



# TEST REPORT

**APPLICANT** : Shenzhen Jaguar Wave Technology LTD

**PRODUCT NAME** : Wireless Gigabit Mobile Hotspot

**MODEL NAME** : JW-MRD-6001

**BRAND NAME** : JAGUAR WAVE/SUGAR lady

**FCC ID** : 2ARPAJW-MRD-6001

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

**RECEIPT DATE** : 2019-08-02

**TEST DATE** : 2019-08-02 to 2019-09-02

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Peng Huarui( Supervisor )

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REPORT No.: SZ19070448W01

<b>Change History</b>		
<b>Version</b>	<b>Date</b>	<b>Reason for change</b>
1.0	2019-09-03	Initial Version
2.0	2019-09-12	Change the font



# 1. Technical Information

**Note:** Provide by applicant.

## 1.1. Applicant and Manufacturer Information

<b>Applicant:</b>	Shenzhen Jaguar Wave Technology LTD
<b>Applicant Address:</b>	Unit 1002/1003, Block 2A, Tongtai Times Center, No.6259 Baoan Road, Fuhai Street, Baoan District, Shenzhen City, P.R.China
<b>Manufacturer:</b>	Shenzhen Jaguar Wave Technology LTD
<b>ManufacturerAddress:</b>	Unit 1002/1003, Block 2A, Tongtai Times Center, No.6259 Baoan Road, Fuhai Street, Baoan District, Shenzhen City, P.R.China

## 1.2. Equipment Under Test (EUT) Description

<b>Product Name:</b>	Wireless Gigabit Mobile Hotspot	
<b>Serial No:</b>	(N/A, marked #1 by test site)	
<b>Hardware Version:</b>	P1	
<b>Software Version:</b>	1.0.201810120116	
<b>Modulation Type:</b>	WCDMA Mode with QPSK Modulation HSDPA Mode with QPSK Modulation HSUPA Mode with QPSK Modulation HSPA+ Mode with QPSK Modulation	
<b>Operating Frequency Range:</b>	<b>WCDMA Band V</b> Tx: 826.4 - 846.6MHz Rx: 871.4 - 891.6MHz <b>WCDMA Band II</b> Tx: 1852.4 - 1907.6MHz Rx: 1932.4 - 1987.6MHz	
<b>Antenna Type:</b>	PIFA Antenna	
	WCDMA Band V:	2dBi
	WCDMA Band II:	2dBi
<b>Accessory Information:</b>	Battery	
	Brand Name:	N/A



	Model No.:	JW-MRD-6001
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	4000mAh
	Rated Voltage:	3.85V
	Charge Limit:	4.40V
	AC Adapter	
	Brand Name:	N/A
	Model No.:	TN-090200U1
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V~50/60Hz 0.5A
	Rated Output:	5V=3A or 9V=2A or 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  $F(n)=824.2+0.2*(n-128)$ ,  $128 \leq n \leq 251$ ; 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:** 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:  
WCDMA mode for WCDMA band V;  
WCDMA mode for WCDMA band II;
- Note 6:** 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
WCDMA Band V	0.188	4M13F9W
WCDMA Band II	0.154	4M18F9W



## 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 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

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	Aug2, 2019	Gao Mingzhou	PASS
2	24.232(d)	Peak -Average Ratio	Aug2, 2019 Aug5, 2019	Gao Mingzhou	PASS
3	2.1049	99% Occupied Bandwidth	Aug2, 2019 Aug5, 2019	Gao Mingzhou	PASS
4	2.1055,22.355, 24.235	Frequency Stability	Aug15, 2019	Gao Mingzhou	PASS
5	2.1051,22.917(a),2 4.238(a)	Conducted Out of Band Emissions	Aug22, 2019	Gao Mingzhou	PASS
6	2.1051,22.917(a),2 4.238(a)	Band Edge	Aug5, 2019	Gao Mingzhou	PASS
7	22.913(a),24.232(a )	Transmitter Radiated Power (EIPR/ERP)	Aug15, 2019	Wu Zhongwen	PASS
8	2.1051,22.917(a),2 4.238(a)	Radiated Out of Band Emissions	Aug15, 2019	Wu Zhongwen	PASS

**Note 1:** The tests were performed according to the method of measurements prescribed in KDB 971168 D01 V03R01 (Oct 27, 2017) and ANSI C63.26 2015 section 5.2.5.5.

