



TEST REPORT

APPLICANT : BLU Products, Inc.

PRODUCT NAME : Smart phone

MODEL NAME : C6L

BRAND NAME : BLU

FCC ID : YHLBLUC6L

STANDARD(S) : 47 CFR Part 22 Subpart H
47 CFR Part 24 Subpart E
47 CFR Part 27 Subpart L

TEST DATE : 2018-11-05 to 2018-12-18

ISSUE DATE : 2018-12-18

Tested by: Gao Mingzhou
Gao Mingzhou (Test Engineer)

Approved by: Peng Huarui
Peng Huarui (Supervisor)

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Change History		
Issue	Date	Reason for change
1.0	2018-12-18	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

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

1.2. Equipment Under Test (EUT) Description

Product Name:	Smart phone
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	FS097-MB-V1.0A
Software Version:	BLU_C5_PLUS_V8.1.G.01.03_GENERIC_01-11-2018_1359_debug
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 (at intervals of 200kHz); Rx: 869.20 - 893.80MHz (at intervals of 200kHz) GSM 1900MHz: Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz); Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz) WCDMA Band V Tx: 826.4 - 846.6MHz (at intervals of 200kHz); Rx: 871.4 - 891.6MHz (at intervals of 200kHz) WCDMA Band II Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz); Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz) WCDMA Band IV Tx: 1712.4 - 1752.6MHz (at intervals of 200kHz); Rx: 2112.4 - 2152.6MHz (at intervals of 200kHz)



Emission Designators:	GSM 850:248KGXW, GSM 1900:274KGXW EDGE850:246KG7W, EDGE1900:271KG7W, WCDMA Band V:4M18F9W , WCDMA Band II:4M19F9W, WCDMA Band IV:4M17F9W	
Antenna Type:	PIFA Antenna	
Antenna Gain:	GSM 850:	-2.0 dBi
	GSM1900:	-1.2 dBi
	WCDMA Band V:	-2.0 dBi
	WCDMA Band II:	-1.5 dBi
	WCDMA Band IV:	-1.2 dBi
Operating voltage:	Normal(NV):	3.8V
	Lowest(LV):	3.5V
	Highest(HV):	4.35V
Accessory Information:	Battery	
	Brand Name:	BLU
	Model No.:	C6L
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	2500mAh
	Rated Voltage:	3.8V
	Charge Limit:	4.35V
	AC Adapter	
	Brand Name:	N/A
	Model No.:	US-WW-1002
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V~ 50/60Hz 0.2A
	Rated Output:	5V= 1.0A

Note 1: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula $F(n)=824.2+0.2*(n-128)$, $128 \leq n \leq 251$; 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 $F(n)=1850.2+0.2*(n-512)$, $512 \leq n \leq 810$; 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 $F(n)=826.4+0.2*(n-4132)$, $4132 \leq n \leq 4233$; 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 $F(n)=1852.4+0.2*(n-9262)$, $9262 \leq n \leq 9538$; 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 $F(n)=1712.4+0.2*(n-1312)$, $1312 \leq n \leq 1513$; 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: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. 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	Nov 05, 2018	Gao Mingzhou	PASS
2	24.232(d), 27.50(d)	Peak - Average Ratio	Nov 05&22, 2018	Gao Mingzhou	PASS
3	2.1049	99% Occupied Bandwidth	Nov 06&23, 2018	Gao Mingzhou	PASS
4	2.1055, 22.355, 24.235, 27.54	Frequency Stability	Nov 05, 2018	Gao Mingzhou	PASS
5	2.1051, 22.917(a), 24.238(a), 27.53(h)	Conducted Out of Band Emissions	Dec 18, 2018	Gao Mingzhou	PASS
6	2.1051, 22.917(a), 24.238(a), 27.53(h)	Band Edge	Nov 06&22, 2018	Gao Mingzhou	PASS
7	22.913(a), 24.232(a)	Transmitter Radiated Power (EIPR/ERP)	Nov 21, 2018	Wang Dalong	PASS
8	2.1051, 22.917(a), 24.238(a), 27.53(h)	Radiated Out of Band Emissions	Nov 15&20, 2018	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.



1.4. 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

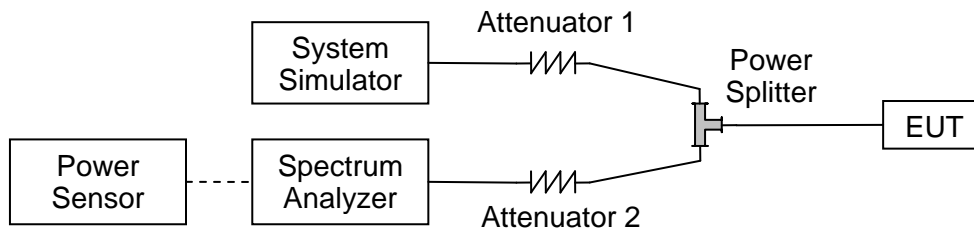
2.1. Conducted RF Output Power

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

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

GSM850	Average Power (dBm)		
TX Channel	128	190	251
Frequency (MHz)	824.2	836.6	848.8
GSM 1 Tx slot	32.29	32.30	32.37
GPRS 1 Tx slot	32.40	32.39	32.46
GPRS 2 Tx slots	29.99	30.00	30.10
GPRS 3 Tx slots	28.02	28.05	28.16
GPRS 4 Tx slots	25.96	26.02	26.18
EDGE 1 Tx slot	25.50	25.54	25.49
EDGE 2 Tx slots	25.08	25.13	25.31
EDGE 3 Tx slots	24.02	23.98	23.92
EDGE 4 Tx slots	21.15	21.28	21.30

GSM1900	Average Power (dBm)		
TX Channel	512	661	810
Frequency (MHz)	1850.2	1880	1909.8
GSM 1 Tx slot	28.95	28.94	28.69
GPRS 1 Tx slot	28.92	28.93	28.69
GPRS 2 Tx slots	26.91	26.70	26.24
GPRS 3 Tx slots	25.39	25.16	24.73
GPRS 4 Tx slots	23.33	23.12	22.69
EDGE 1 Tx slot	25.29	25.13	24.78
EDGE 2 Tx slots	25.43	25.27	24.89
EDGE 3 Tx slots	24.38	24.08	24.31
EDGE 4 Tx slots	23.46	23.78	23.36



WCDMA Band V		Average Power (dBm)		
TX Channel		4132	4182	4233
Frequency (MHz)		826.4	836.4	846.6
3GPP Rel 99	AMR 12.2Kbps	21.94	21.91	21.96
3GPP Rel 99	RMR 12.2Kbps	21.96	21.69	21.99
3GPP Rel 6	HSDPA Subtest-1	21.19	21.38	21.09
3GPP Rel 6	HSDPA Subtest-2	20.85	21.08	20.76
3GPP Rel 6	HSDPA Subtest-3	20.56	20.74	20.45
3GPP Rel 6	HSDPA Subtest-4	20.43	20.68	20.32
3GPP Rel 6	HSUPA Subtest-1	19.39	19.79	19.35
3GPP Rel 6	HSUPA Subtest-2	19.12	19.30	18.89
3GPP Rel 6	HSUPA Subtest-3	19.47	19.85	19.42
3GPP Rel 6	HSUPA Subtest-4	19.04	19.40	18.96
3GPP Rel 6	HSUPA Subtest-5	20.87	21.08	20.78

WCDMA Band II		Average Power (dBm)		
TX Channel		9262	9400	9538
Frequency (MHz)		1852.4	1880.0	1907.6
3GPP Rel 99	AMR 12.2Kbps	21.81	21.76	21.74
3GPP Rel 99	RMR 12.2Kbps	21.80	21.83	21.77
3GPP Rel 6	HSDPA Subtest-1	21.53	21.77	21.75
3GPP Rel 6	HSDPA Subtest-2	21.35	21.62	21.51
3GPP Rel 6	HSDPA Subtest-3	21.49	21.39	21.51
3GPP Rel 6	HSDPA Subtest-4	21.13	21.71	21.65
3GPP Rel 6	HSUPA Subtest-1	19.13	19.70	19.85
3GPP Rel 6	HSUPA Subtest-2	19.00	19.58	19.75
3GPP Rel 6	HSUPA Subtest-3	19.48	20.00	20.21
3GPP Rel 6	HSUPA Subtest-4	19.64	20.03	20.24
3GPP Rel 6	HSUPA Subtest-5	21.51	21.79	21.39



WCDMA Band IV		Average Power (dBm)		
TX Channel		1312	1413	1513
Frequency (MHz)		1712.4	1732.6	1752.6
3GPP Rel 99	AMR 12.2Kbps	22.20	22.24	22.22
3GPP Rel 99	RMR 12.2Kbps	22.22	22.27	22.24
3GPP Rel 6	HSDPA Subtest-1	22.05	21.96	21.71
3GPP Rel 6	HSDPA Subtest-2	21.72	21.70	21.43
3GPP Rel 6	HSDPA Subtest-3	20.98	20.83	20.67
3GPP Rel 6	HSDPA Subtest-4	20.72	20.62	20.43
3GPP Rel 6	HSUPA Subtest-1	19.76	19.57	19.48
3GPP Rel 6	HSUPA Subtest-2	19.21	19.08	19.08
3GPP Rel 6	HSUPA Subtest-3	19.71	19.59	19.49
3GPP Rel 6	HSUPA Subtest-4	19.79	19.62	19.53
3GPP Rel 6	HSUPA Subtest-5	21.87	21.82	21.59

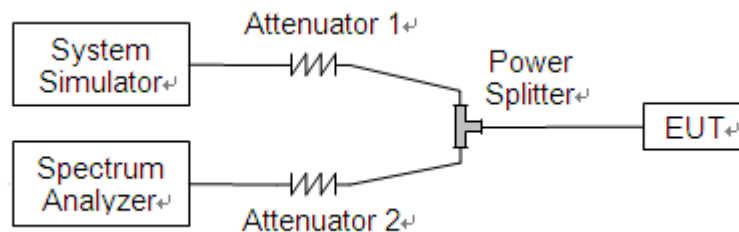
2.2. Peak to Average Ratio

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

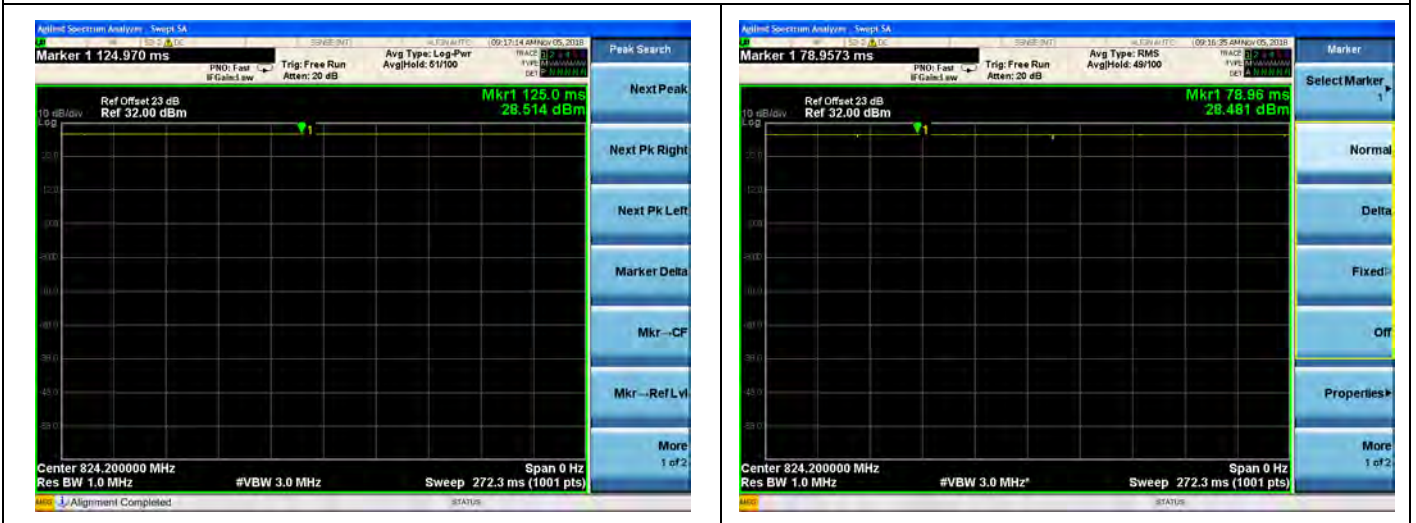
The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

A. Test Verdict:

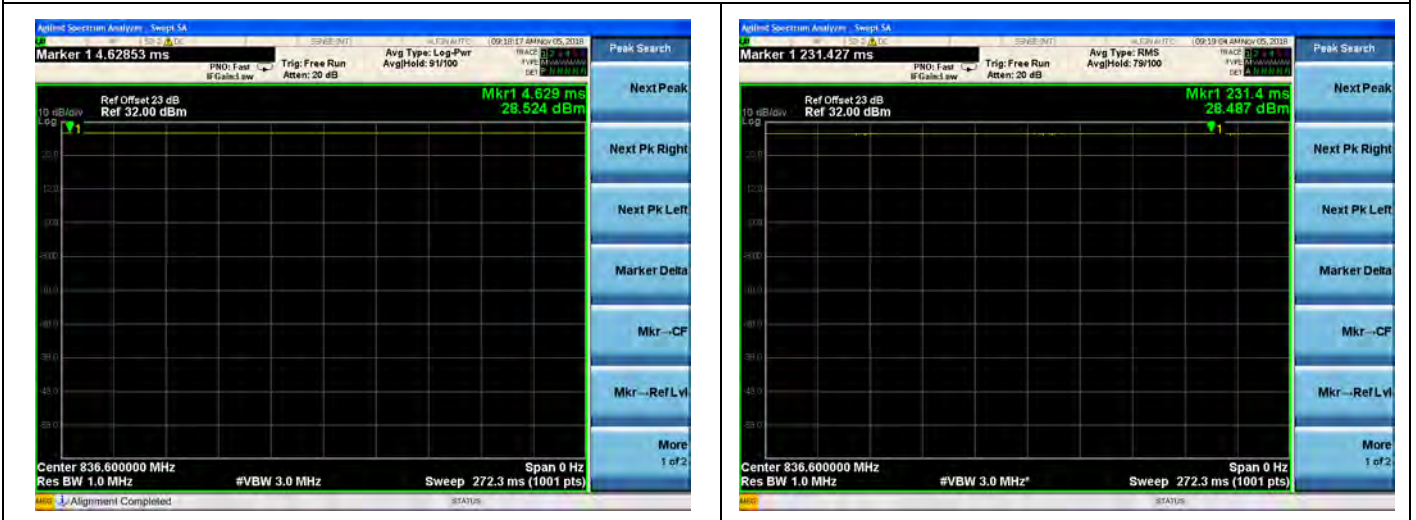
Band	Channel	Frequency (MHz)	Peak to Average ratio	Limit	Verdict
			dB	dB	
GSM 850MHz	128	824.2	0.03	13	PASS
	190	836.6	0.04		PASS
	251	848.8	0.06		PASS
GSM 1900MHz	512	1850.2	0.06		PASS
	661	1880.0	0.04		PASS
	810	1909.8	0.06		PASS
EDGE 850MHz	128	824.2	0.05		PASS
	190	836.6	0.06		PASS
	251	848.8	0.08		PASS
EDGE 1900MHz	512	1850.2	0.08		PASS
	661	1880.0	0.05		PASS
	810	1909.8	0.16		PASS
WCDMA Band V	4132	826.4	2.97		PASS
	4182	836.4	2.87		PASS
	4233	846.6	2.87		PASS
WCDMA Band II	9262	1852.4	2.97		PASS
	9400	1880.0	2.37		PASS
	9538	1907.6	2.76		PASS
WCDMA Band IV	1312	1712.4	2.83	PASS	
	1413	1732.6	3.01	PASS	
	1513	1752.6	3.02	PASS	



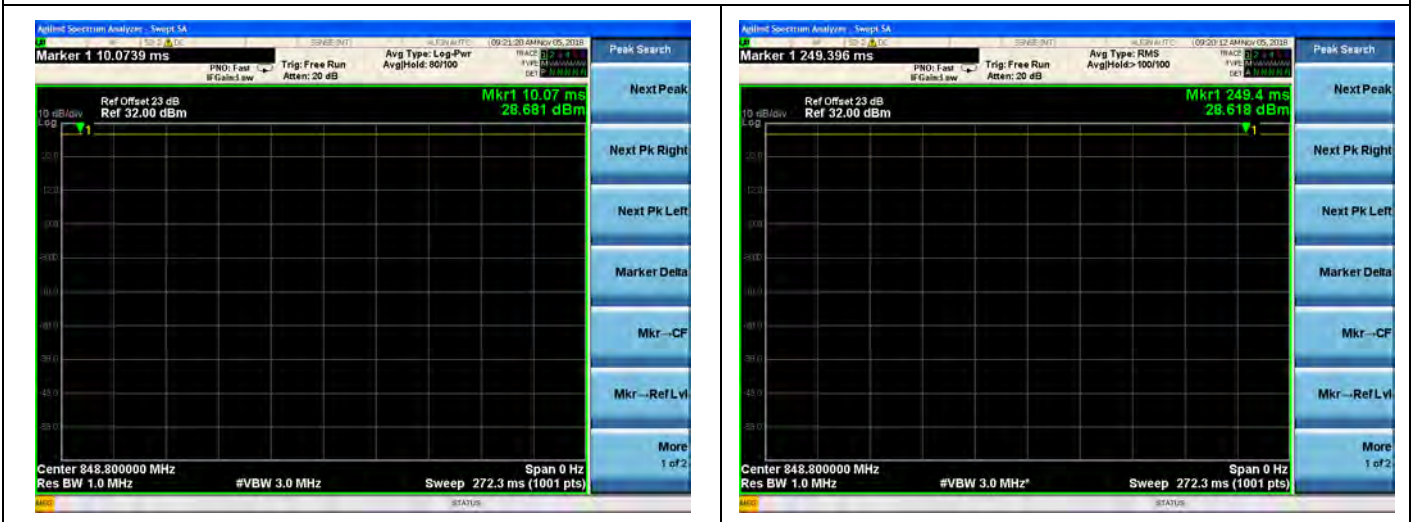
GSM 850MHz CH128 824.2MHz



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

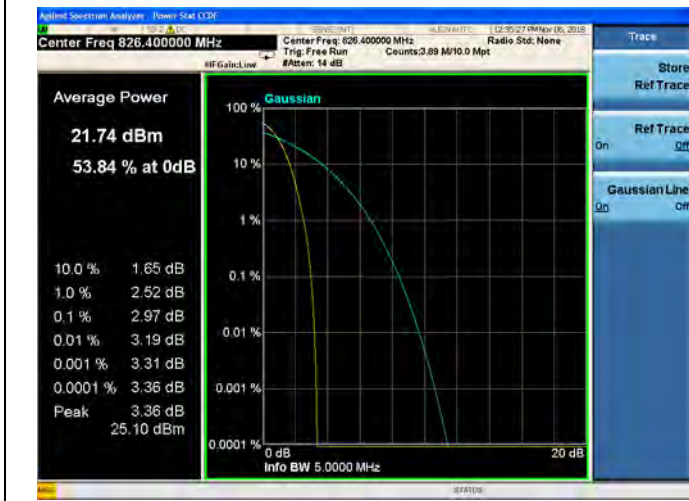


EDGE 1900MHz CH810 1909.8MHz





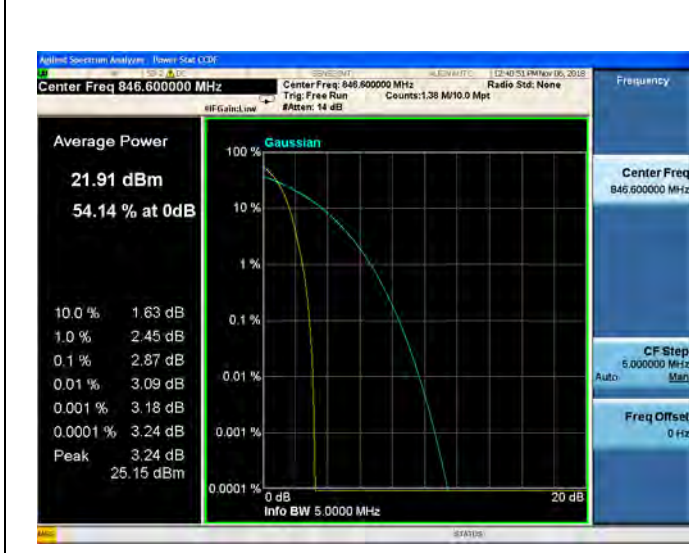
WCDMA Band V CH4132 826.4MHz

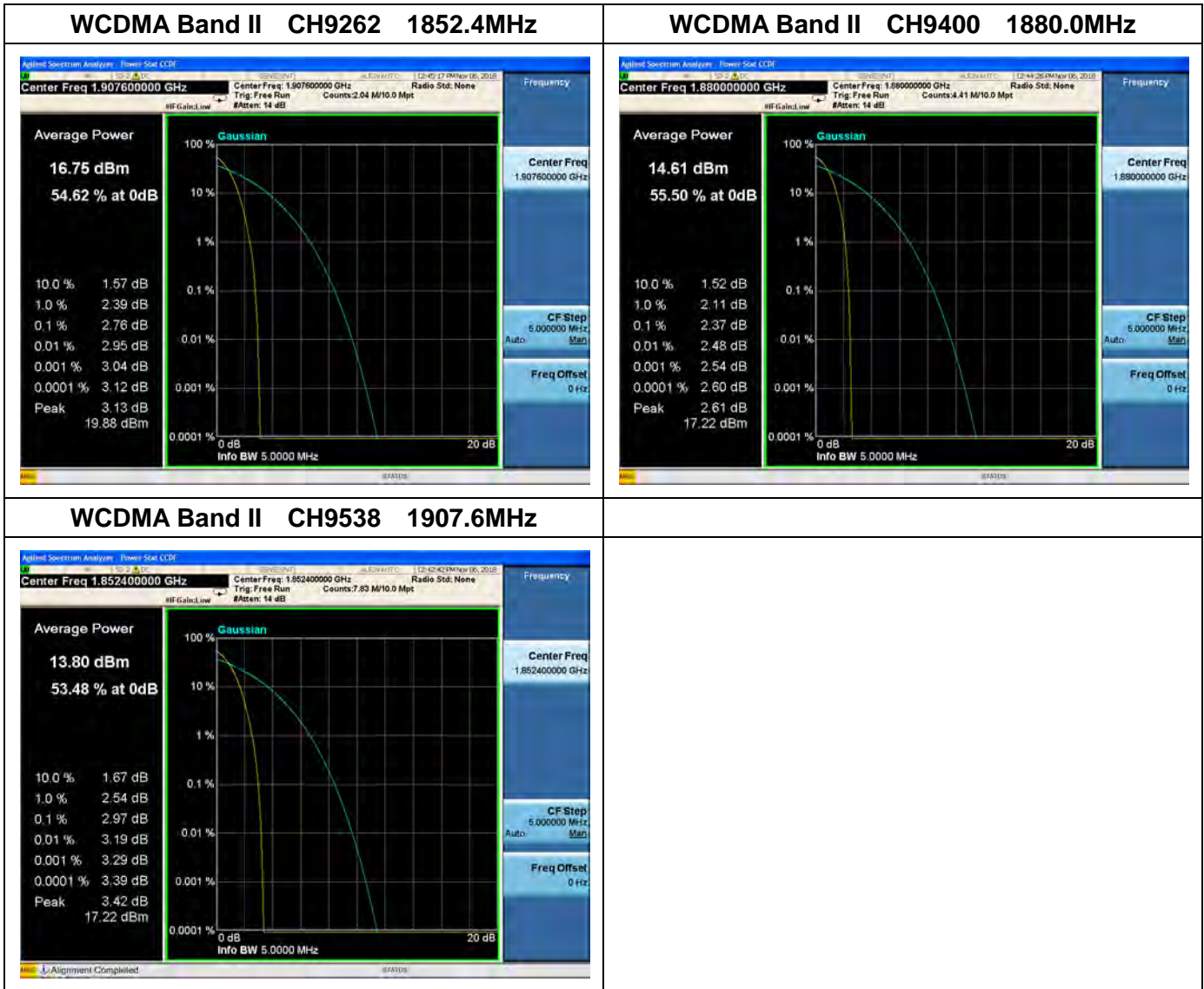


WCDMA Band V CH4182 836.4MHz



WCDMA Band V CH4233 846.6MHz



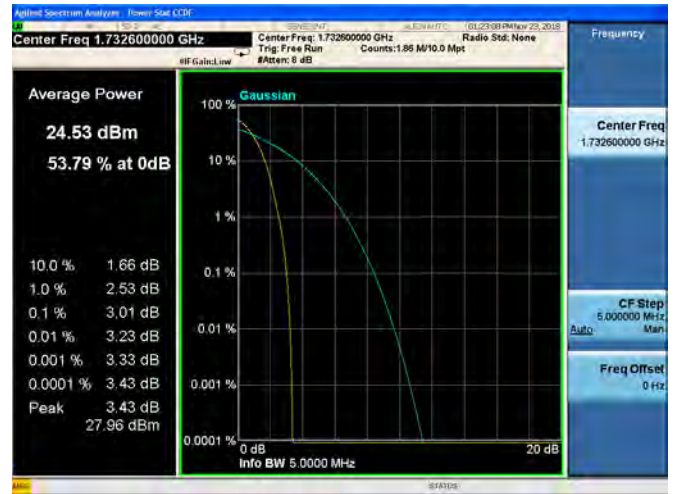




WCDMA Band IV CH1312 1712.4MHz



WCDMA Band IV CH1413 1732.6MHz



WCDMA Band IV CH1513 1752.6MHz



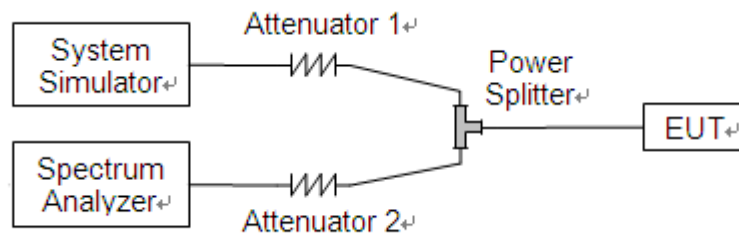
2.3.99% Occupied Bandwidth

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.

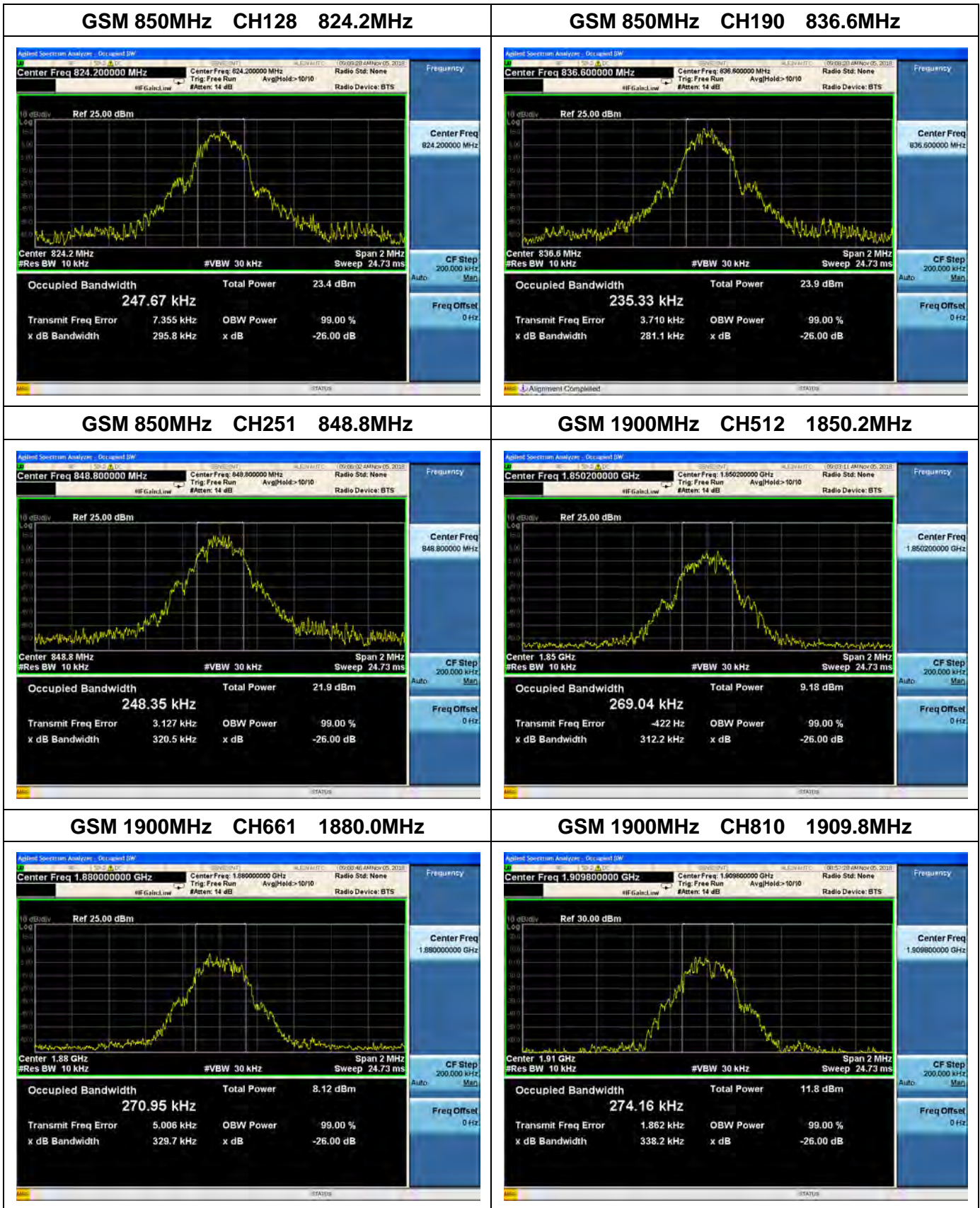


2.3.3. Test Result

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

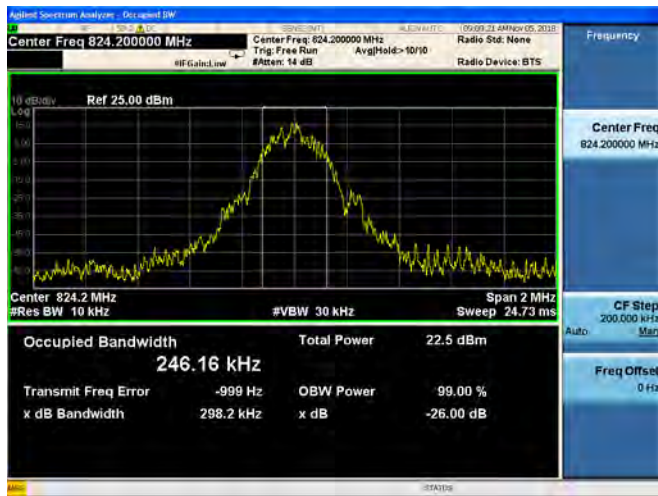
GSM Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)
GSM 850MHz	128	824.2	247.67	295.8
	190	836.6	235.33	281.1
	251	848.8	248.35	320.5
GSM 1900MHz	512	1850.2	269.04	312.2
	661	1880.0	270.95	329.7
	810	1909.8	274.16	338.2
EDGE 850MHz	128	824.2	246.16	298.2
	190	836.6	233.94	304.0
	251	848.8	223.82	287.5
EDGE 1900MHz	512	1850.2	271.81	315.7
	661	1880.0	256.29	325.0
	810	1909.8	243.35	303.1

