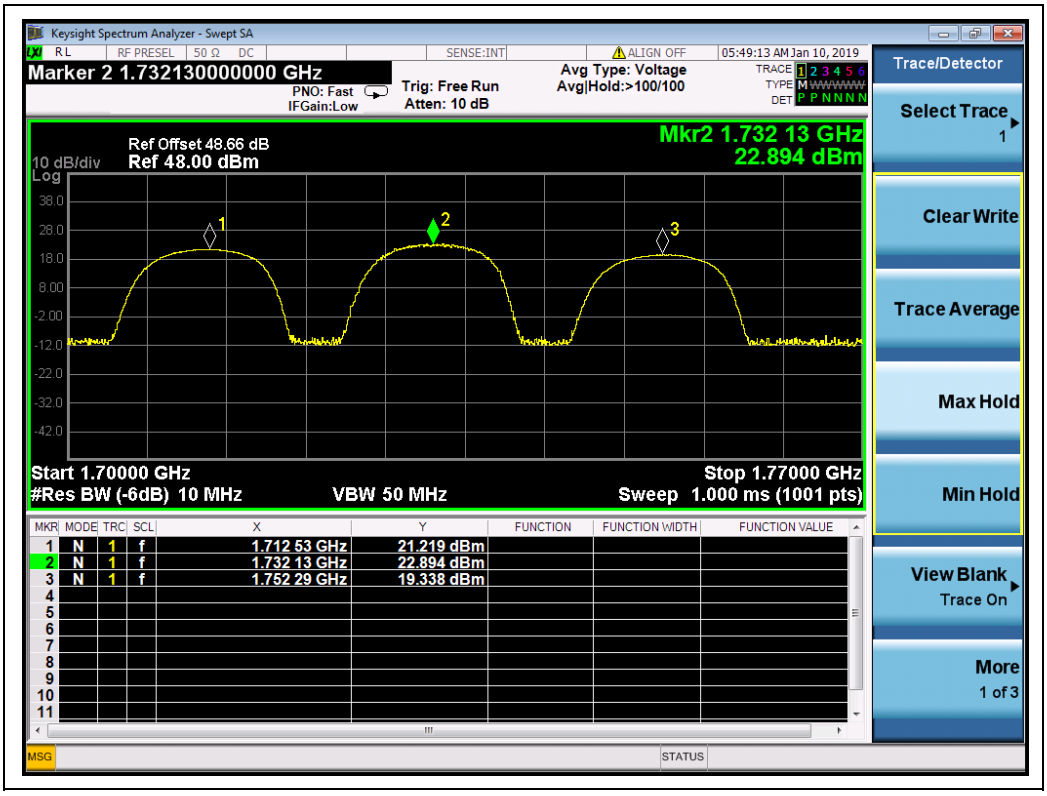
(WCDMA Band II, Channel = 9262, 9400, 9538)



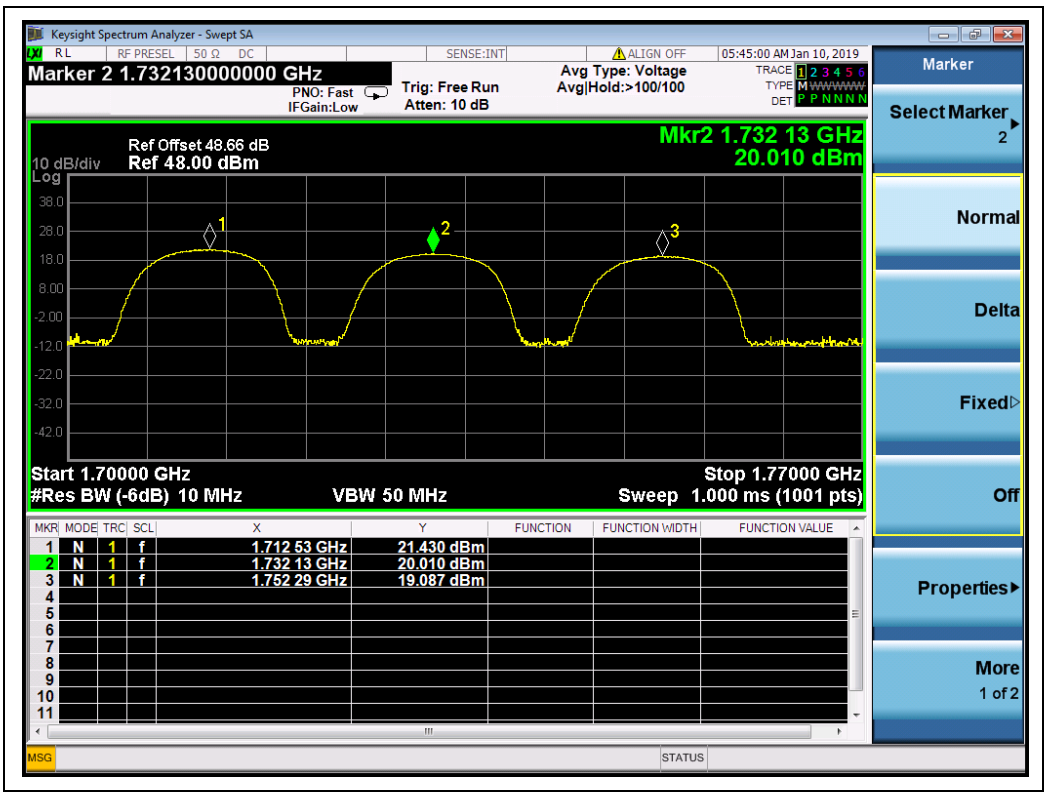
(HSDPA Band II, Channel = 9262, 9400, 9538)



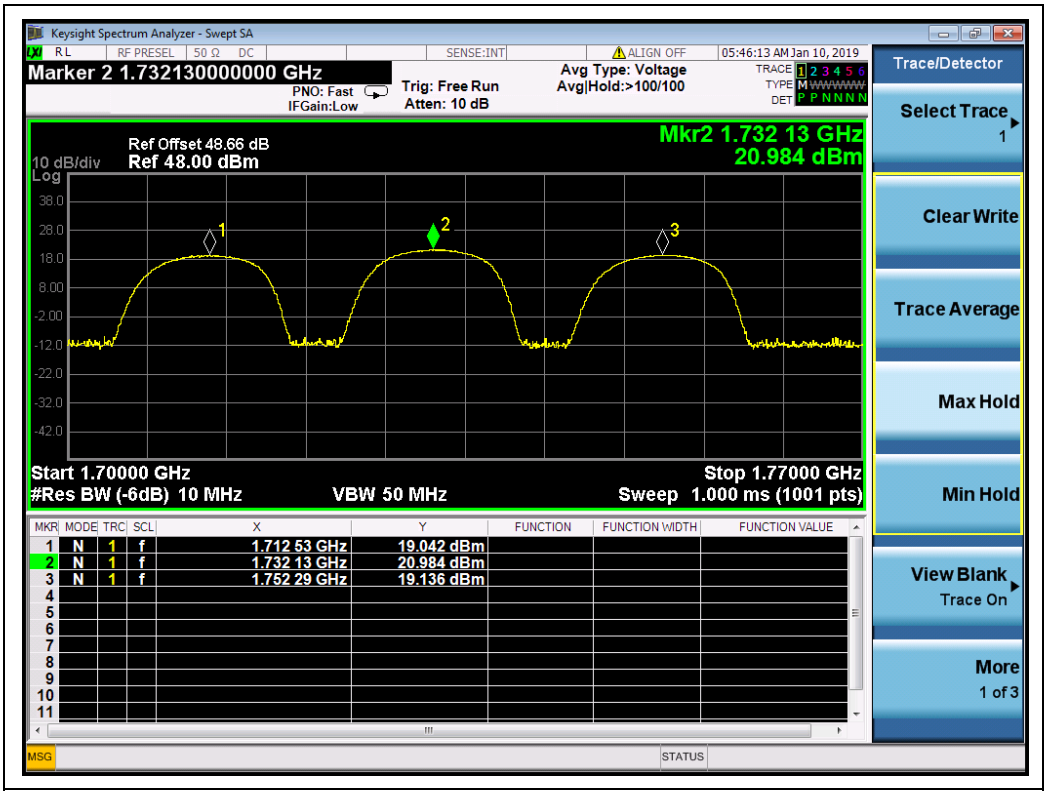
(HSUPA Band II, Channel = 9262, 9400, 9538)



(WCDMA Band IV, Channel = 1312, 1413, 1513)



(HSDPA Band IV, Channel = 1312, 1413, 1513)



(HSUPA Band IV, Channel = 1312, 1413, 1513)

2.8. Radiated Out of Band Emissions

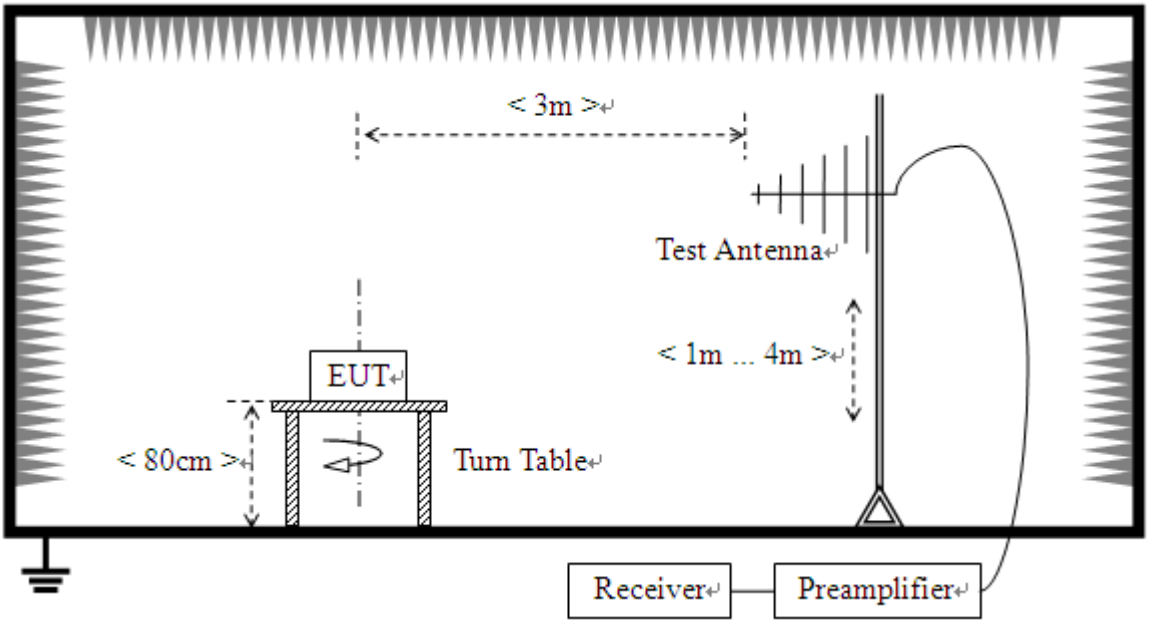
2.8.1. Requirement

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.

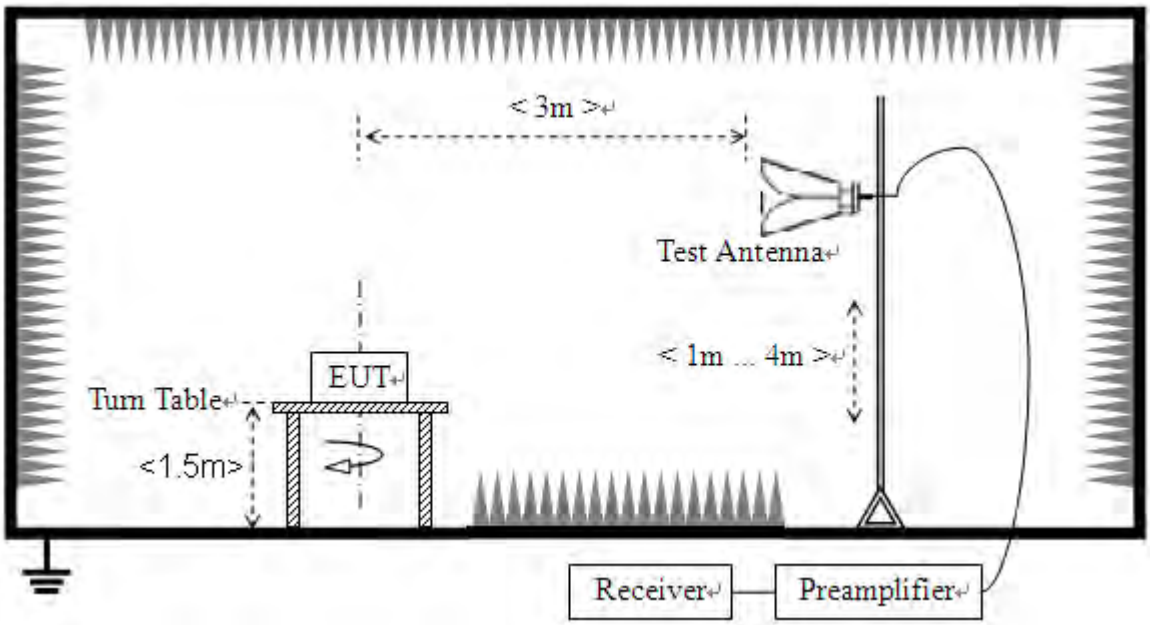
2.8.2. Test Description

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

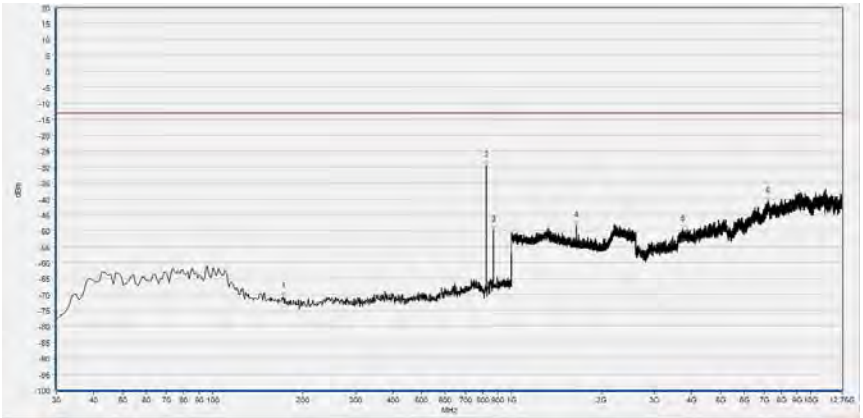
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels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

Top Antenna

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
	4182	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

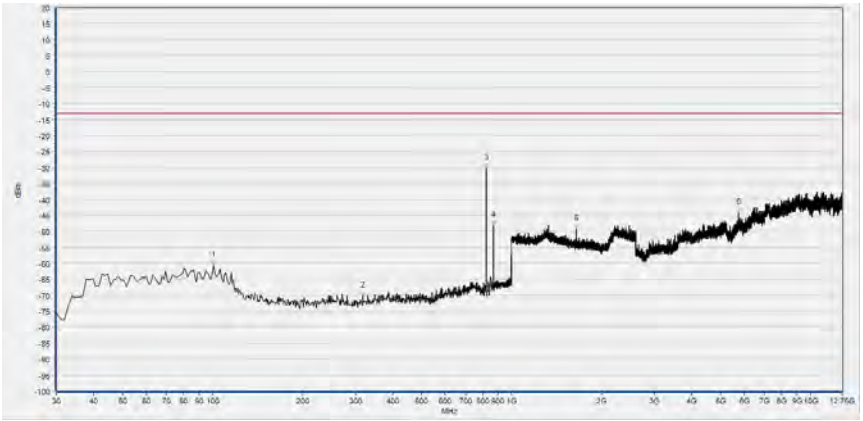
Note 1: All test mode and condition mentioned were considered and evaluated respectively by performing full test, only the worst data were recorded and reported.

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.