**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 Requirements

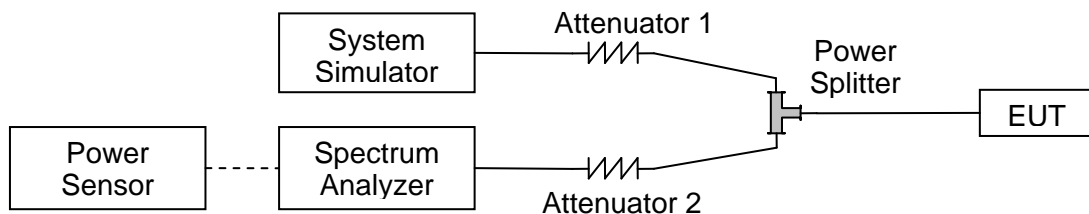
### 2.1. Conducted RF Output Power

#### 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 50 Ohm; 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

WCDMA Band V	Average Power (dBm)		
<b>TX Channel</b>	<b>4132</b>	<b>4183</b>	<b>4233</b>
<b>Frequency (MHz)</b>	<b>826.4</b>	<b>836.4</b>	<b>846.6</b>
RMC 12.2Kbps	22.65	22.90	22.63
HSDPA Subtest-1	21.66	21.83	21.63
HSDPA Subtest-2	21.71	21.85	21.74
HSDPA Subtest-3	21.81	21.85	21.71
HSDPA Subtest-4	21.64	21.70	21.60

WCDMA Band II	Average Power (dBm)		
<b>TX Channel</b>	<b>9262</b>	<b>9400</b>	<b>9538</b>
<b>Frequency (MHz)</b>	<b>1852.4</b>	<b>1880.0</b>	<b>1907.6</b>
RMC 12.2Kbps	19.84	19.88	19.81
HSDPA Subtest-1	18.72	18.73	18.66
HSDPA Subtest-2	18.68	18.81	18.79
HSDPA Subtest-3	18.62	18.74	18.58
HSDPA Subtest-4	18.67	18.78	18.64

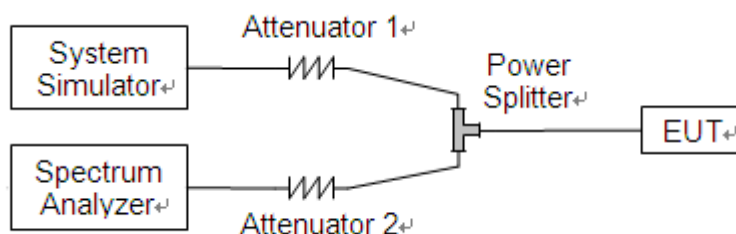
## 2.2. Peak to Average Ratio

### 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 50 Ohm; 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%.