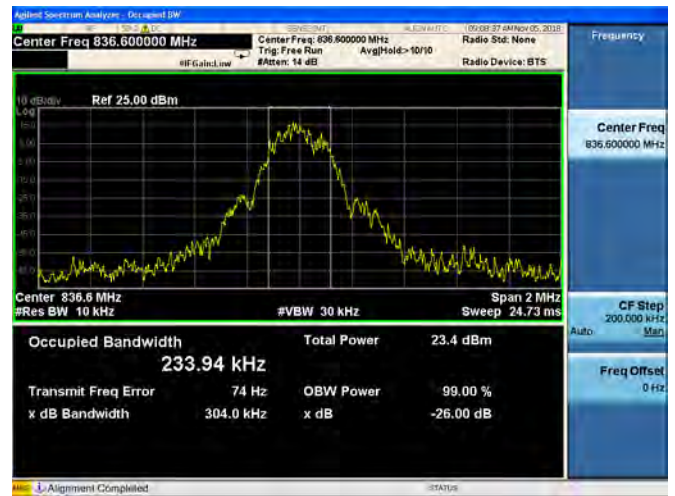




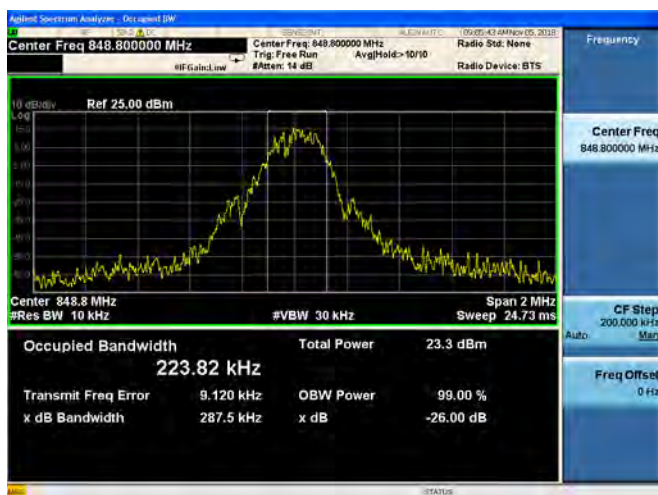
EDGE 850MHz CH128 824.2MHz



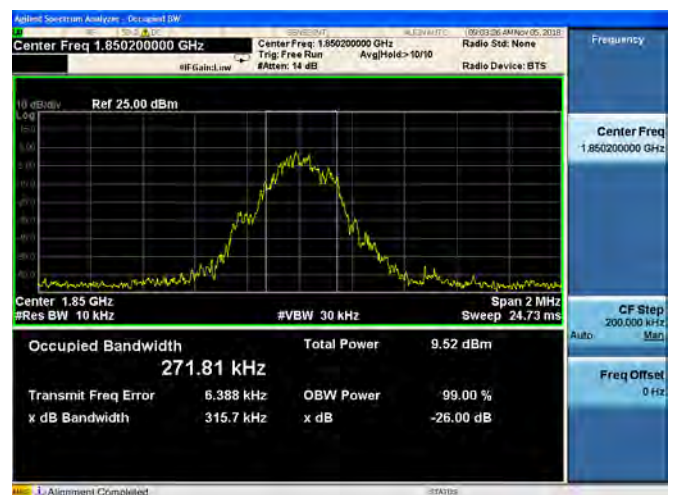
EDGE 850MHz CH190 836.6MHz



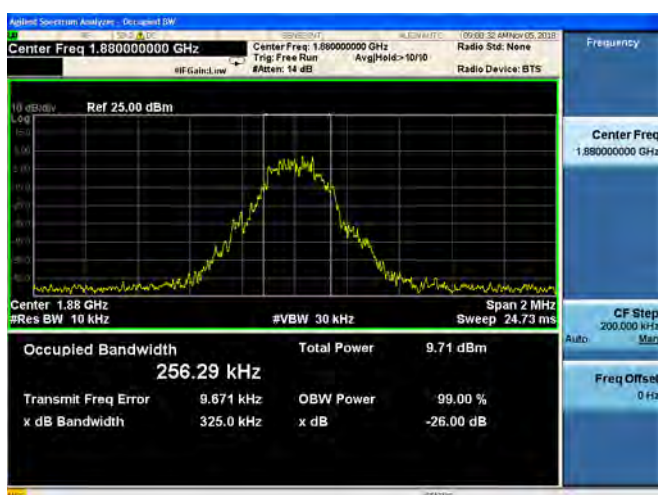
EDGE 850MHz CH251 848.8MHz



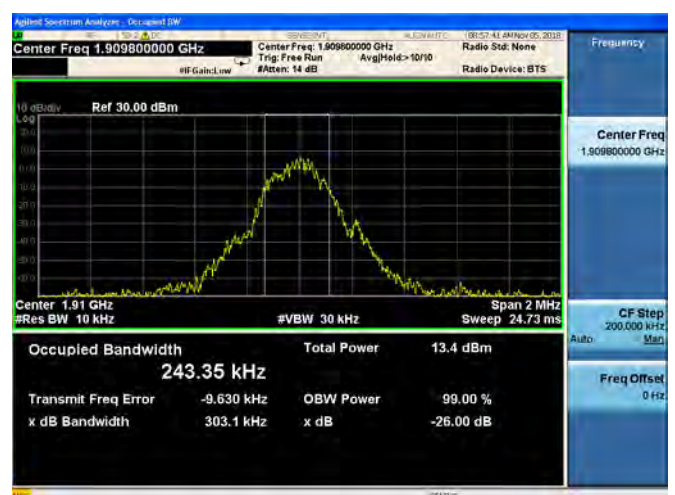
EDGE 1900MHz CH512 1850.2MHz



EDGE 1900MHz CH661 1880.0MHz



EDGE 1900MHz CH810 1909.8MHz



**WCDMA Test Verdict:**

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
WCDMA Band V	4132	826.4	4.176	4.644
	4182	836.4	4.152	4.649
	4233	846.6	4.174	4.659
WCDMA Band II	9262	1852.4	4.147	4.662
	9400	1880.0	4.186	4.701
	9538	1907.6	4.139	4.650
WCDMA Band IV	1312	1712.4	4.160	4.648
	1413	1732.6	4.162	4.636
	1513	1752.6	4.165	4.647
HSDPA Band V	4132	826.4	4.149	4.640
	4182	836.4	4.151	4.636
	4233	846.6	4.164	4.654
HSDPA Band II	9262	1852.4	4.147	4.638
	9400	1880.0	4.183	4.722
	9538	1907.6	4.144	4.660
HSDPA Band IV	1312	1712.4	4.164	4.648
	1413	1732.6	4.150	4.644
	1513	1752.6	4.148	4.647
HSUPA Band V	4132	826.4	4.150	4.654
	4182	836.4	4.158	4.647
	4233	846.6	4.172	4.663
HSUPA Band II	9262	1852.4	4.138	4.638
	9400	1880.0	4.167	4.710
	9538	1907.6	4.130	4.660
HSUPA Band IV	1312	1712.4	4.156	4.666
	1413	1732.6	4.166	4.653
	1513	1752.6	4.154	4.652



WCDMA Band V CH4132 826.4MHz



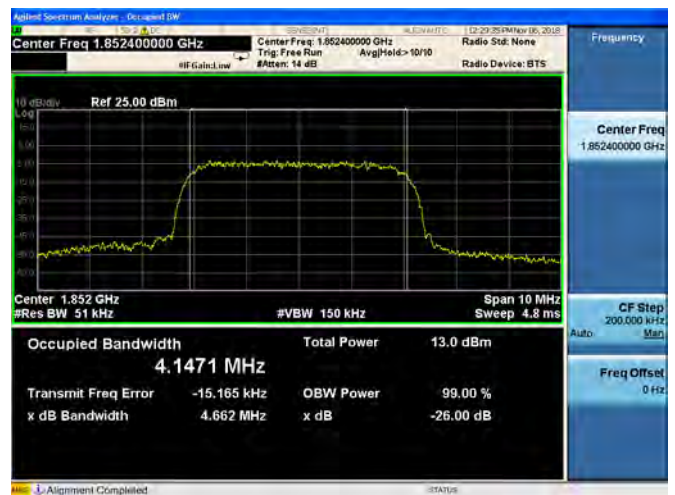
WCDMA Band V CH4182 836.4MHz



WCDMA Band V CH4233 846.6MHz



WCDMA Band II CH9262 1852.4MHz



WCDMA Band II CH9400 1880.0MHz

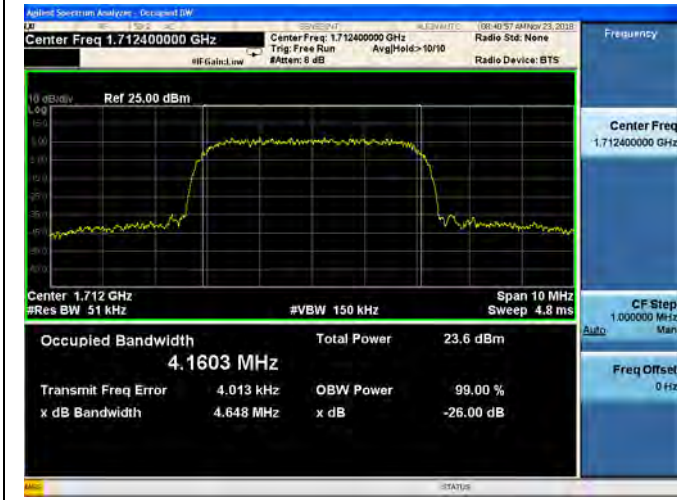


WCDMA Band II CH9538 1907.6MHz





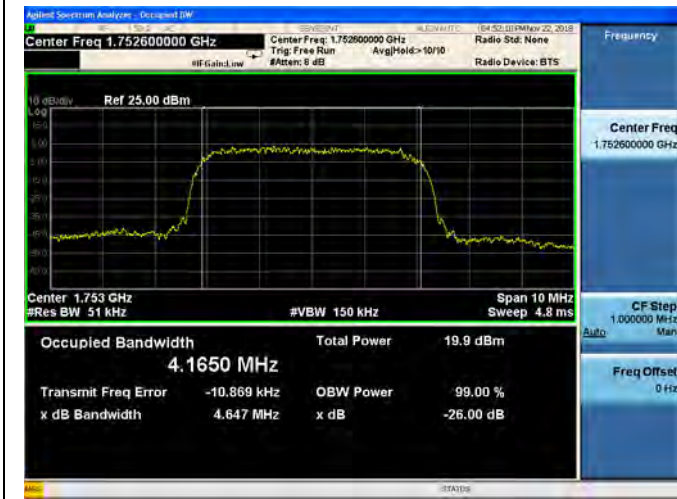
WCDMA Band IV CH1312 1712.4MHz



WCDMA Band IV CH1413 1732.6MHz

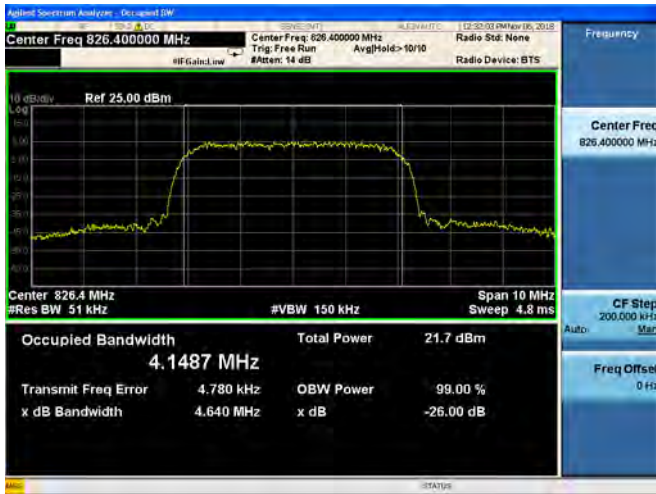


WCDMA Band IV CH1513 1752.6MHz

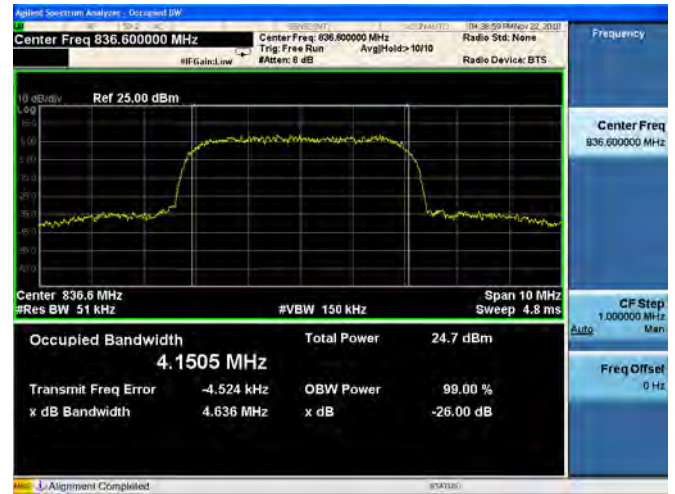




HSDPA Band V CH4132 826.4MHz



HSDPA Band V CH4182 836.4MHz



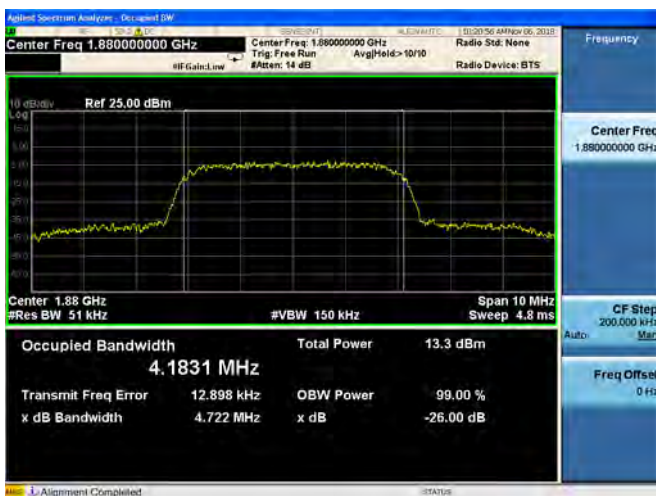
HSDPA Band V CH4233 846.6MHz



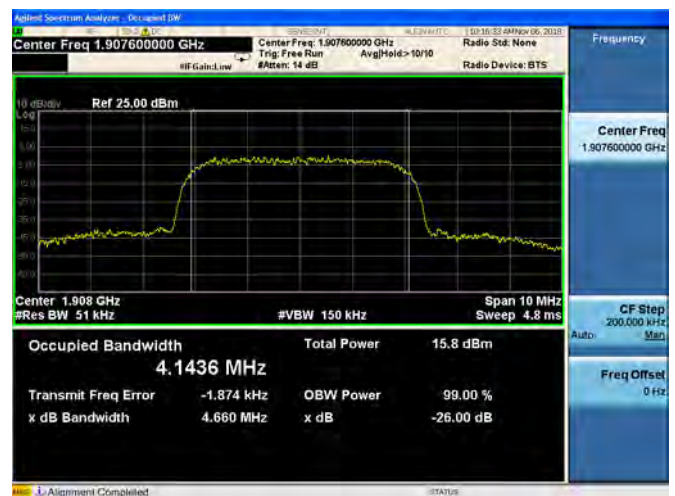
HSDPA Band II CH9262 1852.4MHz



HSDPA Band II CH9400 1880.0MHz

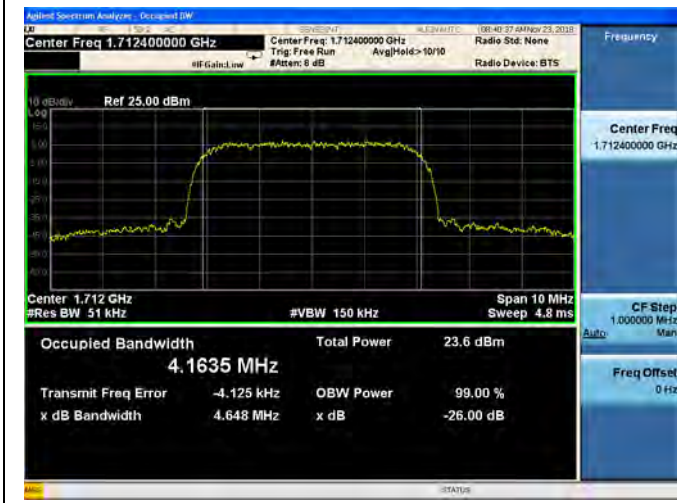


HSDPA Band II CH9538 1907.6MHz





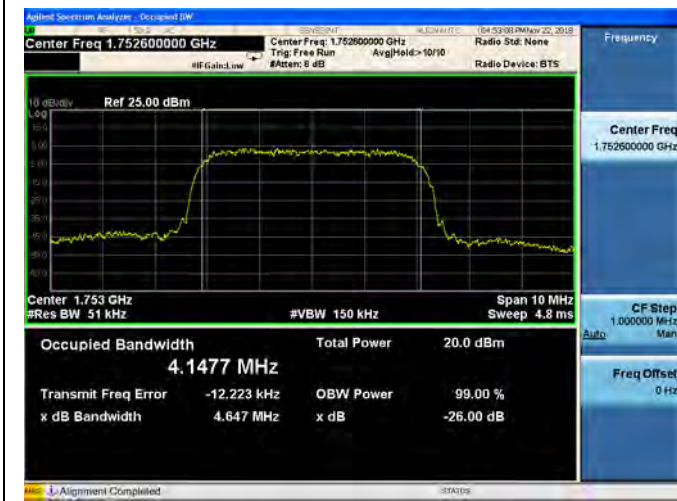
HSDPA Band IV CH1312 1712.4MHz



HSDPA Band IV CH1413 1732.6MHz

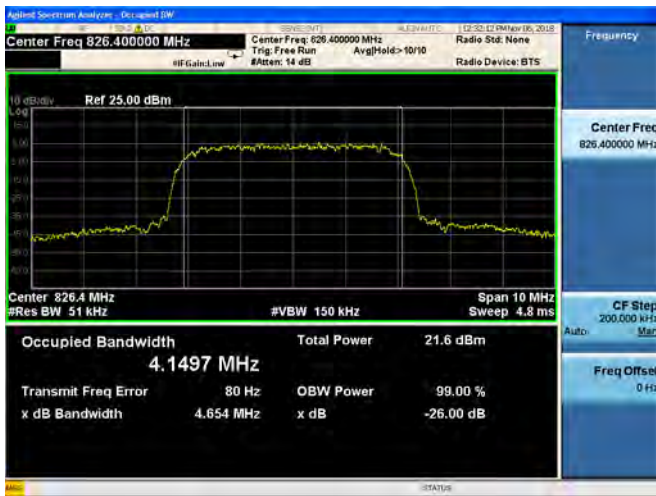


HSDPA Band IV CH1513 1752.6MHz

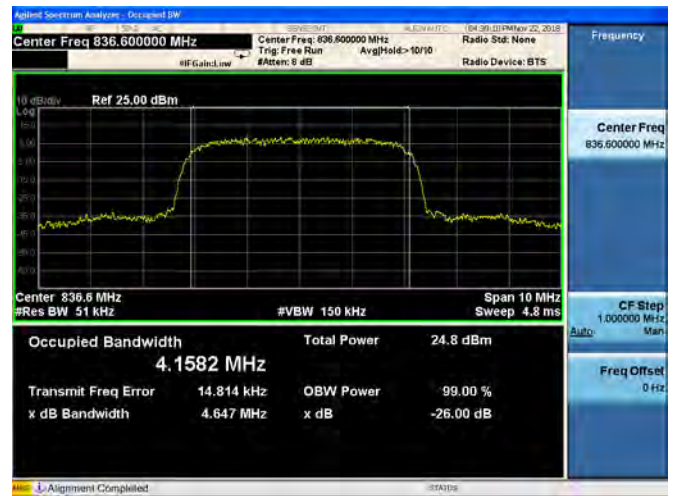




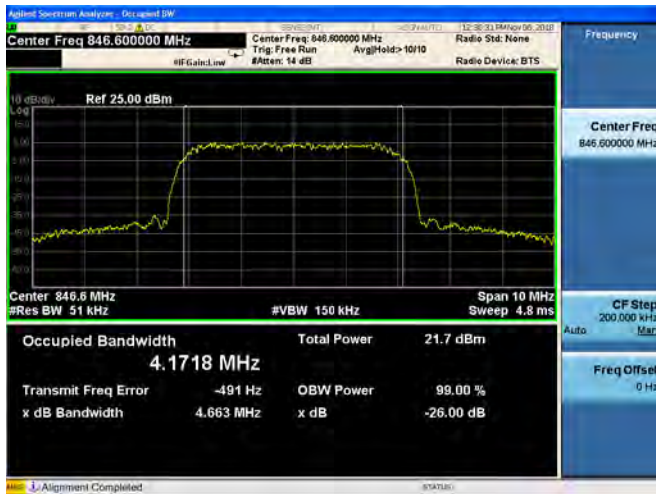
HSUPA Band V CH4132 826.4MHz



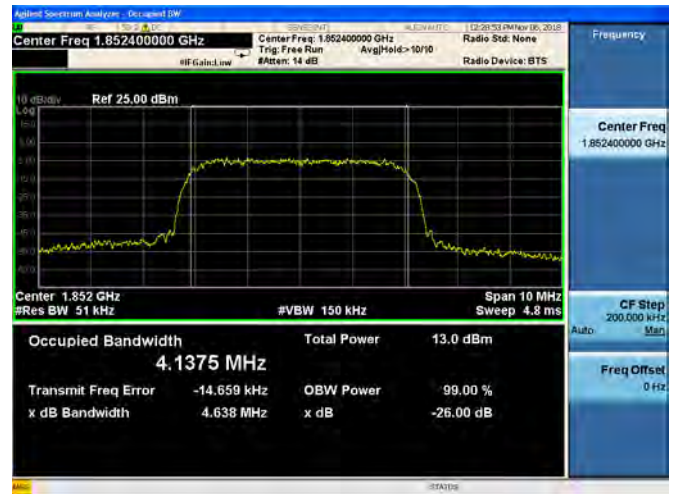
HSUPA Band V CH4182 836.4MHz



HSUPA Band V CH4233 846.6MHz



HSUPA Band II CH9262 1852.4MHz



HSUPA Band II CH9400 1880.0MHz

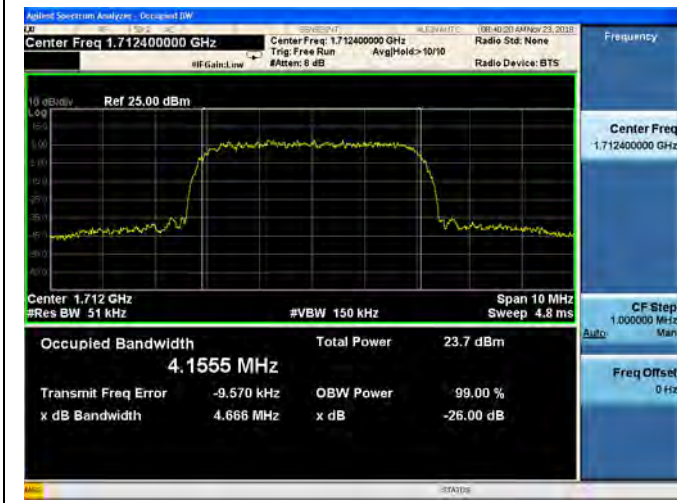


HSUPA Band II CH9538 1907.6MHz





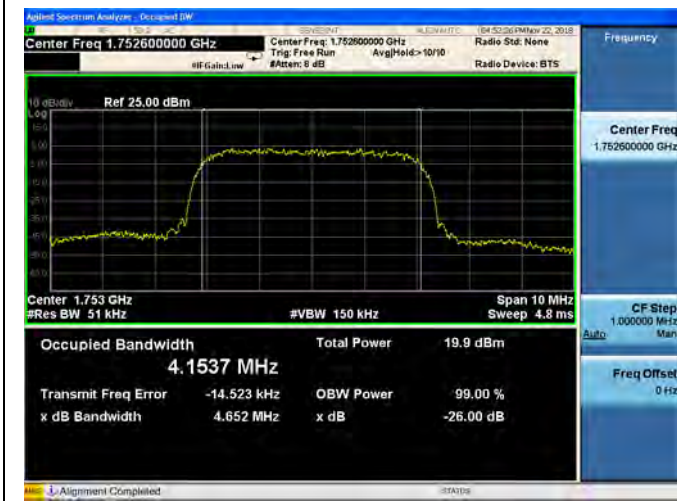
HSUPA Band IV CH1312 1712.4MHz



HSUPA Band IV CH1413 1732.6MHz



HSUPA Band IV CH1513 1752.6MHz



2.4. Frequency Stability

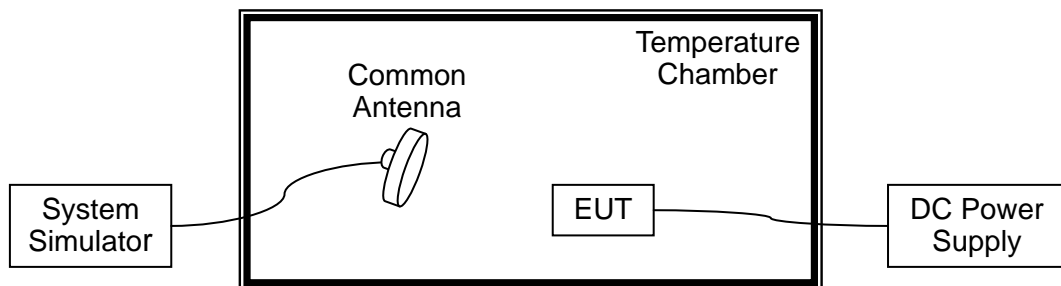
2.4.1. Requirement

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 $+50^{\circ}\text{C}$ at intervals of not more than 10°C .
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.4.2. Test Description

Test Setup:



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



2.4.3. Test Result

The nominal, highest and lowest extreme voltages are separately 36VDC, 37VDC and 34VDC, which are specified by the applicant; the normal temperature here used is 25°C.

A. Test Verdict:

GSM 850MHz, Channel 190, Frequency 836.6MHz					
Limit =±2.5ppm					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	+20(Ref)	25	0.030	PASS
100		-30	-76	-0.091	
100		-20	-43	-0.051	
100		-10	-24	-0.029	
100		0	-55	-0.066	
100		+10	21	0.025	
100		+20	13	0.016	
100		+30	14	0.017	
100		+40	52	0.062	
100		+50	31	0.037	
100		+60	13	0.016	
115		4.35	+20	-25	
85	3.5	+20	-36	-0.043	



GSM 1900MHz, Channel 661, Frequency 1880.0MHz					
Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	+20(Ref)	23	0.012	PASS
100		-30	43	0.023	
100		-20	-68	-0.036	
100		-10	52	0.028	
100		0	-58	-0.031	
100		+10	-75.7	-0.040	
100		+20	42	0.022	
100		+30	23	0.012	
100		+40	16	0.009	
100		+50	28	0.015	
100		+60	52	0.028	
115		4.35	+20	-22	
85	3.5	+20	67	0.036	

EDGE 850MHz, Channel 190, Frequency 836.6MHz					
Limit =±2.5ppm					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	+20(Ref)	32	0.038	PASS
100		-30	-46	-0.055	
100		-20	-24	-0.029	
100		-10	-55	-0.066	
100		0	-37	-0.044	
100		+10	23	0.027	
100		+20	43	0.051	
100		+30	54	0.065	
100		+40	23	0.027	
100		+50	45	0.054	
100		+60	23	0.027	
115		4.35	+20	-13	
85	3.5	+20	-76	-0.091	



EDGE 1900MHz, Channel 661, Frequency 1880.0MHz					
Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	+20(Ref)	32	0.017	PASS
100		-30	54	0.029	
100		-20	-33	-0.018	
100		-10	87	0.046	
100		0	-4	-0.002	
100		+10	-66	-0.035	
100		+20	54	0.029	
100		+30	26	0.014	
100		+40	87	0.046	
100		+50	57	0.030	
100		+60	54	0.029	
115		4.35	+20	-24	
85	3.5	+20	21	0.011	

WCDMA Band V, Channel 4182, Frequency 836.4MHz					
Limit =±2.5ppm					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	+20(Ref)	32	0.038	PASS
100		-30	-57	-0.068	
100		-20	-46	-0.055	
100		-10	-66	-0.079	
100		0	-46	-0.055	
100		+10	26	0.031	
100		+20	36	0.043	
100		+30	38	0.046	
100		+40	74	0.089	
100		+50	54	0.065	
100		+60	26	0.031	
115		4.35	+20	-47	
85	3.5	+20	-76	-0.091	



WCDMA Band II, Channel 9400, Frequency 1880.0MHz					
Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	+20(Ref)	65	0.035	PASS
100		-30	87	0.046	
100		-20	-44	-0.023	
100		-10	85	0.045	
100		0	-33	-0.018	
100		+10	-33	-0.018	
100		+20	23	0.012	
100		+30	43	0.023	
100		+40	54	0.029	
100		+50	62	0.033	
100		+60	65	0.035	
115		4.35	+20	-43	
85	3.5	+20	37	0.020	

WCDMA Band IV, Channel 1413, Frequency 1732.6MHz					
Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	+20(Ref)	34	0.016	PASS
100		-30	63	0.030	
100		-20	21	0.010	
100		-10	24	0.011	
100		0	53	0.025	
100		+10	27	0.013	
100		+20	68	0.033	
100		+30	41	0.020	
100		+40	57	0.027	
100		+50	74	0.035	
100		+60	41	0.020	
115		4.35	+20	74	
85	3.5	+20	83	0.040	

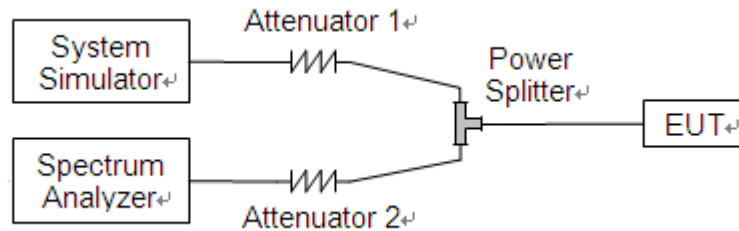
2.5. Conducted Out of Band Emissions

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:



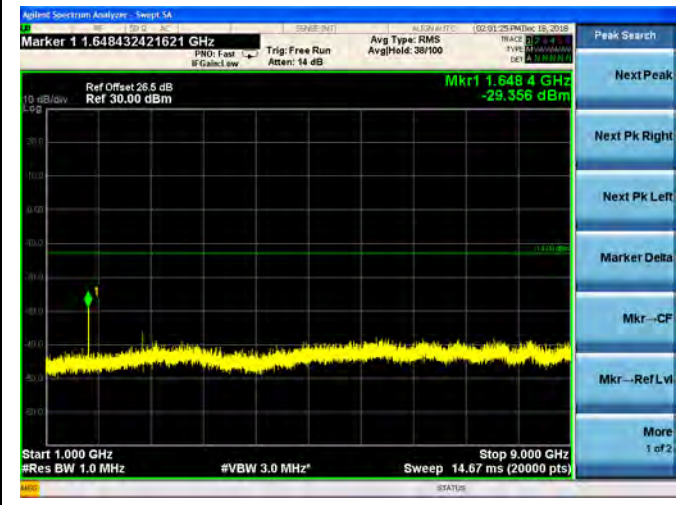
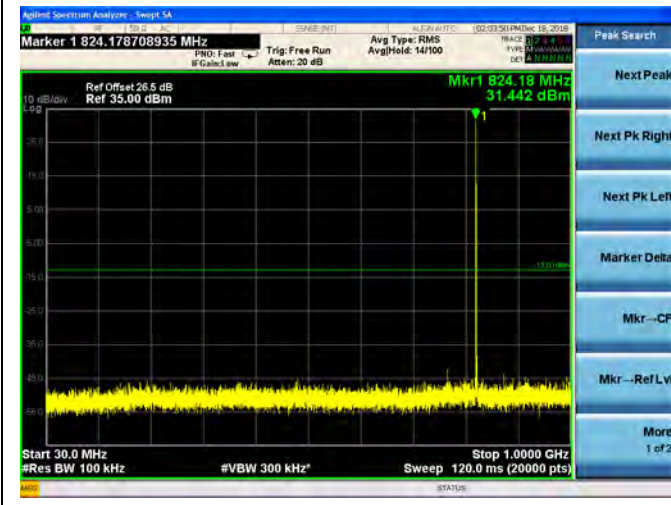
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

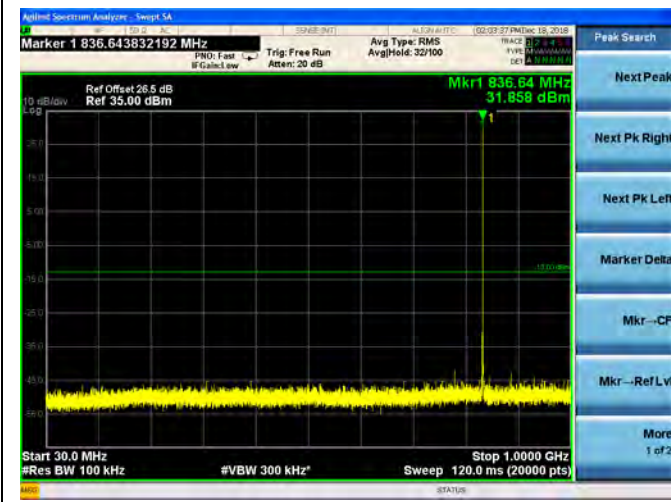
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.