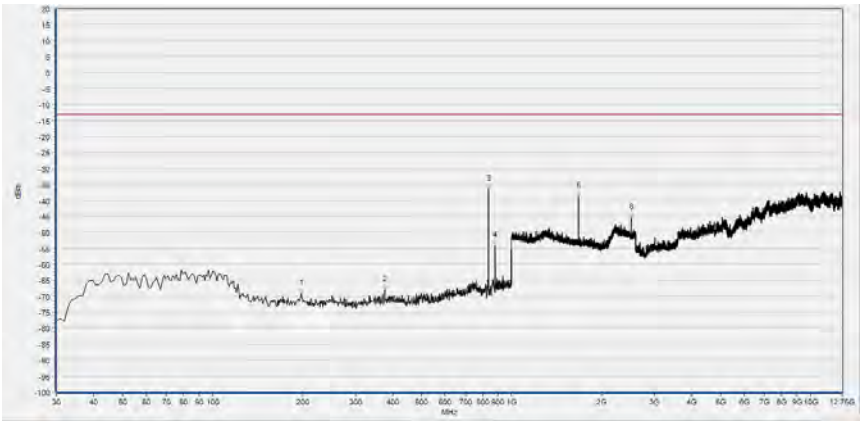
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	172.590	-70.72	-13.00	Horizontal	PASS
2	824.430	-29.60	-13.00	Horizontal	N/A
3	869.050	-49.75	-13.00	Horizontal	N/A
4	1647.939	-48.35	-13.00	Horizontal	PASS
5	3735.161	-49.47	-13.00	Horizontal	PASS
6	7181.251	-40.88	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 128, Horizontal)



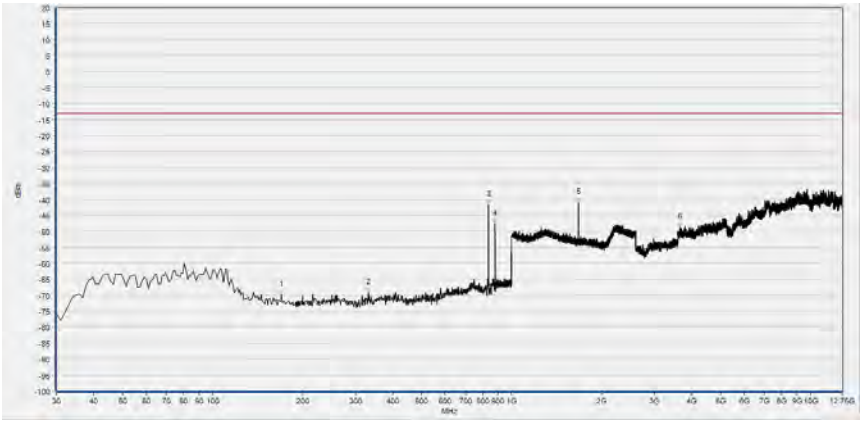
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	100.810	-60.78	-13.00	Vertical	PASS
2	318.090	-70.39	-13.00	Vertical	PASS
3	824.430	-30.20	-13.00	Vertical	N/A
4	869.050	-48.15	-13.00	Vertical	N/A
5	1647.939	-49.21	-13.00	Vertical	PASS
6	5739.689	-44.24	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 128, Vertical)



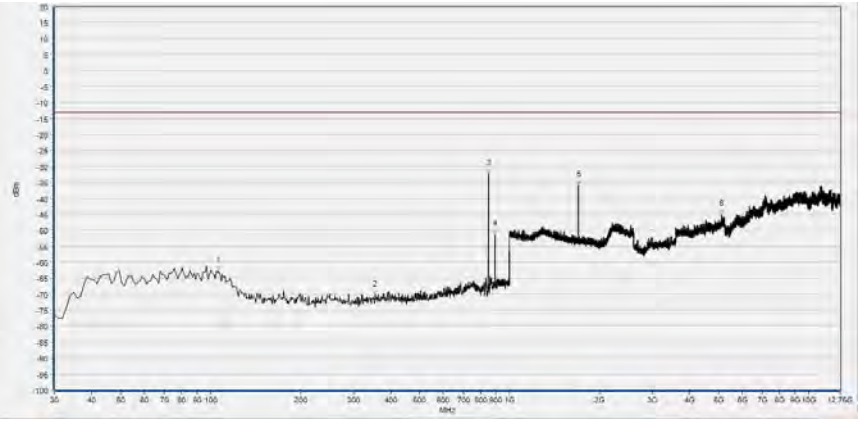
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	197.810	-69.21	-13.00	Horizontal	PASS
2	376.290	-68.00	-13.00	Horizontal	PASS
3	836.070	-36.54	-13.00	Horizontal	N/A
4	881.660	-54.13	-13.00	Horizontal	N/A
5	1672.909	-38.87	-13.00	Horizontal	PASS
6	2509.724	-45.37	-13.00	Horizontal	PASS

(GSM850MHz, Channel = 190, Horizontal)



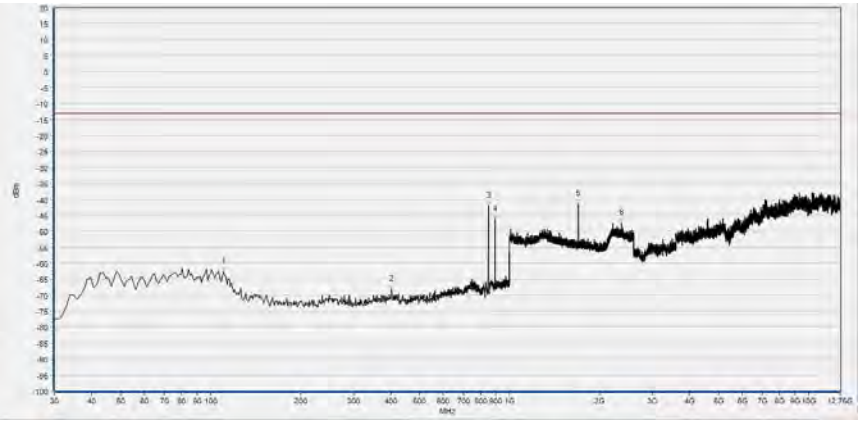
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	169.680	-69.81	-13.00	Vertical	PASS
2	331.670	-69.13	-13.00	Vertical	PASS
3	836.070	-41.73	-13.00	Vertical	N/A
4	881.660	-47.74	-13.00	Vertical	N/A
5	1672.909	-41.08	-13.00	Vertical	PASS
6	3661.329	-48.88	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 190, Vertical)



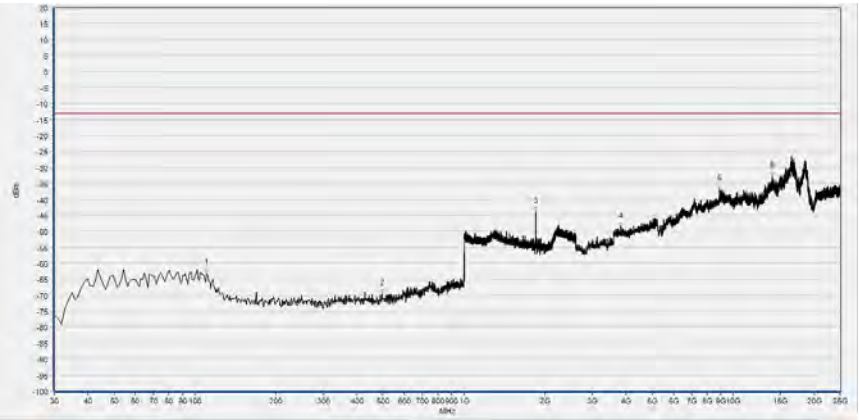
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	106.630	-62.64	-13.00	Horizontal	PASS
2	354.950	-70.32	-13.00	Horizontal	PASS
3	848.680	-32.29	-13.00	Horizontal	N/A
4	894.270	-51.36	-13.00	Horizontal	N/A
5	1697.879	-35.93	-13.00	Horizontal	PASS
6	5112.120	-45.05	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 251, Horizontal)



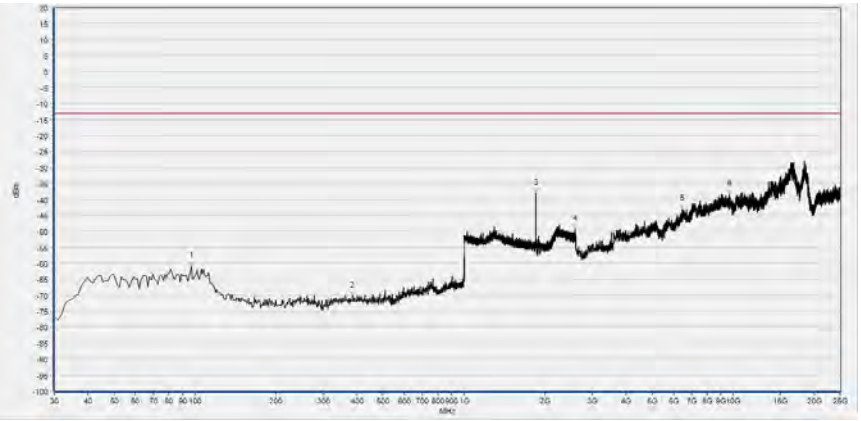
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	110.510	-62.76	-13.00	Vertical	PASS
2	403.450	-68.23	-13.00	Vertical	PASS
3	848.680	-42.11	-13.00	Vertical	N/A
4	894.270	-46.43	-13.00	Vertical	N/A
5	1697.239	-41.46	-13.00	Vertical	PASS
6	2362.465	-47.56	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 251, Vertical)



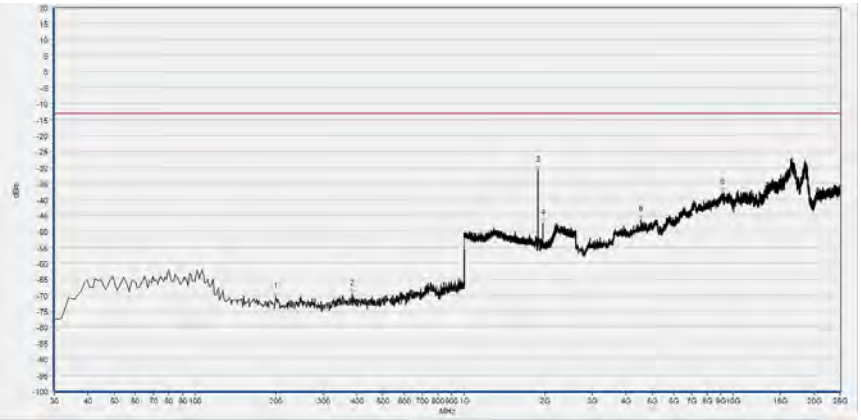
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	110.510	-63.06	-13.00	Horizontal	PASS
2	496.570	-69.53	-13.00	Horizontal	PASS
3	1850.260	-44.01	-13.00	Horizontal	N/A
4	3817.967	-48.51	-13.00	Horizontal	PASS
5	8922.022	-36.87	-13.00	Horizontal	PASS
6	14013.857	-32.80	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 512, Horizontal)



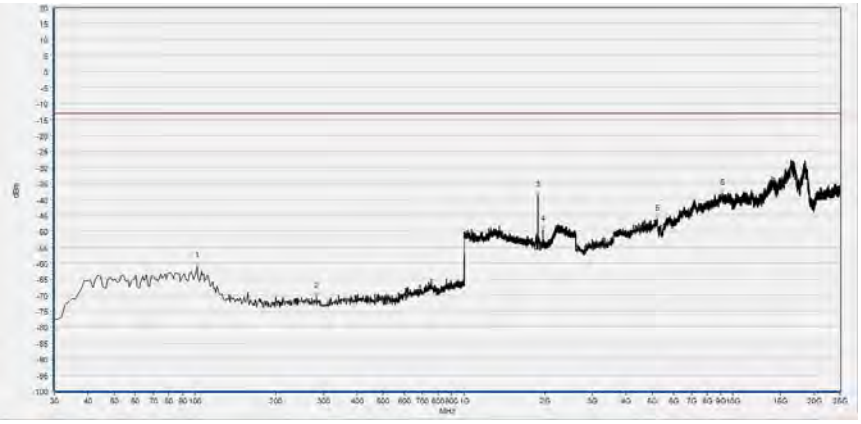
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	96.930	-60.88	-13.00	Vertical	PASS
2	385.020	-70.17	-13.00	Vertical	PASS
3	1850.260	-38.14	-13.00	Vertical	N/A
4	2593.597	-49.33	-13.00	Vertical	PASS
5	6457.574	-43.02	-13.00	Vertical	PASS
6	9720.422	-38.37	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 512, Vertical)



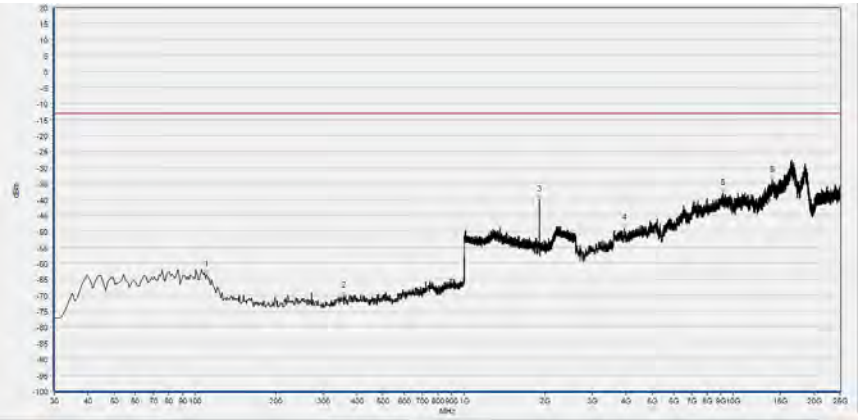
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	199.750	-70.56	-13.00	Horizontal	PASS
2	384.050	-69.64	-13.00	Horizontal	PASS
3	1879.712	-31.03	-13.00	Horizontal	N/A
4	1959.744	-47.51	-13.00	Horizontal	N/A
5	4538.971	-46.42	-13.00	Horizontal	PASS
6	9109.402	-37.91	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 661, Horizontal)



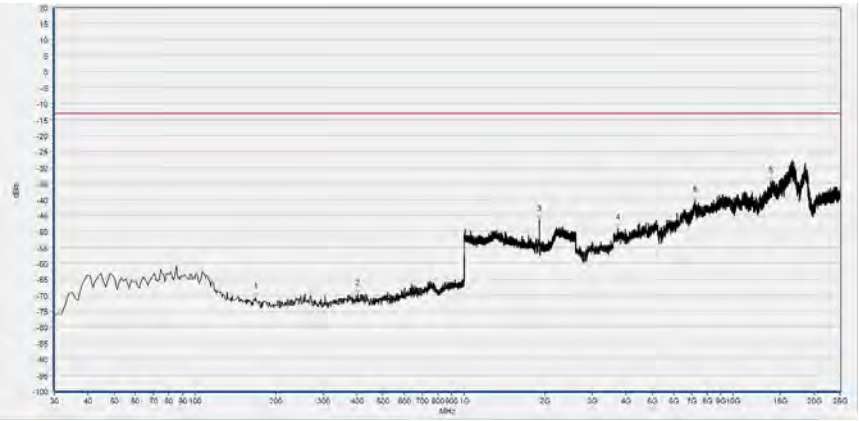
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	101.780	-60.89	-13.00	Vertical	PASS
2	282.200	-70.42	-13.00	Vertical	PASS
3	1879.712	-38.76	-13.00	Vertical	N/A
4	1959.744	-49.47	-13.00	Vertical	N/A
5	5223.313	-46.07	-13.00	Vertical	PASS
6	9093.108	-38.14	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 661, Vertical)



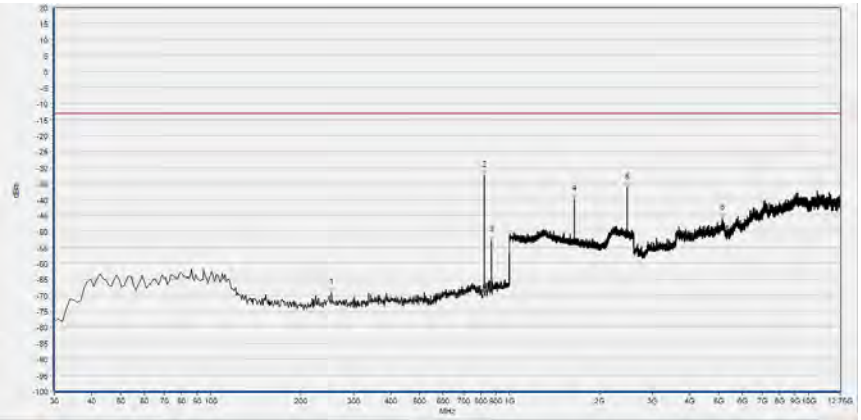
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	110.510	-63.54	-13.00	Horizontal	PASS
2	356.890	-70.35	-13.00	Horizontal	PASS
3	1909.804	-40.10	-13.00	Horizontal	N/A
4	3944.244	-48.96	-13.00	Horizontal	PASS
5	9158.283	-38.14	-13.00	Horizontal	PASS
6	13964.975	-34.02	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 810, Horizontal)



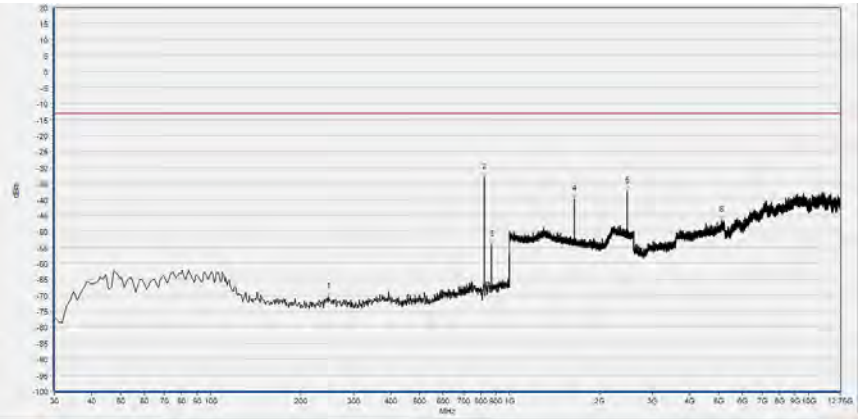
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	168.710	-70.66	-13.00	Vertical	PASS
2	404.420	-69.52	-13.00	Vertical	PASS
3	1909.804	-46.33	-13.00	Vertical	N/A
4	3728.351	-49.15	-13.00	Vertical	PASS
5	7231.533	-40.24	-13.00	Vertical	PASS
6	13781.669	-34.26	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 810, Vertical)



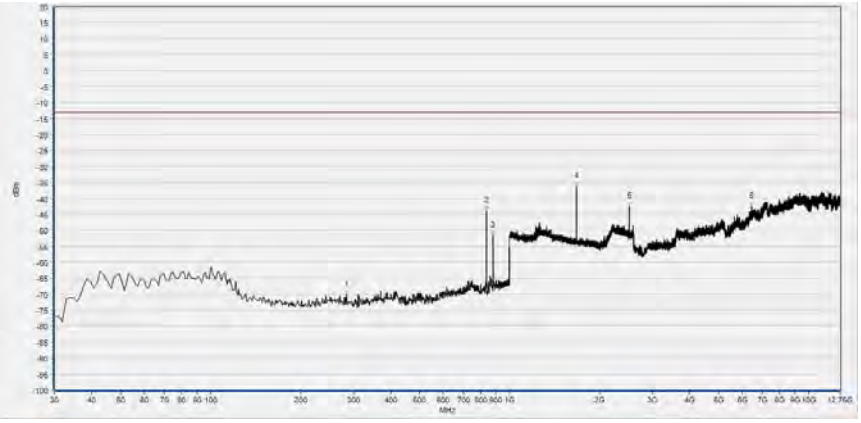
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	254.070	-69.26	-13.00	Horizontal	PASS
2	824.430	-32.48	-13.00	Horizontal	N/A
3	869.050	-52.85	-13.00	Horizontal	N/A
4	1648.579	-39.94	-13.00	Horizontal	PASS
5	2472.589	-36.41	-13.00	Horizontal	PASS
6	5152.728	-45.96	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 128, Horizontal)