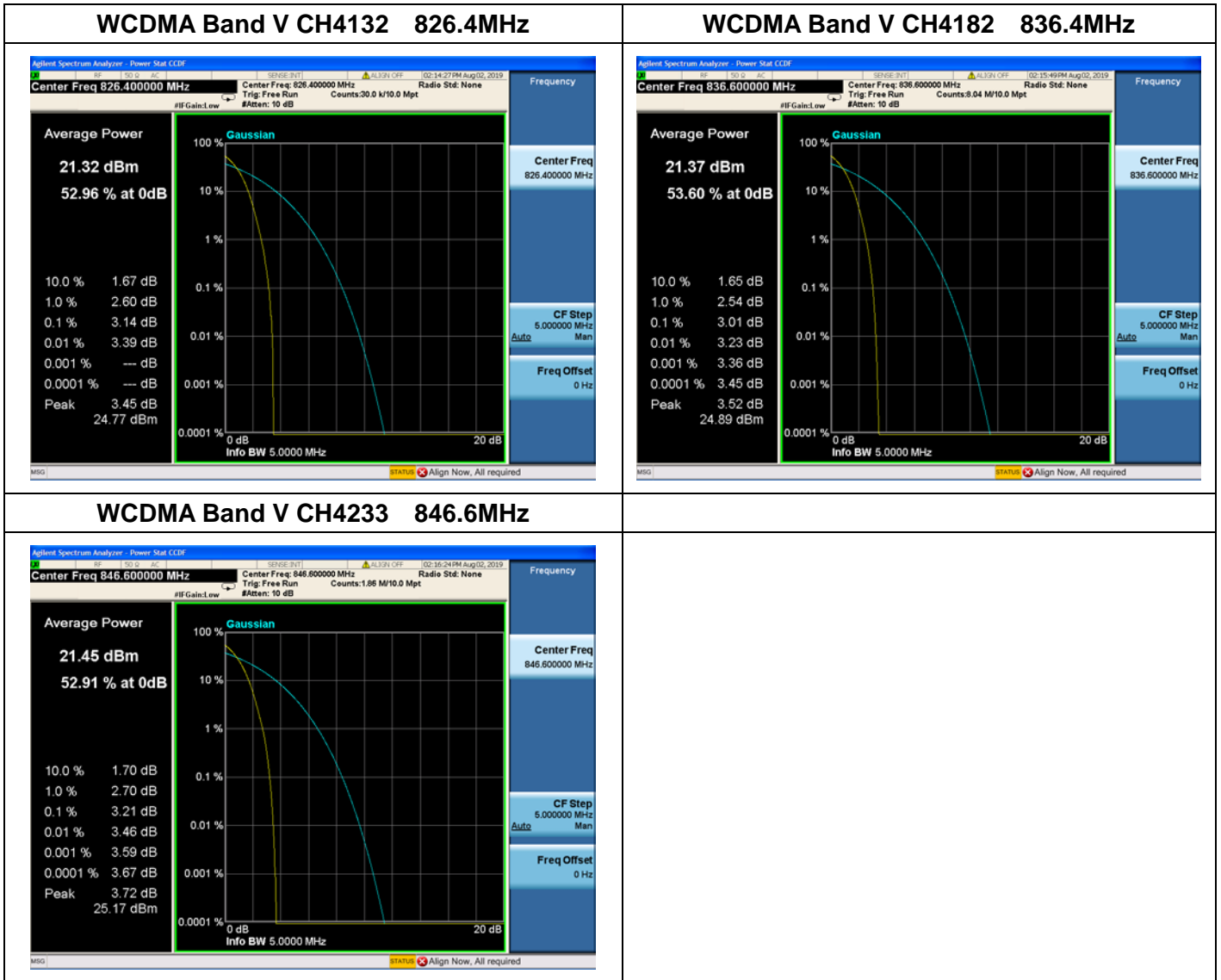


**2.2.4. Test Result**

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

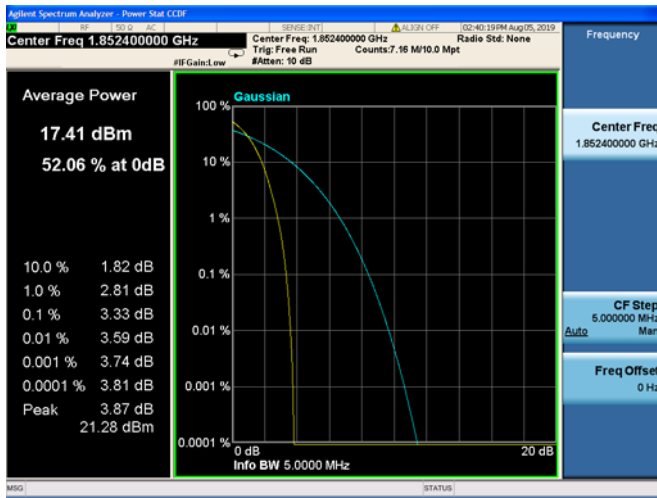
**A. Test Verdict:**

Band	Channel	Frequency (MHz)	Peak to Average ratio	Limit	Verdict
			dB	dB	
WCDMA BandV	4132	826.4	3.14	13	PASS
	4183	836.4	3.01		PASS
	4233	846.6	3.21		PASS
WCDMA BandII	9262	1852.4	3.33		PASS
	9400	1880.0	3.22		PASS
	9538	1907.6	3.17		PASS