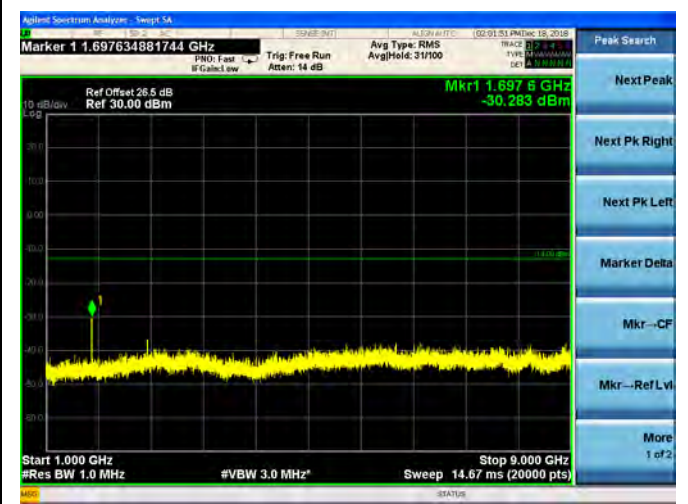
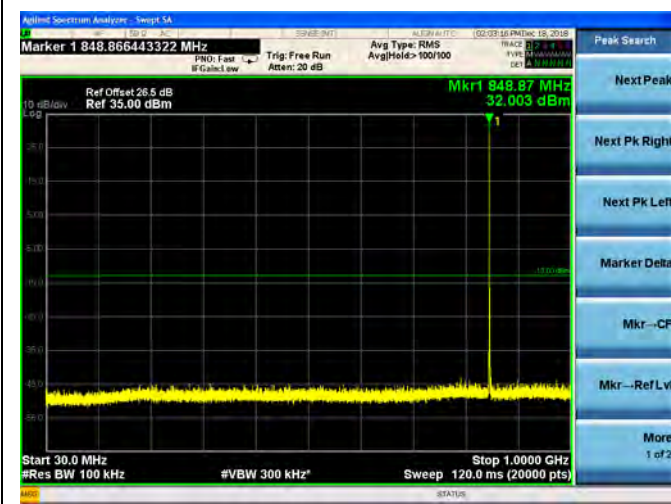
GSM 850MHz CH128 824.2MHz



GSM 850MHz CH190 836.6MHz

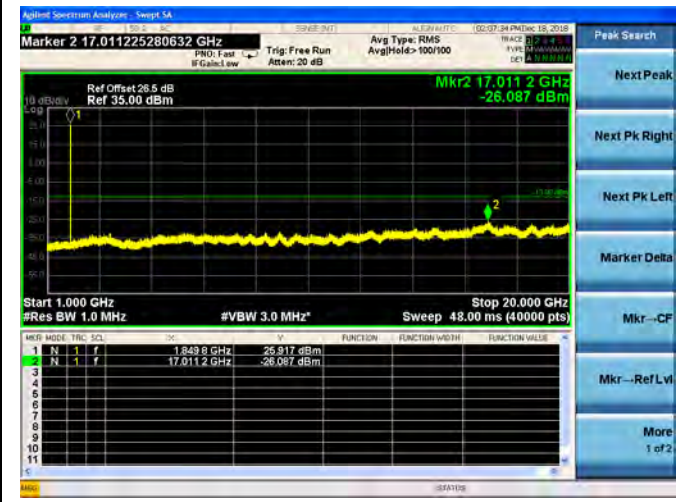
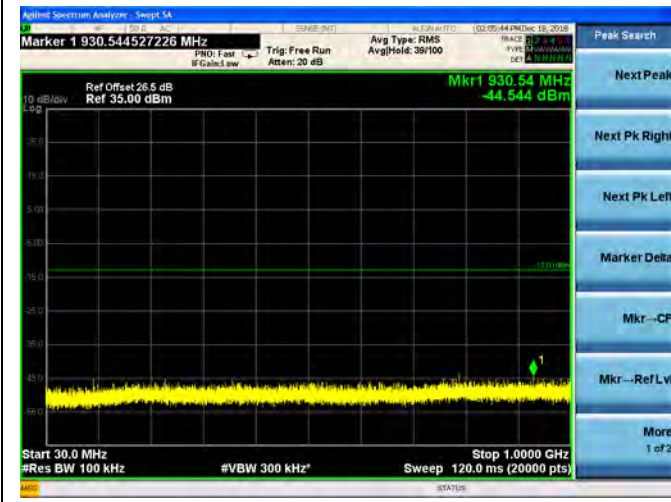


GSM 850MHz CH251 848.8MHz

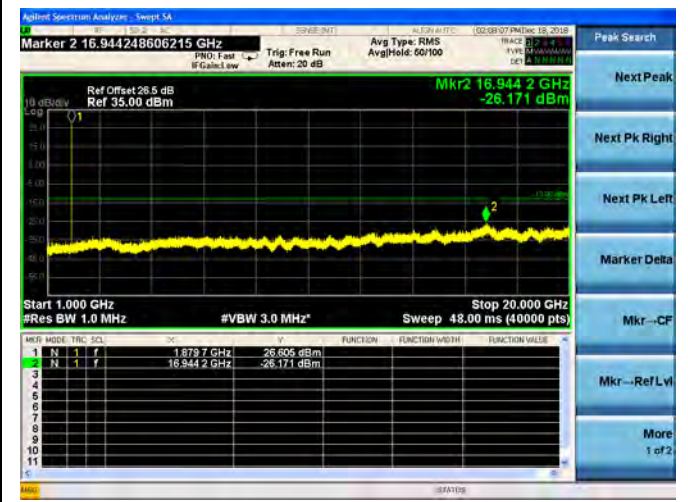
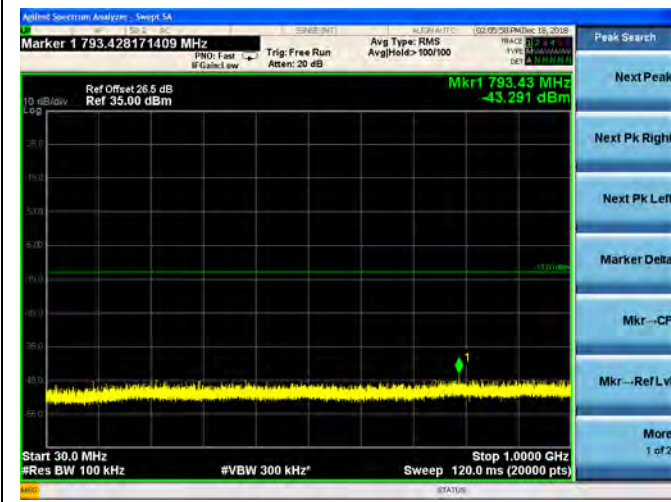




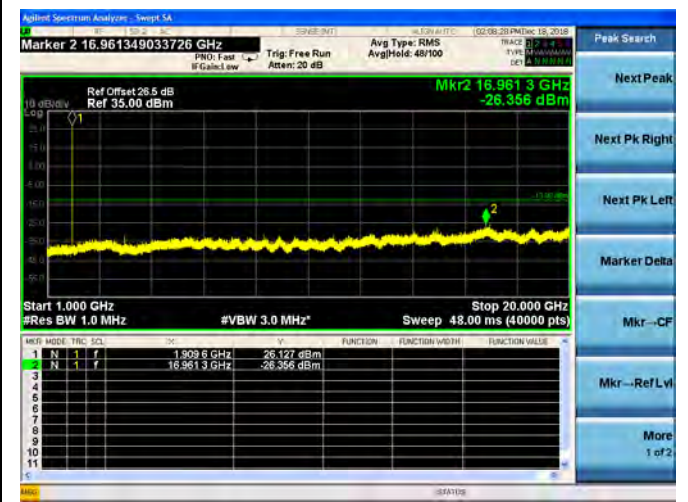
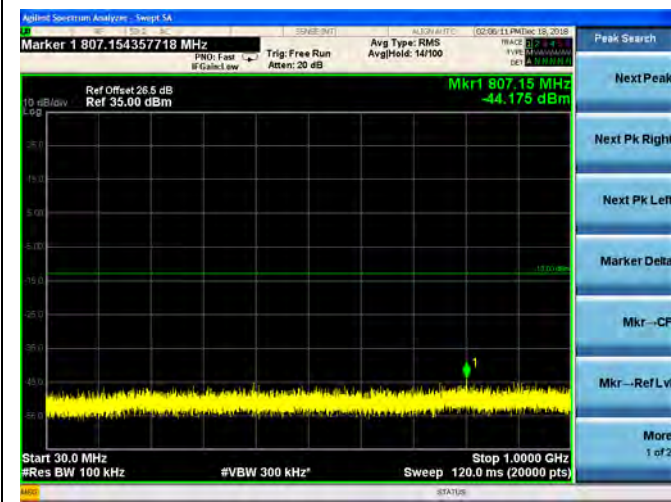
GSM 1900MHz CH521 1850.2MHz



GSM 1900MHz CH661 1880.0MHz

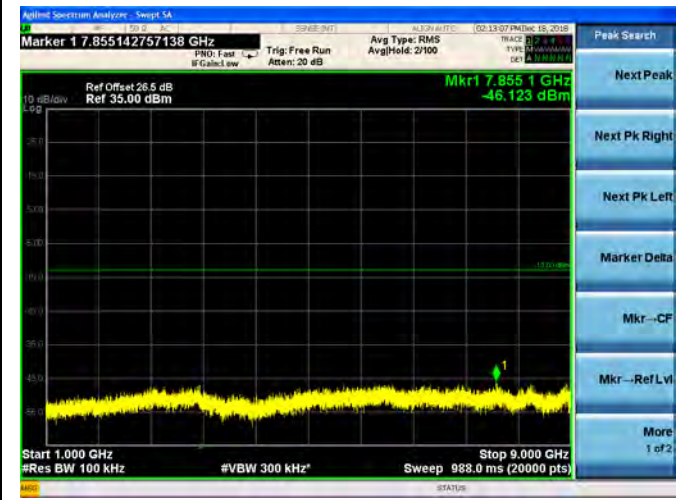
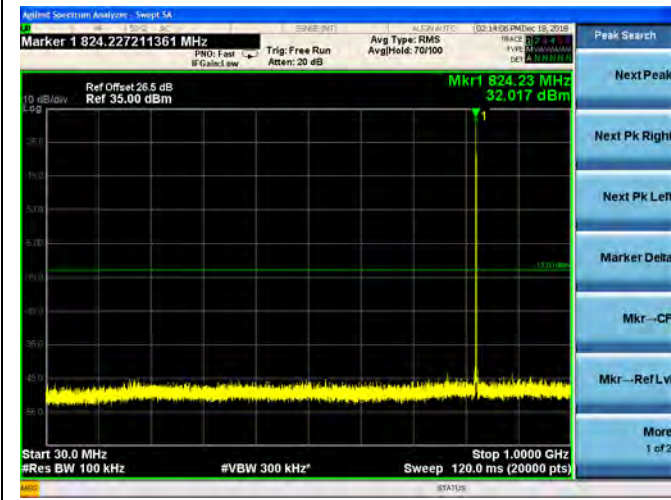


GSM 1900MHz CH810 1909.8MHz

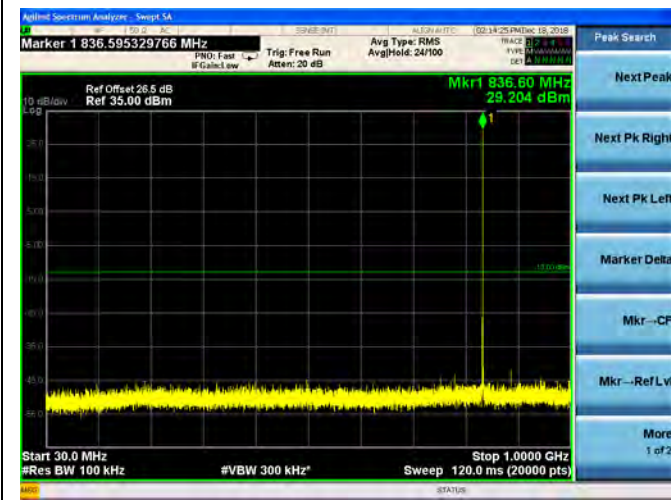




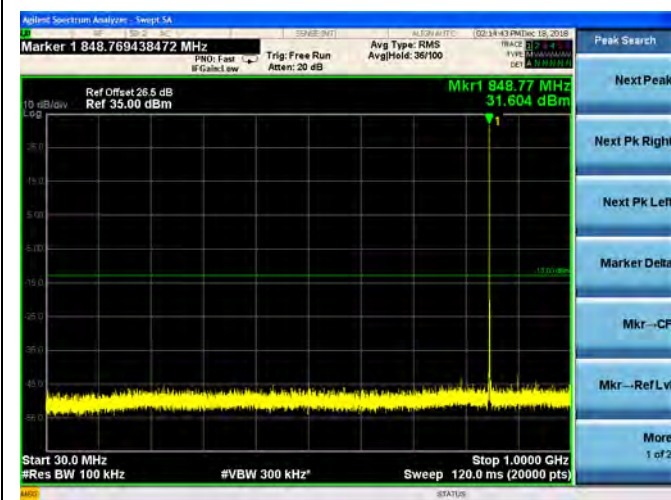
EDGE 850MHz CH128 824.2MHz



EDGE 850MHz CH190 836.6MHz

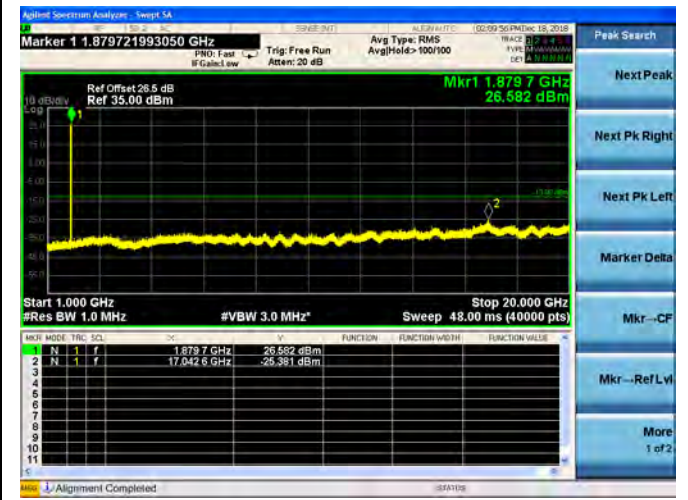
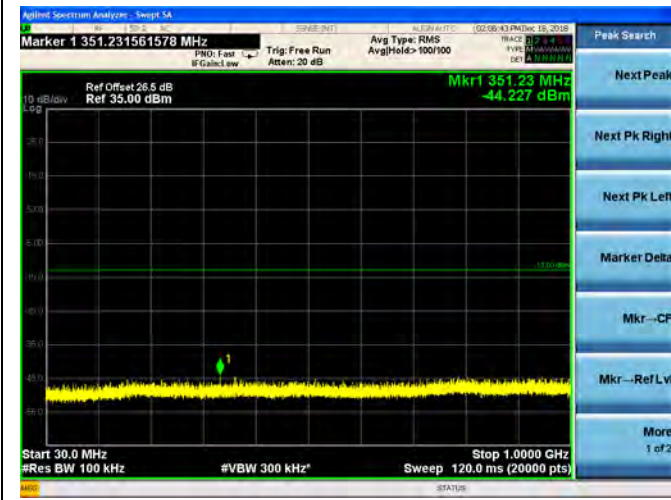


EDGE 850MHz CH251 848.8MHz

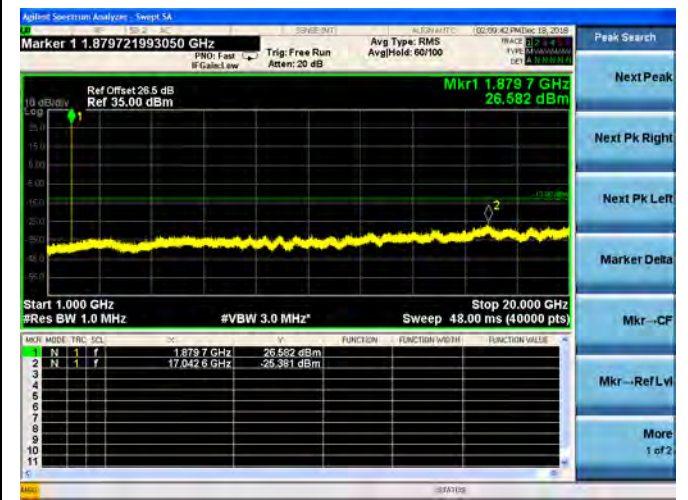
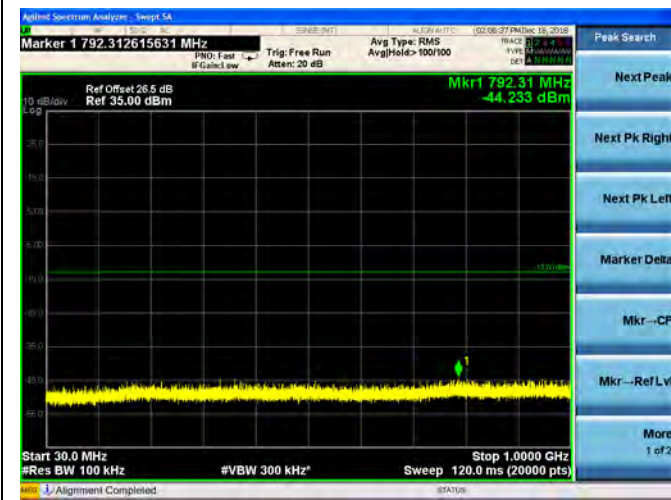




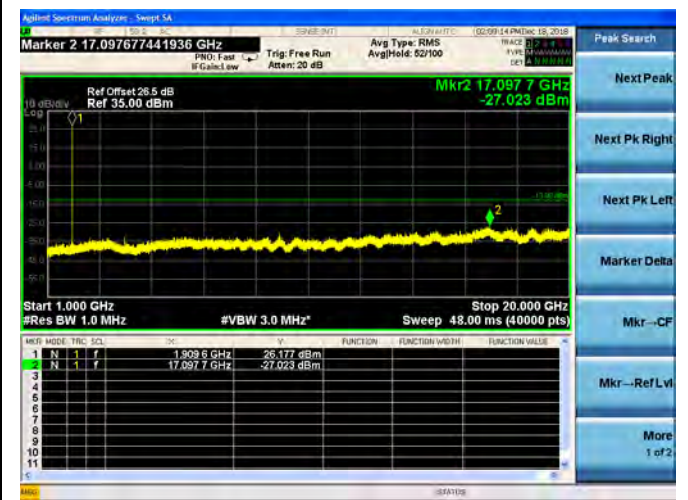
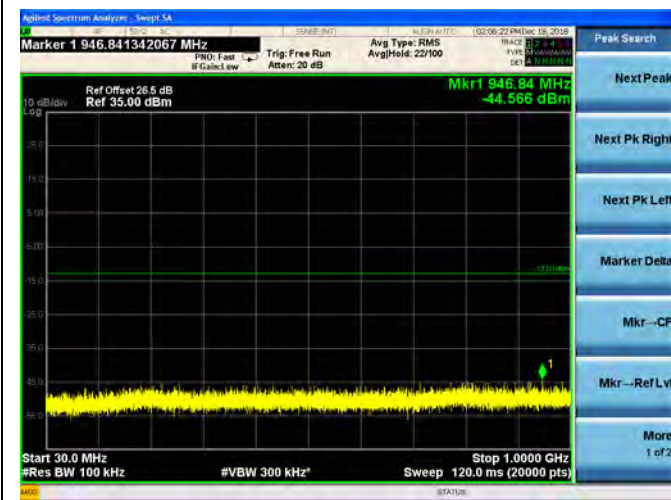
EDGE 1900MHz CH521 1850.2MHz



EDGE 1900MHz CH661 1880.0MHz

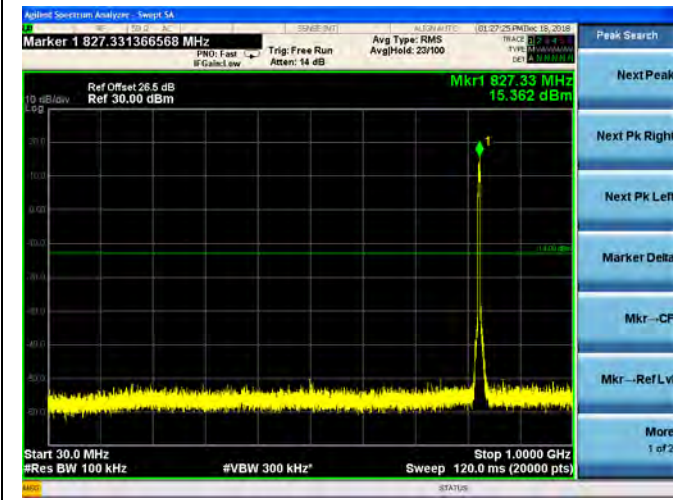


EDGE 1900MHz CH810 1909.8MHz

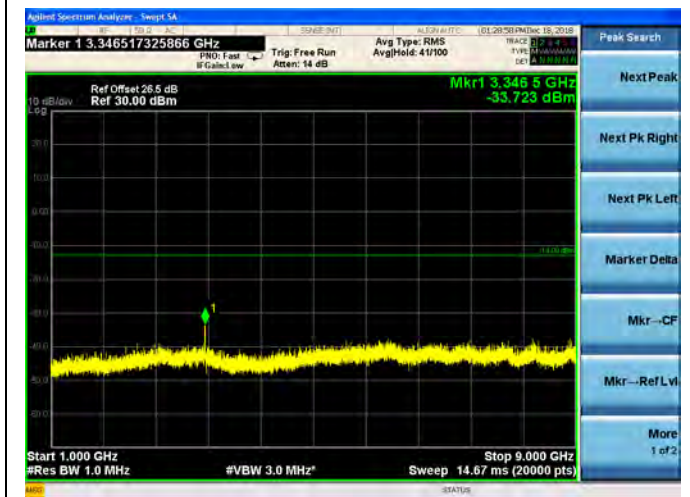
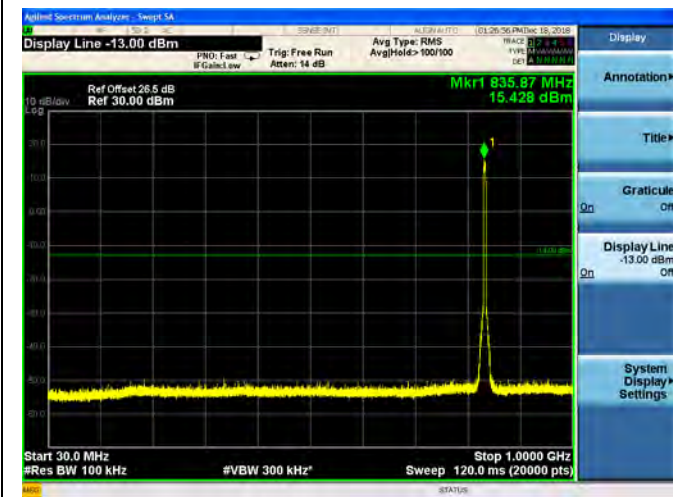




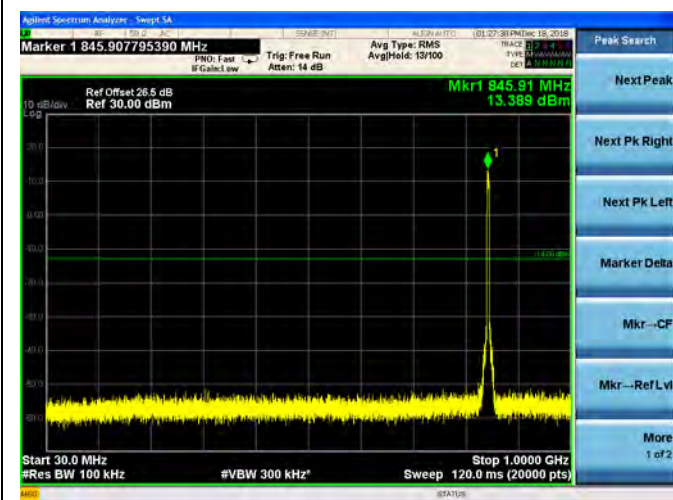
WCDMA Band V CH4132 826.4MHz



WCDMA Band V CH4182 836.4MHz

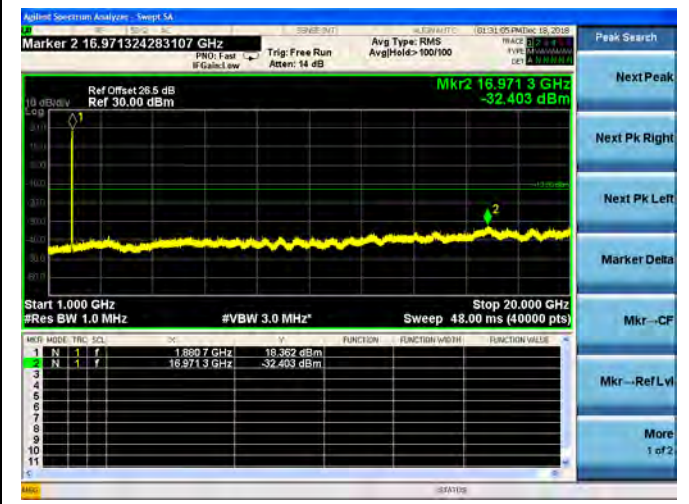
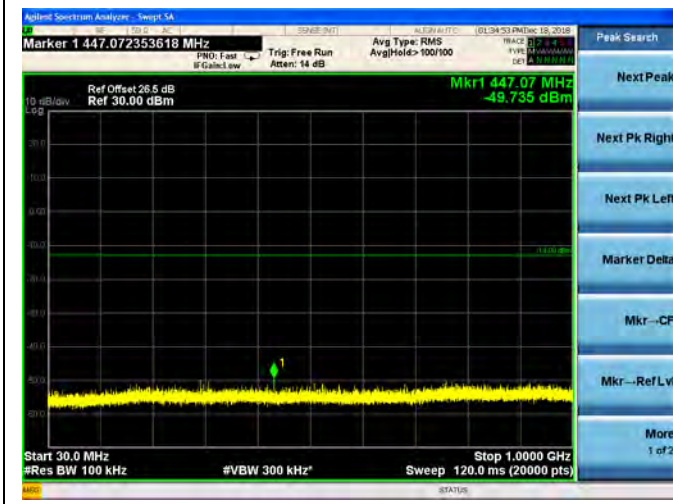


WCDMA Band V CH4233 846.6MHz

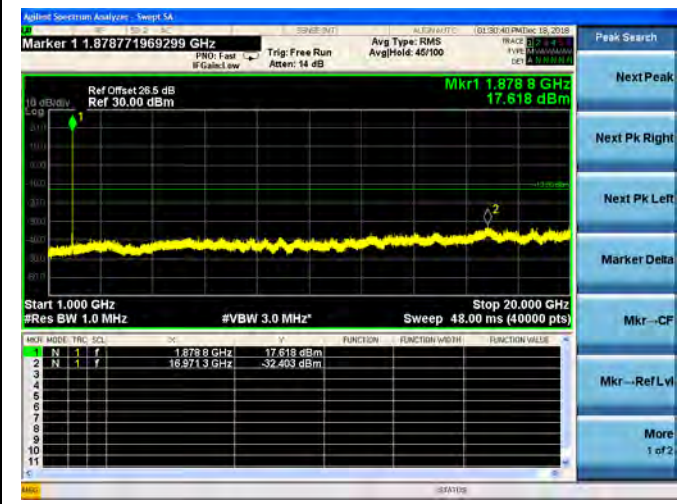
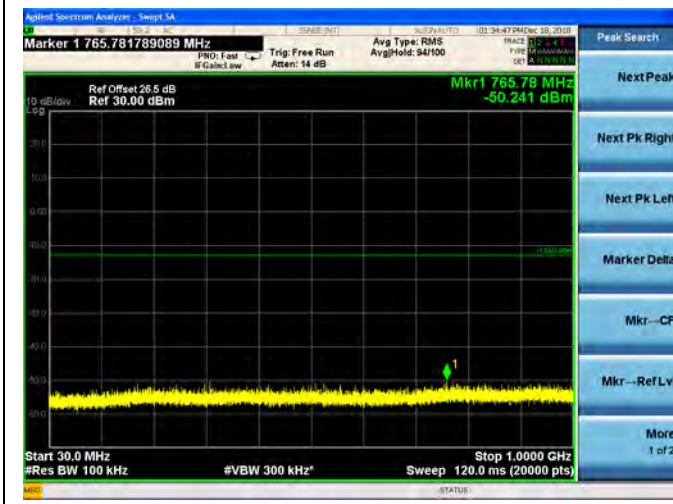




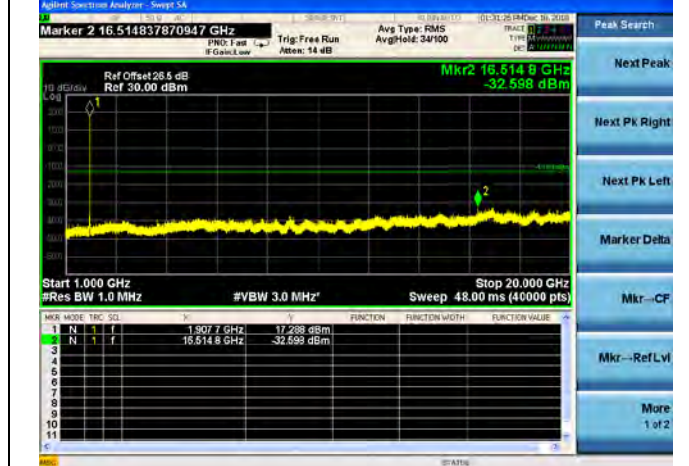
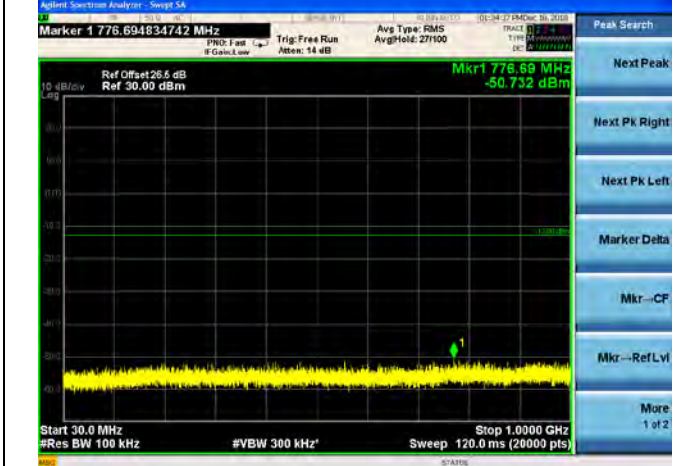
WCDMA Band II CH9262 1852.4MHz



WCDMA Band II CH9400 1880.0MHz

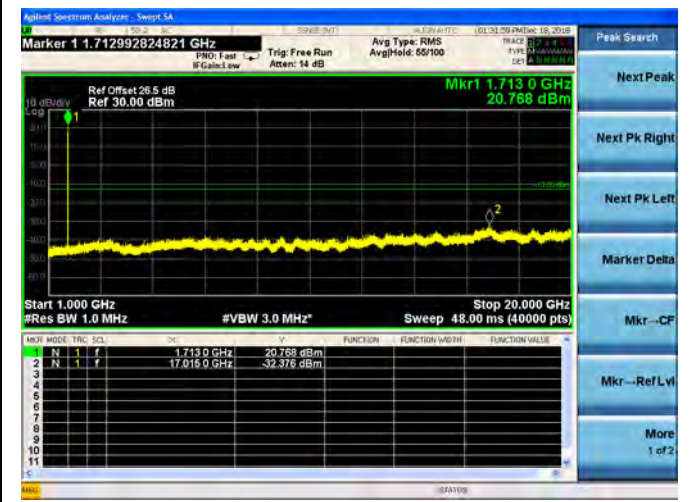
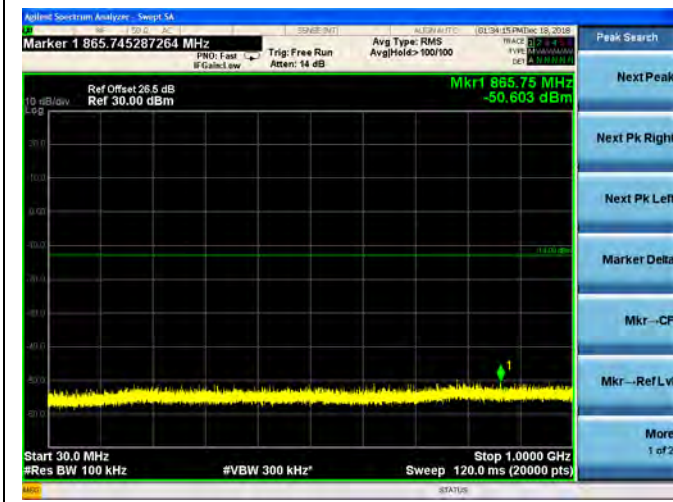


WCDMA Band II CH9538 1907.6MHz

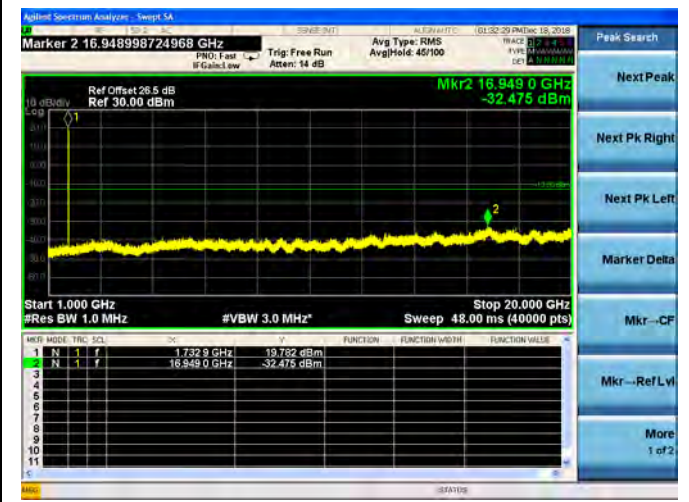
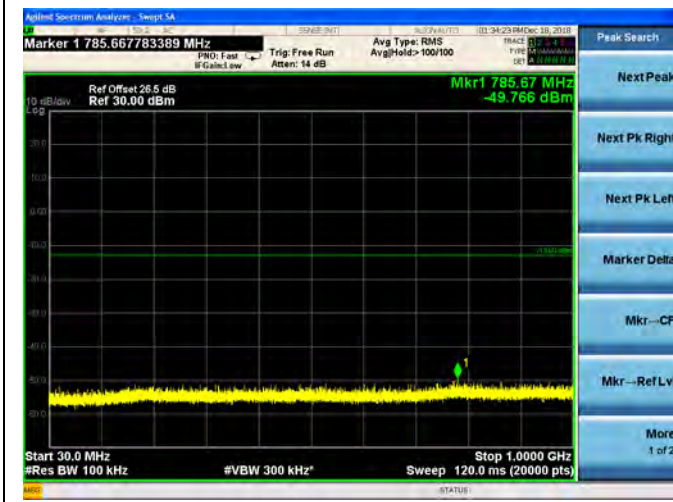