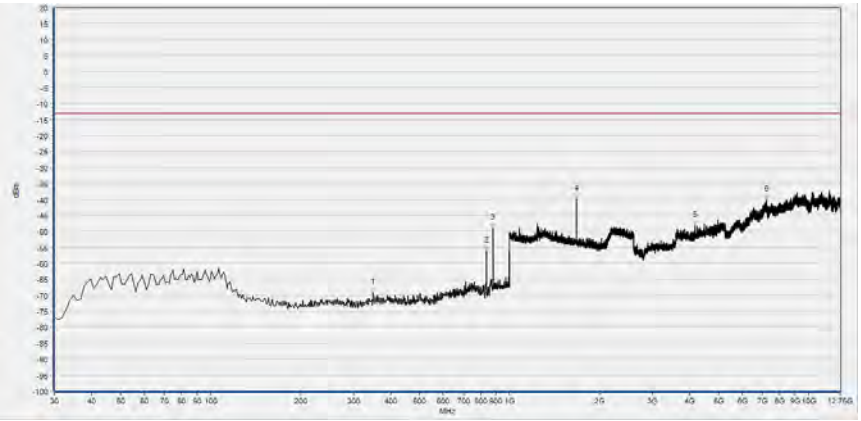
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	248.250	-70.51	-13.00	Vertical	PASS
2	824.430	-33.10	-13.00	Vertical	N/A
3	869.050	-54.27	-13.00	Vertical	N/A
4	1647.939	-39.84	-13.00	Vertical	PASS
5	2471.949	-37.46	-13.00	Vertical	PASS
6	5115.812	-46.67	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 128, Vertical)



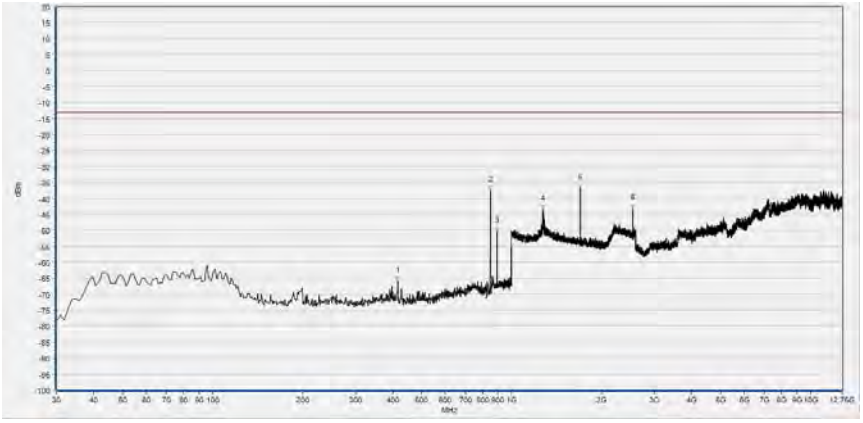
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	285.110	-70.32	-13.00	Horizontal	PASS
2	837.040	-43.99	-13.00	Horizontal	N/A
3	881.660	-51.77	-13.00	Horizontal	N/A
4	1672.909	-36.39	-13.00	Horizontal	PASS
5	2509.724	-42.51	-13.00	Horizontal	PASS
6	6454.010	-42.48	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 190, Horizontal)



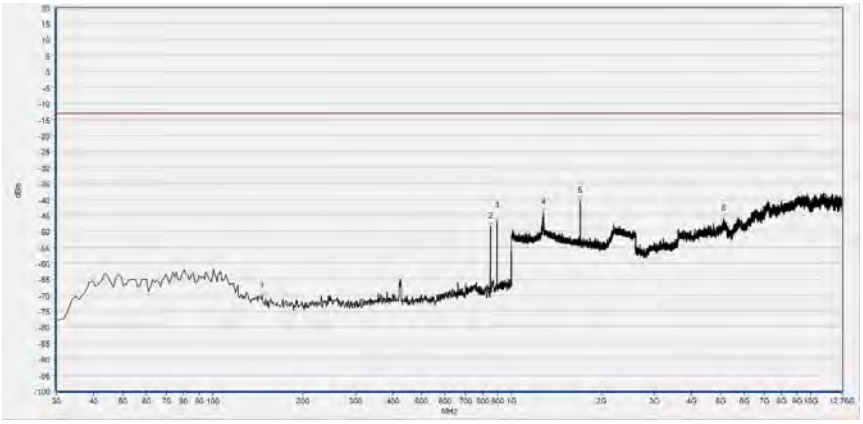
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	349.130	-69.05	-13.00	Vertical	PASS
2	836.070	-56.16	-13.00	Vertical	N/A
3	881.660	-49.10	-13.00	Vertical	N/A
4	1672.909	-39.86	-13.00	Vertical	PASS
5	4176.305	-48.19	-13.00	Vertical	PASS
6	7227.396	-40.06	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 190, Vertical)



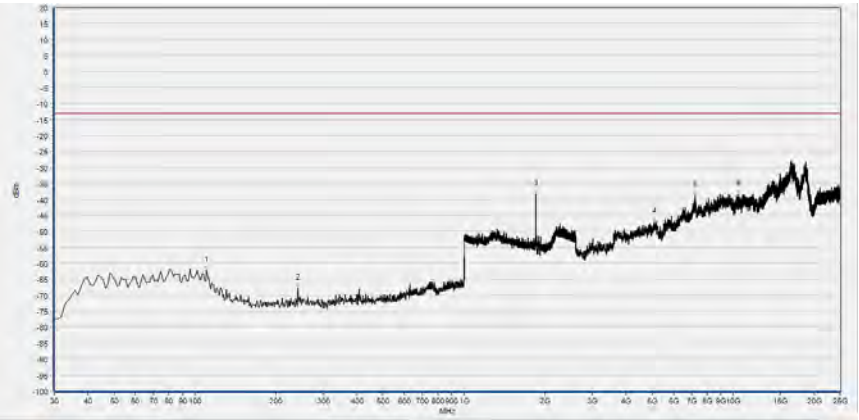
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	417.030	-65.78	-13.00	Horizontal	PASS
2	848.680	-37.43	-13.00	Horizontal	N/A
3	893.300	-50.36	-13.00	Horizontal	N/A
4	1274.670	-43.47	-13.00	Horizontal	PASS
5	1697.239	-36.70	-13.00	Horizontal	PASS
6	2546.218	-43.28	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 251, Horizontal)



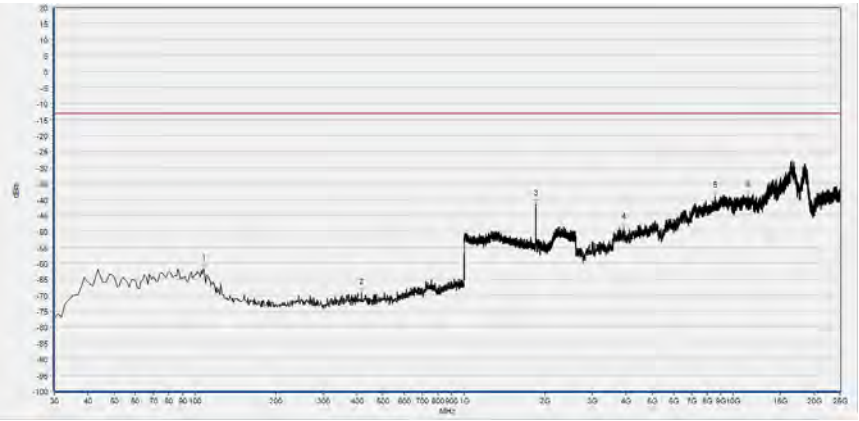
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-70.31	-13.00	Vertical	PASS
2	848.680	-48.59	-13.00	Vertical	N/A
3	894.270	-46.95	-13.00	Vertical	N/A
4	1277.871	-44.16	-13.00	Vertical	PASS
5	1697.239	-40.62	-13.00	Vertical	PASS
6	5115.812	-46.23	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 251, Vertical)



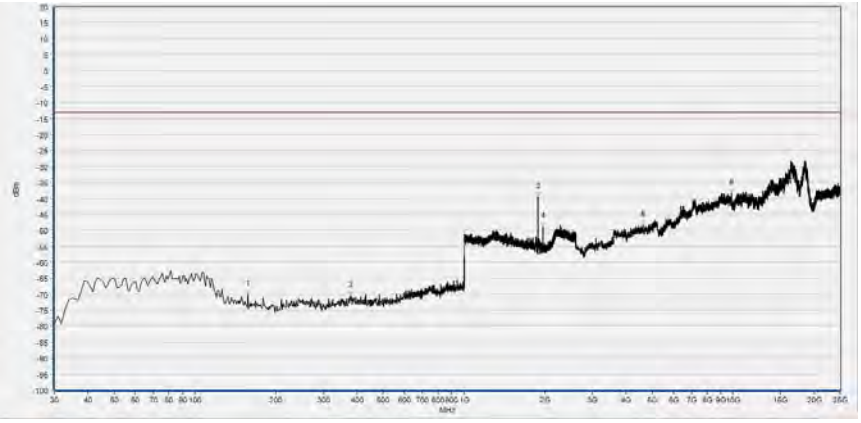
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	110.510	-62.32	-13.00	Horizontal	PASS
2	241.460	-67.92	-13.00	Horizontal	PASS
3	1849.620	-38.40	-13.00	Horizontal	N/A
4	5084.815	-47.03	-13.00	Horizontal	PASS
5	7243.753	-38.68	-13.00	Horizontal	PASS
6	10522.895	-38.23	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 512, Horizontal)



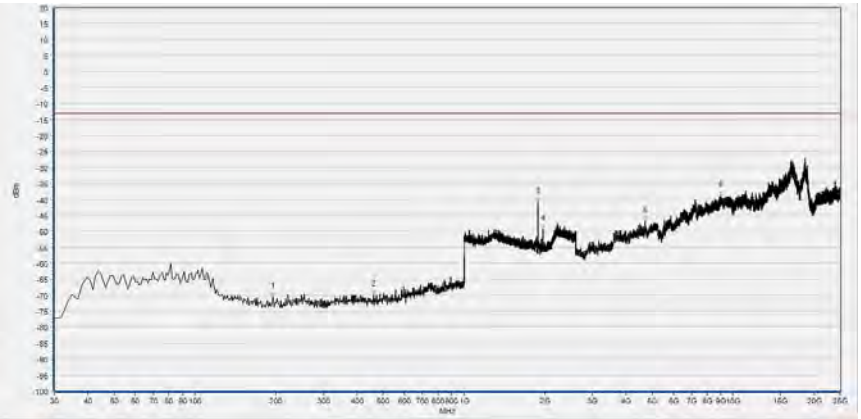
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	107.600	-61.88	-13.00	Vertical	PASS
2	416.060	-69.14	-13.00	Vertical	PASS
3	1850.260	-41.54	-13.00	Vertical	N/A
4	3927.951	-48.89	-13.00	Vertical	PASS
5	8555.410	-39.07	-13.00	Vertical	PASS
6	11353.883	-38.85	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 512, Vertical)



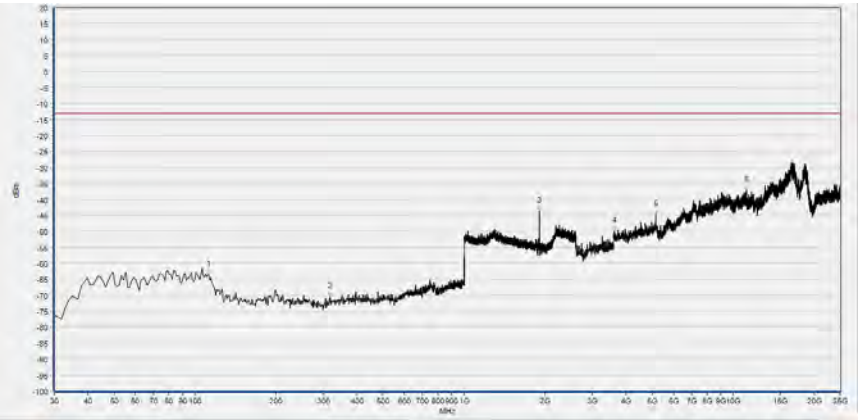
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	157.070	-70.15	-13.00	Horizontal	PASS
2	379.200	-70.58	-13.00	Horizontal	PASS
3	1879.712	-39.51	-13.00	Horizontal	N/A
4	1959.744	-48.75	-13.00	Horizontal	N/A
5	4624.514	-48.34	-13.00	Horizontal	PASS
6	9846.699	-38.32	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 661, Horizontal)



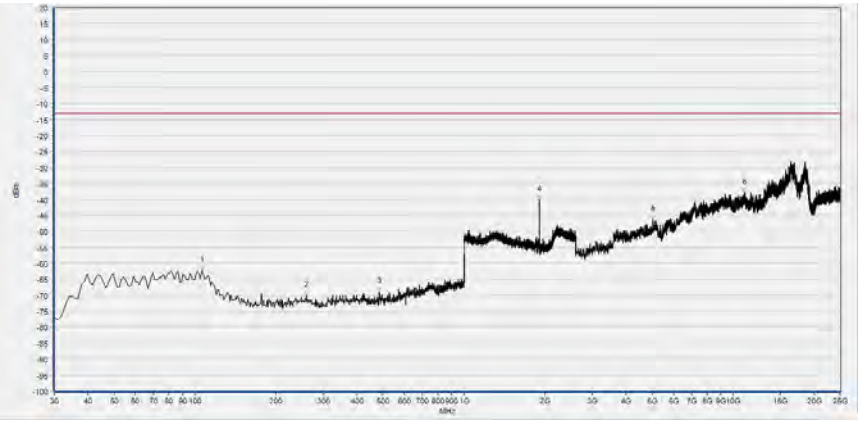
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	194.900	-70.57	-13.00	Vertical	PASS
2	460.680	-69.91	-13.00	Vertical	PASS
3	1879.712	-40.82	-13.00	Vertical	N/A
4	1959.744	-49.32	-13.00	Vertical	N/A
5	4710.056	-46.91	-13.00	Vertical	PASS
6	8979.051	-38.86	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 661, Vertical)



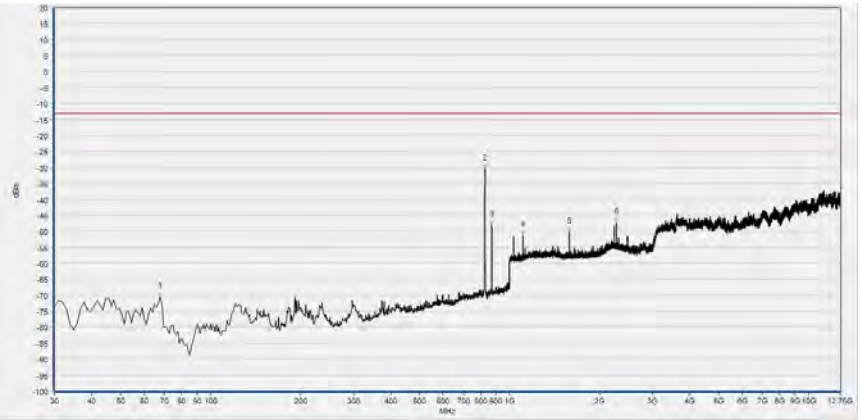
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	112.450	-63.64	-13.00	Horizontal	PASS
2	317.120	-70.46	-13.00	Horizontal	PASS
3	1909.804	-43.71	-13.00	Horizontal	N/A
4	3618.367	-49.84	-13.00	Horizontal	PASS
5	5149.991	-44.83	-13.00	Horizontal	PASS
6	11215.385	-37.24	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 810, Horizontal)



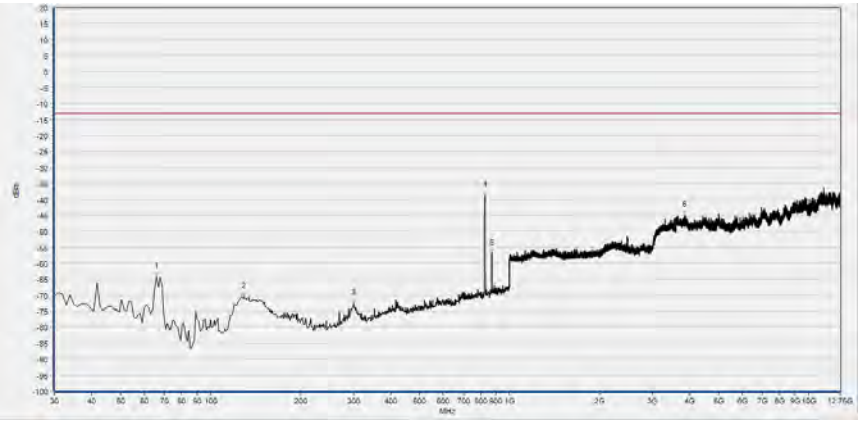
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	106.630	-62.24	-13.00	Vertical	PASS
2	259.890	-70.10	-13.00	Vertical	PASS
3	483.960	-69.02	-13.00	Vertical	PASS
4	1909.804	-40.16	-13.00	Vertical	N/A
5	5048.154	-46.31	-13.00	Vertical	PASS
6	10987.270	-37.97	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 810, Vertical)



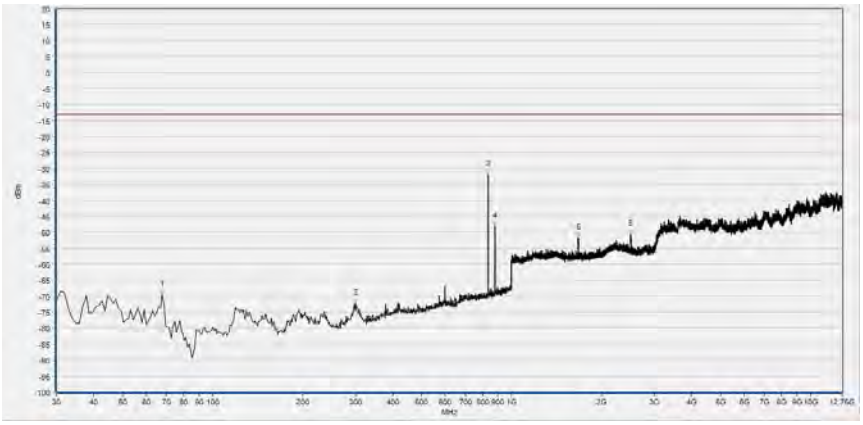
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-70.51	-13.00	Horizontal	PASS
2	827.340	-30.61	-13.00	Horizontal	N/A
3	871.960	-48.03	-13.00	Horizontal	N/A
4	1109.484	-51.30	-13.00	Horizontal	PASS
5	1585.834	-50.15	-13.00	Horizontal	PASS
6	2283.713	-47.27	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4132, Horizontal)