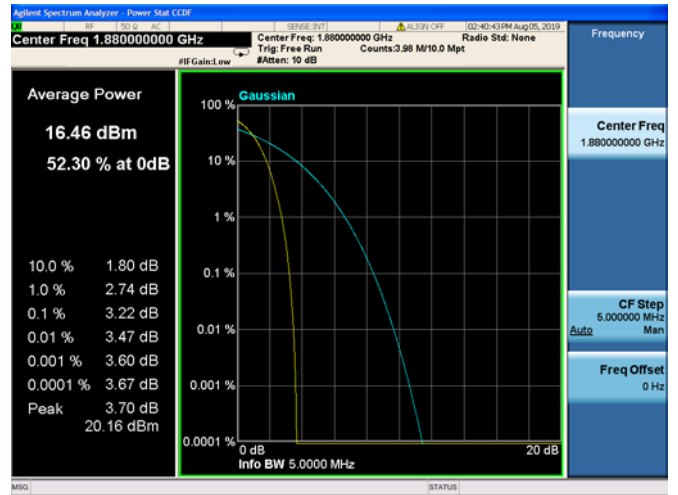




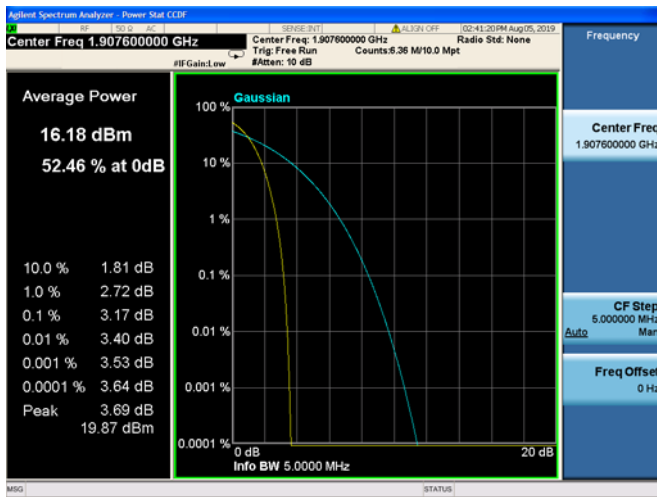
**WCDMA Band II CH9262 1852.4MHz**



**WCDMA Band II CH9400 1880.0MHz**



**WCDMA Band II CH9538 1907.6MHz**



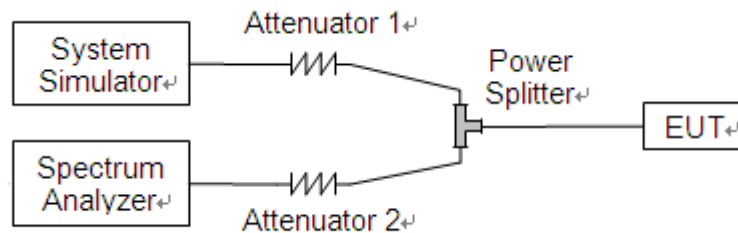
## 2.3.99% Occupied Bandwidth

### 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 50 Ohm; 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.

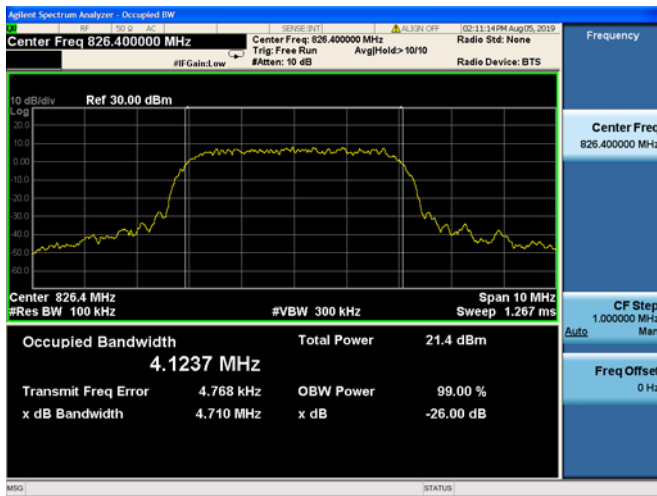
#### WCDMA Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
WCDMA Band V	4132	826.4	4.124	4.710
	4183	836.4	4.134	4.714
	4233	846.6	4.132	4.714
WCDMA Band II	9262	1852.4	4.154	4.706
	9400	1880.0	4.180	4.740
	9538	1907.6	4.176	4.716