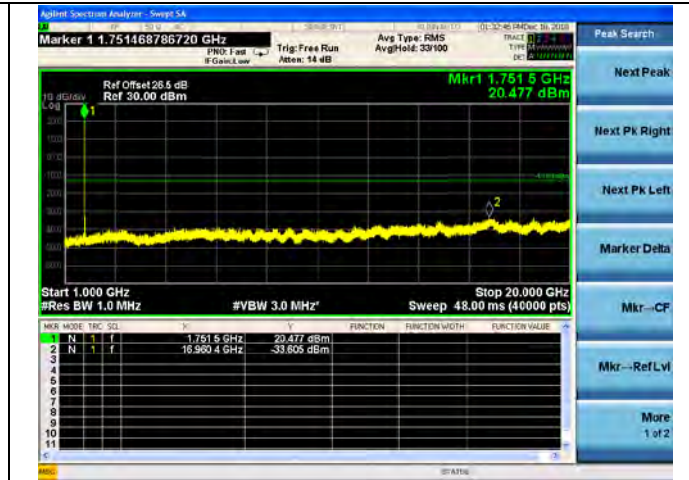
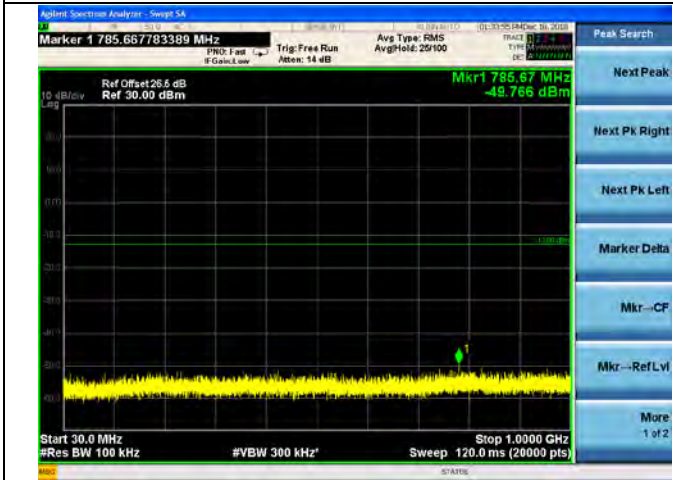
WCDMA Band IV CH1312 1712.4MHz



WCDMA Band IV CH1413 1732.6MHz

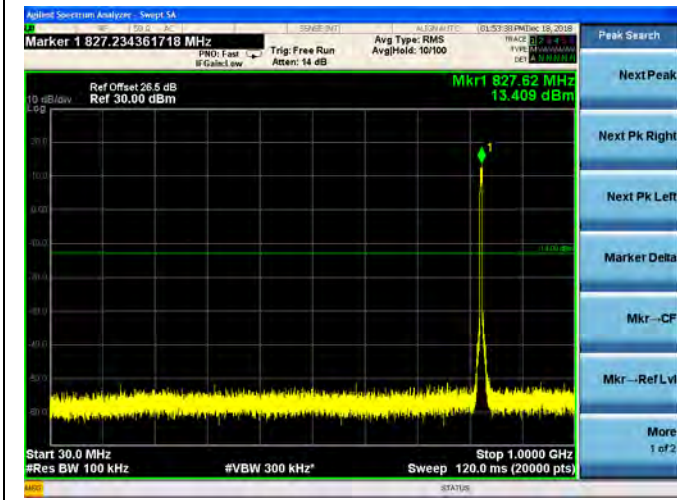


WCDMA Band IV CH1513 1752.6MHz

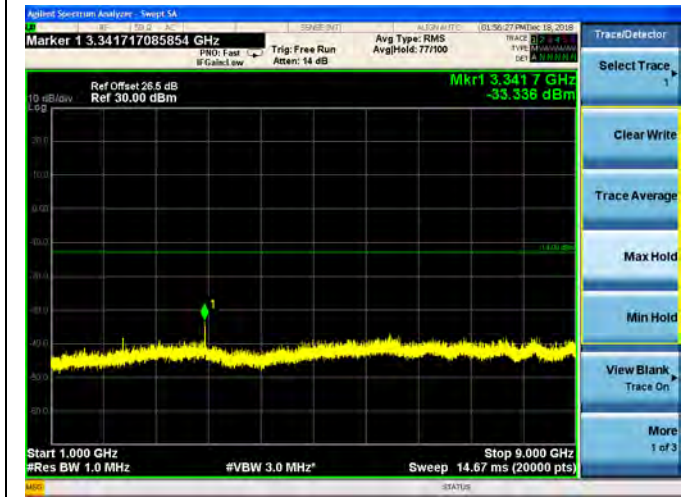
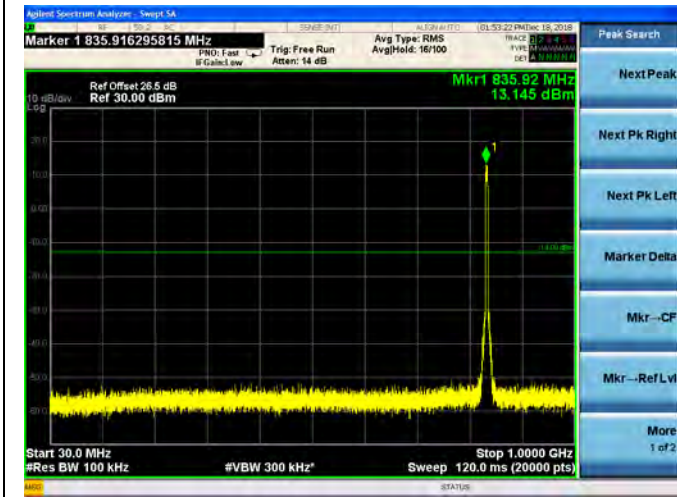




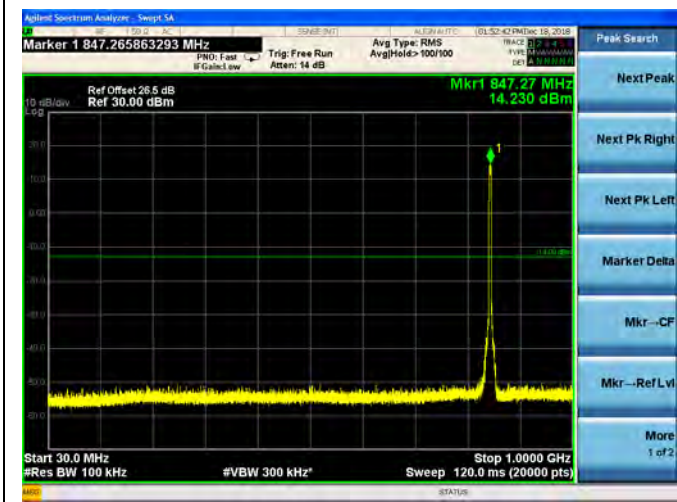
HSDPA Band V CH4132 826.4MHz



HSDPA Band V CH4182 836.4MHz

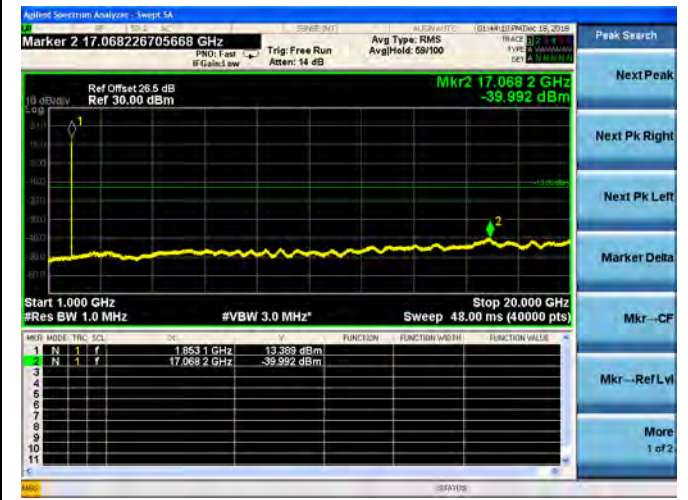
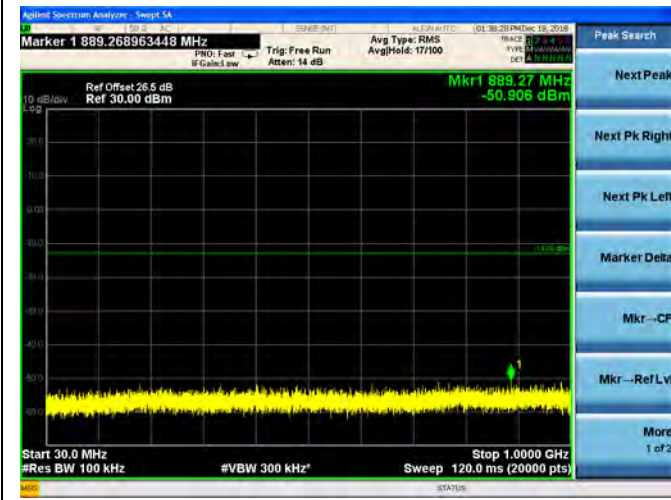


HSDPA Band V CH4233 846.6MHz

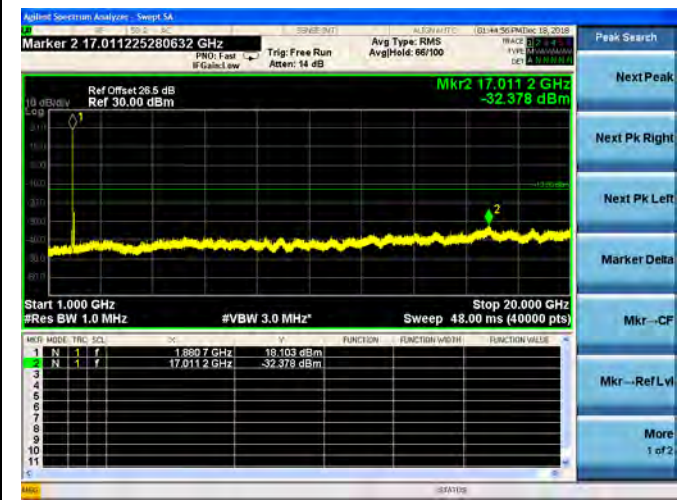
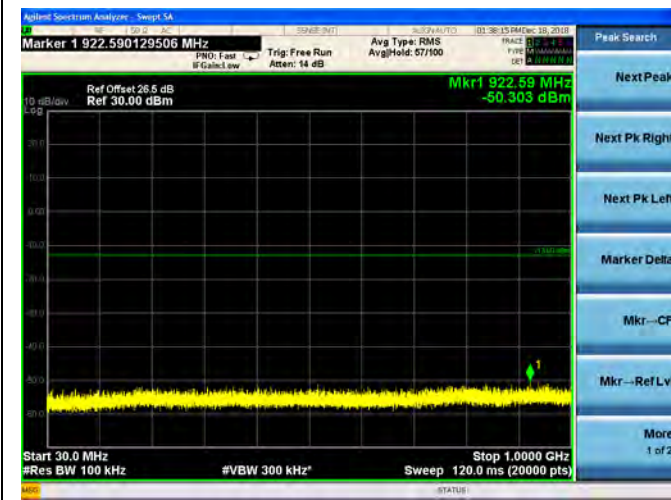




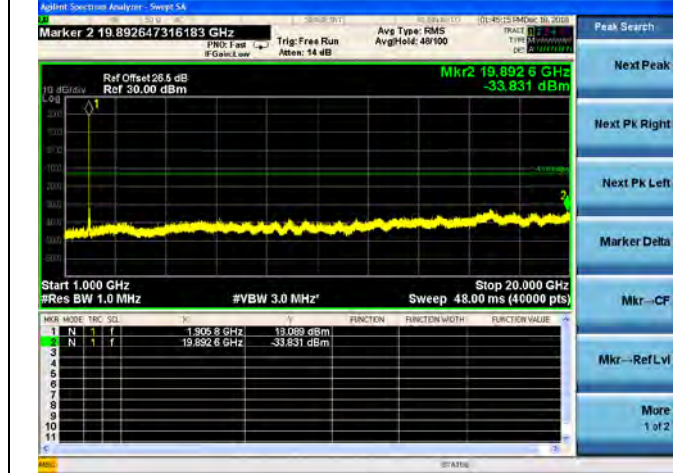
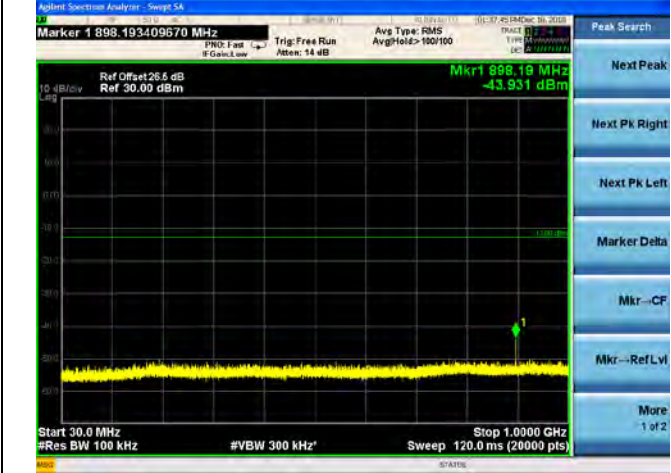
HSDPA Band II CH9262 1852.4MHz



HSDPA Band II CH9400 1880.0MHz

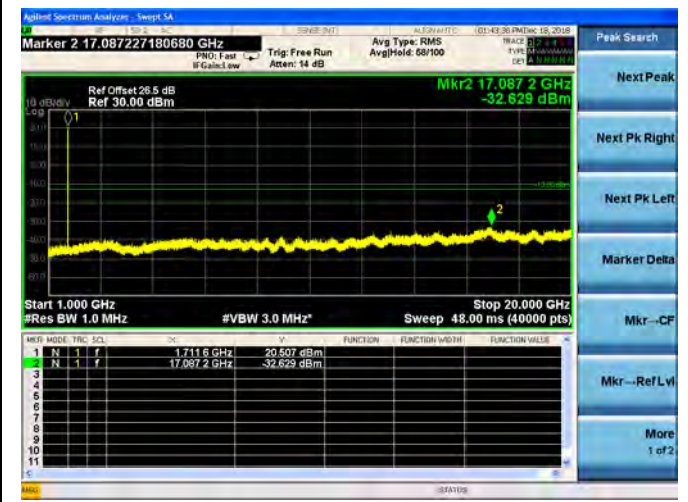
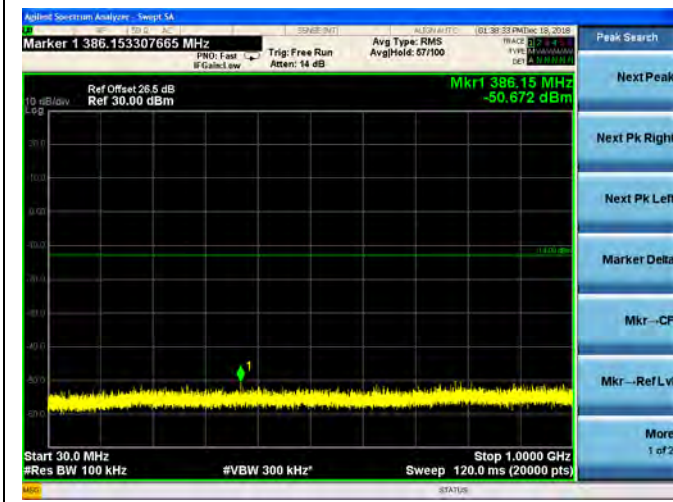


HSDPA Band II CH9538 1907.6MHz

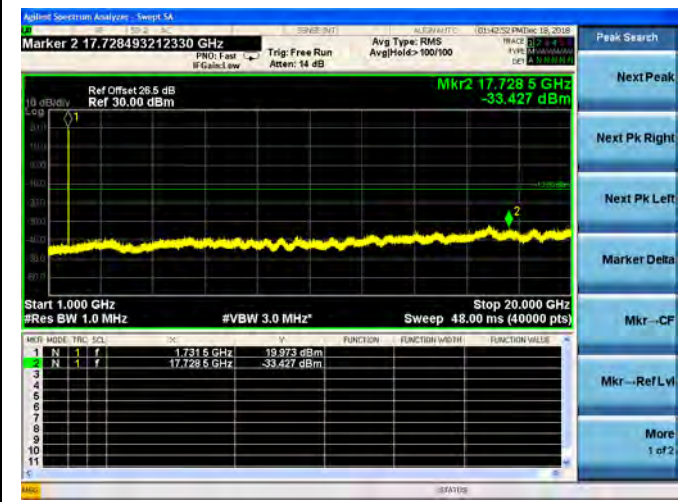
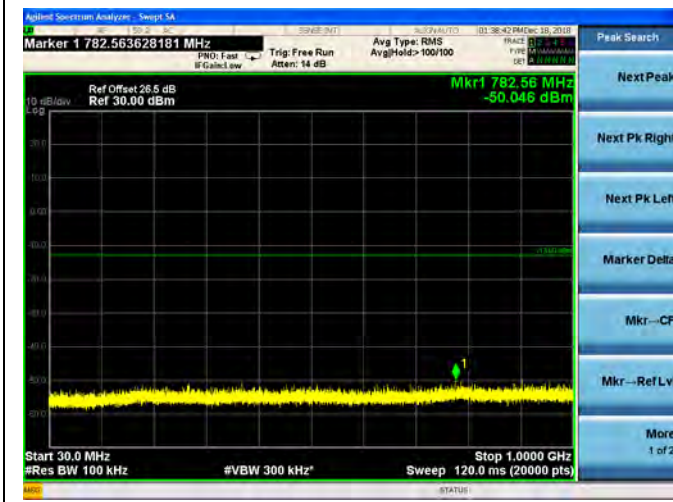




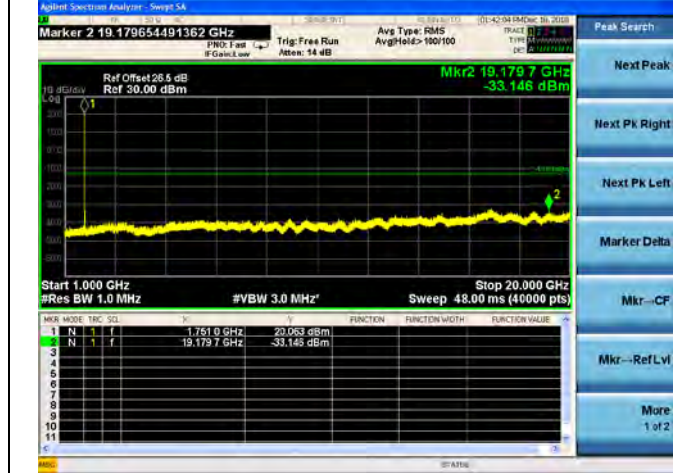
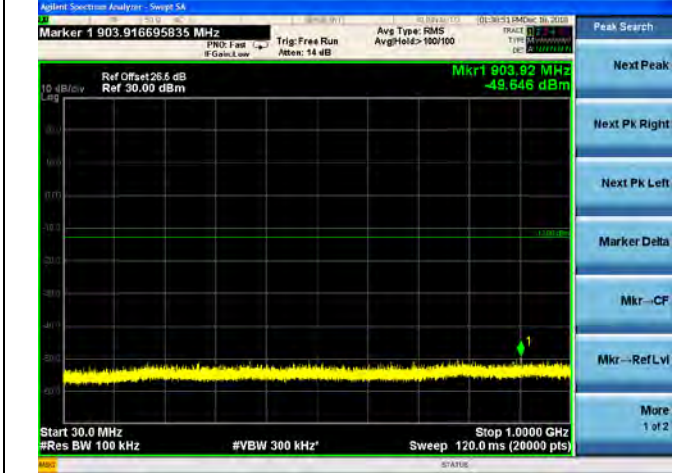
HSDPA Band IV CH1312 1712.4MHz



HSDPA Band IV CH1413 1732.6MHz

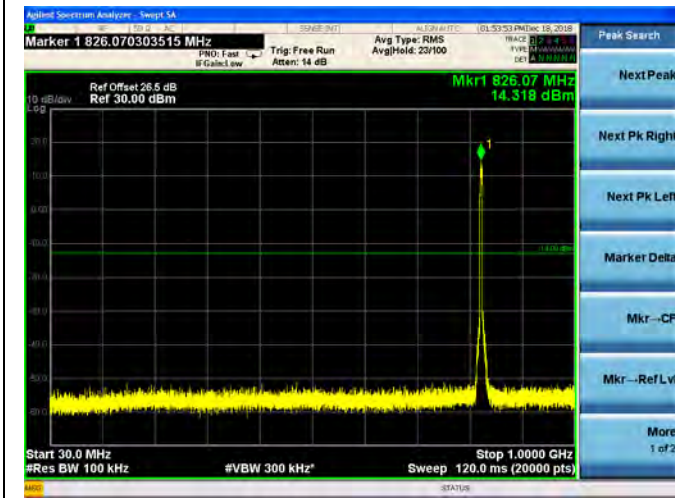


HSDPA Band IV CH1513 1752.6MHz

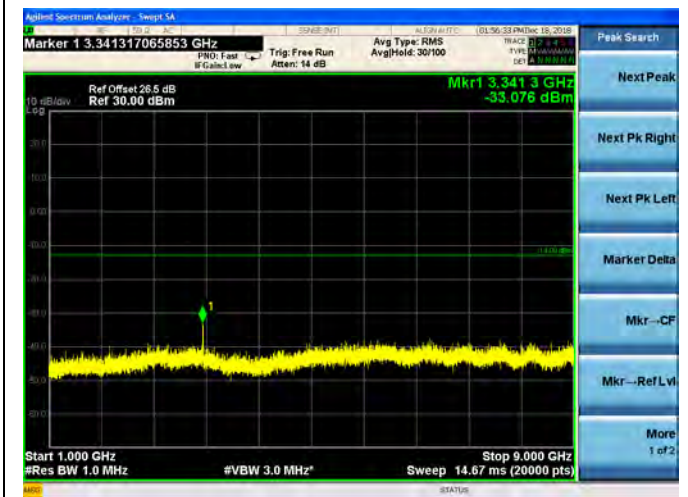
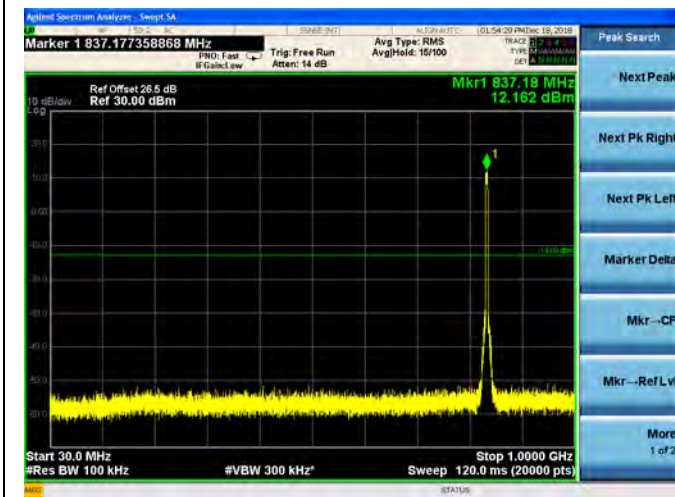




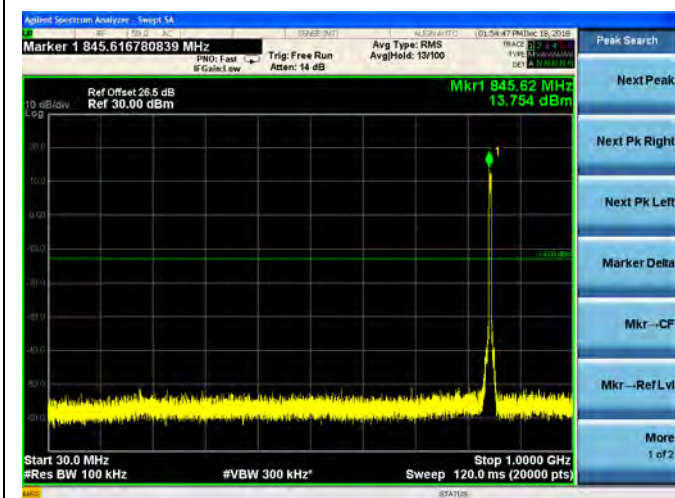
HSUPA Band V CH4132 826.4MHz



HSUPA Band V CH4182 836.4MHz

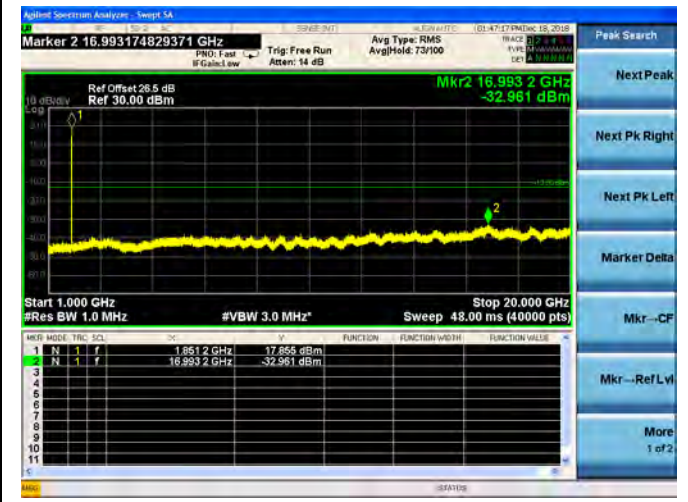
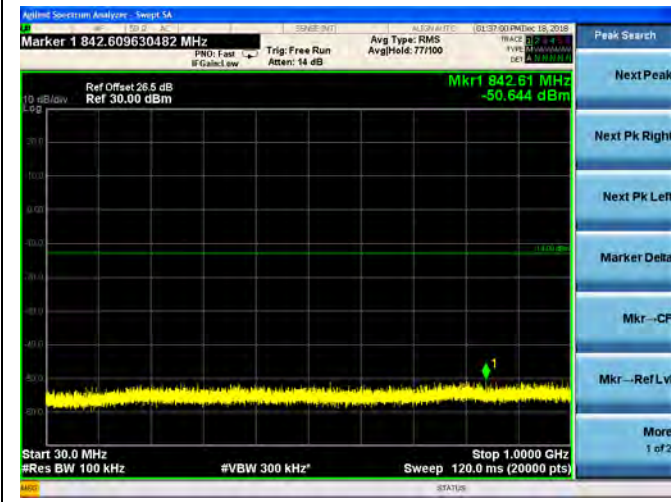


HSUPA Band V CH4233 846.6MHz

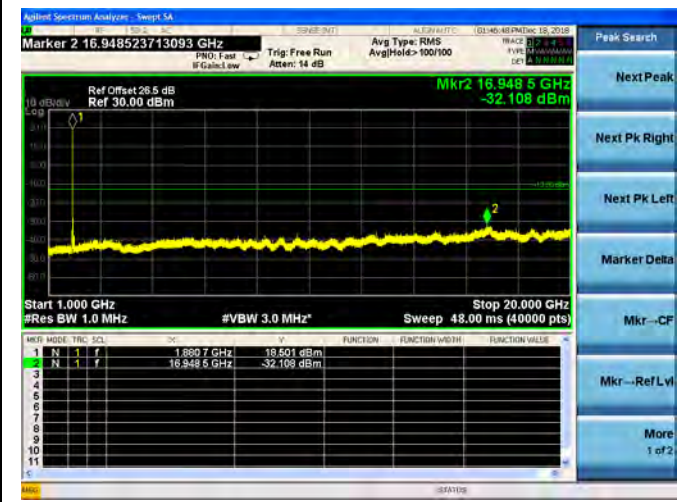
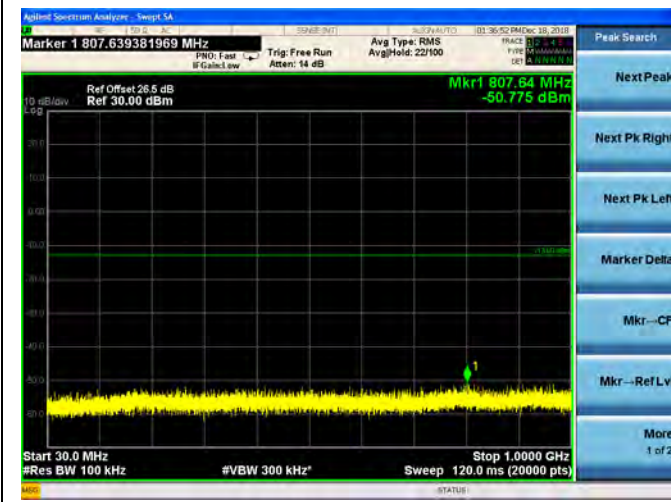




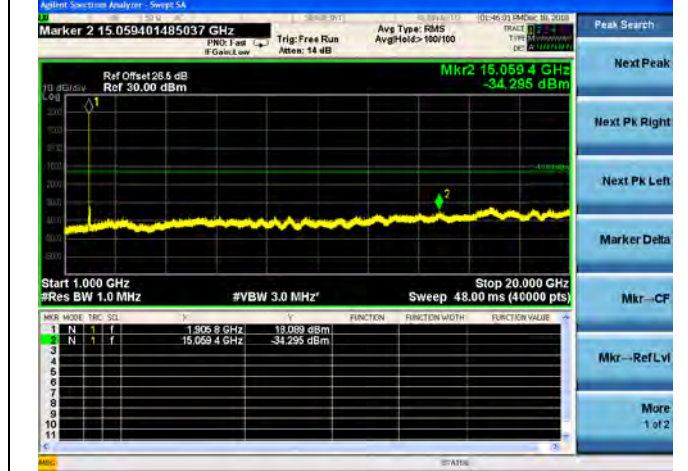
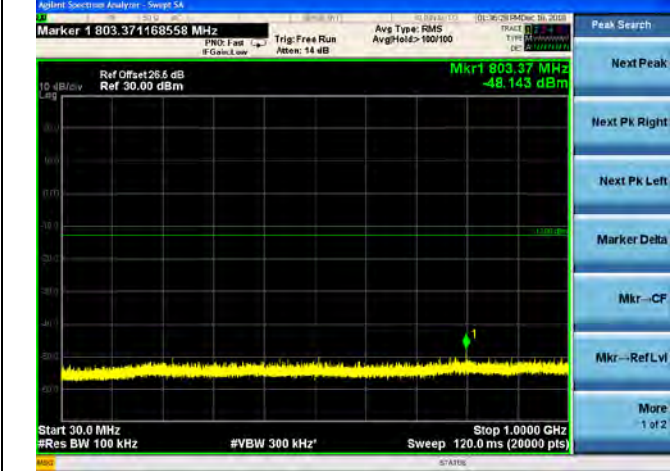
HSUPA Band II CH9262 1852.4MHz



HSUPA Band II CH9400 1880.0MHz

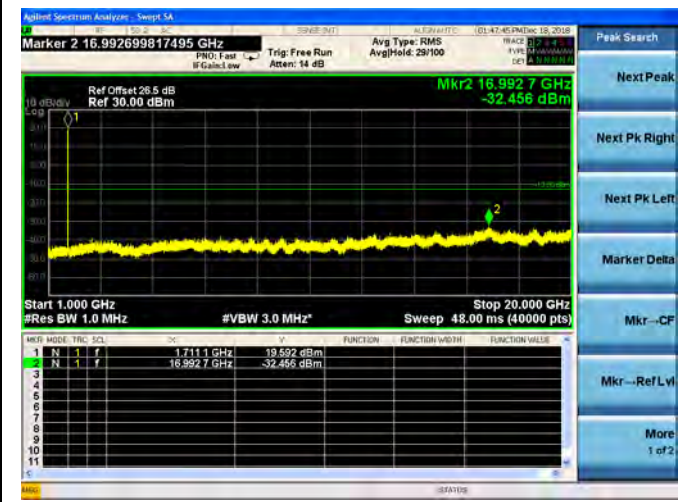
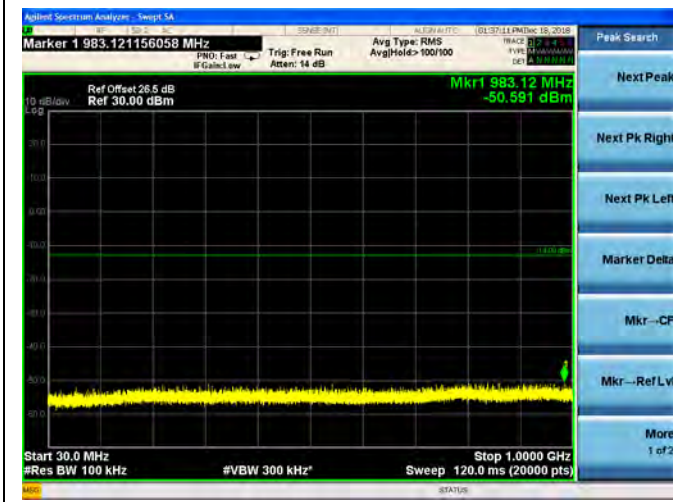