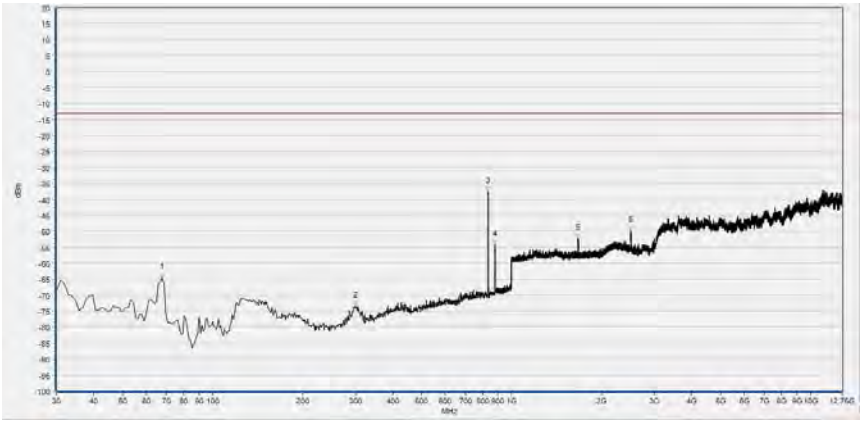
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-64.16	-13.00	Vertical	PASS
2	128.940	-70.56	-13.00	Vertical	PASS
3	301.600	-72.60	-13.00	Vertical	PASS
4	827.340	-38.78	-13.00	Vertical	N/A
5	870.020	-57.03	-13.00	Vertical	N/A
6	3851.446	-45.05	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4132, Vertical)



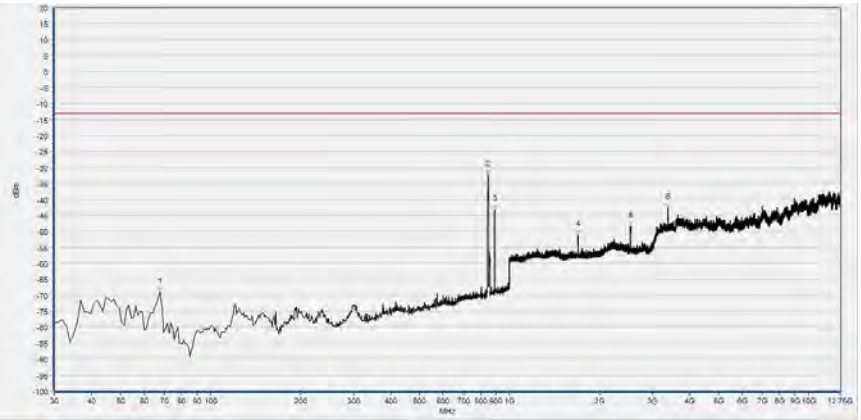
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-69.69	-13.00	Horizontal	PASS
2	300.630	-72.33	-13.00	Horizontal	PASS
3	834.130	-31.74	-13.00	Horizontal	N/A
4	879.720	-48.13	-13.00	Horizontal	N/A
5	1671.629	-51.77	-13.00	Horizontal	PASS
6	2501.401	-50.72	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4182, Horizontal)



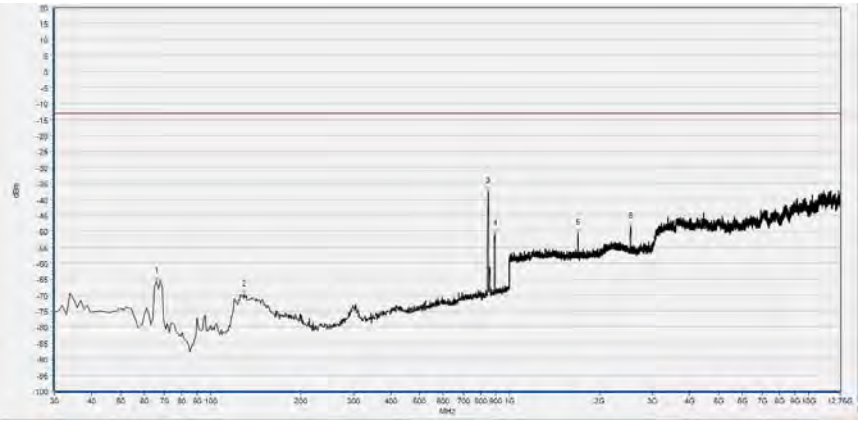
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-64.39	-13.00	Vertical	PASS
2	300.630	-73.46	-13.00	Vertical	PASS
3	834.130	-37.45	-13.00	Vertical	N/A
4	881.660	-54.20	-13.00	Vertical	N/A
5	1667.787	-52.18	-13.00	Vertical	PASS
6	2508.443	-49.70	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4182, Vertical)



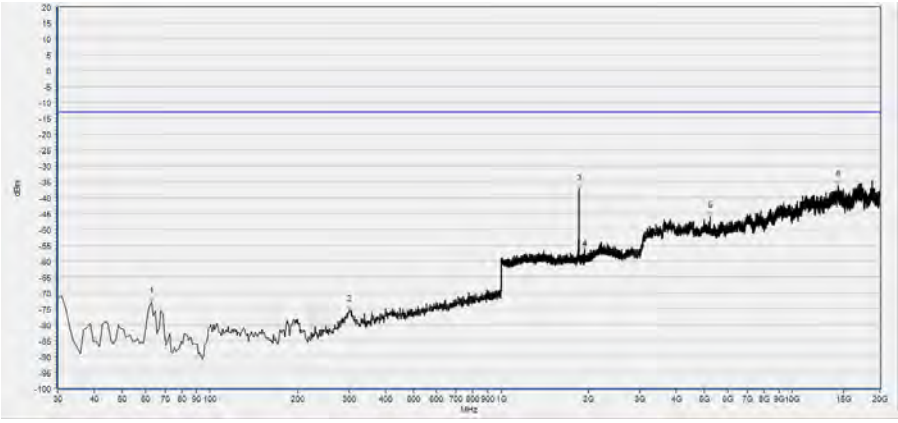
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-69.00	-13.00	Horizontal	PASS
2	847.710	-32.33	-13.00	Horizontal	N/A
3	892.330	-43.27	-13.00	Horizontal	N/A
4	1692.117	-51.10	-13.00	Horizontal	PASS
5	2537.895	-48.34	-13.00	Horizontal	PASS
6	3391.844	-42.49	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4233, Horizontal)



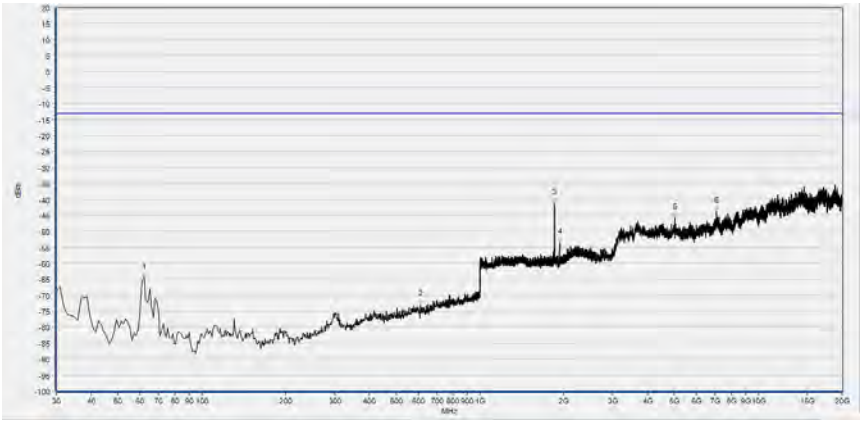
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-65.64	-13.00	Vertical	PASS
2	129.910	-69.84	-13.00	Vertical	PASS
3	847.710	-37.32	-13.00	Vertical	N/A
4	892.330	-50.88	-13.00	Vertical	N/A
5	1695.958	-50.71	-13.00	Vertical	PASS
6	2537.895	-48.68	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4233, Vertical)



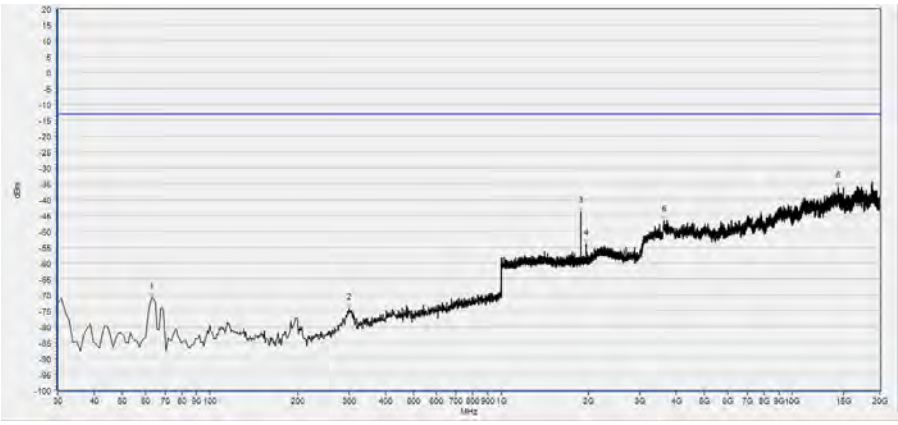
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	62.980	-72.84	-13.00	Horizontal	PASS
2	301.600	-75.54	-13.00	Horizontal	PASS
3	1851.541	-37.43	-13.00	Horizontal	N/A
4	1933.493	-55.94	-13.00	Horizontal	N/A
5	5232.624	-45.91	-13.00	Horizontal	PASS
6	14386.688	-36.24	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9262, Horizontal)



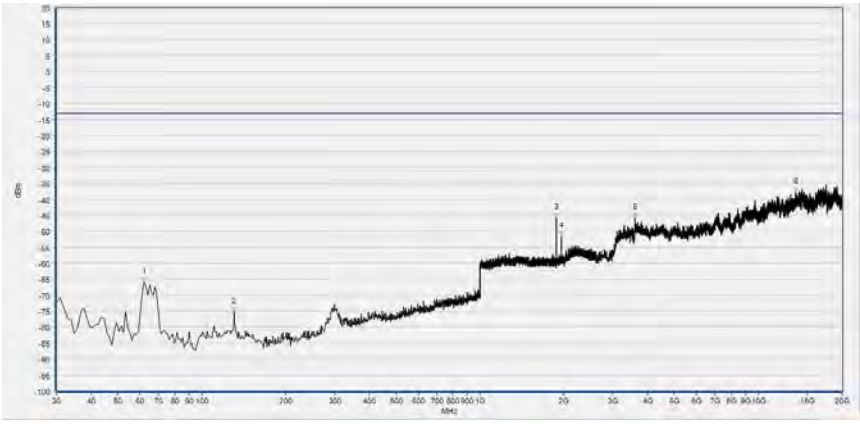
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	62.010	-64.56	-13.00	Vertical	PASS
2	610.060	-72.88	-13.00	Vertical	PASS
3	1851.541	-41.23	-13.00	Vertical	N/A
4	1931.573	-53.56	-13.00	Vertical	N/A
5	5001.637	-45.77	-13.00	Vertical	PASS
6	7086.852	-43.65	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9262, Vertical)



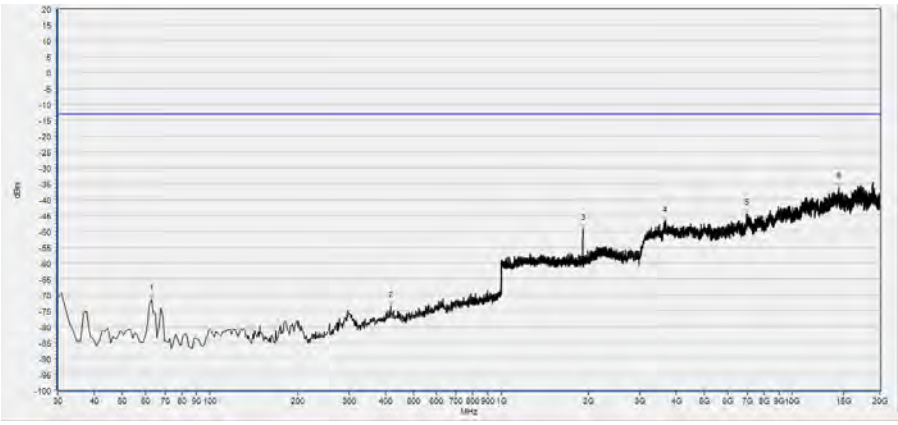
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	62.980	-70.96	-13.00	Horizontal	PASS
2	300.630	-74.19	-13.00	Horizontal	PASS
3	1878.431	-43.71	-13.00	Horizontal	N/A
4	1958.463	-53.95	-13.00	Horizontal	N/A
5	3622.040	-46.78	-13.00	Horizontal	PASS
6	14399.345	-35.85	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9400, Horizontal)



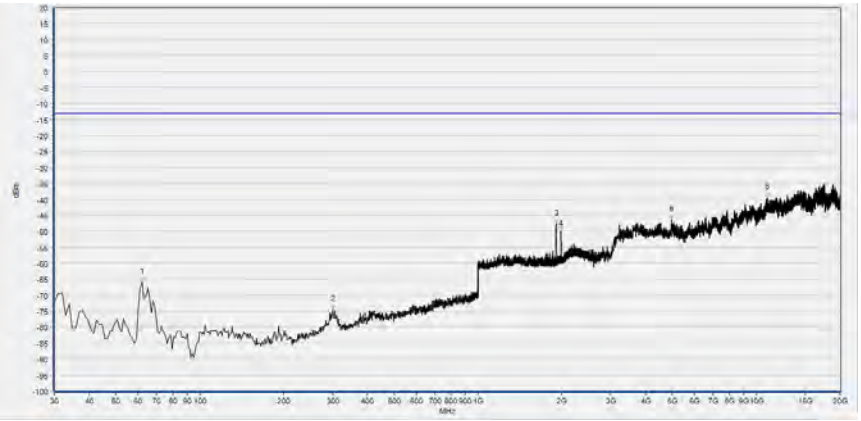
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	62.010	-65.78	-13.00	Vertical	PASS
2	130.880	-75.30	-13.00	Vertical	PASS
3	1879.072	-45.80	-13.00	Vertical	N/A
4	1959.104	-51.49	-13.00	Vertical	N/A
5	3609.384	-45.74	-13.00	Vertical	PASS
6	13586.143	-37.60	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9400, Vertical)



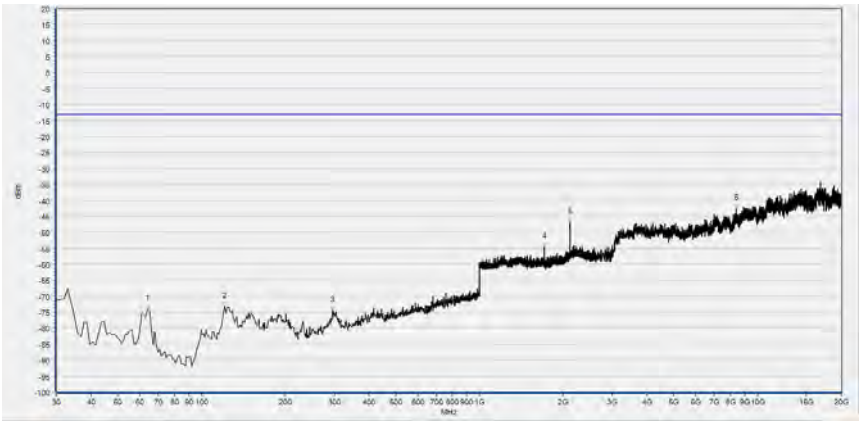
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	62.980	-71.48	-13.00	Horizontal	PASS
2	418.000	-73.65	-13.00	Horizontal	PASS
3	1908.523	-49.33	-13.00	Horizontal	N/A
4	3653.682	-47.02	-13.00	Horizontal	PASS
5	6966.612	-44.59	-13.00	Horizontal	PASS
6	14481.615	-36.14	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9538, Horizontal)



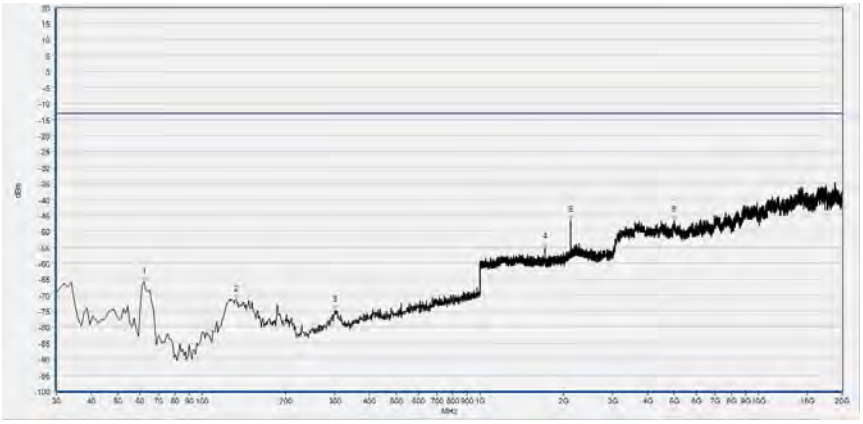
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	62.010	-65.99	-13.00	Vertical	PASS
2	300.630	-74.51	-13.00	Vertical	PASS
3	1908.523	-47.65	-13.00	Vertical	N/A
4	1987.275	-50.02	-13.00	Vertical	N/A
5	4966.830	-46.42	-13.00	Vertical	PASS
6	10966.176	-39.48	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9538, Vertical)