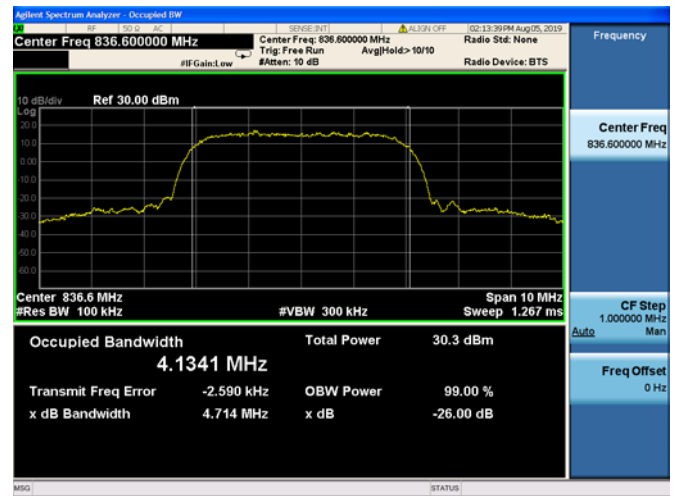




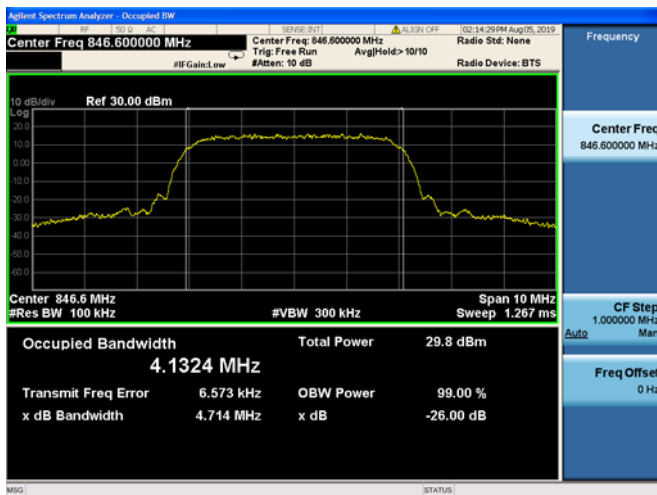
**WCDMA Band VCH4132 826.4MHz**



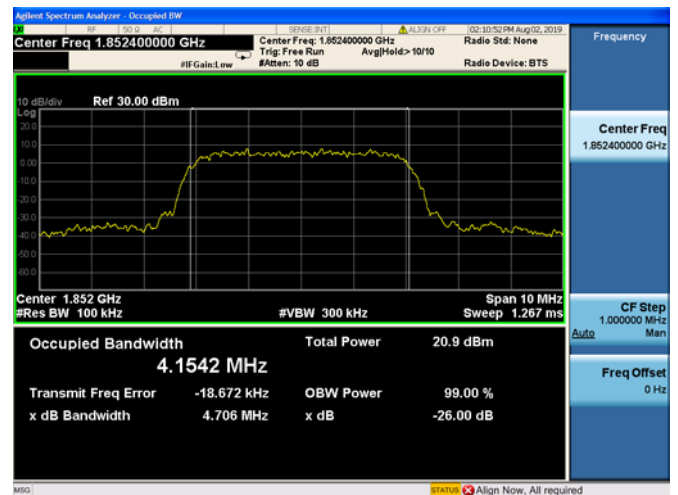
**WCDMA Band VCH4183 836.4MHz**



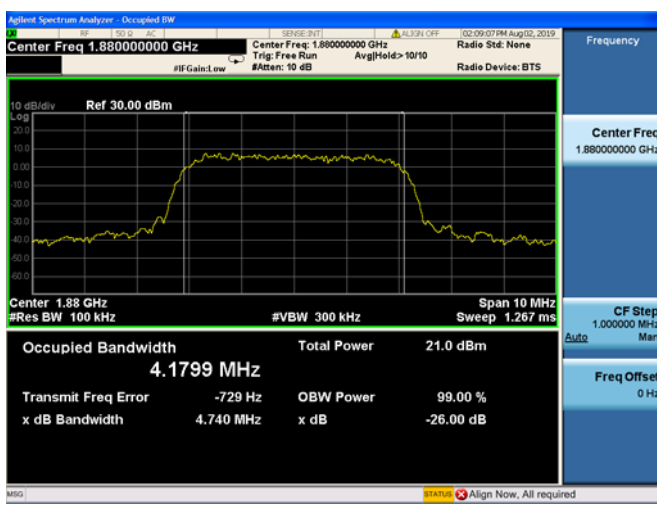
**WCDMA Band VCH4233 846.6MHz**



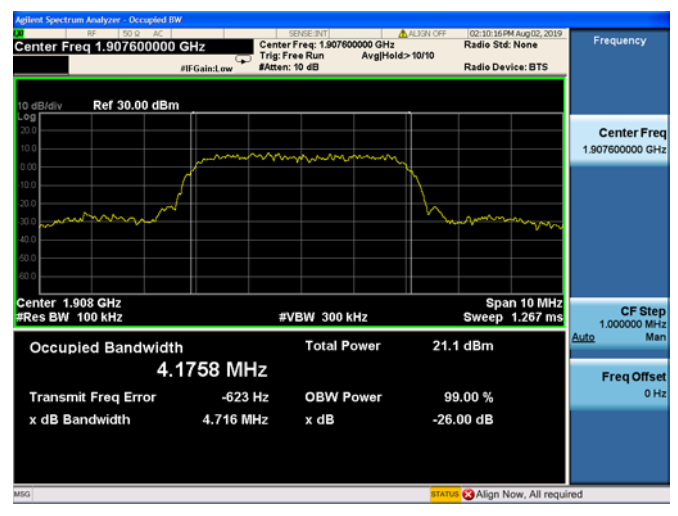
**WCDMA Band II CH9262 1852.4MHz**



**WCDMA Band II CH9400 1880.0MHz**



**WCDMA Band II CH9538 1907.6MHz**



## 2.4. Frequency Stability

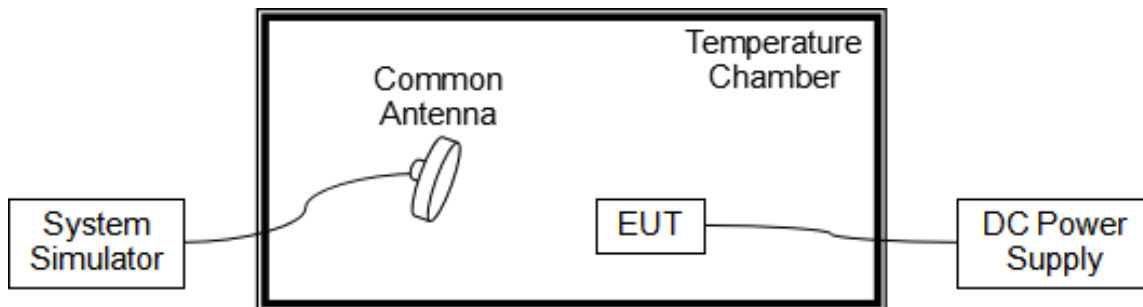
### 2.4.1. Requirement

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  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at intervals of not more than  $10^{\circ}\text{C}$ .
- (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:

WCDMA Band V, Channel 4182, Frequency 836.4MHz					
Limit =±2.5ppm					
Voltage(%)	Power(V DC)	Temp(°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.85	+20(Ref)	25	0.030	PASS
100		0	-68	-0.082	
100		+10	43	0.051	
100		+20	53	0.063	
100		+30	43	0.051	
100		+40	16	0.019	
100		+45	54	0.064	
115	4.3	+20	-32	-0.039	
85	3.4	+20	-14	-0.017	

WCDMA Band II, Channel 9400, Frequency 1880.0MHz					
Limit =Within Authorized Band					
Voltage(%)	Power(V DC)	Temp(°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.85	+20(Ref)	35	0.019	PASS
100		0	-12	-0.006	
100		+10	-74	-0.039	
100		+20	32	0.017	
100		+30	32	0.017	
100		+40	55	0.030	
100		+45	18	0.010	
115	4.3	+20	-36	-0.019	
85	3.4	+20	94	0.050	