HSUPA Band II CH9538 1907.6MHz

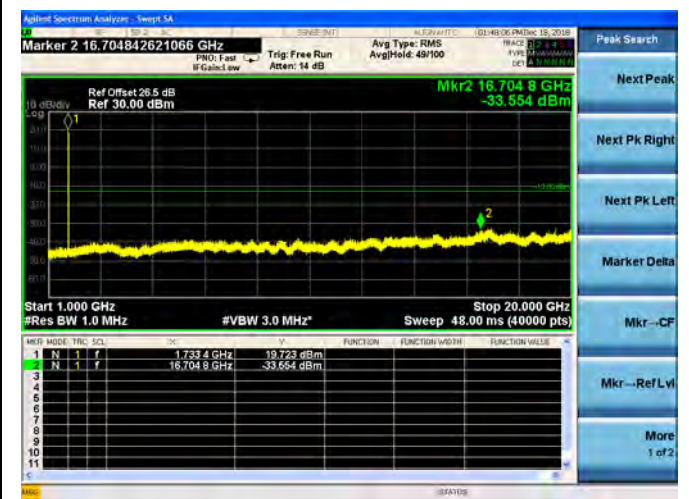
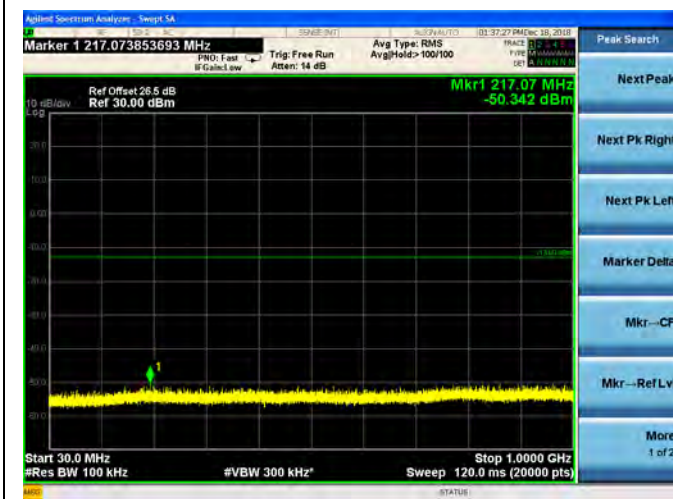




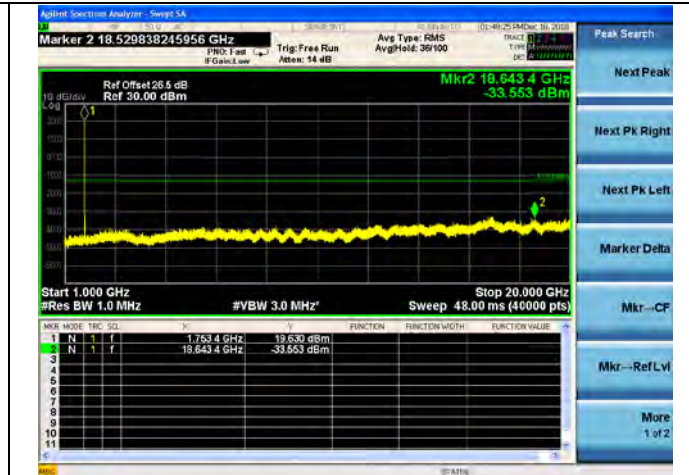
HSUPA Band IV CH1312 1712.4MHz



HSUPA Band IV CH1413 1732.6MHz



HSUPA Band IV CH1513 1752.6MHz



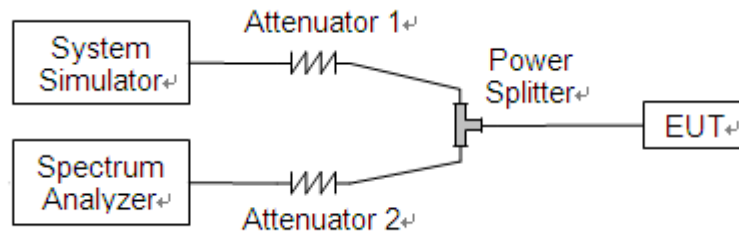
2.6. Band Edge

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:

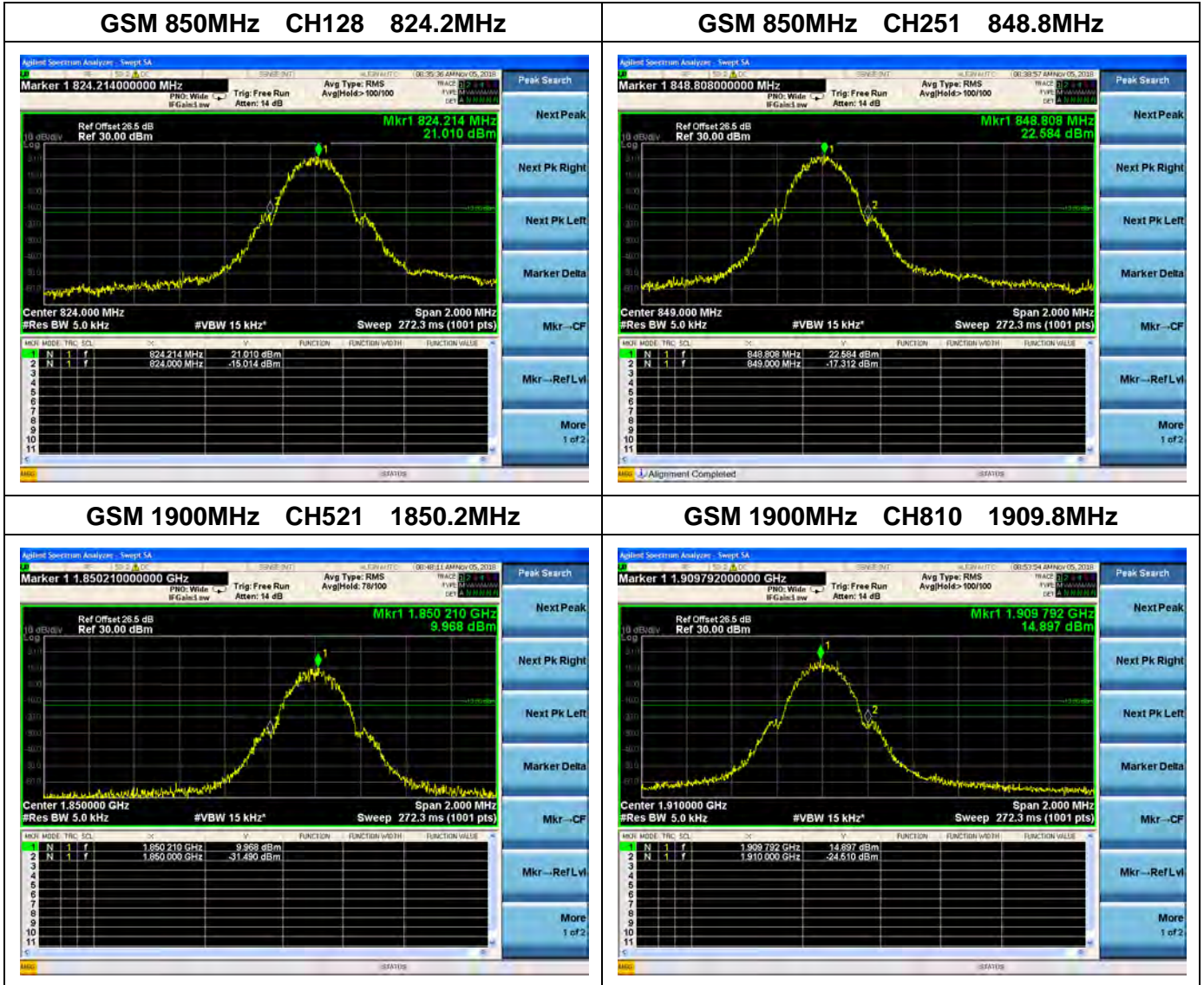


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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



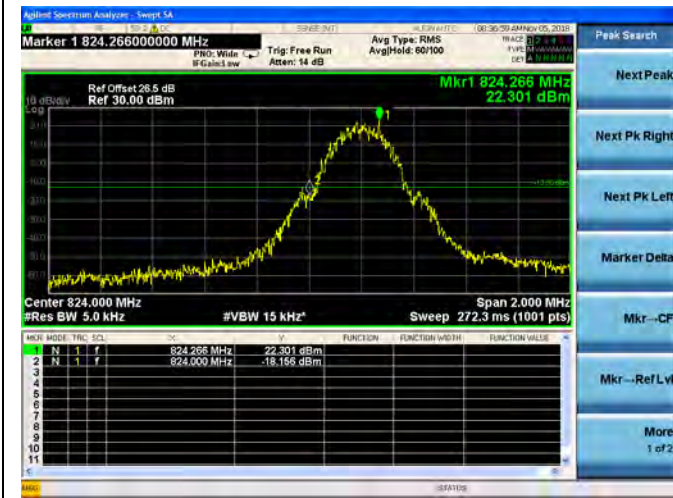
2.6.3. Test Result

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

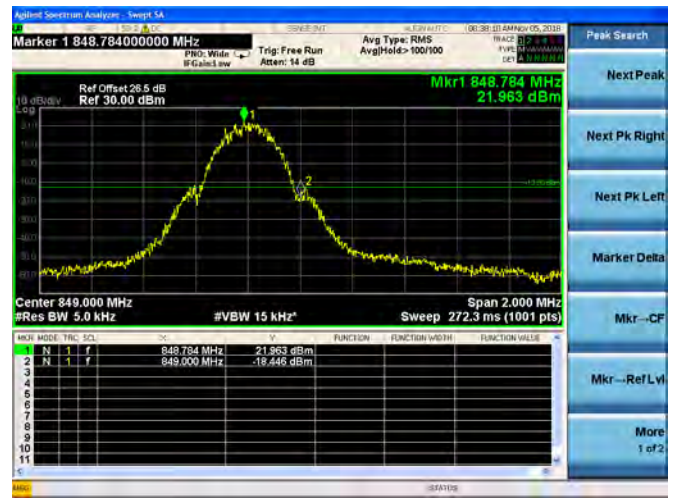




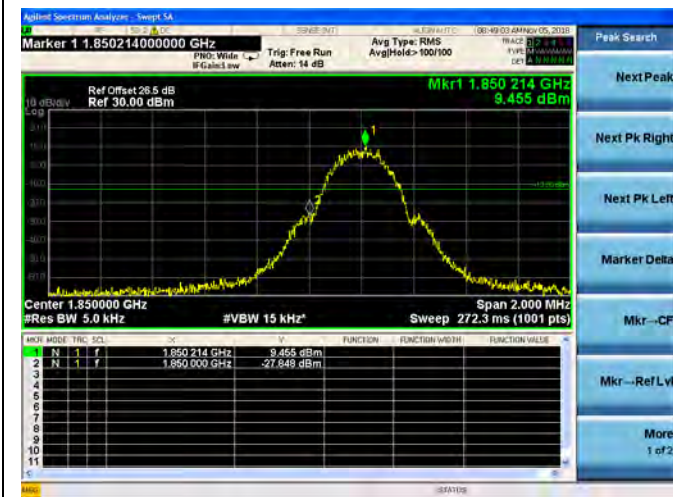
EDGE 850MHz CH128 824.2MHz



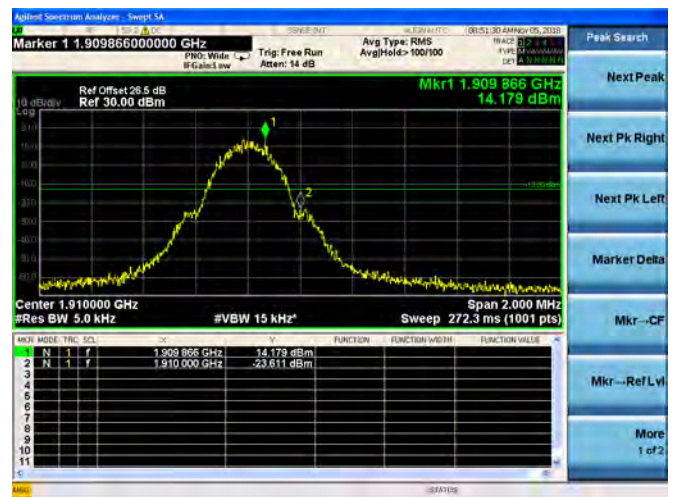
EDGE 850MHz CH251 848.8MHz



EDGE 1900MHz CH521 1850.2MHz



EDGE 1900MHz CH810 1909.8MHz







HSDPA Band V CH4132 826.4MHz



HSDPA Band V CH4233 846.6MHz



HSDPA Band II CH9262 1852.4MHz



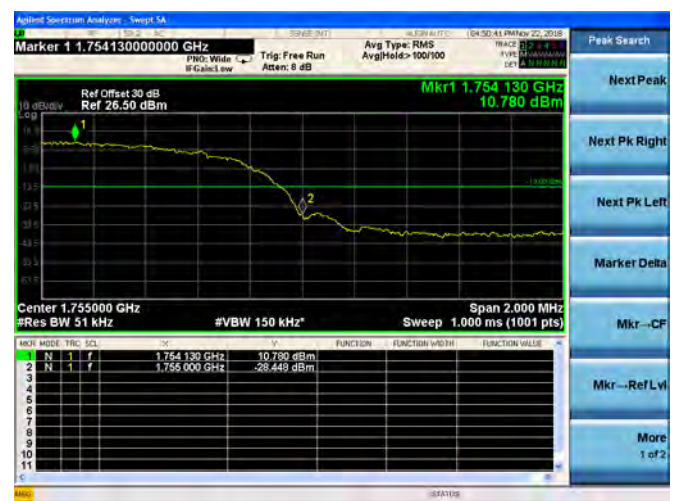
HSDPA Band II CH9538 1907.6MHz



HSDPA Band IV CH1312 1712.4MHz



HSDPA Band IV CH1513 1752.6MHz





HSUPA Band V CH4132 826.4MHz



HSUPA Band V CH4233 846.6MHz



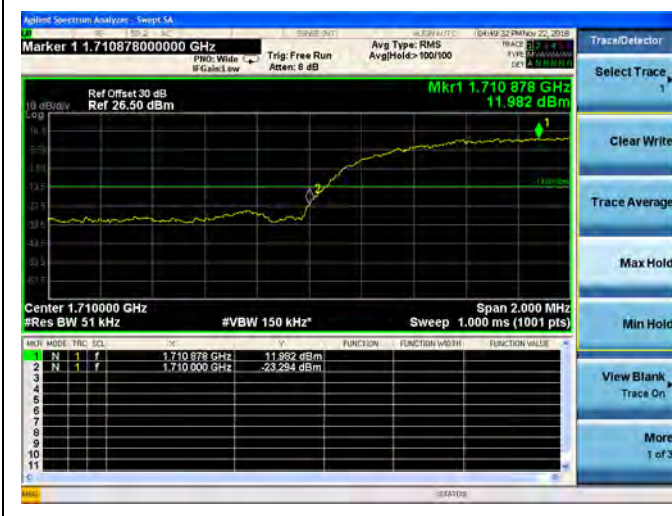
HSUPA Band II CH9262 1852.4MHz



HSUPA Band II CH9538 1907.6MHz



HSUPA Band IV CH1312 1712.4MHz



HSUPA 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.

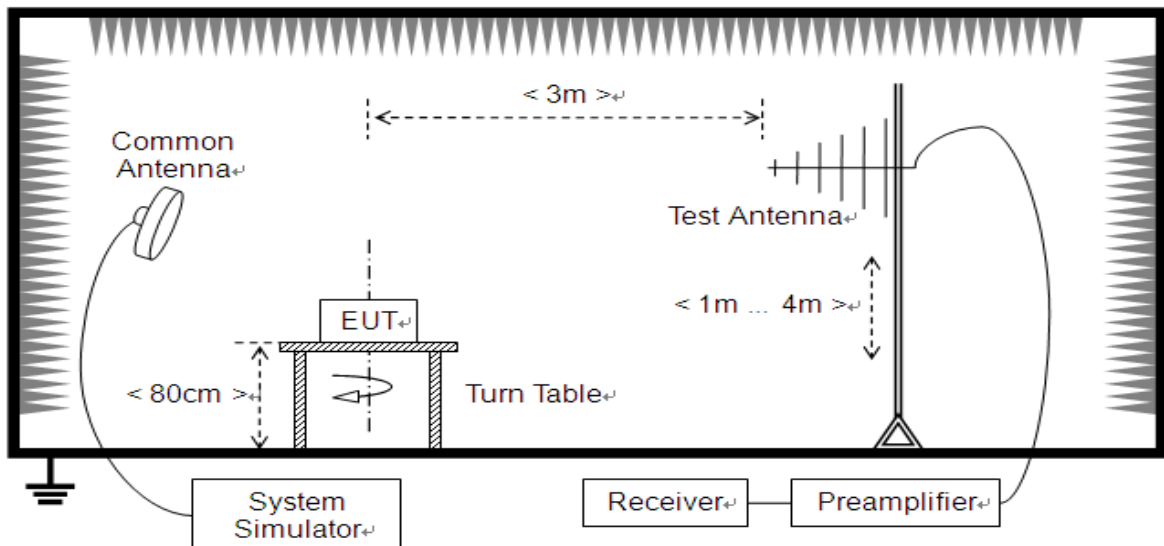
According to FCC section 24.232, the broadband PCS mobile station is limited to 2 Watts e.i.r.p. peak power.

According to FCC section 27.50, mobile, and portable (hand-held) stations is limited to 1 Watts e.i.r.p. peak power.

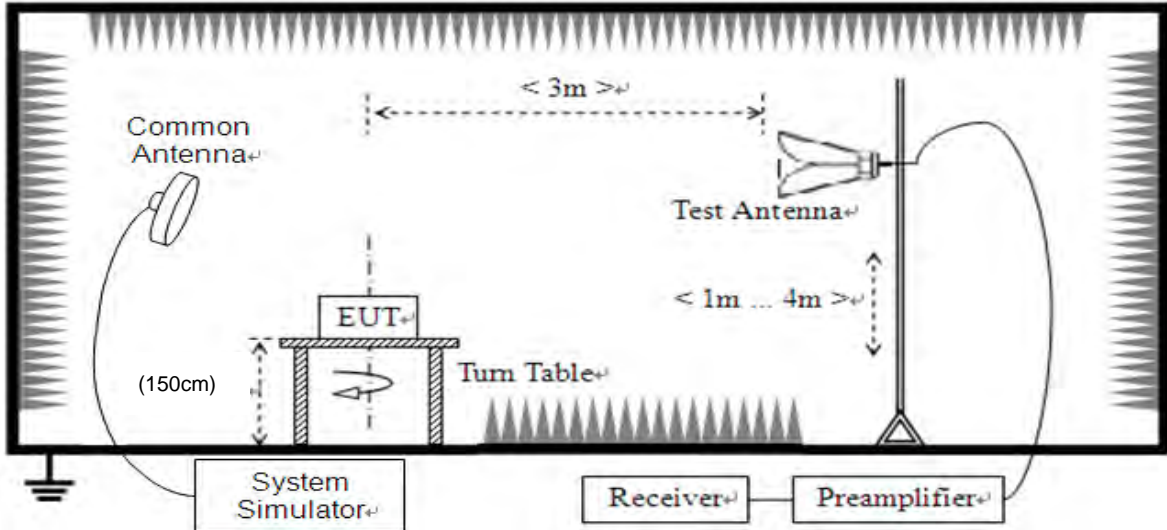
2.7.2. Test Description

Test Setup:

1) Below 1GHz



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:

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

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

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

$P_{\text{SUBST_TX}}$ is signal generator level,

$P_{\text{SUBST_RX}}$ is receiver level,

$L_{\text{SUBST_CABLES}}$ is cable losses including TX cable,

$G_{\text{SUBST_TX_ANT}}$ is substitution antenna gain.

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

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



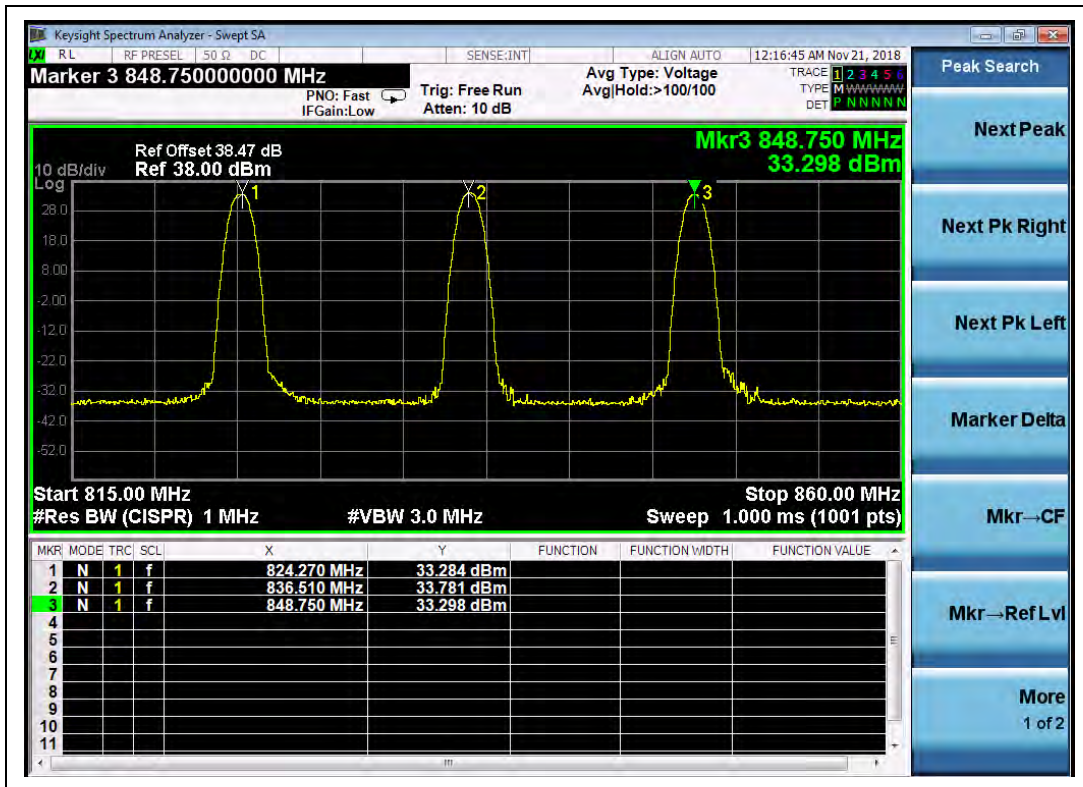
GSM Test verdict:

Band	Channel	Frequency (MHz)	PCL	Measured ERP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 850MHz	128	824.20	5	33.28	2.128	Plot A	38.5	7	PASS
	190	836.60	5	33.78	2.388				PASS
	251	848.80	5	33.30	2.138				PASS
GPRS 850MHz	128	824.20	5	33.23	2.104	Plot B ^{Note 1}	38.5	7	PASS
	190	836.60	5	33.48	2.228				PASS
	251	848.80	5	33.23	2.104				PASS
EDGE 850MHz	128	824.20	5	33.16	2.070	Plot C ^{Note 1}	38.5	7	PASS
	190	836.60	5	33.66	2.323				PASS
	251	848.80	5	33.18	2.080				PASS

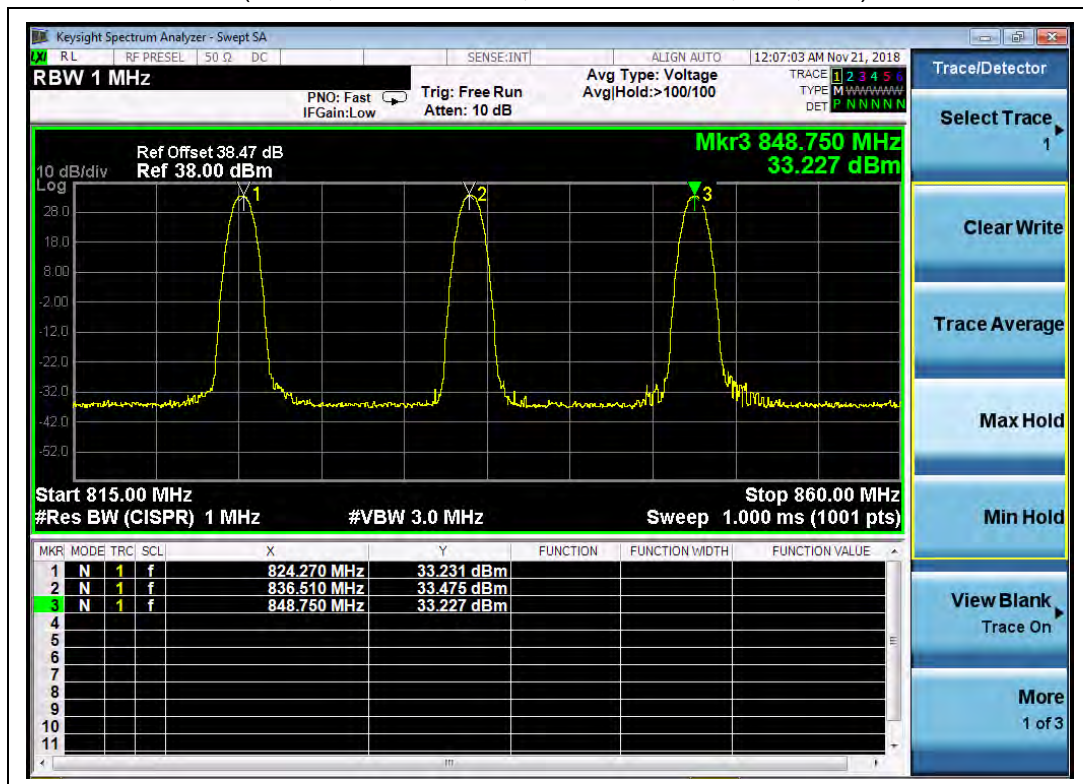
Band	Channel	Frequency (MHz)	PCL	Measured EIRP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 1900MHz	512	1850.2	0	28.71	0.743	Plot D	33	2	PASS
	661	1880.0	0	28.05	0.638				PASS
	810	1909.8	0	27.86	0.611				PASS
GPRS 1900MHz	512	1850.2	0	28.81	0.760	Plot E ^{Note 1}	33	2	PASS
	661	1880.0	0	28.12	0.649				PASS
	810	1909.8	0	28.19	0.659				PASS
EDGE 1900MHz	512	1850.2	0	28.80	0.759	Plot F ^{Note 1}	33	2	PASS
	661	1880.0	0	28.35	0.684				PASS
	810	1909.8	0	28.20	0.661				PASS

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

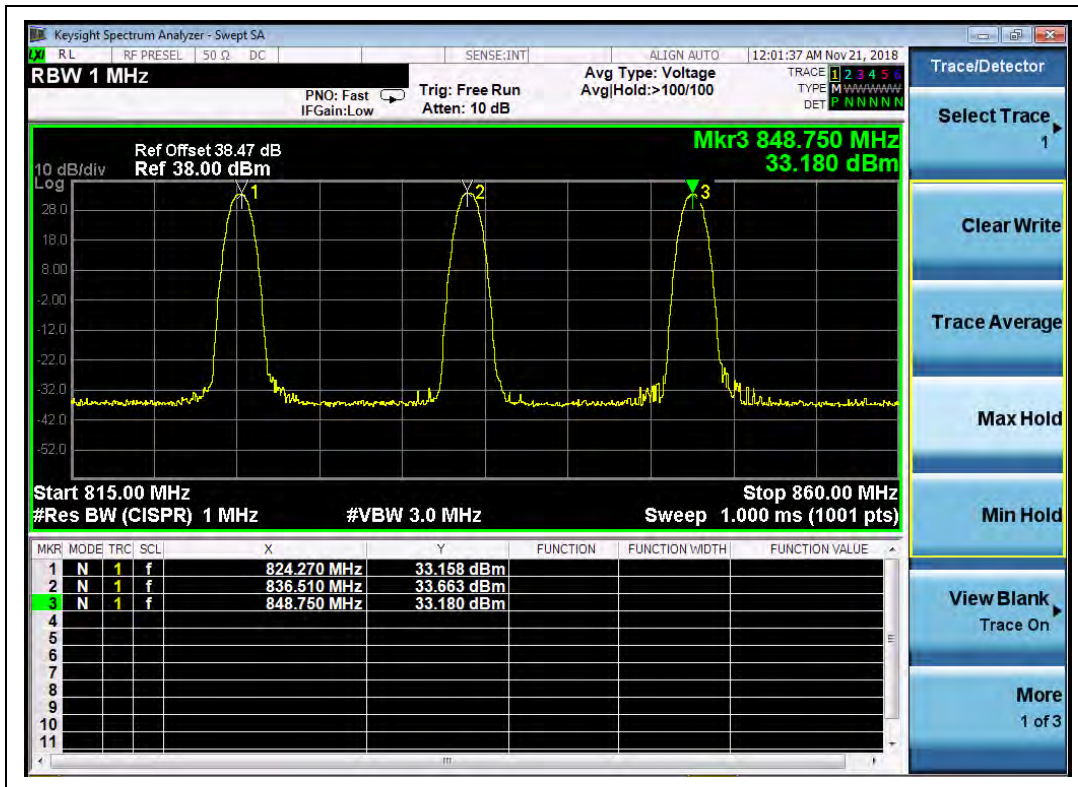
Note 2: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.