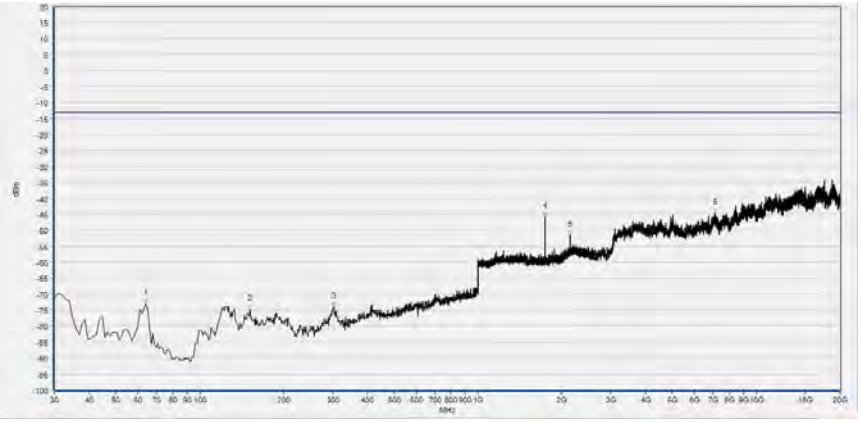
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	63.950	-74.19	-13.00	Horizontal	PASS
2	121.180	-73.17	-13.00	Horizontal	PASS
3	295.780	-74.45	-13.00	Horizontal	PASS
4	1711.325	-54.53	-13.00	Horizontal	N/A
5	2113.405	-46.73	-13.00	Horizontal	N/A
6	8406.328	-42.64	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1312, Horizontal)



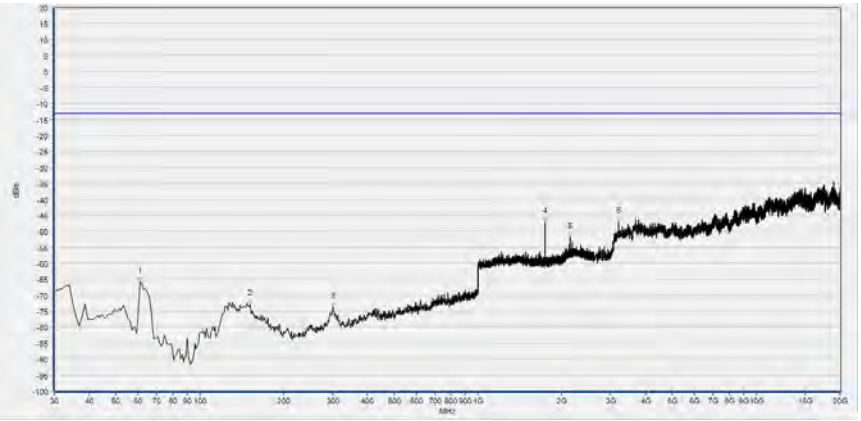
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	62.010	-65.71	-13.00	Vertical	PASS
2	132.820	-71.34	-13.00	Vertical	PASS
3	301.600	-74.82	-13.00	Vertical	PASS
4	1711.325	-55.18	-13.00	Vertical	N/A
5	2114.046	-46.55	-13.00	Vertical	N/A
6	4976.323	-46.64	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1312, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	63.950	-73.06	-13.00	Horizontal	PASS
2	151.250	-74.84	-13.00	Horizontal	PASS
3	302.570	-73.86	-13.00	Horizontal	PASS
4	1732.856	-45.69	-13.00	Horizontal	N/A
5	2140.296	-51.51	-13.00	Horizontal	N/A
6	7112.166	-44.58	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1413, Horizontal)

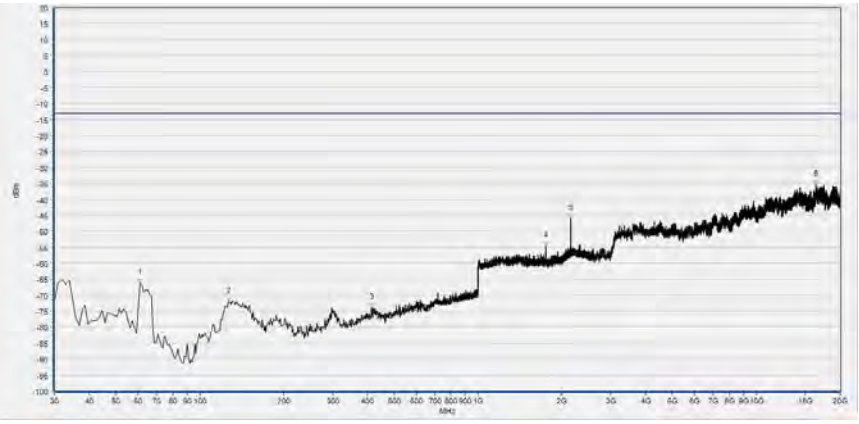


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-65.92	-13.00	Vertical	PASS
2	151.250	-72.71	-13.00	Vertical	PASS
3	301.600	-73.71	-13.00	Vertical	PASS
4	1732.496	-46.98	-13.00	Vertical	N/A
5	2140.296	-51.84	-13.00	Vertical	N/A
6	3204.364	-47.02	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1413, Vertical)

Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-73.19	-13.00	Horizontal	PASS
2	301.600	-73.22	-13.00	Horizontal	PASS
3	418.970	-73.41	-13.00	Horizontal	PASS
4	1751.661	-56.00	-13.00	Horizontal	N/A
5	2152.461	-44.85	-13.00	Horizontal	N/A
6	9751.118	-40.51	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1513, Horizontal)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-66.34	-13.00	Vertical	PASS
2	127.000	-71.96	-13.00	Vertical	PASS
3	413.150	-73.78	-13.00	Vertical	PASS
4	1751.661	-54.71	-13.00	Vertical	N/A
5	2153.741	-45.92	-13.00	Vertical	N/A
6	16386.470	-35.39	-13.00	Vertical	PASS

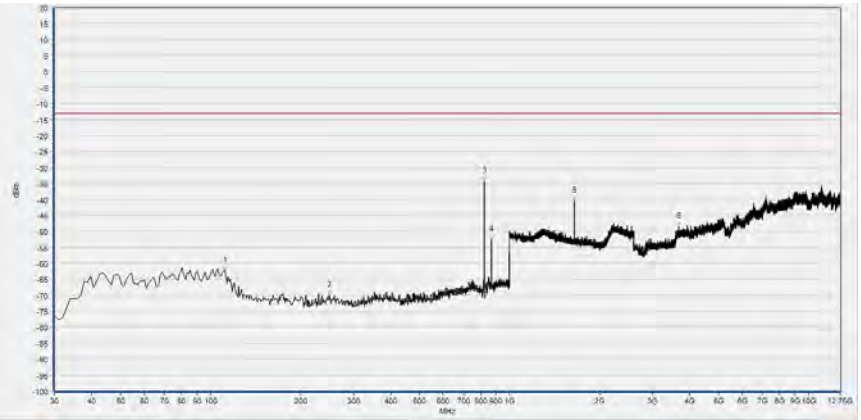
(WCDMA Band IV, Channel = 1513, Vertical)

Bottom Antenna

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
	4182	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

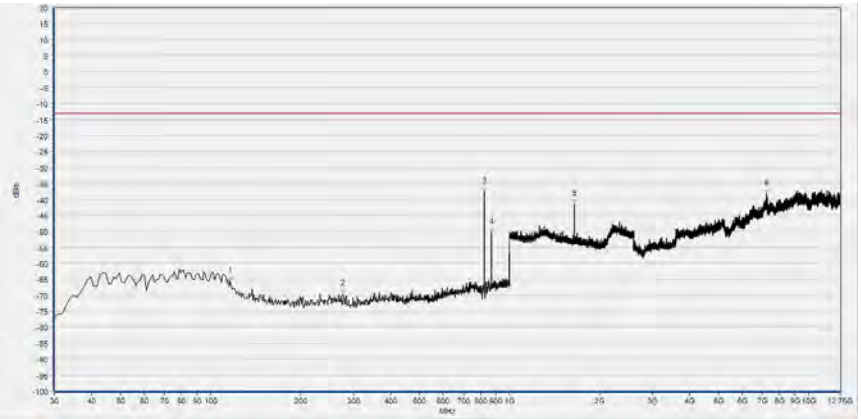
Note 1: All test mode and condition mentioned were considered and evaluated respectively by performing full test, only the worst data were recorded and reported.

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.



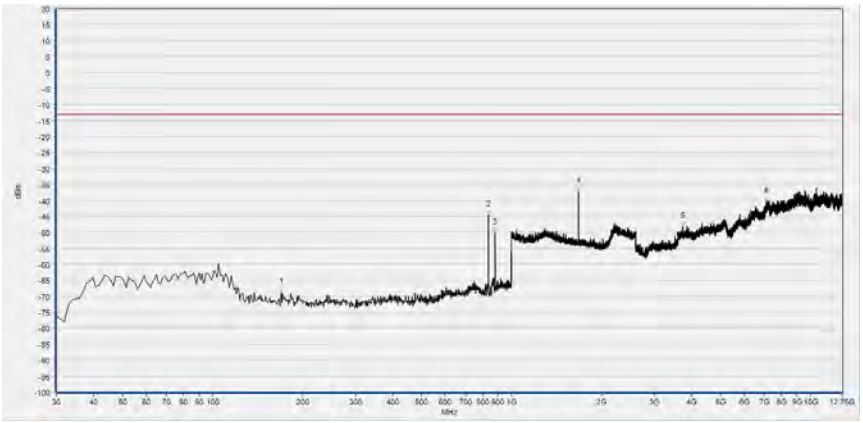
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	111.480	-62.50	-13.00	Horizontal	PASS
2	249.220	-70.06	-13.00	Horizontal	PASS
3	824.430	-34.26	-13.00	Horizontal	N/A
4	869.050	-52.60	-13.00	Horizontal	N/A
5	1647.939	-40.57	-13.00	Horizontal	PASS
6	3676.096	-48.58	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 128, Horizontal)



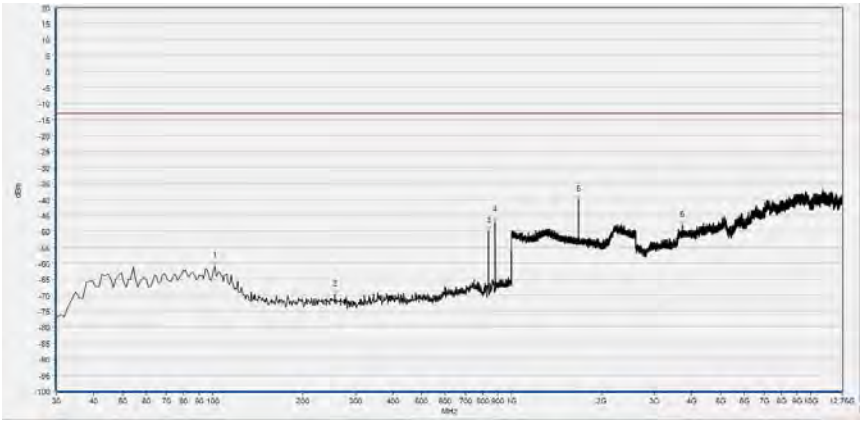
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	116.330	-65.55	-13.00	Vertical	PASS
2	277.350	-69.54	-13.00	Vertical	PASS
3	824.430	-37.34	-13.00	Vertical	N/A
4	869.050	-50.29	-13.00	Vertical	N/A
5	1647.939	-41.43	-13.00	Vertical	PASS
6	7229.242	-38.40	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 128, Vertical)



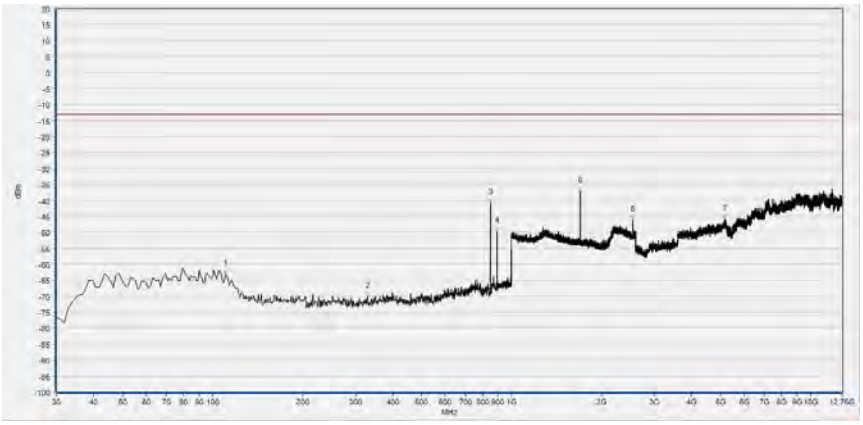
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	169.680	-68.60	-13.00	Horizontal	PASS
2	837.040	-44.62	-13.00	Horizontal	N/A
3	881.660	-50.17	-13.00	Horizontal	N/A
4	1672.909	-37.23	-13.00	Horizontal	PASS
5	3744.390	-48.11	-13.00	Horizontal	PASS
6	7096.345	-40.28	-13.00	Horizontal	PASS

(GSM850MHz, Channel = 190, Horizontal)



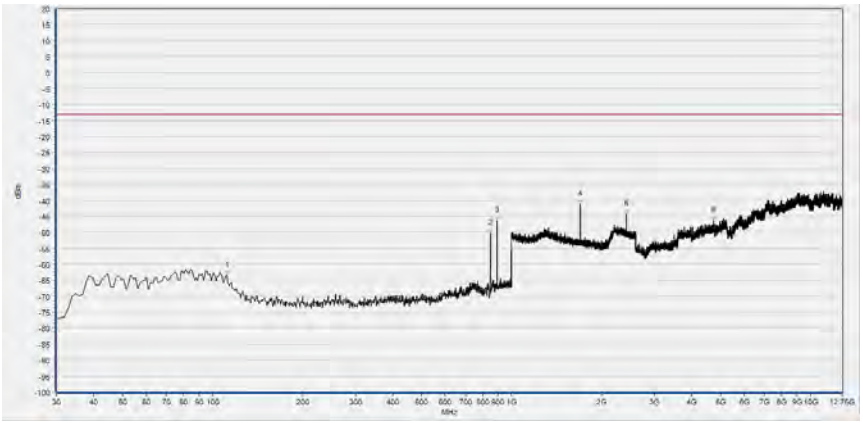
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	101.780	-60.88	-13.00	Vertical	PASS
2	256.010	-69.83	-13.00	Vertical	PASS
3	837.040	-49.98	-13.00	Vertical	N/A
4	881.660	-47.11	-13.00	Vertical	N/A
5	1672.909	-40.21	-13.00	Vertical	PASS
6	3727.778	-48.10	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 190, Vertical)



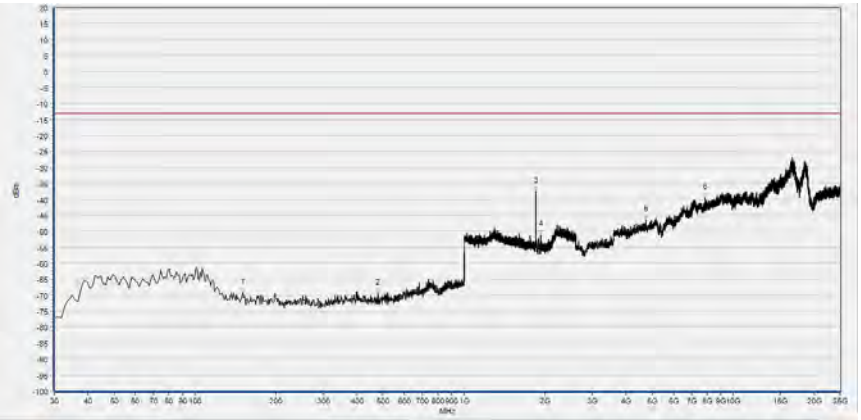
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	110.510	-63.07	-13.00	Horizontal	PASS
2	329.730	-70.17	-13.00	Horizontal	PASS
3	848.680	-40.89	-13.00	Horizontal	N/A
4	894.270	-49.81	-13.00	Horizontal	N/A
5	1697.239	-37.22	-13.00	Horizontal	PASS
6	2546.218	-46.23	-13.00	Horizontal	PASS
7	5174.877	-46.03	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 251, Horizontal)



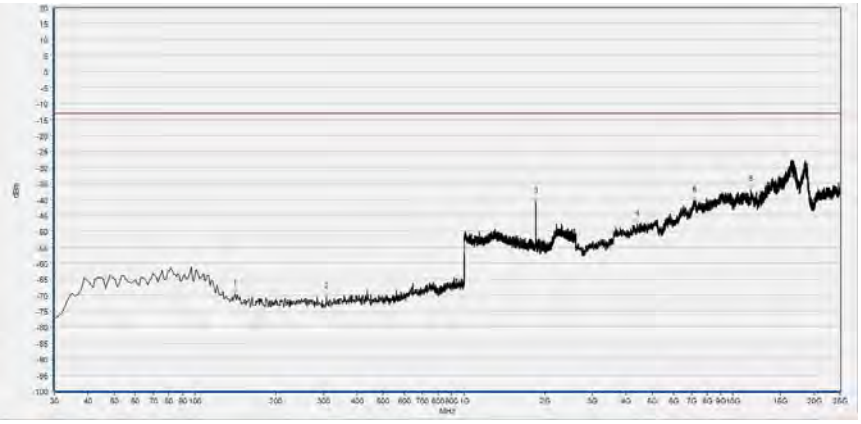
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	111.480	-63.52	-13.00	Vertical	PASS
2	848.680	-50.46	-13.00	Vertical	N/A
3	893.300	-46.47	-13.00	Vertical	N/A
4	1697.239	-41.16	-13.00	Vertical	PASS
5	2415.606	-44.37	-13.00	Vertical	PASS
6	4730.042	-46.38	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 251, Vertical)