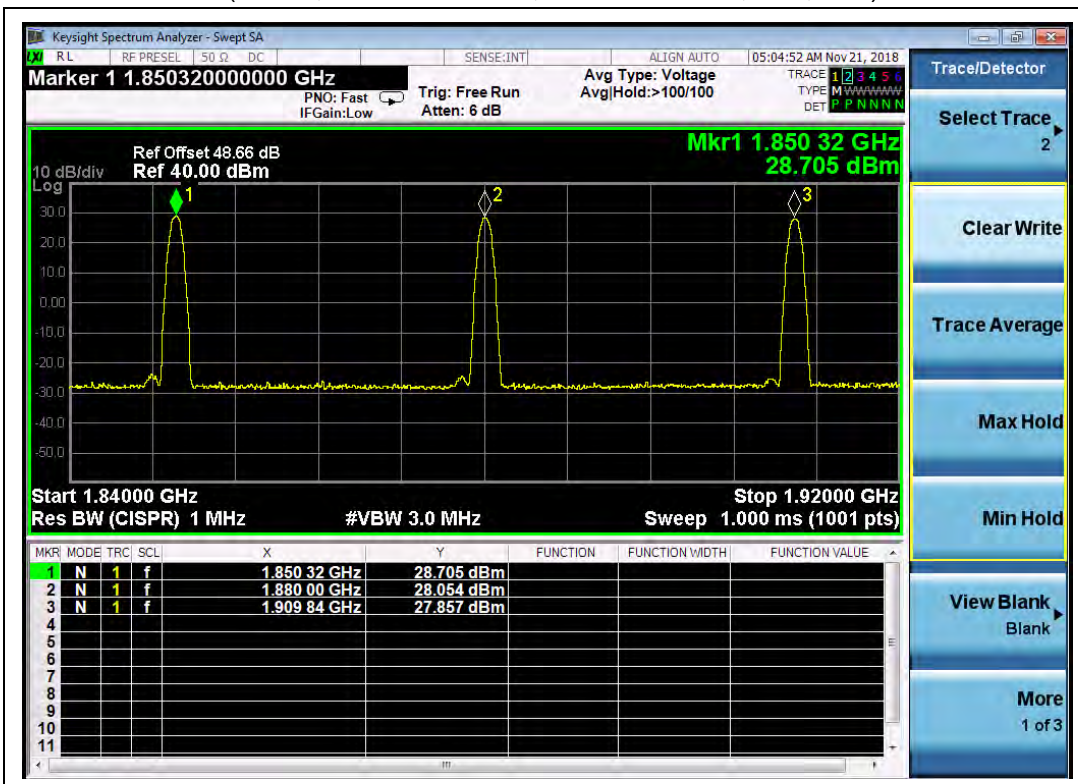
(Plot A, GSM 850MHz, Channel = 128, 190, 251)



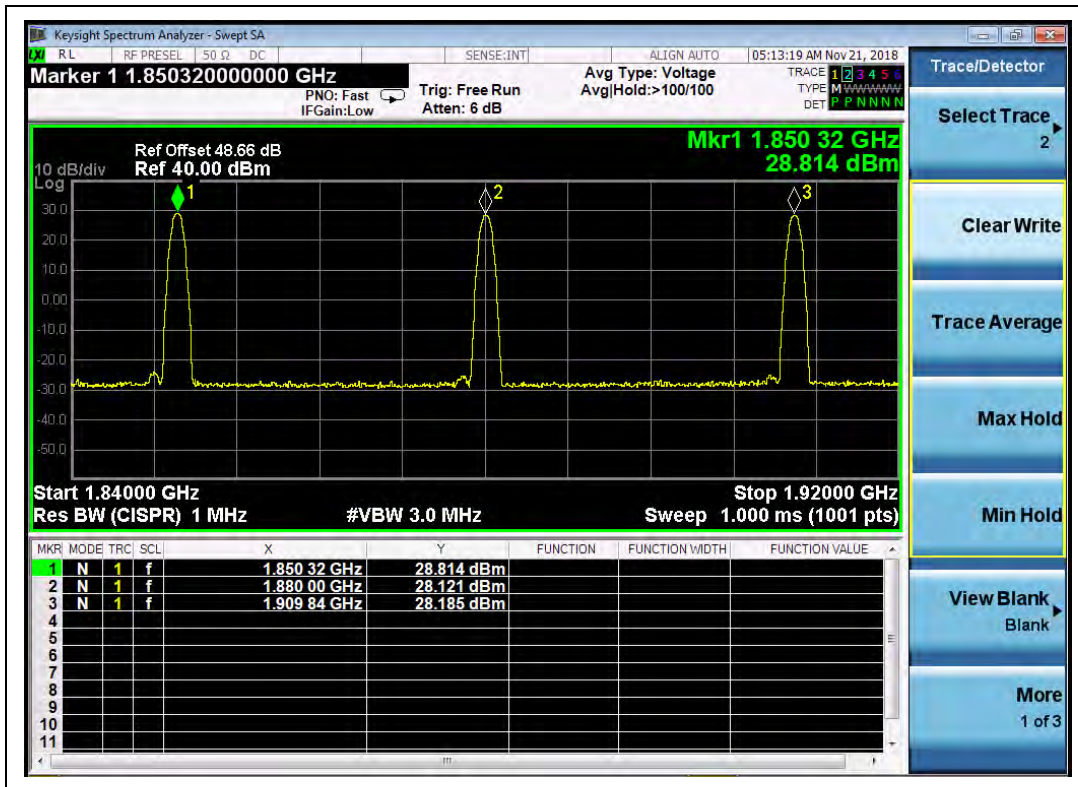
(Plot B, GPRS 850MHz, Channel = 128, 190, 251)



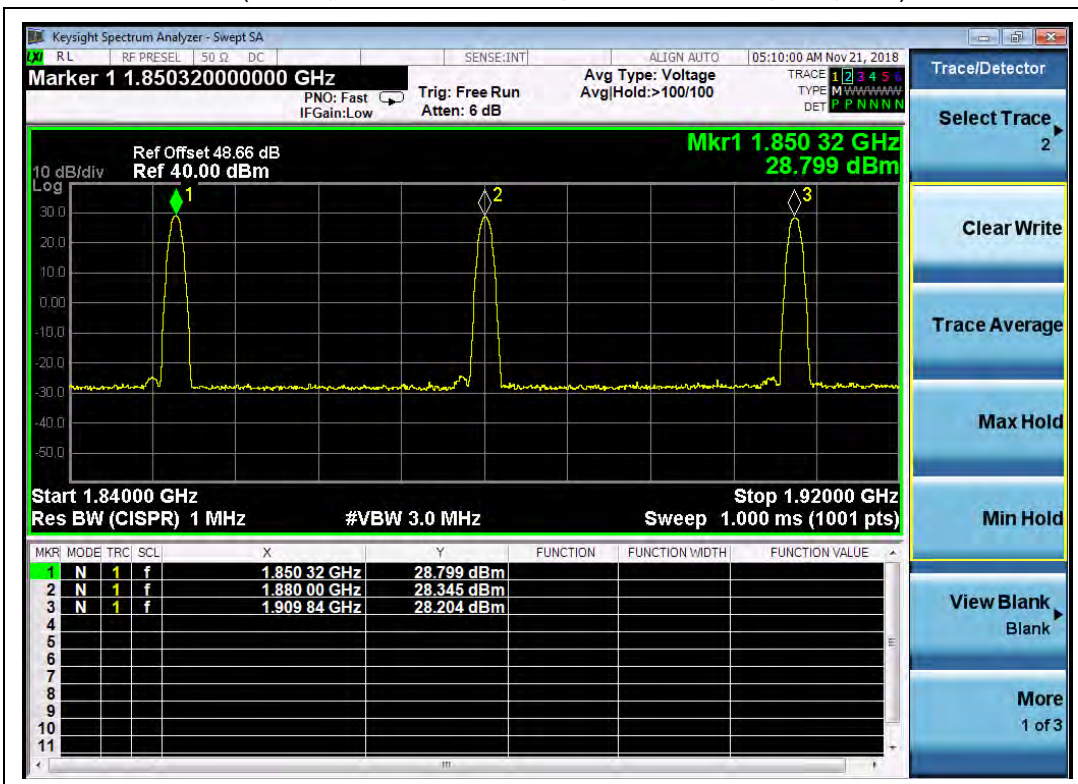
(Plot C, EDGE 850MHz, Channel = 128, 190, 251)



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



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



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



WCDMA Test verdict:

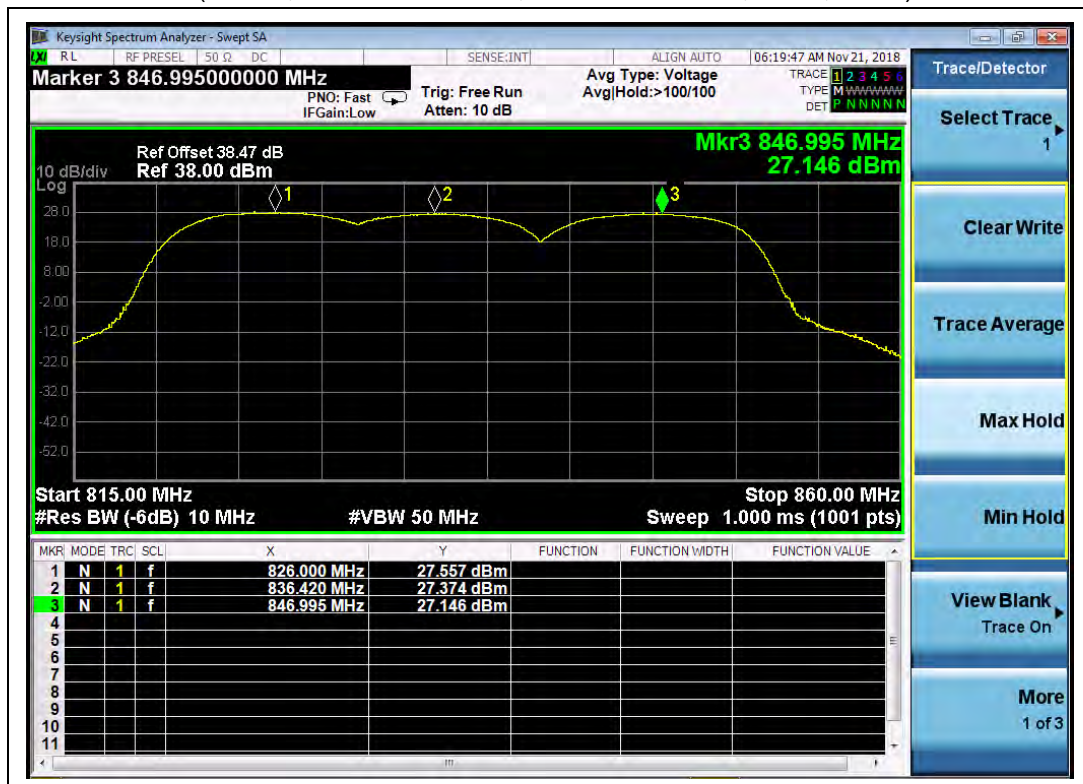
Band	Channel	Frequency (MHz)	Measured ERP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
WCDMA Band V	4132	826.4	27.65	0.582	Plot G	38.5	7	PASS
	4182	836.4	28.60	0.724				PASS
	4233	846.6	27.37	0.546				PASS
HSDPA Band V	4132	826.4	27.56	0.570	Plot H	38.5	7	PASS
	4182	836.4	27.37	0.546				PASS
	4233	846.6	27.15	0.519				PASS
HSUPA Band V	4132	826.4	27.33	0.541	Plot I	38.5	7	PASS
	4182	836.4	28.84	0.766				PASS
	4233	846.6	27.41	0.551				PASS

Band	Channel	Frequency (MHz)	Measured EIRP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
WCDMA Band II	9262	1852.4	26.20	0.417	Plot J	33	2	PASS
	9400	1880.0	25.71	0.372				PASS
	9538	1907.6	25.27	0.337				PASS
HSDPA Band II	9262	1852.4	26.75	0.473	Plot K	33	2	PASS
	9400	1880.0	26.42	0.439				PASS
	9538	1907.6	27.39	0.548				PASS
HSUPA Band II	9262	1852.4	26.17	0.414	Plot L	33	2	PASS
	9400	1880.0	26.03	0.401				PASS
	9538	1907.6	26.16	0.413				PASS
WCDMA Band IV	1312	1712.4	26.04	0.402	Plot M	30	1	PASS
	1413	1732.6	26.27	0.424				PASS
	1513	1752.6	27.31	0.538				PASS
HSDPA Band IV	1312	1712.4	27.00	0.501	Plot N	30	1	PASS
	1413	1732.6	27.00	0.501				PASS
	1513	1752.6	27.07	0.509				PASS
HSUPA Band IV	1312	1712.4	27.04	0.506	Plot O	30	1	PASS
	1413	1732.6	27.12	0.515				PASS
	1513	1752.6	27.57	0.571				PASS

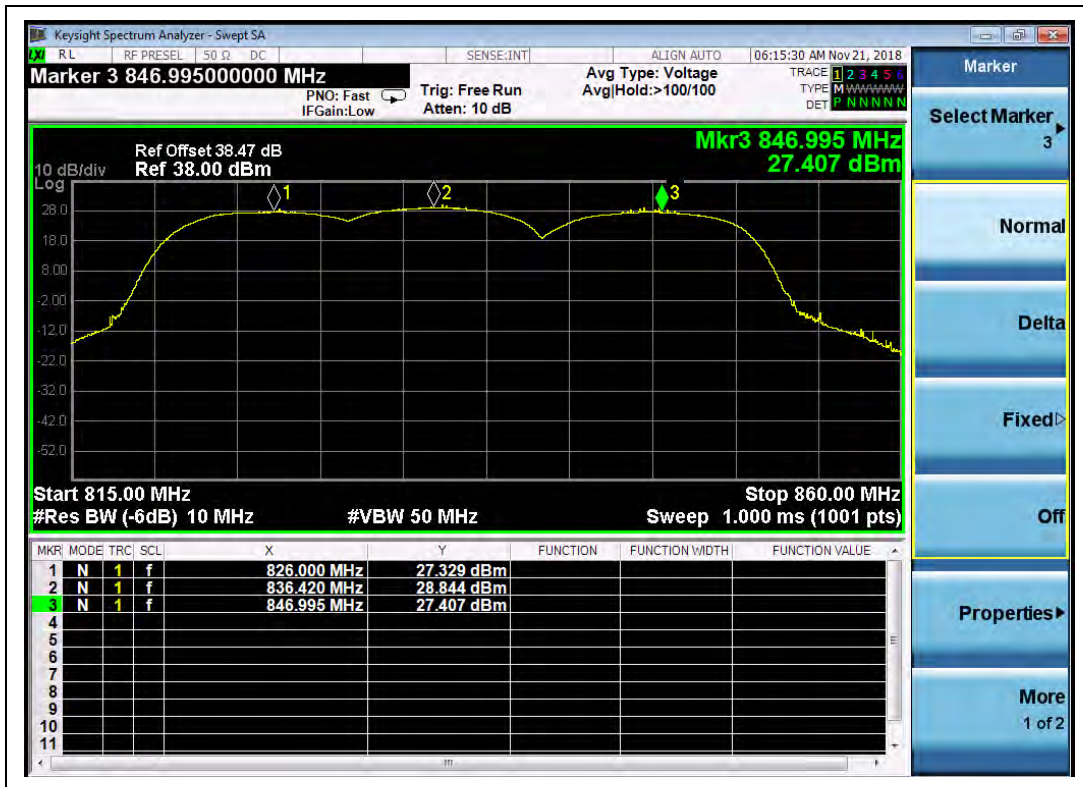
Note 1: Both horizontal and vertical polarizations of the test antenna are evaluated respectively, only the worst data (horizontal) were recorded in this report.



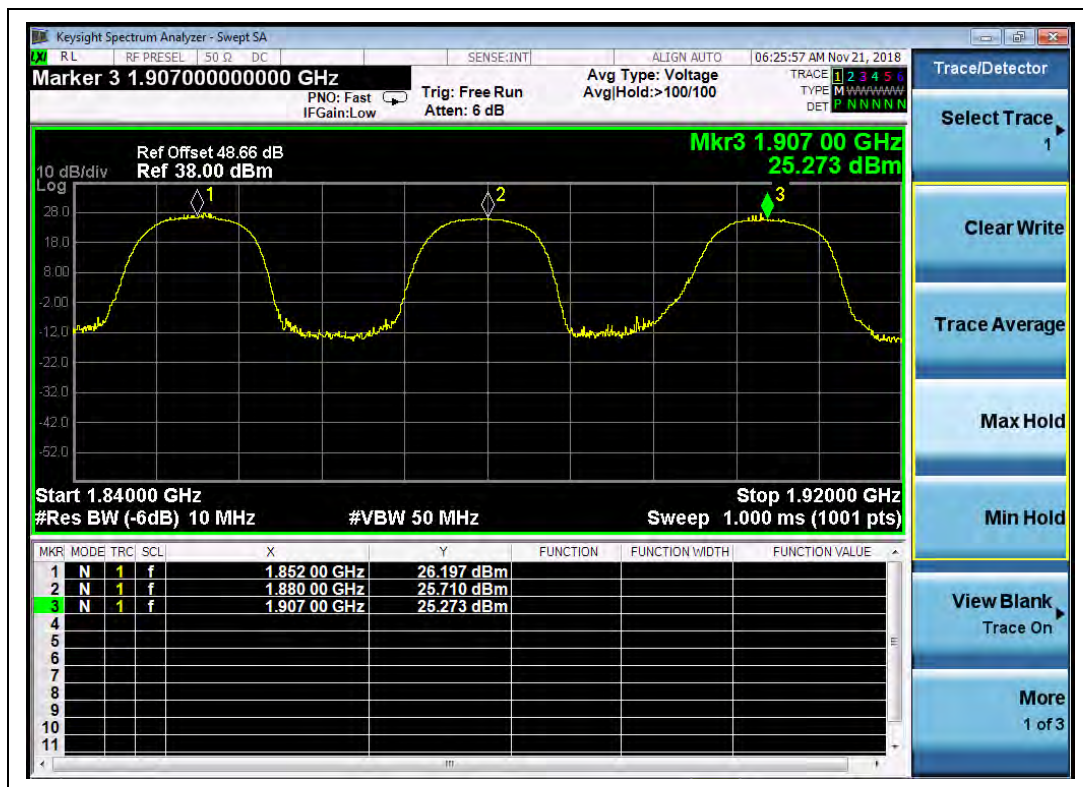
(Plot G, WCDMA Band V, Channel = 4132, 4182, 4233)



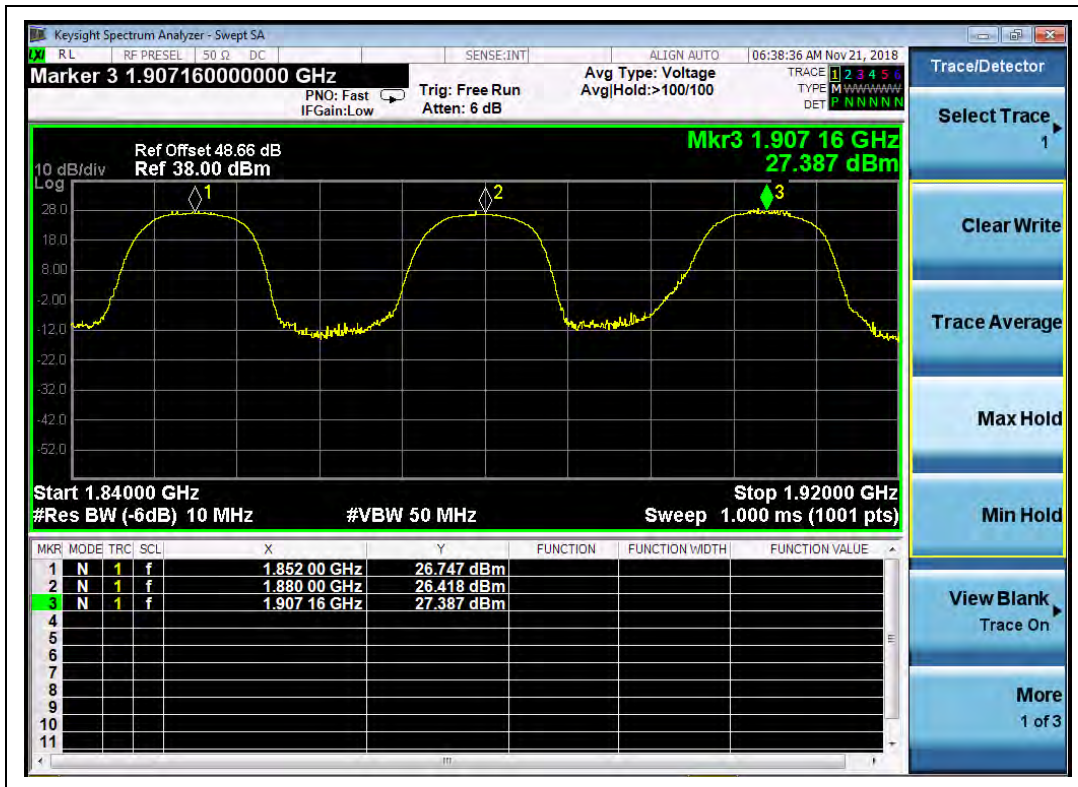
(Plot H, HSDPA Band V, Channel = 4132, 4182, 4233)



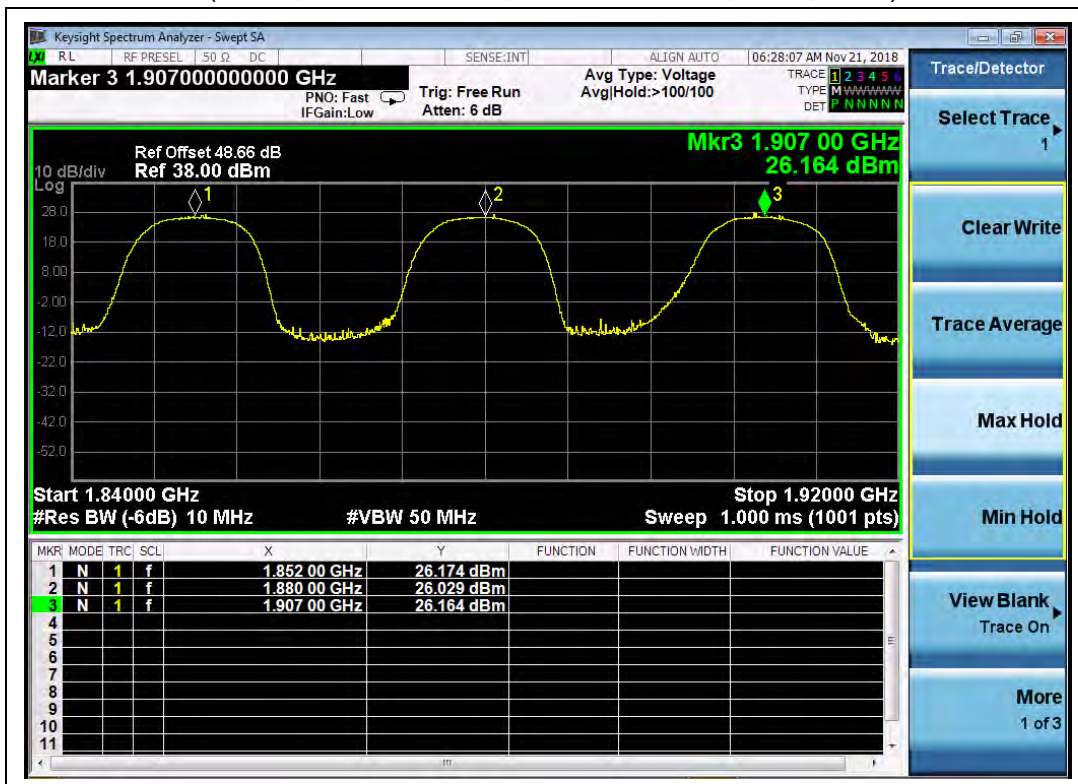
(Plot I, HSUPA Band V, Channel = 4132, 4182, 4233)



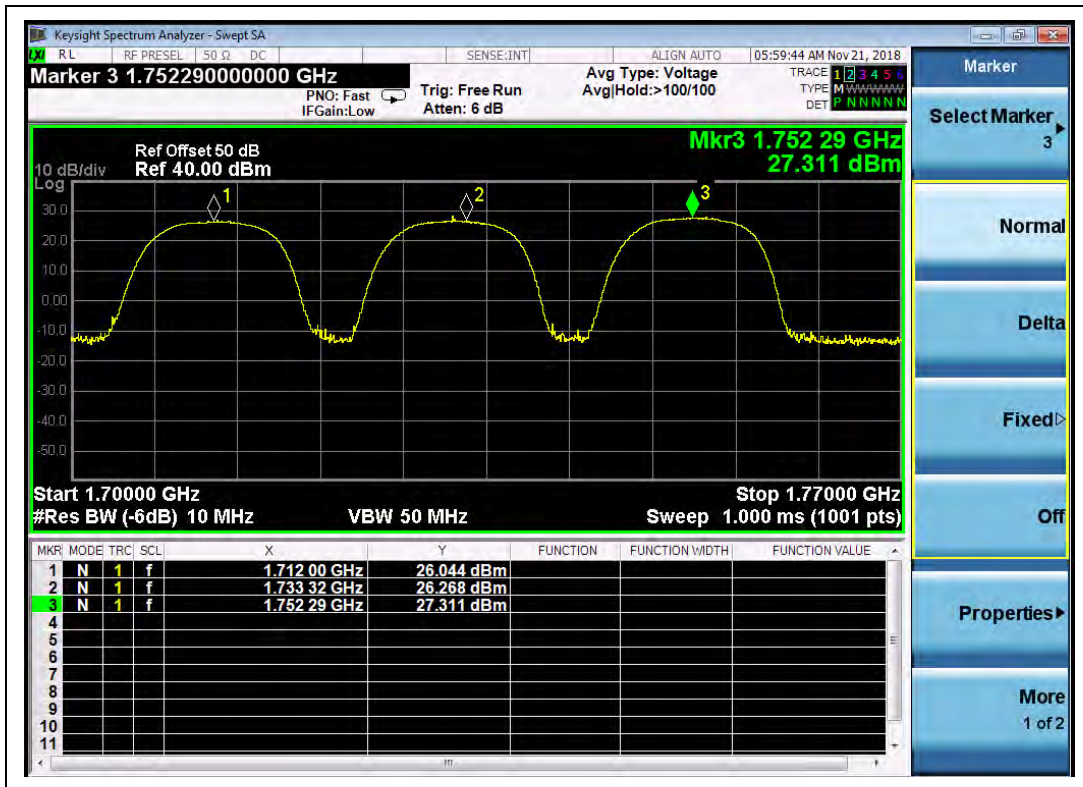
(Plot J, WCDMA Band II, Channel = 9262, 9400, 9538)



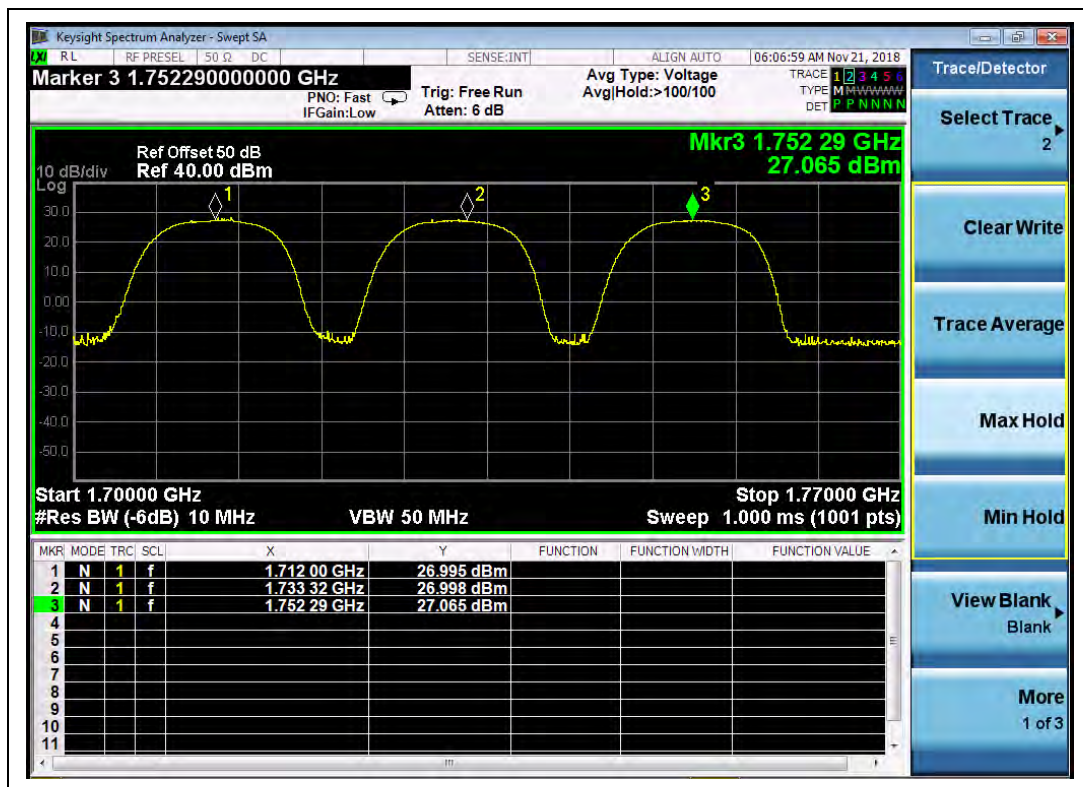
(Plot K, HSDPA Band II, Channel = 9262, 9400, 9538)



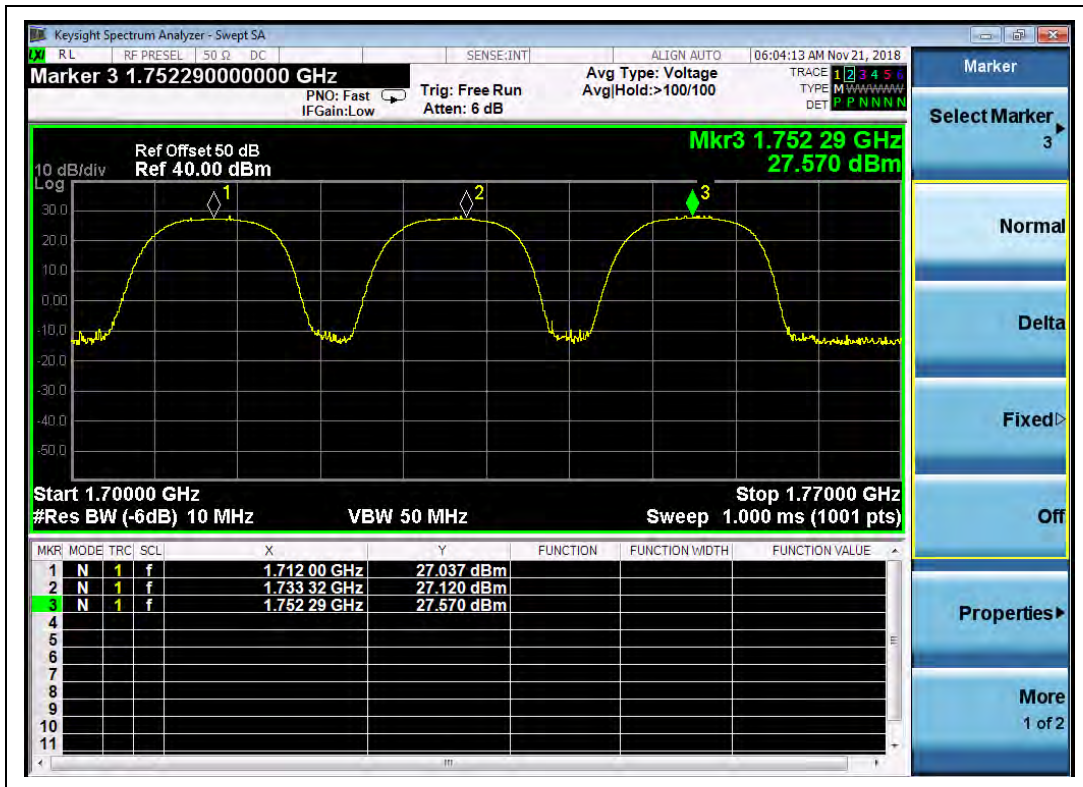
(Plot L, HSUPA Band II, Channel = 9262, 9400, 9538)



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



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



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

2.8. Radiated Out of Band Emissions

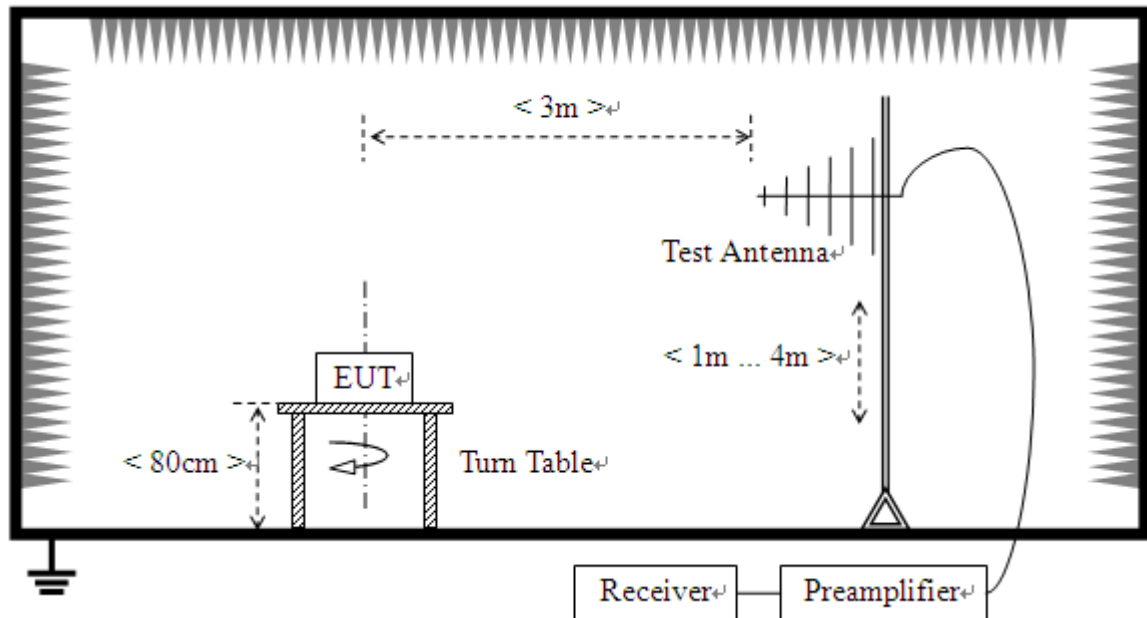
2.8.1. Requirement

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.

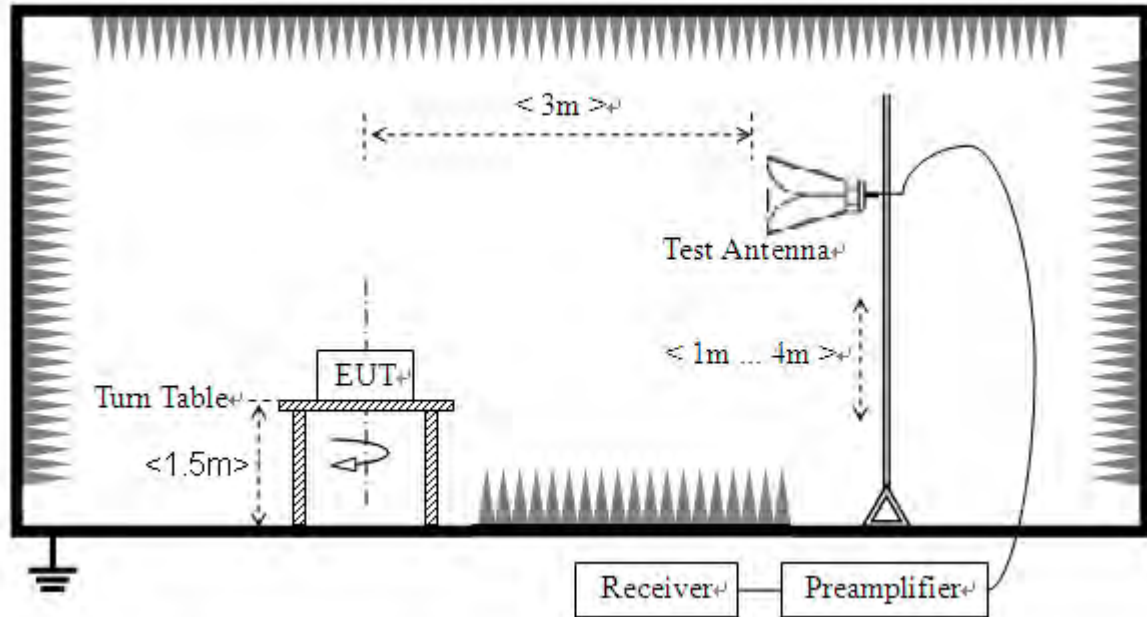
2.8.2. Test Description

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.



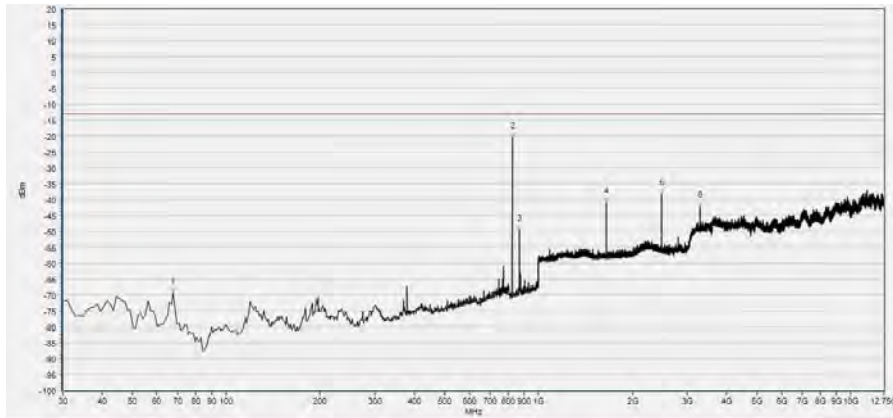
2.8.3. Test Result

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.

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

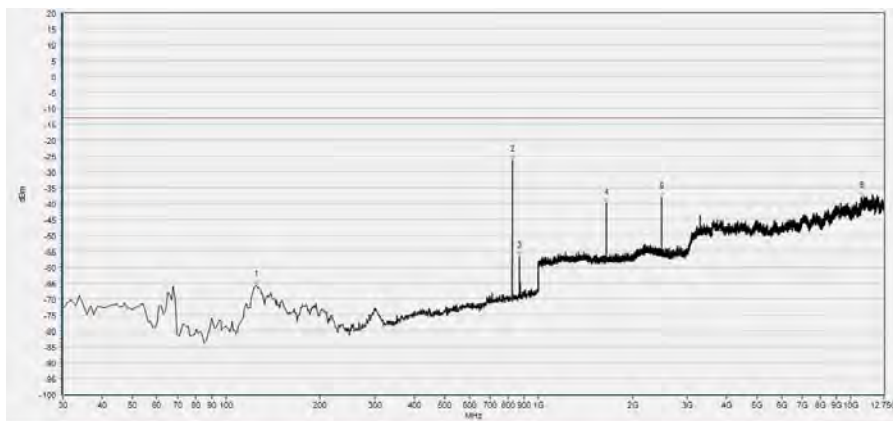
Note 1: All test mode and condition mentioned were considered and evaluated respectively by performing full test, only the worst data were recorded and reported.

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.



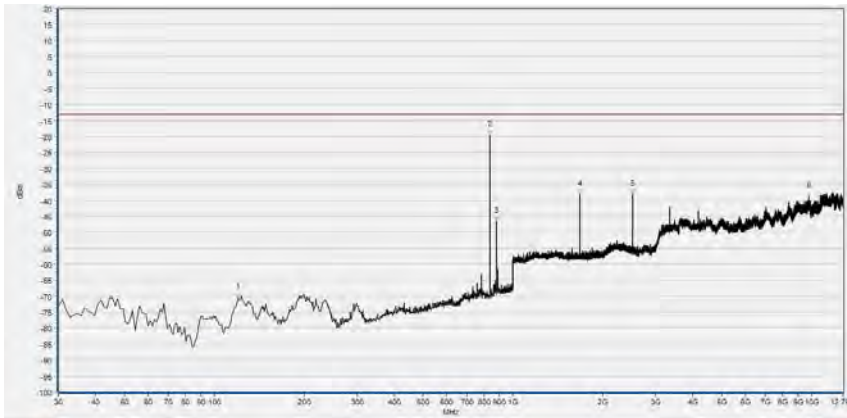
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-69.40	-13.00	Horizontal	PASS
2	824.430	-20.48	-13.00	Horizontal	N/A
3	869.050	-49.45	-13.00	Horizontal	N/A
4	1648.579	-40.92	-13.00	Horizontal	PASS
5	2473.229	-38.29	-13.00	Horizontal	PASS
6	3297.709	-42.23	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 128, Horizontal)



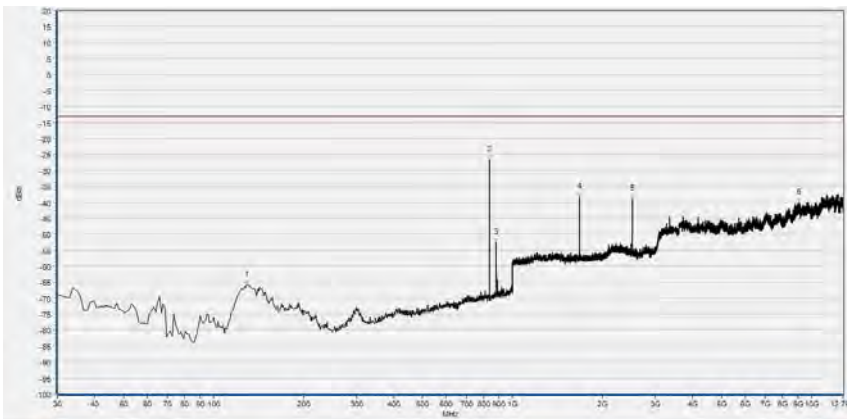
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	125.060	-65.67	-13.00	Vertical	PASS
2	824.430	-26.44	-13.00	Vertical	N/A
3	869.050	-56.58	-13.00	Vertical	N/A
4	1648.579	-39.94	-13.00	Vertical	PASS
5	2473.229	-38.19	-13.00	Vertical	PASS
6	10822.995	-37.97	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 128, Vertical)



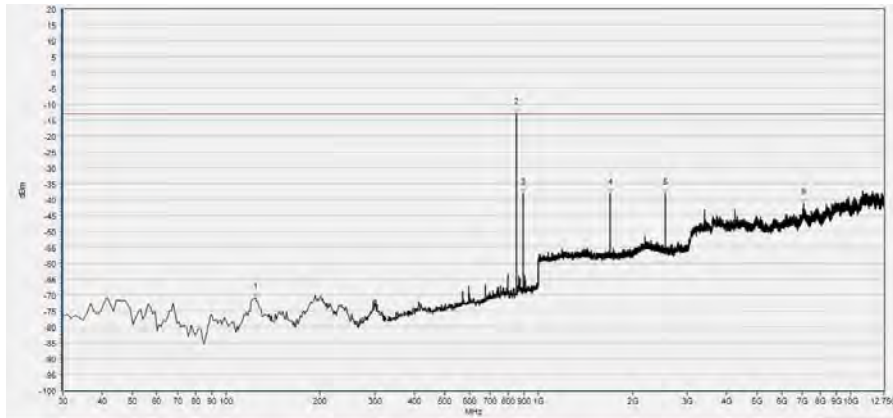
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	120.210	-70.42	-13.00	Horizontal	PASS
2	836.070	-19.65	-13.00	Horizontal	N/A
3	881.660	-46.58	-13.00	Horizontal	N/A
4	1673.549	-38.11	-13.00	Horizontal	PASS
5	2510.364	-38.16	-13.00	Horizontal	PASS
6	9772.740	-38.71	-13.00	Horizontal	PASS

(GSM850MHz, Channel = 190, Horizontal)



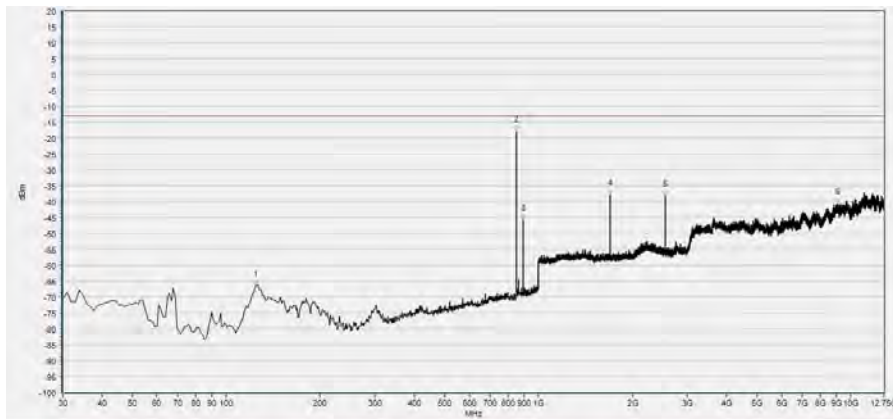
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	128.940	-66.00	-13.00	Vertical	PASS
2	836.070	-26.70	-13.00	Vertical	N/A
3	881.660	-52.58	-13.00	Vertical	N/A
4	1673.549	-38.43	-13.00	Vertical	PASS
5	2510.364	-39.05	-13.00	Vertical	PASS
6	9051.037	-40.19	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 190, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	124.090	-70.85	-13.00	Horizontal	PASS
2	848.680	-12.93	-13.00	Horizontal	N/A
3	894.270	-38.05	-13.00	Horizontal	N/A
4	1697.879	-38.02	-13.00	Horizontal	PASS
5	2546.859	-38.18	-13.00	Horizontal	PASS
6	7059.429	-41.07	-13.00	Horizontal	PASS

(GSM 850MHz, Channel = 251, Horizontal)



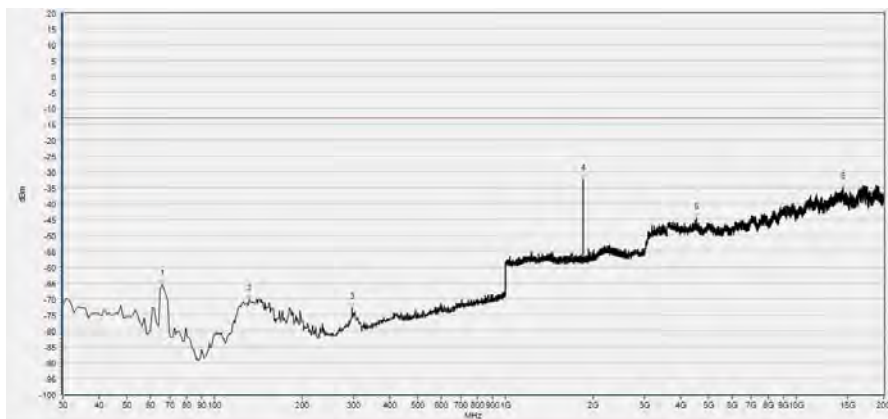
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	124.090	-66.51	-13.00	Vertical	PASS
2	848.680	-17.95	-13.00	Vertical	N/A
3	893.300	-45.80	-13.00	Vertical	N/A
4	1697.879	-37.80	-13.00	Vertical	PASS
5	2546.859	-38.01	-13.00	Vertical	PASS
6	9063.957	-40.57	-13.00	Vertical	PASS

(GSM 850MHz, Channel = 251, Vertical)



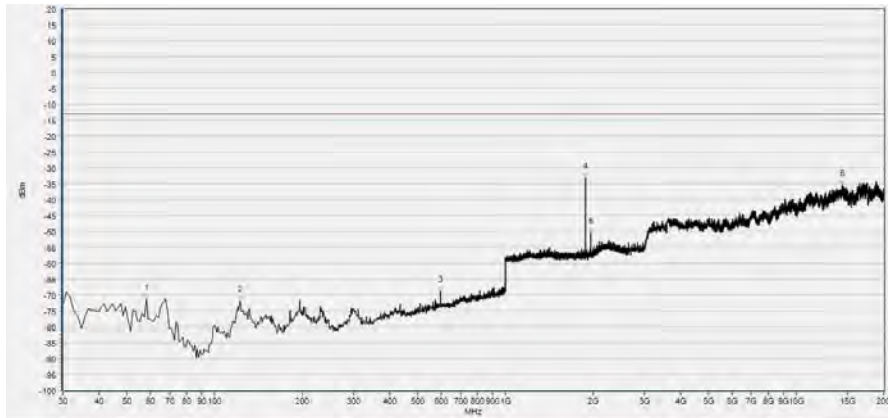
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	66.860	-69.23	-13.00	Horizontal	PASS
2	192.960	-71.49	-13.00	Horizontal	PASS
3	598.420	-68.38	-13.00	Horizontal	PASS
4	1850.900	-32.41	-13.00	Horizontal	N/A
5	1930.292	-53.42	-13.00	Horizontal	N/A
6	14405.674	-34.73	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 512, Horizontal)



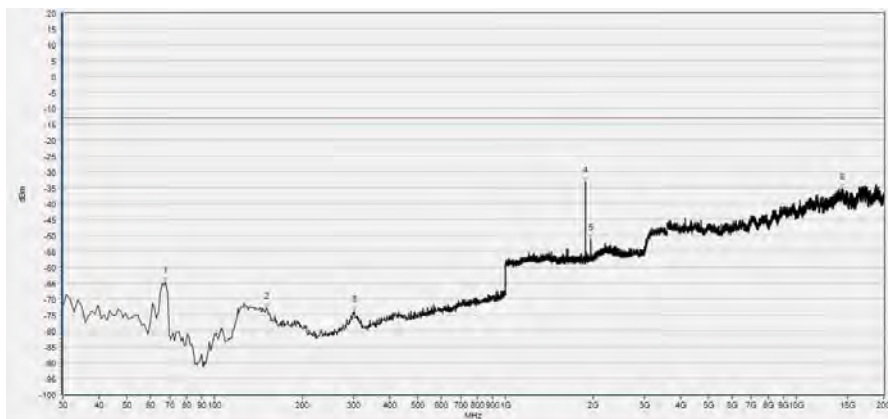
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-65.56	-13.00	Vertical	PASS
2	131.850	-70.26	-13.00	Vertical	PASS
3	296.750	-72.89	-13.00	Vertical	PASS
4	1850.900	-32.45	-13.00	Vertical	N/A
5	4549.154	-44.43	-13.00	Vertical	PASS
6	14481.615	-35.01	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 512, Vertical)



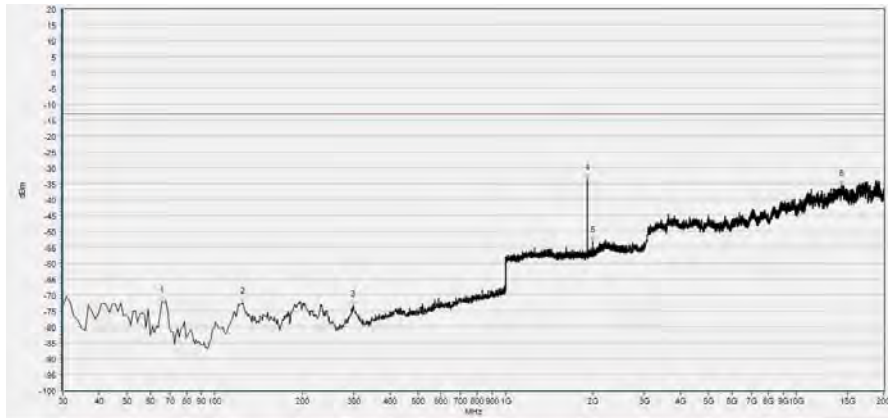
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	58.130	-71.47	-13.00	Horizontal	PASS
2	122.150	-71.84	-13.00	Horizontal	PASS
3	598.420	-68.80	-13.00	Horizontal	PASS
4	1880.352	-32.98	-13.00	Horizontal	N/A
5	1960.384	-50.40	-13.00	Horizontal	N/A
6	14383.524	-35.48	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 661, Horizontal)



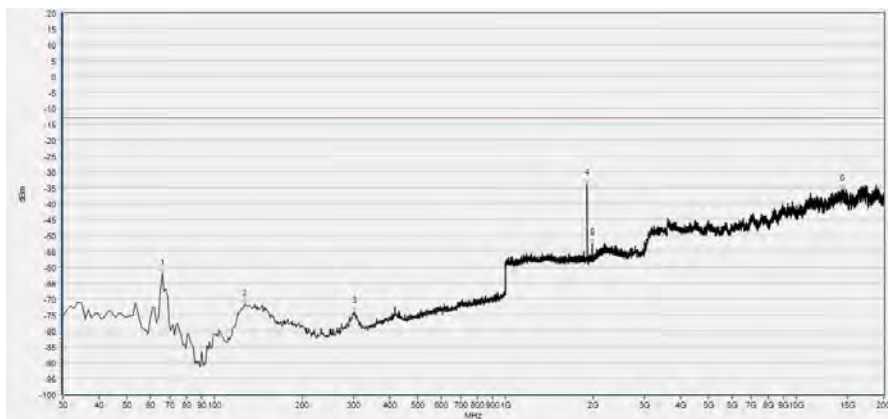
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-64.74	-13.00	Vertical	PASS
2	151.250	-72.84	-13.00	Vertical	PASS
3	302.570	-73.71	-13.00	Vertical	PASS
4	1880.352	-33.03	-13.00	Vertical	N/A
5	1960.384	-51.11	-13.00	Vertical	N/A
6	14383.524	-35.18	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 661, Vertical)



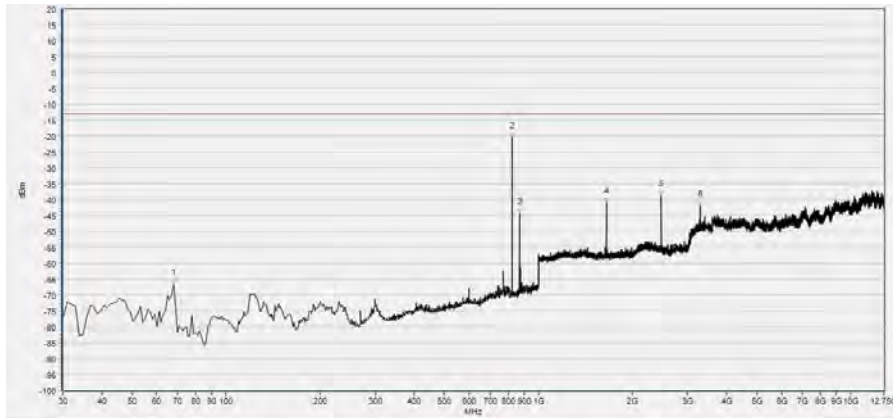
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-72.25	-13.00	Horizontal	PASS
2	125.060	-72.49	-13.00	Horizontal	PASS
3	298.690	-73.24	-13.00	Horizontal	PASS
4	1910.444	-33.65	-13.00	Horizontal	N/A
5	1990.476	-53.21	-13.00	Horizontal	N/A
6	14275.941	-35.58	-13.00	Horizontal	PASS

(GSM 1900MHz, Channel = 810, Horizontal)



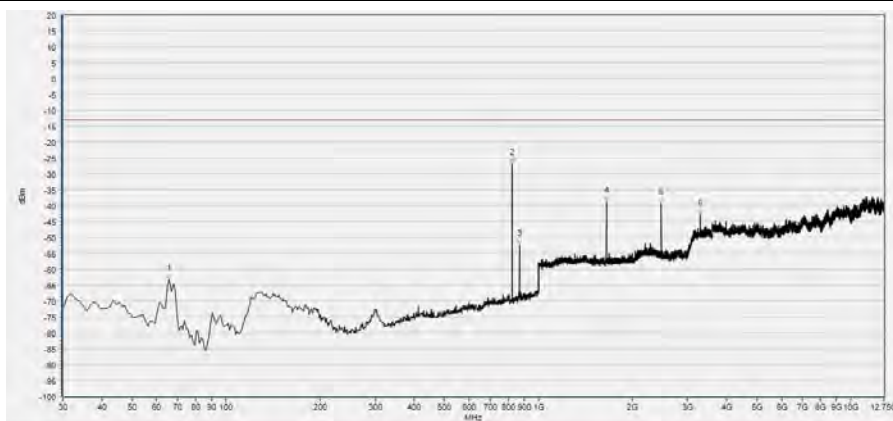
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-62.15	-13.00	Vertical	PASS
2	127.000	-72.01	-13.00	Vertical	PASS
3	302.570	-73.96	-13.00	Vertical	PASS
4	1910.444	-33.69	-13.00	Vertical	N/A
5	1990.476	-52.67	-13.00	Vertical	N/A
6	14370.867	-35.66	-13.00	Vertical	PASS

(GSM 1900MHz, Channel = 810, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-66.65	-13.00	Horizontal	PASS
2	824.430	-20.46	-13.00	Horizontal	N/A
3	869.050	-44.19	-13.00	Horizontal	N/A
4	1648.579	-41.03	-13.00	Horizontal	PASS
5	2473.229	-38.57	-13.00	Horizontal	PASS
6	3297.709	-41.80	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 128, Horizontal)



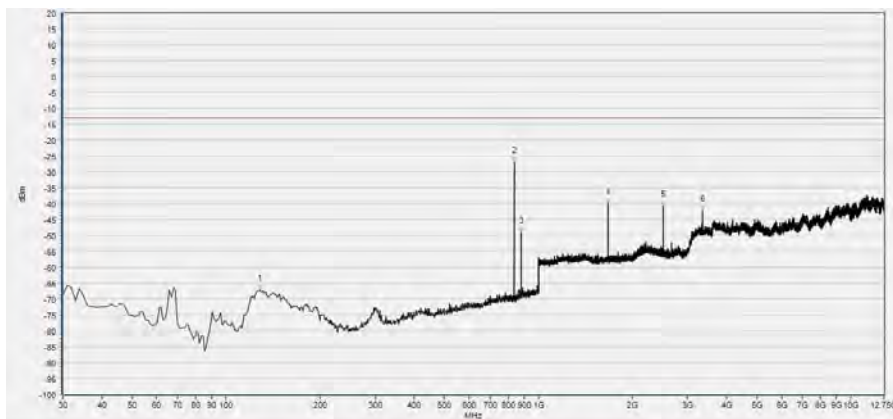
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-63.40	-13.00	Vertical	PASS
2	824.430	-27.02	-13.00	Vertical	N/A
3	869.050	-52.47	-13.00	Vertical	N/A
4	1648.579	-38.86	-13.00	Vertical	PASS
5	2473.229	-39.20	-13.00	Vertical	PASS
6	3297.709	-42.88	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 128, Vertical)



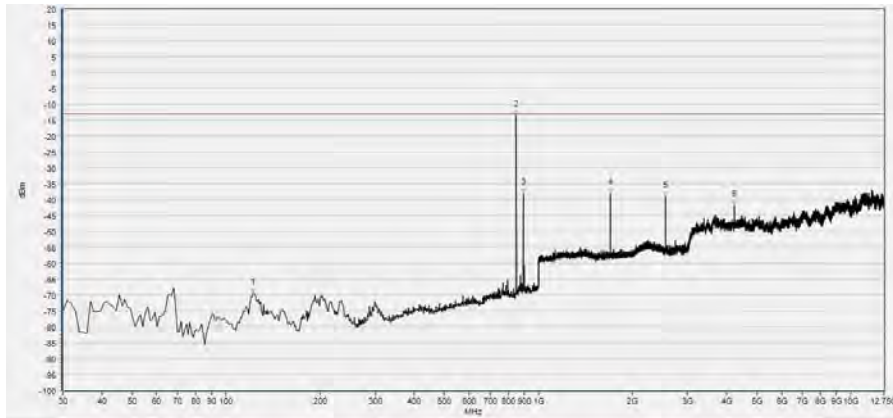
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	196.840	-70.02	-13.00	Horizontal	PASS
2	836.070	-20.52	-13.00	Horizontal	N/A
3	881.660	-41.87	-13.00	Horizontal	N/A
4	1673.549	-37.27	-13.00	Horizontal	PASS
5	2510.364	-38.52	-13.00	Horizontal	PASS
6	3347.545	-39.93	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 190, Horizontal)



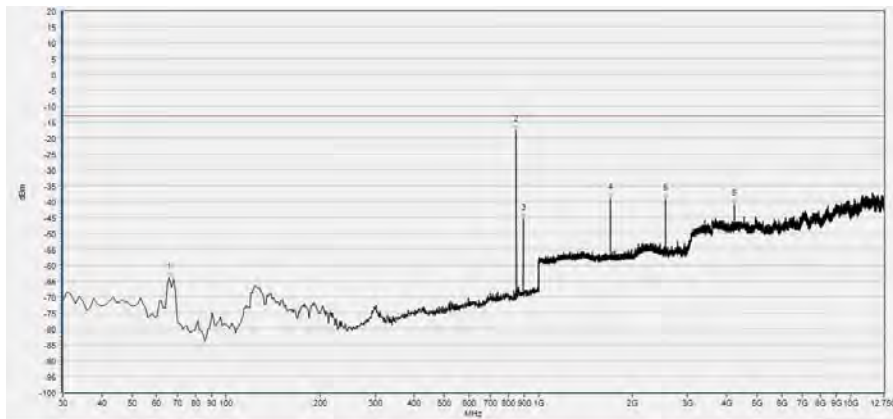
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	127.970	-67.20	-13.00	Vertical	PASS
2	837.040	-26.90	-13.00	Vertical	N/A
3	881.660	-49.12	-13.00	Vertical	N/A
4	1673.549	-39.97	-13.00	Vertical	PASS
5	2510.364	-40.72	-13.00	Vertical	PASS
6	3347.545	-42.19	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 190, Vertical)



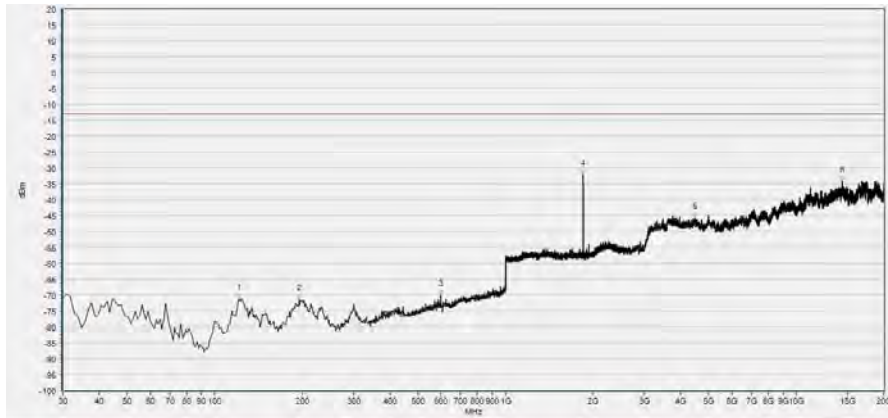
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	122.150	-69.45	-13.00	Horizontal	PASS
2	848.680	-13.64	-13.00	Horizontal	N/A
3	893.300	-38.12	-13.00	Horizontal	N/A
4	1697.879	-38.12	-13.00	Horizontal	PASS
5	2546.859	-39.15	-13.00	Horizontal	PASS
6	4244.599	-41.79	-13.00	Horizontal	PASS

(EDGE 850MHz, Channel = 251, Horizontal)



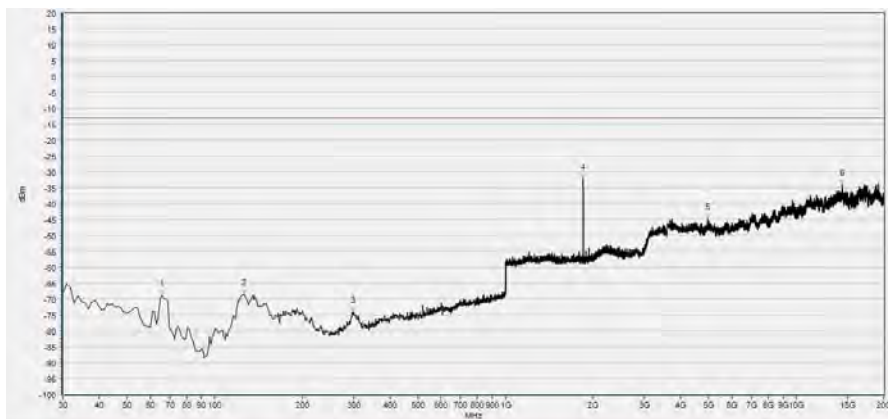
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-64.06	-13.00	Vertical	PASS
2	848.680	-17.52	-13.00	Vertical	N/A
3	893.300	-45.55	-13.00	Vertical	N/A
4	1697.879	-39.06	-13.00	Vertical	PASS
5	2546.859	-39.28	-13.00	Vertical	PASS
6	4244.599	-40.95	-13.00	Vertical	PASS

(EDGE 850MHz, Channel = 251, Vertical)



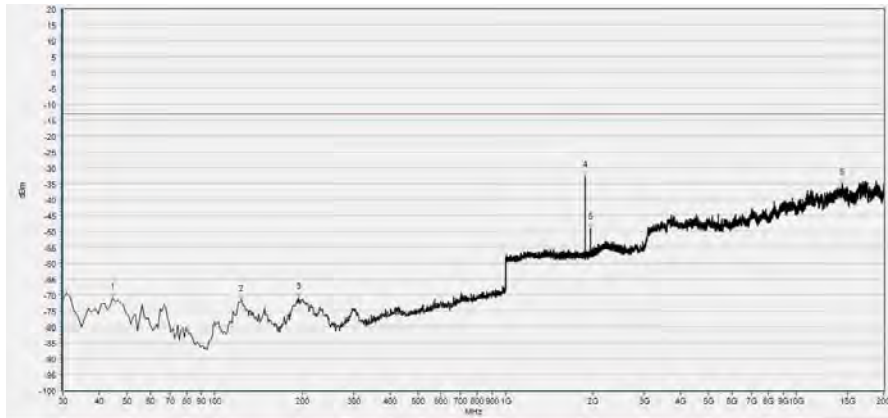
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	121.180	-71.19	-13.00	Horizontal	PASS
2	194.900	-71.46	-13.00	Horizontal	PASS
3	598.420	-70.08	-13.00	Horizontal	PASS
4	1850.260	-32.23	-13.00	Horizontal	N/A
5	4485.870	-45.73	-13.00	Horizontal	PASS
6	14393.017	-34.39	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 512, Horizontal)



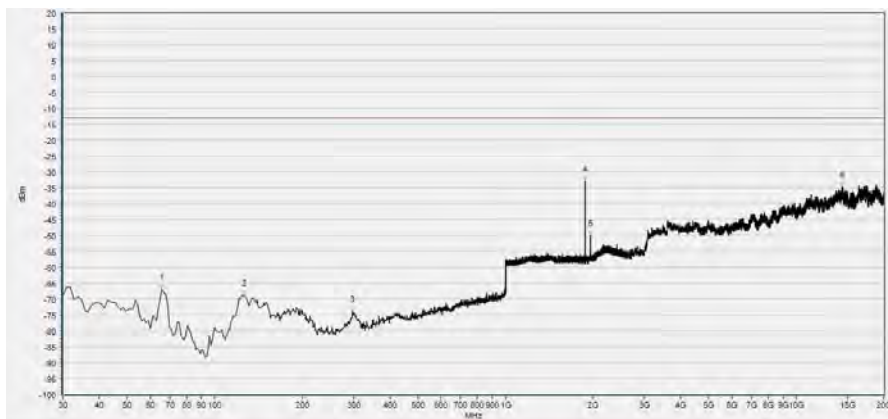
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-68.78	-13.00	Vertical	PASS
2	126.030	-68.50	-13.00	Vertical	PASS
3	299.660	-74.14	-13.00	Vertical	PASS
4	1850.900	-32.22	-13.00	Vertical	N/A
5	4954.173	-44.68	-13.00	Vertical	PASS
6	14386.688	-34.12	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 512, Vertical)



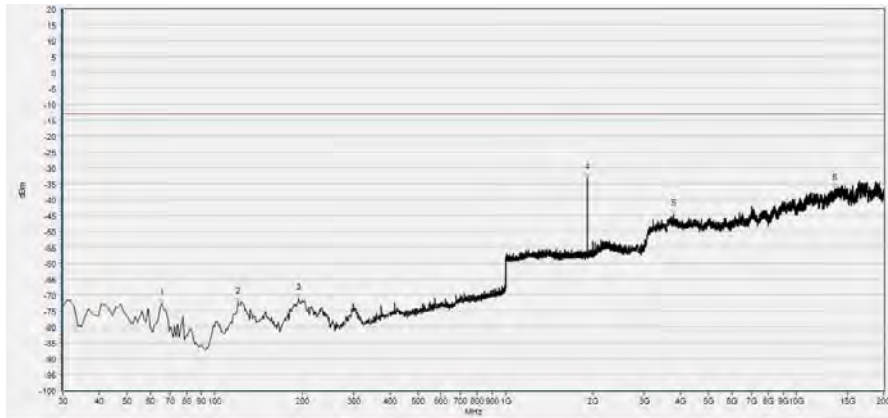
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	44.550	-70.94	-13.00	Horizontal	PASS
2	123.120	-71.57	-13.00	Horizontal	PASS
3	193.930	-71.03	-13.00	Horizontal	PASS
4	1880.352	-32.65	-13.00	Horizontal	N/A
5	1960.384	-49.07	-13.00	Horizontal	N/A
6	14367.703	-35.09	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 661, Horizontal)