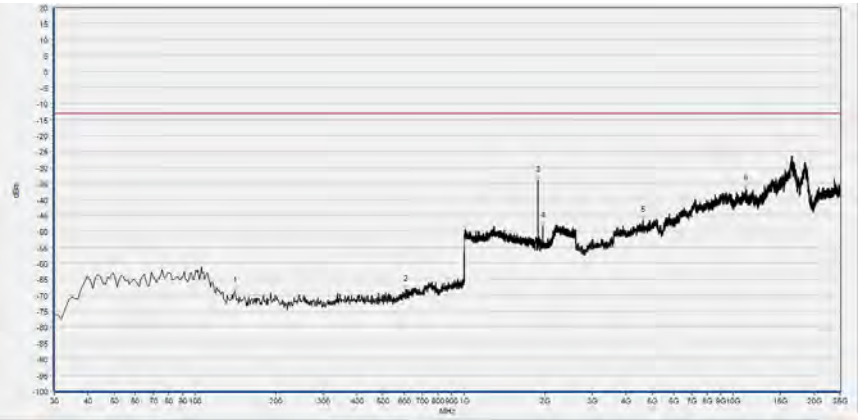
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	150.280	-69.19	-13.00	Horizontal	PASS
2	479.110	-69.40	-13.00	Horizontal	PASS
3	1850.260	-37.45	-13.00	Horizontal	N/A
4	1930.292	-51.14	-13.00	Horizontal	N/A
5	4750.791	-46.36	-13.00	Horizontal	PASS
6	7879.214	-39.37	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 512, Horizontal)



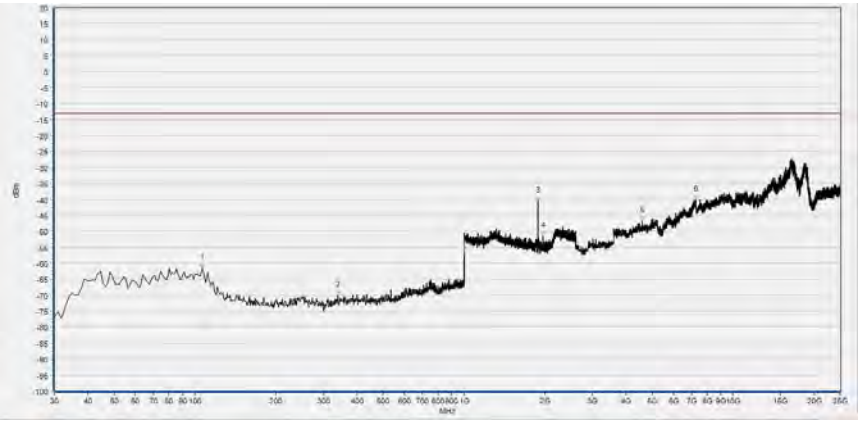
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	140.580	-69.62	-13.00	Vertical	PASS
2	307.420	-70.59	-13.00	Vertical	PASS
3	1850.260	-40.82	-13.00	Vertical	N/A
4	4412.693	-47.61	-13.00	Vertical	PASS
5	7182.651	-40.31	-13.00	Vertical	PASS
6	11651.246	-37.05	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 512, Vertical)



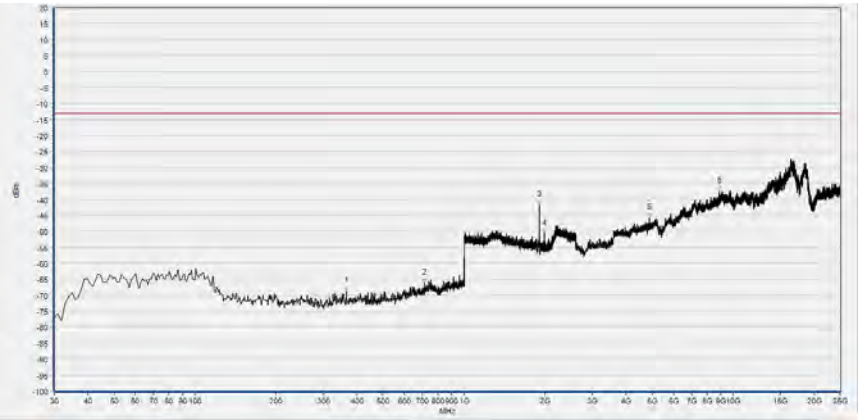
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	140.580	-68.66	-13.00	Horizontal	PASS
2	608.120	-68.30	-13.00	Horizontal	PASS
3	1879.712	-34.06	-13.00	Horizontal	N/A
4	1959.744	-48.33	-13.00	Horizontal	N/A
5	4636.734	-46.60	-13.00	Horizontal	PASS
6	11129.842	-36.78	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 661, Horizontal)



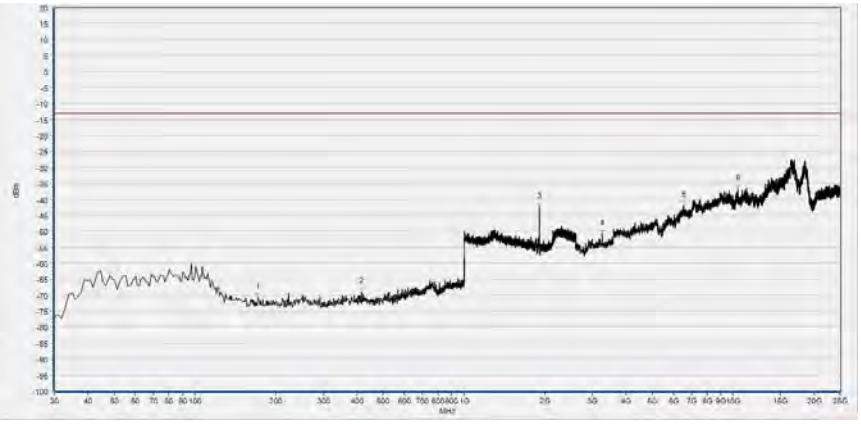
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	106.630	-61.64	-13.00	Vertical	PASS
2	339.430	-70.13	-13.00	Vertical	PASS
3	1879.712	-40.67	-13.00	Vertical	N/A
4	1959.744	-51.52	-13.00	Vertical	N/A
5	4608.220	-46.82	-13.00	Vertical	PASS
6	7255.974	-40.09	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 661, Vertical)



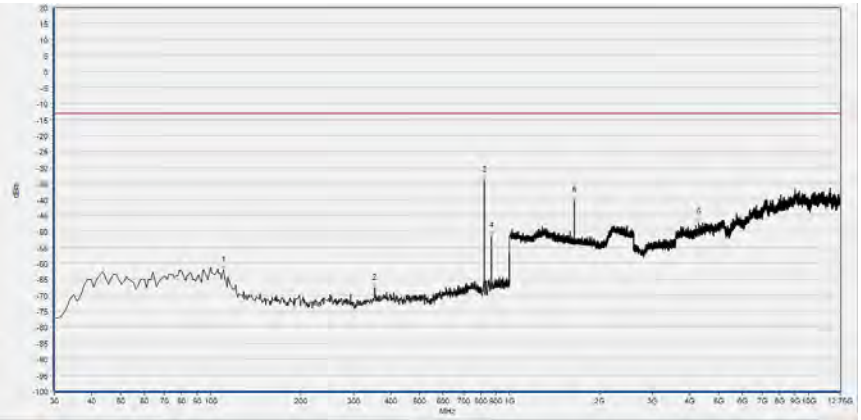
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	365.620	-68.72	-13.00	Horizontal	PASS
2	709.970	-66.34	-13.00	Horizontal	PASS
3	1909.804	-41.60	-13.00	Horizontal	N/A
4	1989.196	-50.74	-13.00	Horizontal	N/A
5	4885.215	-45.64	-13.00	Horizontal	PASS
6	8909.802	-37.33	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 810, Horizontal)



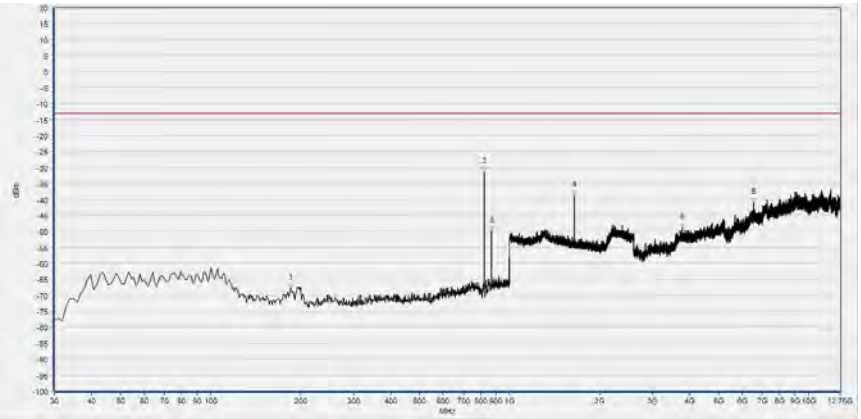
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	171.620	-70.66	-13.00	Vertical	PASS
2	416.060	-68.85	-13.00	Vertical	PASS
3	1909.804	-42.42	-13.00	Vertical	N/A
4	3268.049	-50.75	-13.00	Vertical	PASS
5	6563.484	-41.91	-13.00	Vertical	PASS
6	10416.985	-36.80	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 810, Vertical)



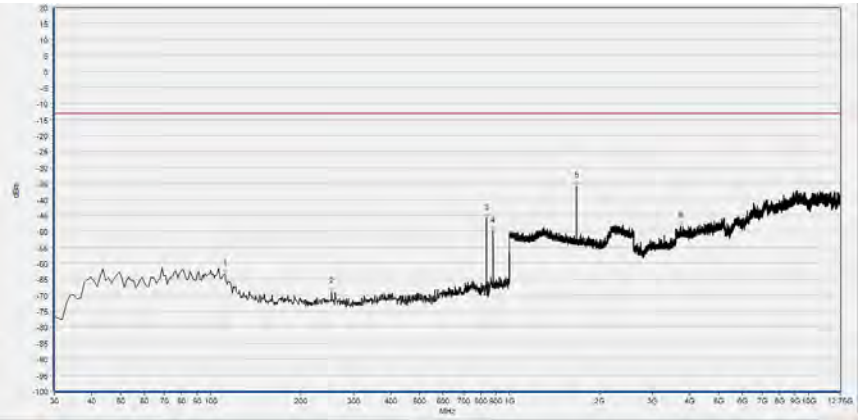
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	110.510	-62.32	-13.00	Horizontal	PASS
2	353.010	-67.89	-13.00	Horizontal	PASS
3	824.430	-34.00	-13.00	Horizontal	N/A
4	869.050	-51.43	-13.00	Horizontal	N/A
5	1647.939	-40.39	-13.00	Horizontal	PASS
6	4294.435	-47.36	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 128, Horizontal)



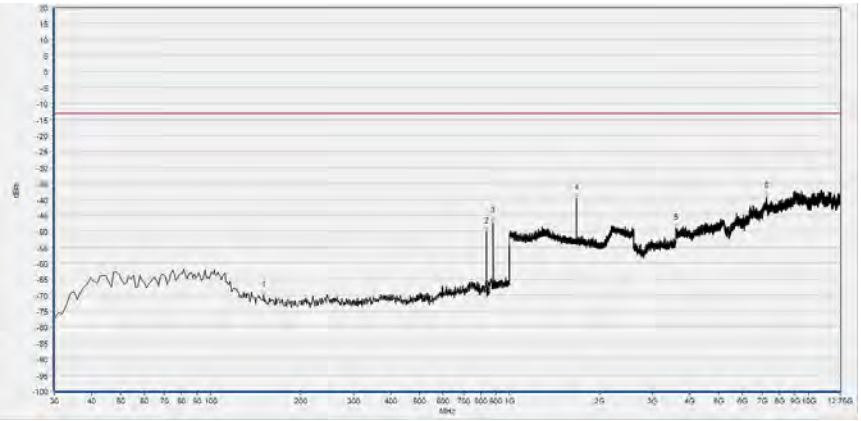
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	185.200	-67.86	-13.00	Vertical	PASS
2	824.430	-31.33	-13.00	Vertical	N/A
3	869.050	-49.99	-13.00	Vertical	N/A
4	1647.939	-38.87	-13.00	Vertical	PASS
5	3775.768	-48.88	-13.00	Vertical	PASS
6	6549.991	-40.98	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 128, Vertical)



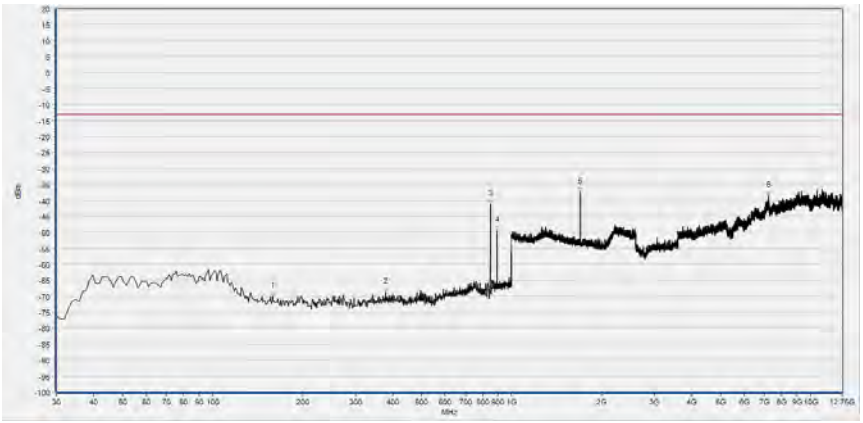
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	111.480	-63.36	-13.00	Horizontal	PASS
2	254.070	-69.00	-13.00	Horizontal	PASS
3	836.070	-45.83	-13.00	Horizontal	N/A
4	881.660	-50.05	-13.00	Horizontal	N/A
5	1672.909	-35.97	-13.00	Horizontal	PASS
6	3729.624	-48.38	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 190, Horizontal)



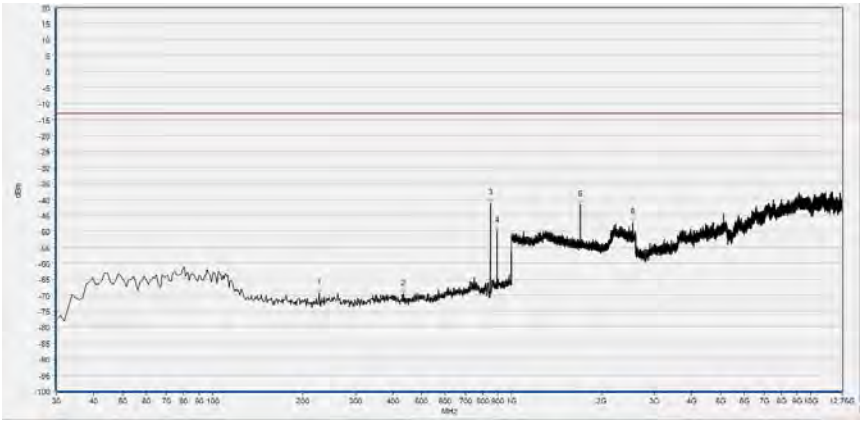
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	150.280	-70.01	-13.00	Vertical	PASS
2	837.040	-50.15	-13.00	Vertical	N/A
3	881.660	-47.33	-13.00	Vertical	N/A
4	1673.549	-39.78	-13.00	Vertical	PASS
5	3605.956	-49.06	-13.00	Vertical	PASS
6	7242.162	-39.19	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 190, Vertical)



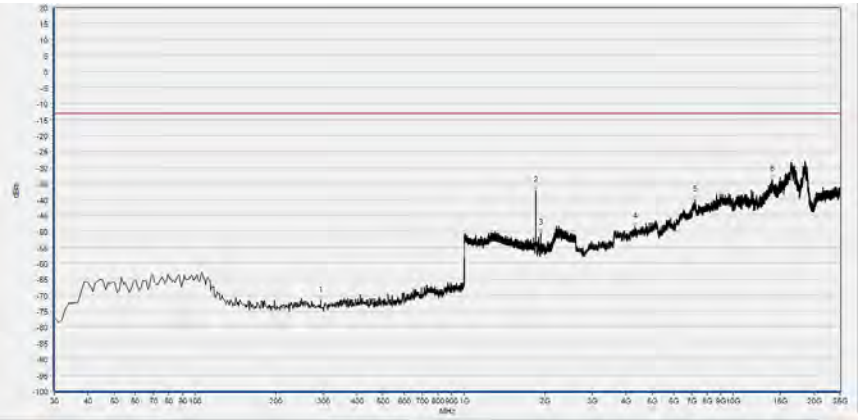
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	159.010	-70.12	-13.00	Horizontal	PASS
2	378.230	-68.81	-13.00	Horizontal	PASS
3	848.680	-41.30	-13.00	Horizontal	N/A
4	894.270	-49.57	-13.00	Horizontal	N/A
5	1697.239	-37.48	-13.00	Horizontal	PASS
6	7229.242	-38.57	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 251, Horizontal)



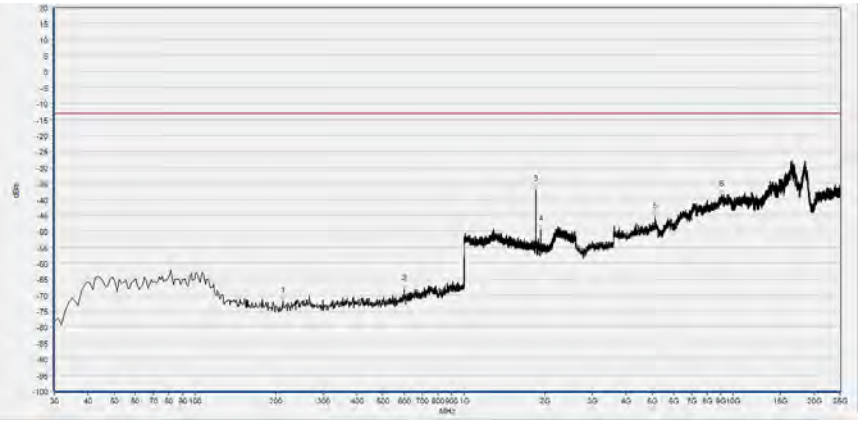
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	226.910	-69.30	-13.00	Vertical	PASS
2	435.460	-69.60	-13.00	Vertical	PASS
3	848.680	-41.21	-13.00	Vertical	N/A
4	893.300	-49.91	-13.00	Vertical	N/A
5	1697.239	-41.59	-13.00	Vertical	PASS
6	2546.218	-47.37	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 251, Vertical)