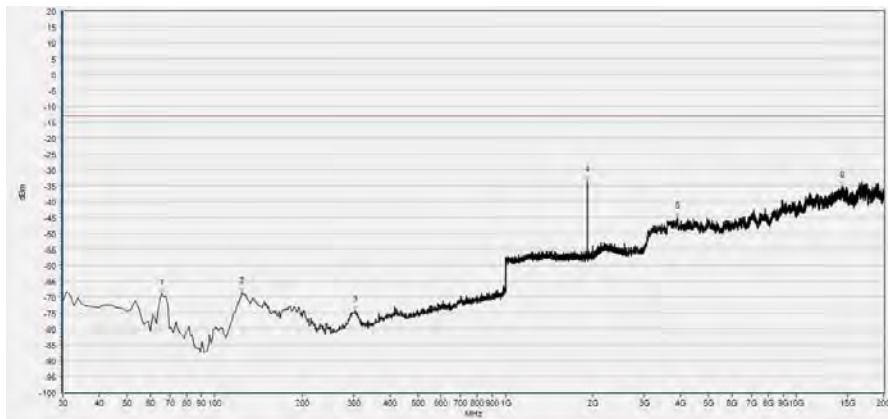
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-66.85	-13.00	Vertical	PASS
2	126.030	-68.93	-13.00	Vertical	PASS
3	297.720	-73.82	-13.00	Vertical	PASS
4	1880.352	-32.87	-13.00	Vertical	N/A
5	1960.384	-49.89	-13.00	Vertical	N/A
6	14367.703	-34.85	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 661, Vertical)



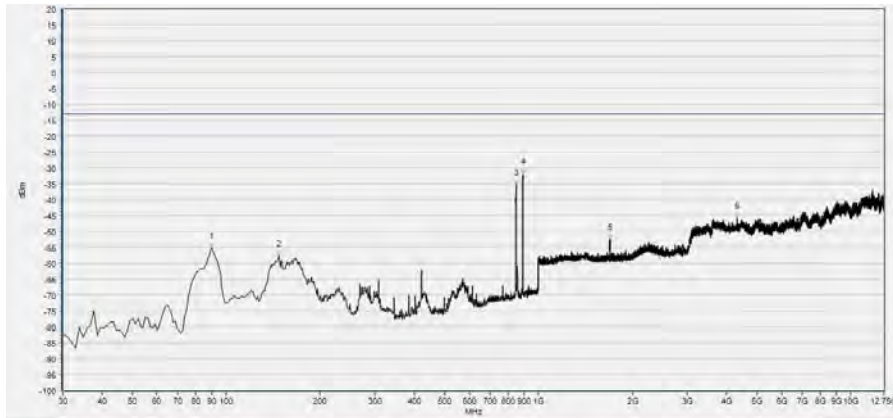
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-72.94	-13.00	Horizontal	PASS
2	120.210	-72.28	-13.00	Horizontal	PASS
3	193.930	-71.13	-13.00	Horizontal	PASS
4	1910.444	-33.36	-13.00	Horizontal	N/A
5	3786.579	-44.72	-13.00	Horizontal	PASS
6	13586.143	-36.78	-13.00	Horizontal	PASS

(EDGE 1900MHz, Channel = 810, Horizontal)



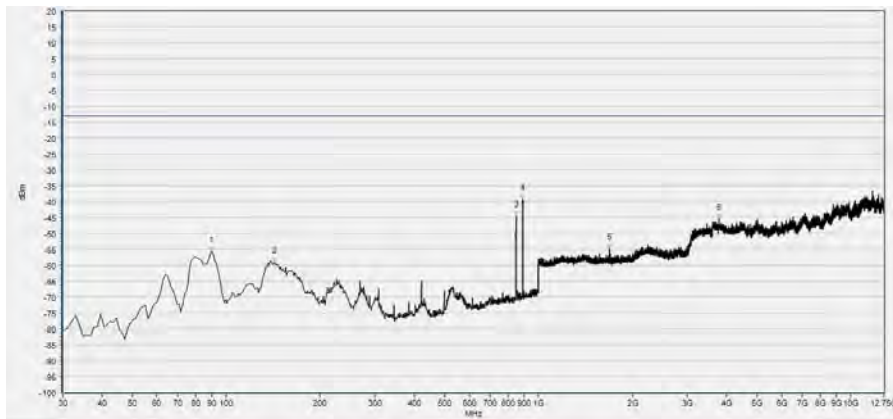
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	65.890	-69.04	-13.00	Vertical	PASS
2	124.090	-68.68	-13.00	Vertical	PASS
3	303.540	-74.34	-13.00	Vertical	PASS
4	1910.444	-33.46	-13.00	Vertical	N/A
5	3909.984	-45.09	-13.00	Vertical	PASS
6	14402.510	-35.25	-13.00	Vertical	PASS

(EDGE 1900MHz, Channel = 810, Vertical)



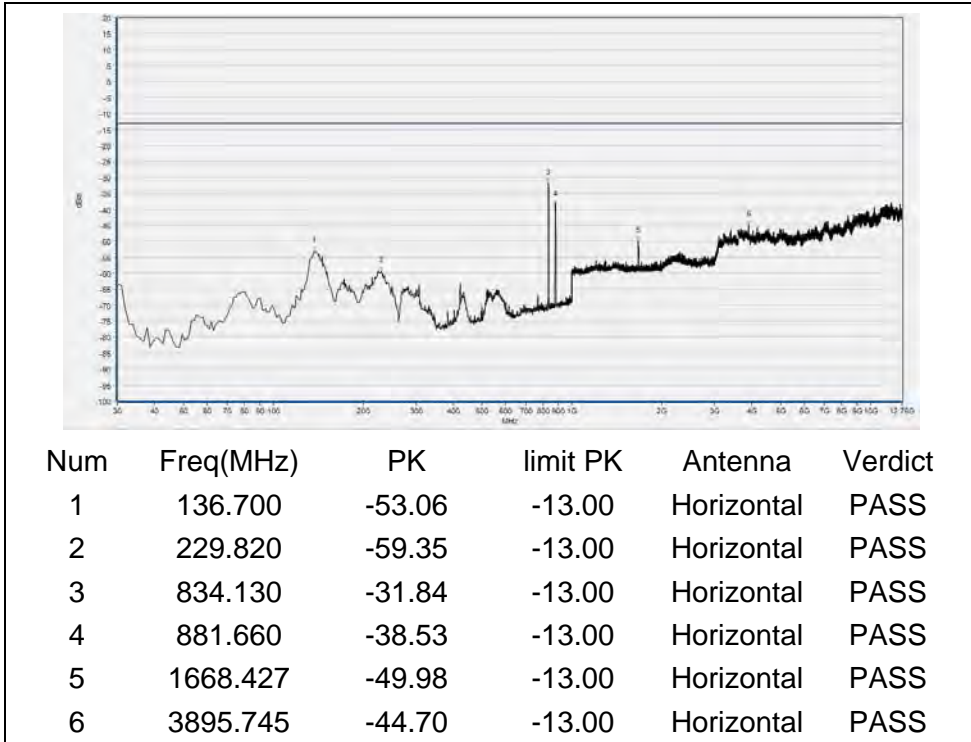
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	90.140	-55.25	-13.00	Horizontal	PASS
2	147.370	-57.73	-13.00	Horizontal	PASS
3	847.710	-35.25	-13.00	Horizontal	PASS
4	892.330	-32.05	-13.00	Horizontal	PASS
5	1691.477	-52.29	-13.00	Horizontal	PASS
6	4327.660	-45.69	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4132, Horizontal)

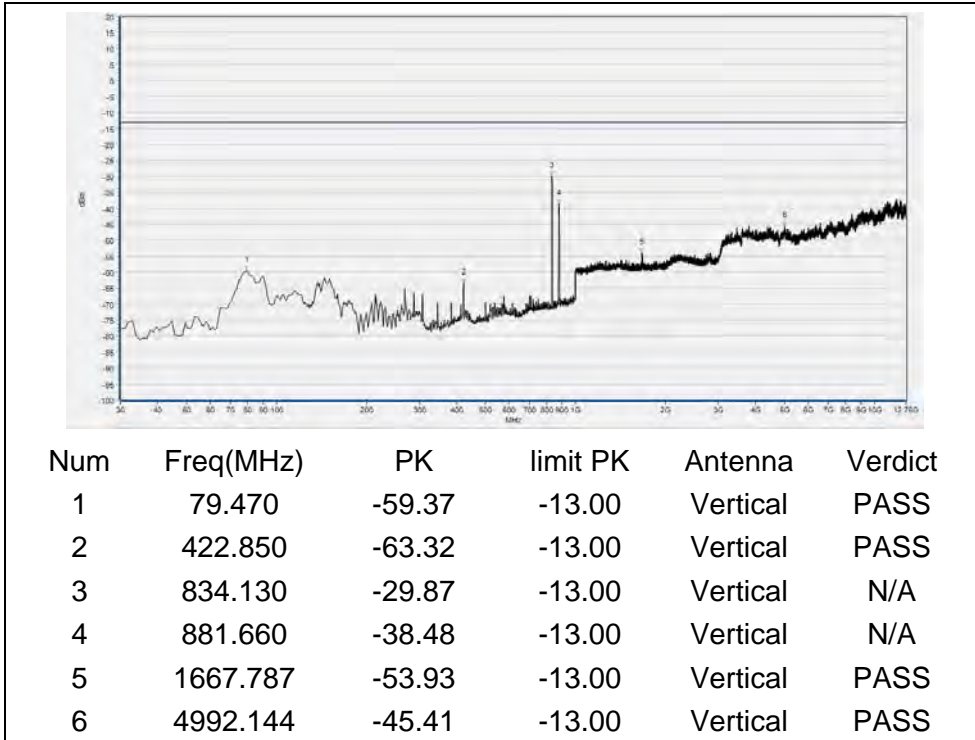


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	90.140	-55.65	-13.00	Vertical	PASS
2	142.520	-59.13	-13.00	Vertical	PASS
3	847.710	-44.56	-13.00	Vertical	PASS
4	890.390	-39.26	-13.00	Vertical	PASS
5	1690.196	-54.81	-13.00	Vertical	PASS
6	3781.306	-45.55	-13.00	Vertical	PASS

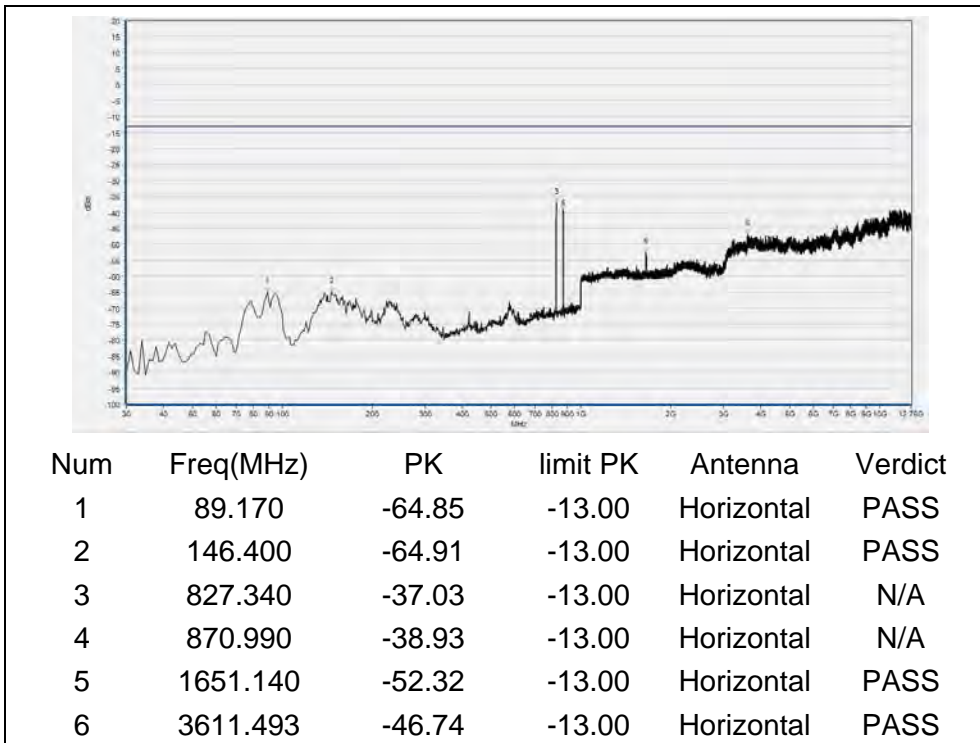
(WCDMA Band V, Channel = 4132, Vertical)



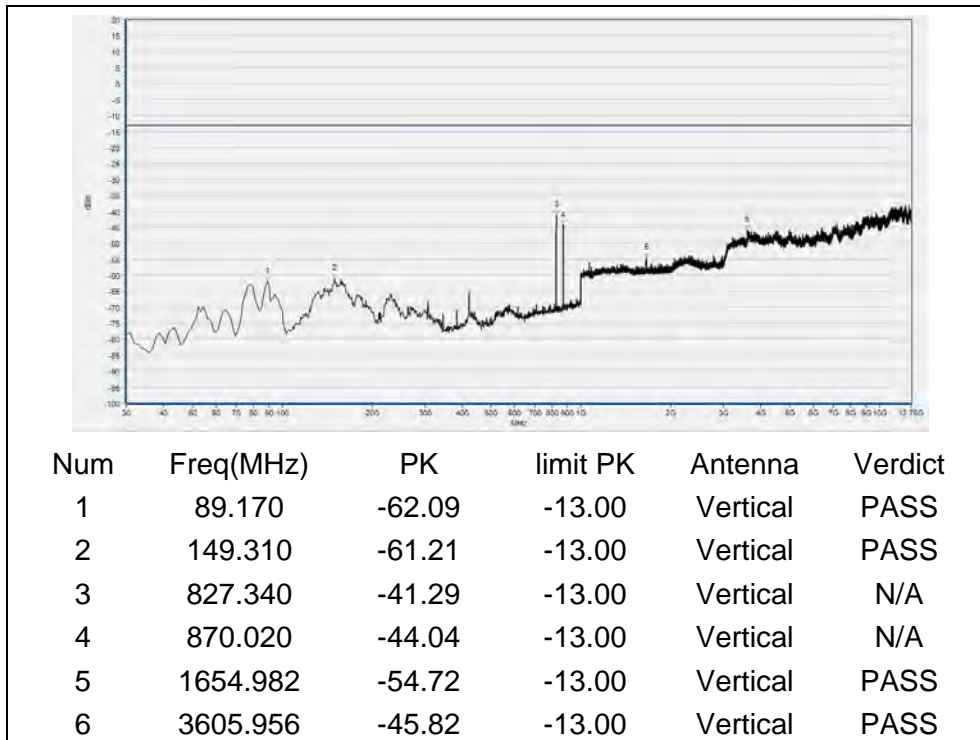
(WCDMA Band V, Channel = 4182, Horizontal)



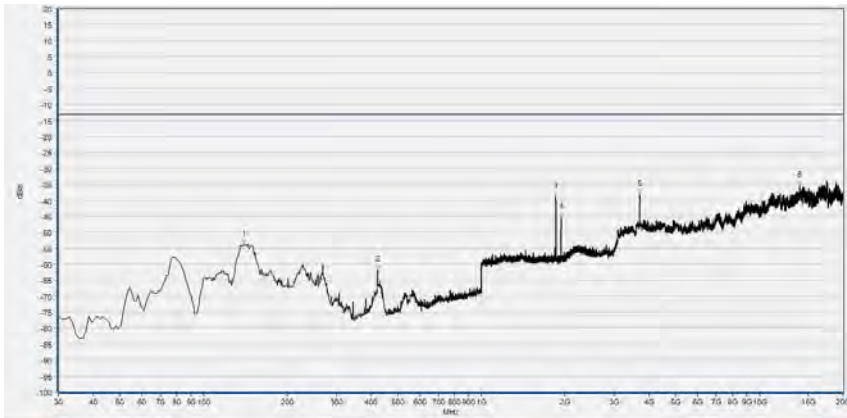
(WCDMA Band V, Channel = 4182, Vertical)



(WCDMA Band V, Channel = 4233, Horizontal)

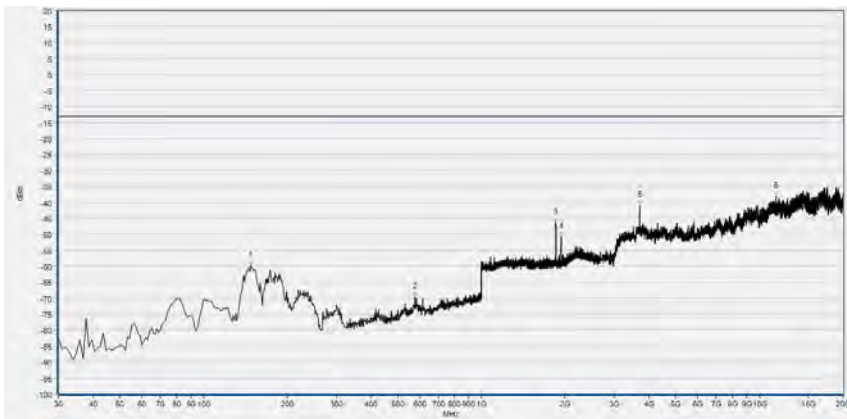


(WCDMA Band V, Channel = 4233, Vertical)



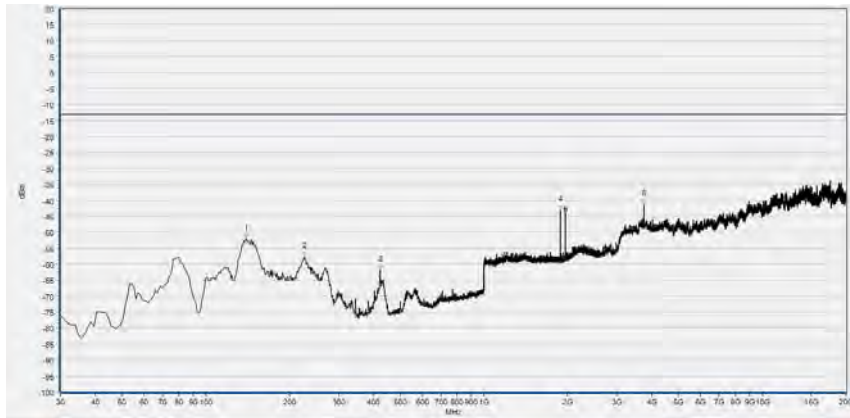
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	139.610	-53.78	-13.00	Horizontal	PASS
2	422.850	-61.87	-13.00	Horizontal	PASS
3	1851.541	-38.86	-13.00	Horizontal	N/A
4	1933.493	-45.20	-13.00	Horizontal	N/A
5	3701.146	-38.00	-13.00	Horizontal	PASS
6	13972.177	-35.46	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9262, Horizontal)



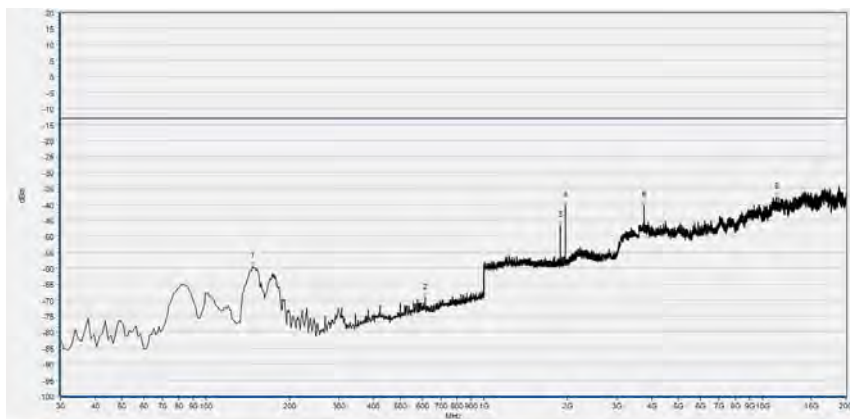
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	148.340	-59.81	-13.00	Vertical	PASS
2	576.110	-69.50	-13.00	Vertical	PASS
3	1851.541	-46.35	-13.00	Vertical	N/A
4	1933.493	-50.75	-13.00	Vertical	N/A
5	3704.310	-40.90	-13.00	Vertical	PASS
6	11485.106	-38.18	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9262, Vertical)



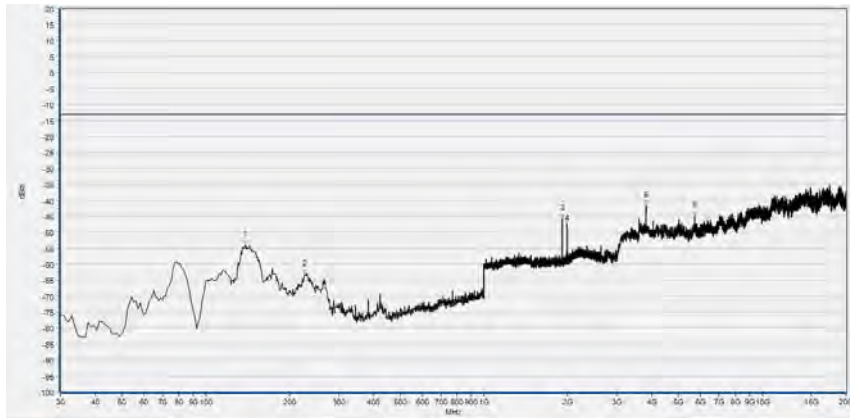
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	139.610	-52.21	-13.00	Horizontal	PASS
2	225.940	-57.52	-13.00	Horizontal	PASS
3	422.850	-61.74	-13.00	Horizontal	PASS
4	1879.072	-43.02	-13.00	Horizontal	N/A
5	1959.744	-43.66	-13.00	Horizontal	N/A
6	3761.266	-41.33	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9400, Horizontal)



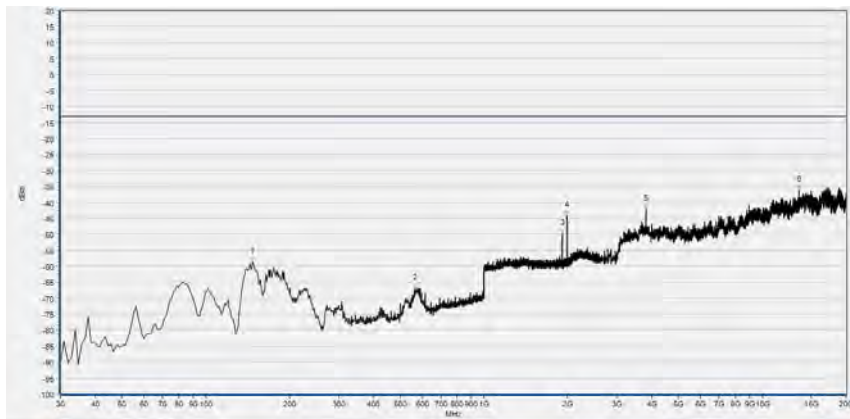
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	147.370	-59.40	-13.00	Vertical	PASS
2	613.940	-69.27	-13.00	Vertical	PASS
3	1878.431	-46.61	-13.00	Vertical	N/A
4	1960.384	-40.22	-13.00	Vertical	N/A
5	3761.266	-40.29	-13.00	Vertical	PASS
6	11257.283	-37.72	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9400, Vertical)



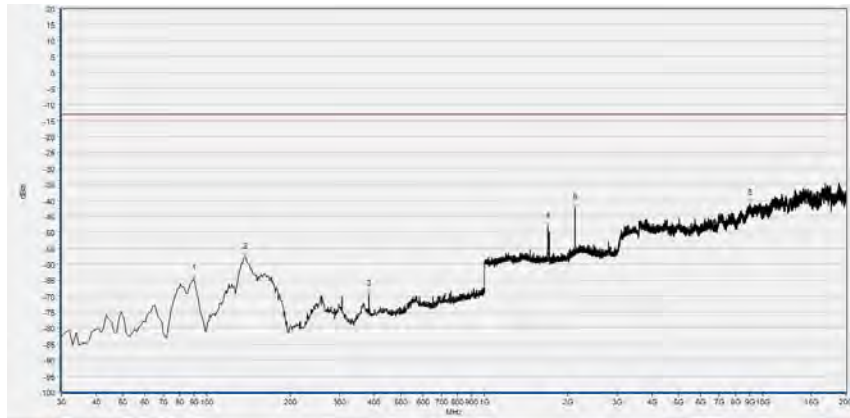
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	138.640	-53.94	-13.00	Horizontal	PASS
2	226.910	-63.07	-13.00	Horizontal	PASS
3	1908.523	-45.63	-13.00	Horizontal	N/A
4	1987.275	-47.35	-13.00	Horizontal	N/A
5	3818.221	-41.58	-13.00	Horizontal	PASS
6	5719.913	-44.84	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9538, Horizontal)



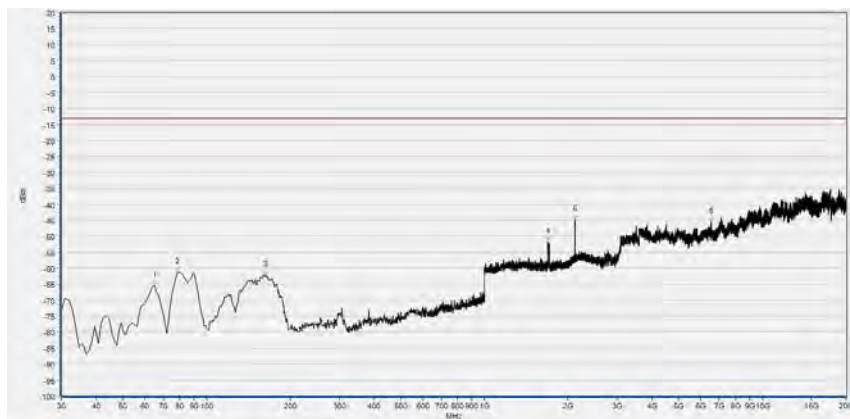
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	147.370	-58.67	-13.00	Vertical	PASS
2	566.410	-66.94	-13.00	Vertical	PASS
3	1908.523	-49.76	-13.00	Vertical	N/A
4	1986.635	-44.13	-13.00	Vertical	N/A
5	3815.057	-42.07	-13.00	Vertical	PASS
6	13573.486	-36.13	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9538, Vertical)



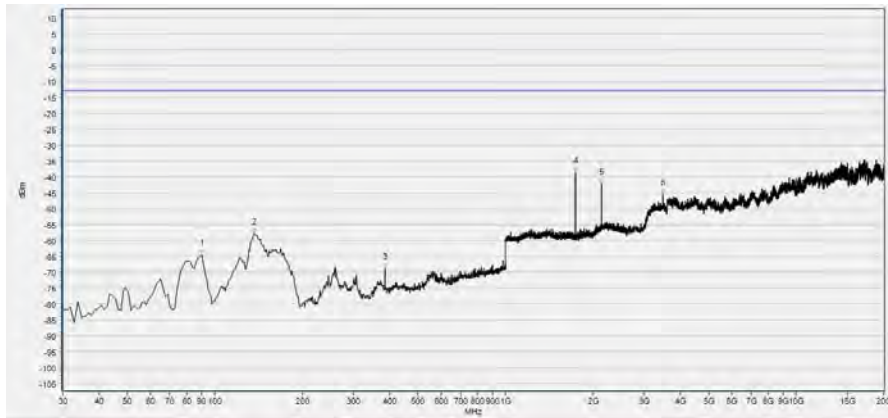
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	90.200	-64.53	-13.00	Horizontal	PASS
2	137.778	-57.77	-13.00	Horizontal	PASS
3	384.404	-69.35	-13.00	Horizontal	PASS
4	1689.945	-48.17	-13.00	Horizontal	PASS
5	2111.756	-42.30	-13.00	Horizontal	PASS
6	9021.670	-41.08	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1312, Horizontal)



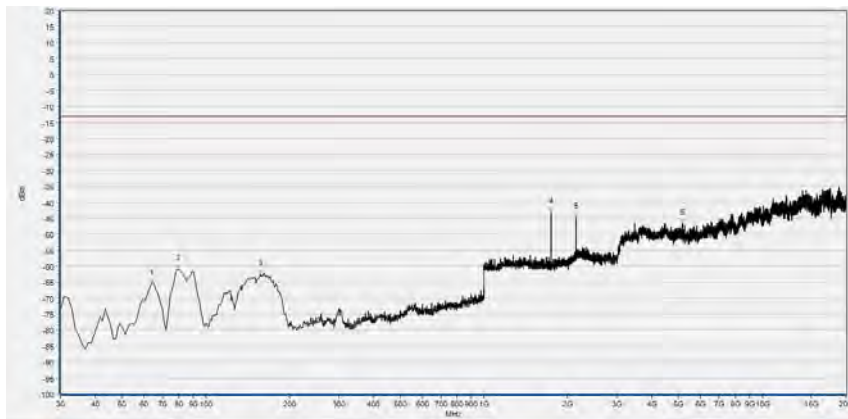
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	64.955	-65.28	-13.00	Vertical	PASS
2	78.549	-61.45	-13.00	Vertical	PASS
3	163.023	-62.06	-13.00	Vertical	PASS
4	1689.945	-51.83	-13.00	Vertical	PASS
5	2112.556	-44.81	-13.00	Vertical	PASS
6	6538.856	-45.57	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1312, Vertical)



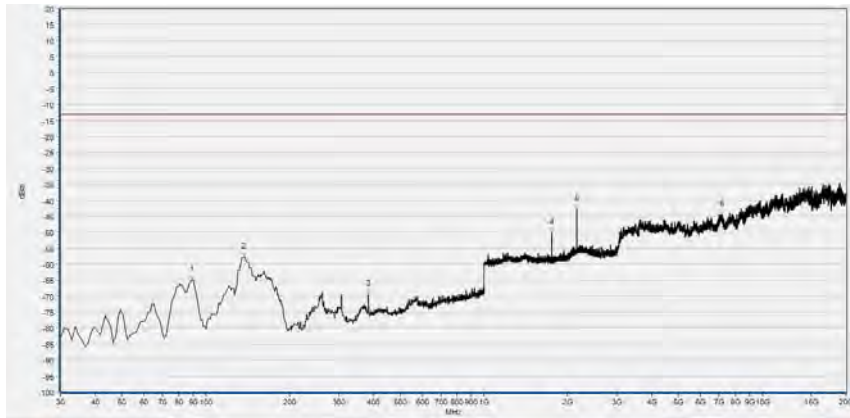
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	90.200	-64.62	-13.00	Horizontal	PASS
2	136.807	-58.00	-13.00	Horizontal	PASS
3	384.404	-68.76	-13.00	Horizontal	PASS
4	1739.570	-38.54	-13.00	Horizontal	PASS
5	2139.770	-42.28	-13.00	Horizontal	PASS
6	3478.846	-45.49	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1413, Horizontal)



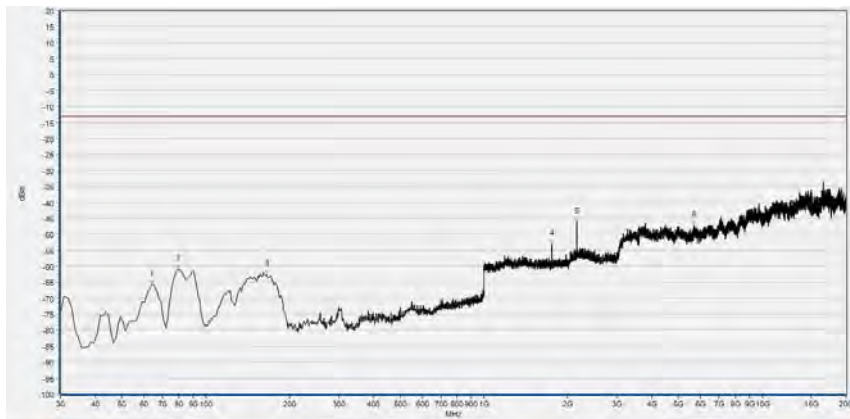
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	63.984	-65.42	-13.00	Vertical	PASS
2	79.520	-60.93	-13.00	Vertical	PASS
3	157.197	-62.38	-13.00	Vertical	PASS
4	1738.769	-42.98	-13.00	Vertical	PASS
5	2141.371	-44.56	-13.00	Vertical	PASS
6	5152.425	-46.62	-13.00	Vertical	PASS

(WCDMA Band IV, Channel = 1413, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	89.229	-64.95	-13.00	Horizontal	PASS
2	136.807	-57.79	-13.00	Horizontal	PASS
3	384.404	-69.39	-13.00	Horizontal	PASS
4	1751.576	-50.11	-13.00	Horizontal	PASS
5	2152.576	-42.70	-13.00	Horizontal	PASS
6	7153.759	-44.43	-13.00	Horizontal	PASS

(WCDMA Band IV, Channel = 1513, Horizontal)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	63.984	-65.92	-13.00	Vertical	PASS
2	79.520	-60.91	-13.00	Vertical	PASS
3	165.936	-62.52	-13.00	Vertical	PASS
4	1751.576	-53.04	-13.00	Vertical	PASS
5	2152.576	-46.16	-13.00	Vertical	PASS
6	5680.313	-47.28	-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	$\pm 2.22\text{dB}$
Bandwidth	$\pm 5\%$
Conducted Spurious Emission	$\pm 2.77\text{ dB}$
Radiated Emission	$\pm 2.95\text{dB}$

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

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
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 Analyzer	MY53470836	N9010A	Agilent	2017.12.03	2018.12.02
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
Anechoic Chamber	N/A	9m*6m*6m	CRT	2017.11.19	2020.11.18

————— END OF REPORT —————