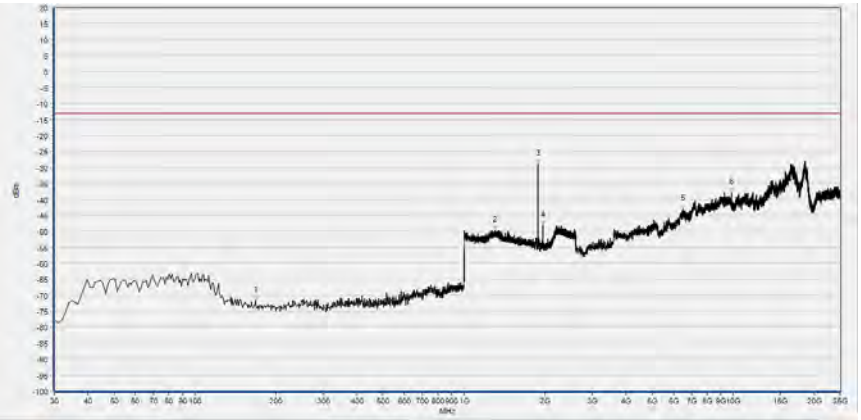
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	292.870	-71.71	-13.00	Horizontal	PASS
2	1850.260	-37.23	-13.00	Horizontal	N/A
3	1930.292	-50.51	-13.00	Horizontal	N/A
4	4319.003	-48.66	-13.00	Horizontal	PASS
5	7211.166	-40.17	-13.00	Horizontal	PASS
6	14005.710	-33.83	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 512, Horizontal)



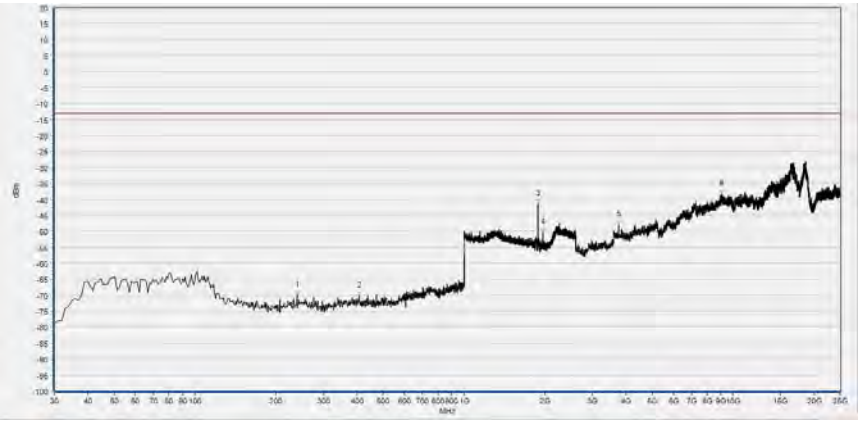
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	212.360	-71.95	-13.00	Vertical	PASS
2	598.420	-68.07	-13.00	Vertical	PASS
3	1850.260	-37.00	-13.00	Vertical	N/A
4	1930.292	-49.47	-13.00	Vertical	N/A
5	5133.697	-45.45	-13.00	Vertical	PASS
6	9044.226	-38.59	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 512, Vertical)



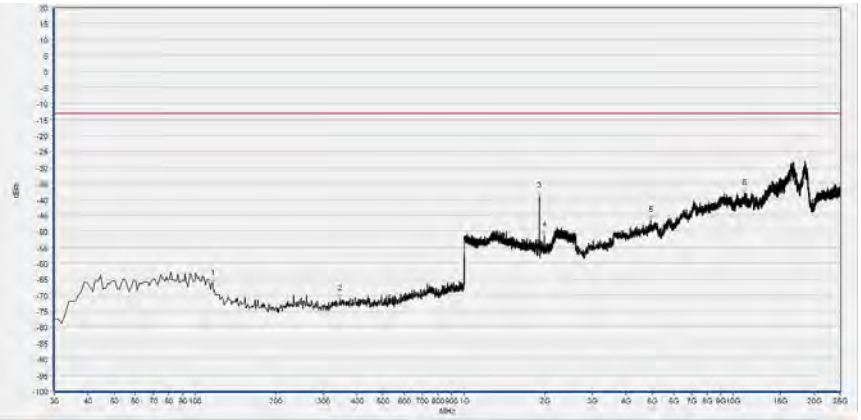
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	167.740	-71.69	-13.00	Horizontal	PASS
2	1306.042	-49.71	-13.00	Horizontal	PASS
3	1879.712	-28.99	-13.00	Horizontal	N/A
4	1959.744	-48.12	-13.00	Horizontal	N/A
5	6506.456	-43.00	-13.00	Horizontal	PASS
6	9854.846	-37.77	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 661, Horizontal)



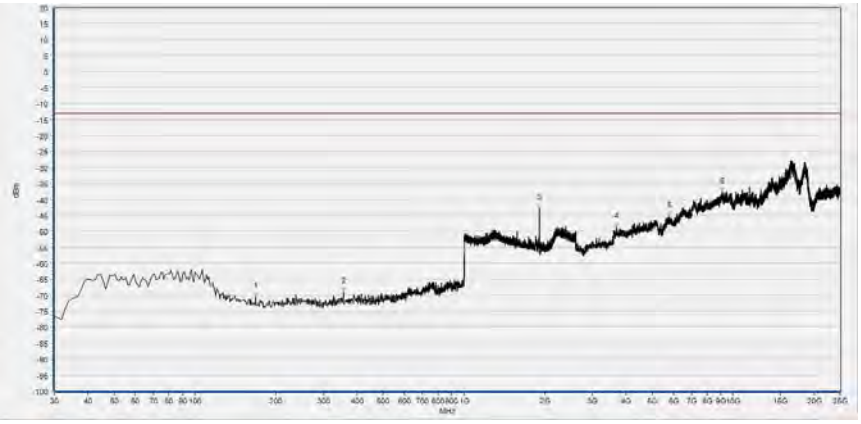
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	239.520	-70.07	-13.00	Vertical	PASS
2	408.300	-70.31	-13.00	Vertical	PASS
3	1879.712	-41.35	-13.00	Vertical	N/A
4	1959.744	-50.41	-13.00	Vertical	N/A
5	3760.938	-47.94	-13.00	Vertical	PASS
6	9052.373	-38.41	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 661, Vertical)



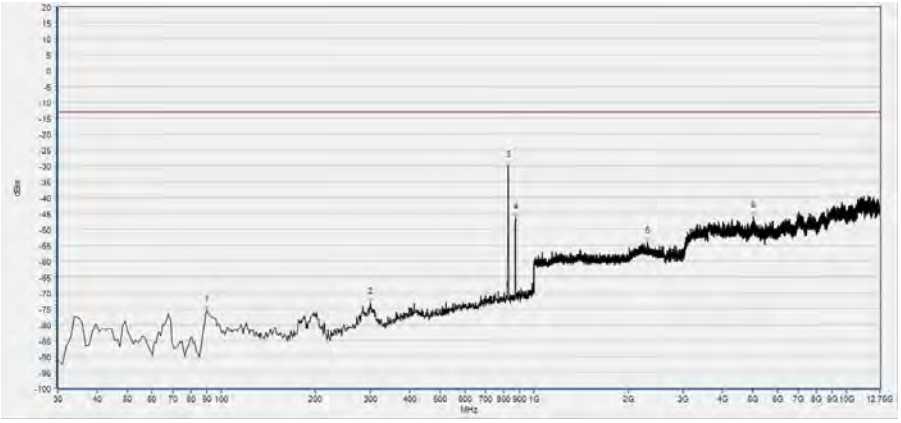
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	116.330	-66.49	-13.00	Horizontal	PASS
2	345.250	-71.25	-13.00	Horizontal	PASS
3	1909.804	-38.89	-13.00	Horizontal	N/A
4	1989.836	-51.30	-13.00	Horizontal	N/A
5	4942.244	-46.61	-13.00	Horizontal	PASS
6	11019.858	-38.01	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 810, Horizontal)



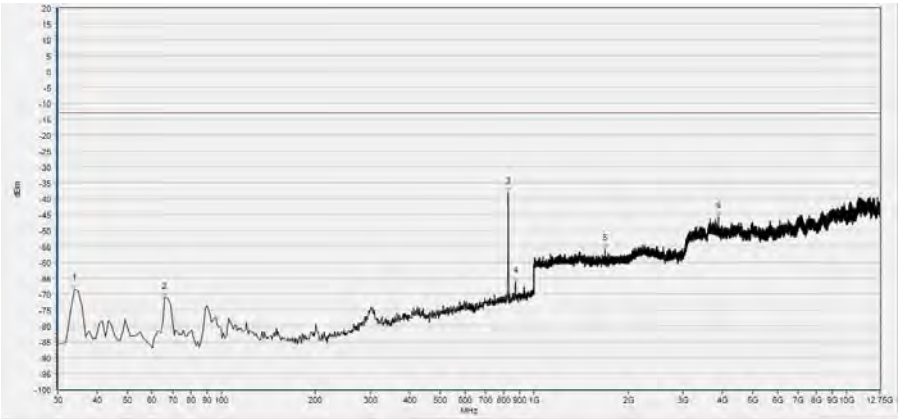
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	167.740	-70.42	-13.00	Vertical	PASS
2	355.920	-69.02	-13.00	Vertical	PASS
3	1909.804	-42.73	-13.00	Vertical	N/A
4	3679.469	-48.63	-13.00	Vertical	PASS
5	5797.672	-45.23	-13.00	Vertical	PASS
6	9089.034	-37.70	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 810, Vertical)



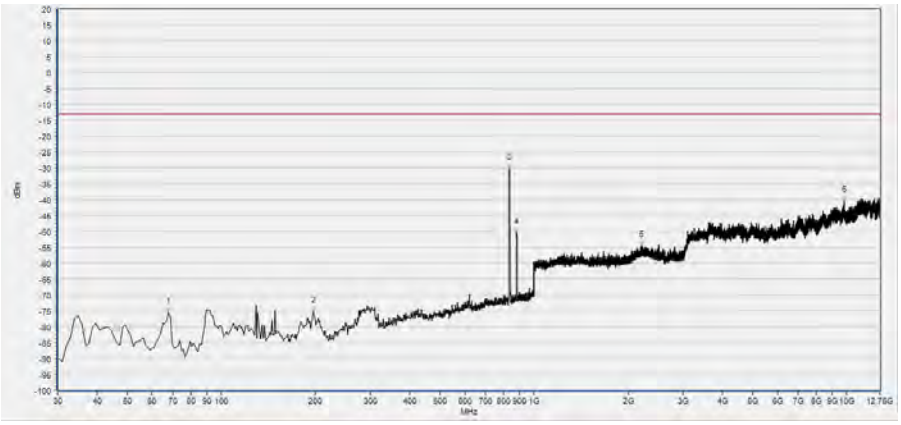
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	90.140	-75.41	-13.00	Horizontal	PASS
2	299.660	-73.12	-13.00	Horizontal	PASS
3	827.340	-30.08	-13.00	Horizontal	N/A
4	872.930	-46.52	-13.00	Horizontal	N/A
5	2299.720	-54.13	-13.00	Horizontal	PASS
6	5019.831	-45.92	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4132, Horizontal)



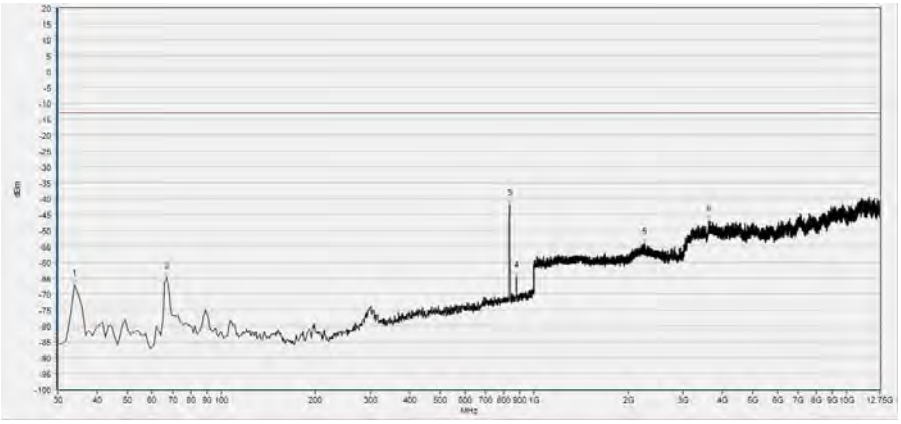
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	33.880	-68.58	-13.00	Vertical	PASS
2	65.890	-71.08	-13.00	Vertical	PASS
3	827.340	-38.09	-13.00	Vertical	N/A
4	871.960	-66.08	-13.00	Vertical	N/A
5	1683.794	-55.98	-13.00	Vertical	PASS
6	3880.978	-45.77	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4132, Vertical)



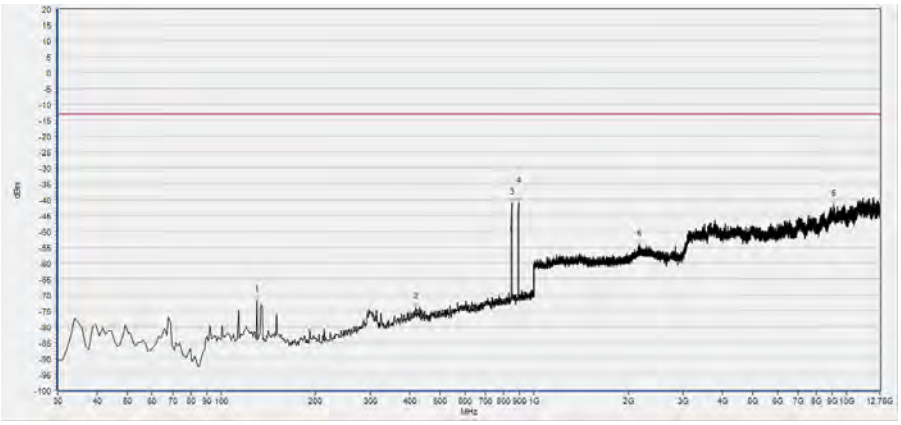
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-75.42	-13.00	Horizontal	PASS
2	196.840	-75.23	-13.00	Horizontal	PASS
3	834.130	-30.12	-13.00	Horizontal	N/A
4	878.750	-50.46	-13.00	Horizontal	N/A
5	2203.681	-54.42	-13.00	Horizontal	PASS
6	9837.343	-40.54	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4182, Horizontal)



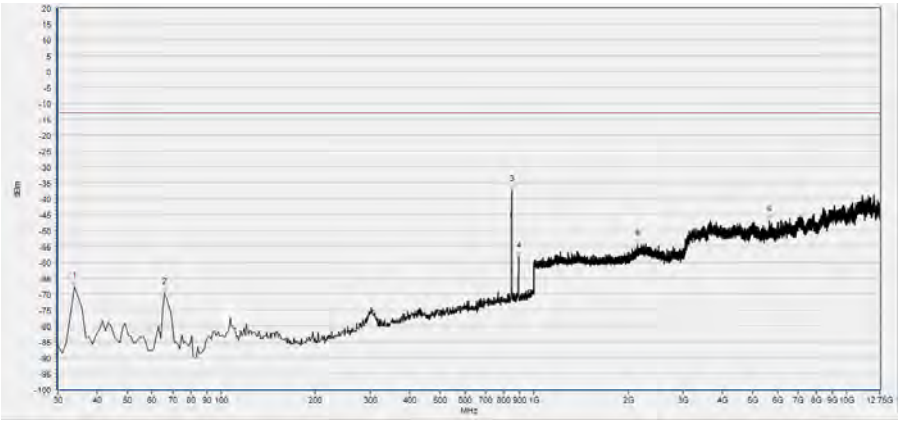
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	33.880	-67.06	-13.00	Vertical	PASS
2	66.860	-65.07	-13.00	Vertical	PASS
3	834.130	-41.79	-13.00	Vertical	N/A
4	878.750	-69.56	-13.00	Vertical	N/A
5	2250.420	-54.12	-13.00	Vertical	PASS
6	3622.568	-46.81	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4182, Vertical)



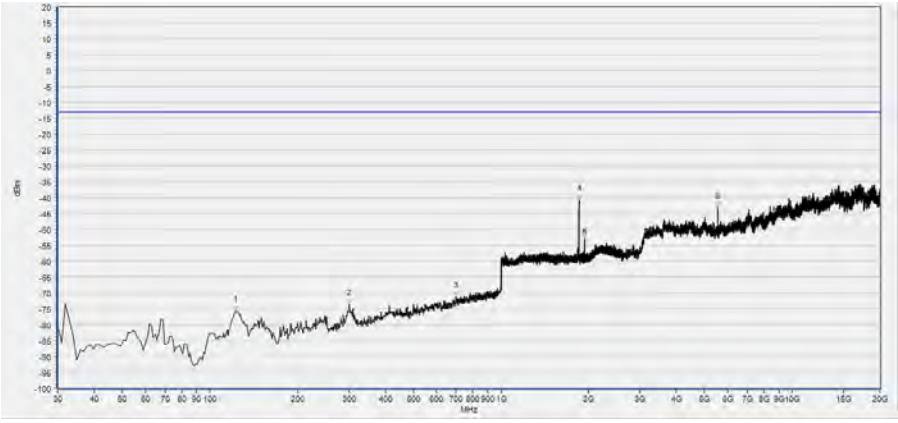
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	129.910	-72.00	-13.00	Horizontal	PASS
2	418.000	-74.16	-13.00	Horizontal	PASS
3	847.710	-41.10	-13.00	Horizontal	N/A
4	892.330	-40.88	-13.00	Horizontal	N/A
5	2172.309	-54.35	-13.00	Horizontal	PASS
6	9089.798	-41.70	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4233, Horizontal)



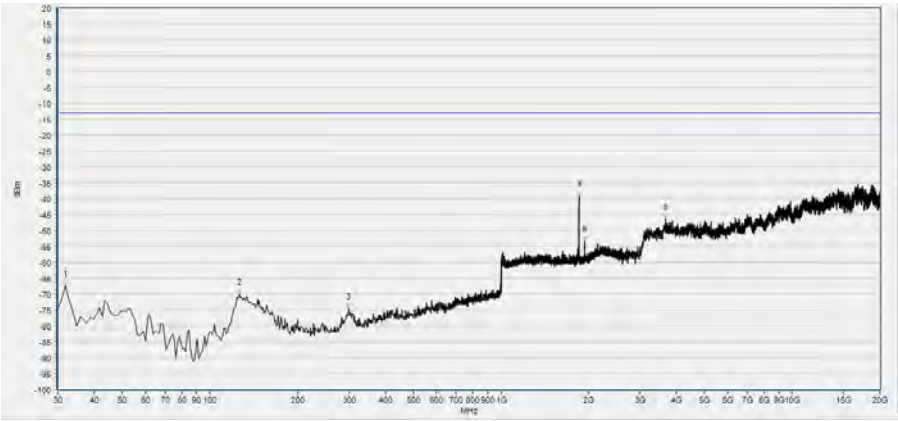
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	33.880	-67.92	-13.00	Vertical	PASS
2	65.890	-69.82	-13.00	Vertical	PASS
3	847.710	-37.36	-13.00	Vertical	N/A
4	892.330	-58.44	-13.00	Vertical	N/A
5	2147.339	-54.44	-13.00	Vertical	PASS
6	5658.474	-46.98	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4233, Vertical)



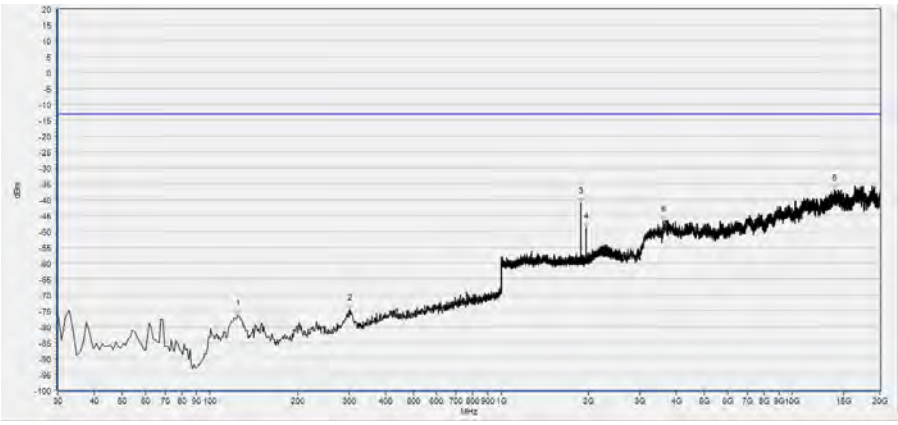
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	122.150	-75.68	-13.00	Horizontal	PASS
2	301.600	-73.66	-13.00	Horizontal	PASS
3	701.240	-71.31	-13.00	Horizontal	PASS
4	1852.181	-40.73	-13.00	Horizontal	N/A
5	1932.853	-52.86	-13.00	Horizontal	N/A
6	5555.374	-43.00	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9262, Horizontal)



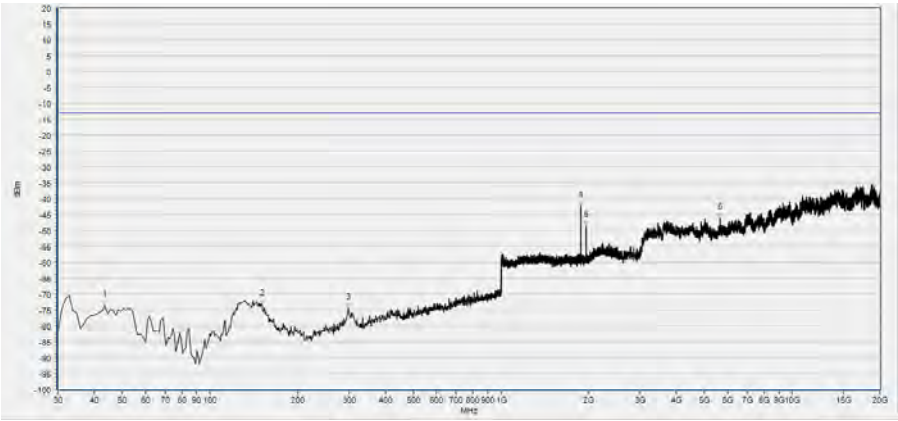
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	31.940	-67.33	-13.00	Vertical	PASS
2	126.030	-70.01	-13.00	Vertical	PASS
3	299.660	-74.53	-13.00	Vertical	PASS
4	1852.181	-39.29	-13.00	Vertical	N/A
5	1933.493	-53.29	-13.00	Vertical	N/A
6	3672.668	-46.53	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9262, Vertical)



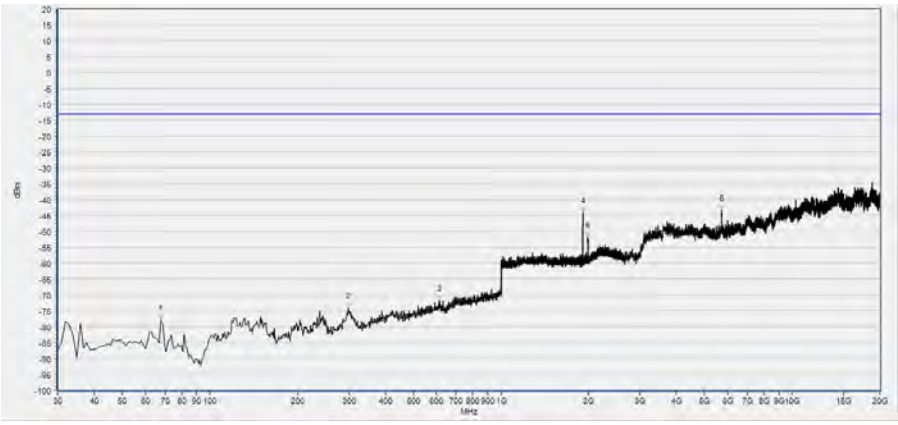
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	125.060	-76.14	-13.00	Horizontal	PASS
2	302.570	-74.54	-13.00	Horizontal	PASS
3	1879.712	-40.99	-13.00	Horizontal	N/A
4	1960.384	-48.71	-13.00	Horizontal	N/A
5	3612.548	-46.71	-13.00	Horizontal	PASS
6	14003.819	-36.92	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9400, Horizontal)



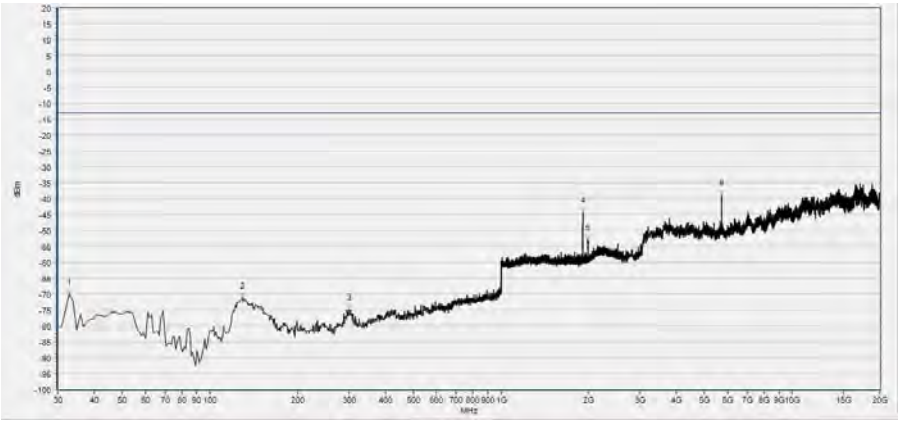
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	43.580	-73.74	-13.00	Vertical	PASS
2	151.250	-73.40	-13.00	Vertical	PASS
3	298.690	-74.59	-13.00	Vertical	PASS
4	1879.712	-42.40	-13.00	Vertical	N/A
5	1961.024	-48.69	-13.00	Vertical	N/A
6	5637.643	-46.22	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9400, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-77.96	-13.00	Horizontal	PASS
2	298.690	-73.94	-13.00	Horizontal	PASS
3	612.000	-71.56	-13.00	Horizontal	PASS
4	1909.164	-44.10	-13.00	Horizontal	N/A
5	1986.635	-51.90	-13.00	Horizontal	N/A
6	5726.241	-43.28	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9538, Horizontal)

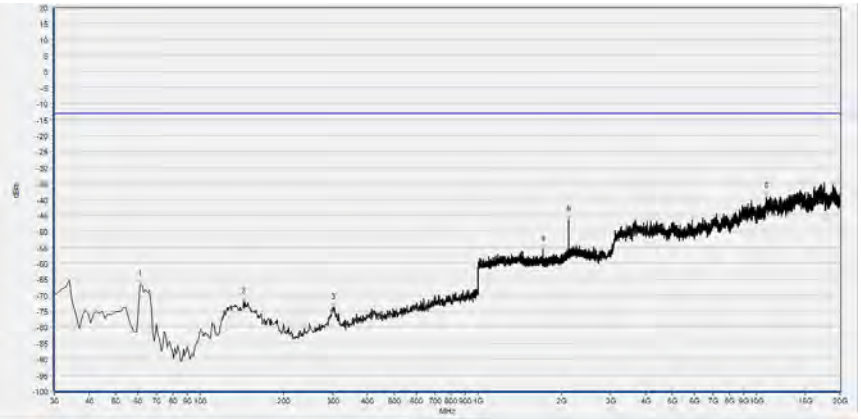


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	32.910	-69.94	-13.00	Vertical	PASS
2	128.940	-71.27	-13.00	Vertical	PASS
3	300.630	-74.86	-13.00	Vertical	PASS
4	1909.164	-44.26	-13.00	Vertical	N/A
5	1986.635	-52.83	-13.00	Vertical	N/A
6	5719.913	-38.89	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9538, Vertical)

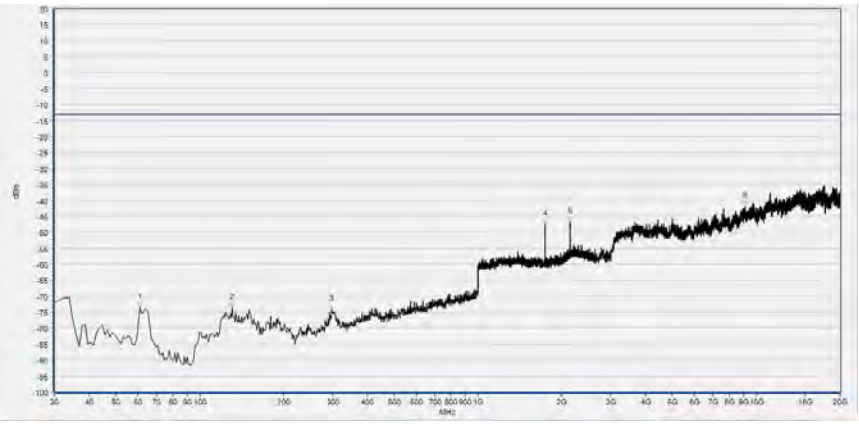
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-72.72	-13.00	Horizontal	PASS
2	131.850	-72.43	-13.00	Horizontal	PASS
3	296.750	-74.04	-13.00	Horizontal	PASS
4	1711.325	-55.38	-13.00	Horizontal	N/A
5	2112.765	-46.52	-13.00	Horizontal	N/A
6	5745.226	-46.73	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1312, Horizontal)



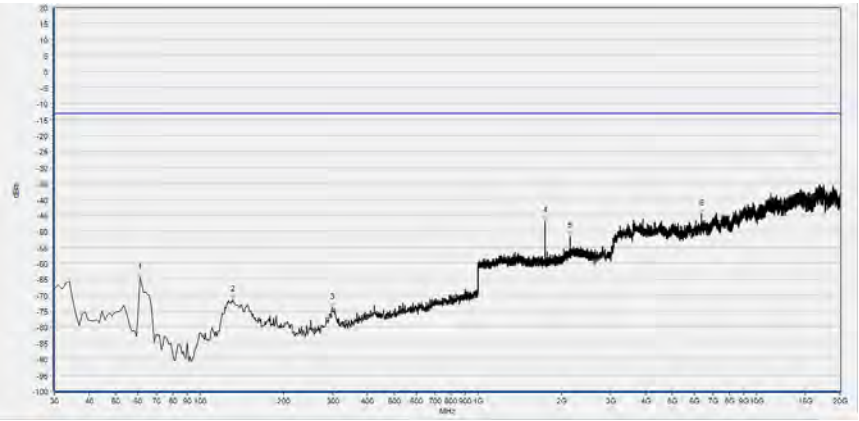
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-66.71	-13.00	Vertical	PASS
2	143.490	-72.07	-13.00	Vertical	PASS
3	300.630	-73.81	-13.00	Vertical	PASS
4	1711.965	-55.77	-13.00	Vertical	N/A
5	2111.485	-46.31	-13.00	Vertical	N/A
6	10877.578	-39.29	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1312, Vertical)



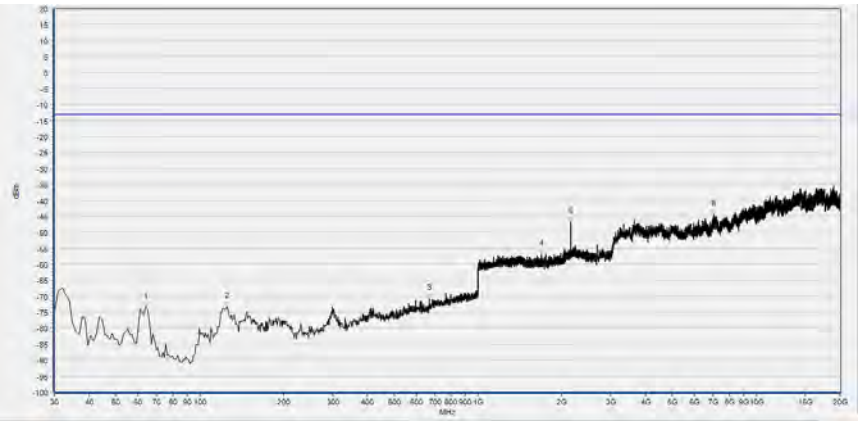
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-73.50	-13.00	Horizontal	PASS
2	130.880	-73.67	-13.00	Horizontal	PASS
3	297.720	-74.00	-13.00	Horizontal	PASS
4	1732.856	-47.54	-13.00	Horizontal	N/A
5	2139.016	-46.88	-13.00	Horizontal	N/A
6	9134.097	-41.91	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1413, Horizontal)



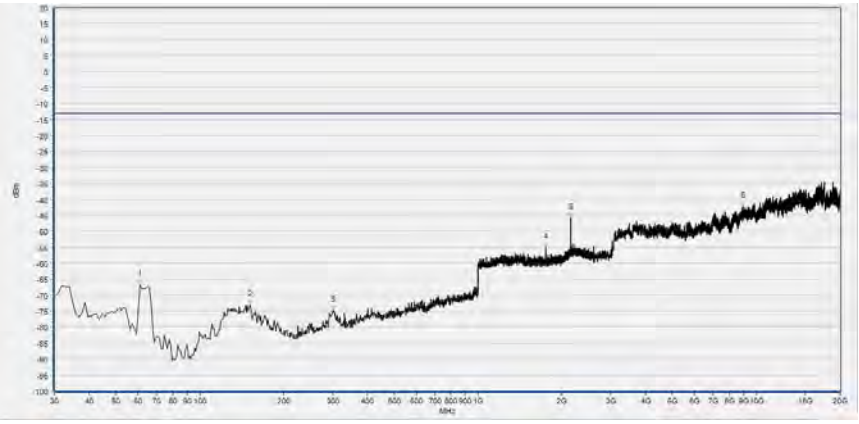
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-64.55	-13.00	Vertical	PASS
2	131.850	-71.43	-13.00	Vertical	PASS
3	298.690	-73.81	-13.00	Vertical	PASS
4	1732.856	-46.87	-13.00	Vertical	N/A
5	2139.656	-51.52	-13.00	Vertical	N/A
6	6336.934	-44.62	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1413, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	63.950	-73.48	-13.00	Horizontal	PASS
2	125.060	-73.12	-13.00	Horizontal	PASS
3	667.290	-70.74	-13.00	Horizontal	PASS
4	1686.355	-56.83	-13.00	Horizontal	PASS
5	2152.461	-46.77	-13.00	Horizontal	N/A
6	7026.732	-44.42	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1513, Horizontal)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	61.040	-66.74	-13.00	Vertical	PASS
2	151.250	-73.01	-13.00	Vertical	PASS
3	301.600	-74.82	-13.00	Vertical	PASS
4	1751.661	-55.19	-13.00	Vertical	N/A
5	2153.741	-45.69	-13.00	Vertical	N/A
6	8944.244	-42.10	-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	2018.04.17	2019.04.16
Attenuator 1	(N/A.)	10dB	Resnet	2018.04.17	2019.04.16
Attenuator 2	(N/A.)	3dB	Resnet	2018.04.17	2019.04.16
EXA Signal Analzyer	MY53470836	N9010A	Agilent	2018.11.06	2019.11.05
Wireless synthesizer	MY48364176	8960 -E5515C	Agilent	2018.04.17	2019.04.16
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	2018.04.17	2019.04.16
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	2018.08.04	2019.08.03
Receiver	MY54130016	N9038A	Agilent	2018.05.18	2019.05.17
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2018.03.03	2019.03.02
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2018.08.06	2019.08.05
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2018.08.02	2019.08.01
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	MA02	TS-PR18	Rohde& Schwarz	2018.05.08	2019.05.07
18-26.5GHz pre-Amplifier	MA03	TS-PR18	Rohde& Schwarz	2018.05.08	2019.05.07
Notch Filter	N/A	WRCG-GSM 850	Wainwright	2018.12.01	2019.11.30
Notch Filter	N/A	WRCG-GSM 1900	Wainwright	2018.12.01	2019.11.30
Notch Filter	N/A	WRCGV-W Band V	Wainwright	2018.12.01	2019.11.30
Notch Filter	N/A	WRCGV-W Band II	Wainwright	2018.12.01	2019.11.30
Notch Filter	N/A	WRCGV-W Band IV	Wainwright	2018.12.01	2019.11.30
Anechoic Chamber	N/A	9m*6m*6m	CRT	2017.11.19	2020.11.18

END OF REPORT