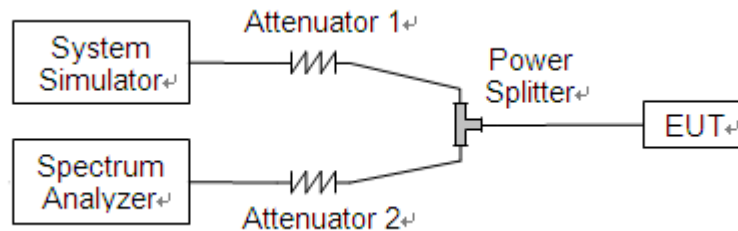
## 2.5. Conducted Out of Band Emissions

### 2.5.1. Requirement

According to FCC section 22.917(a), 24.238(a) 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:



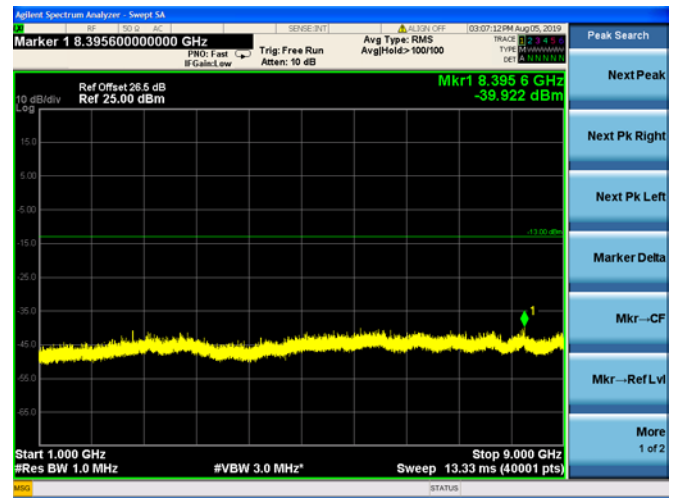
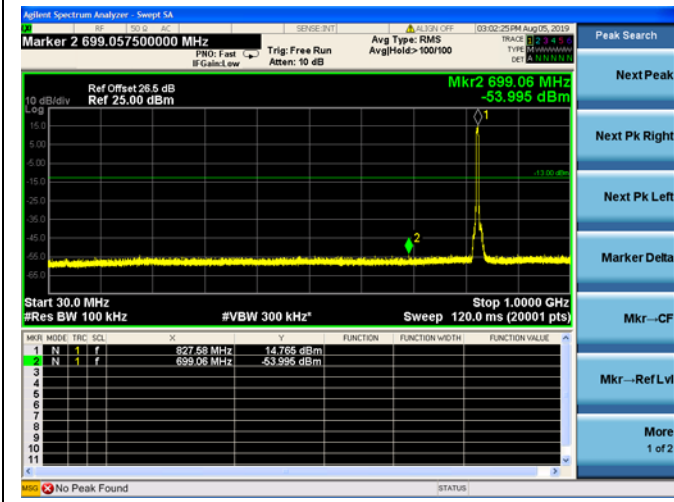
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

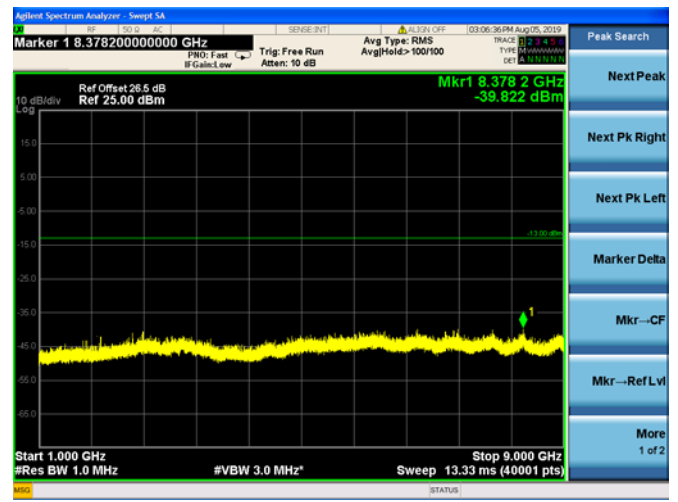
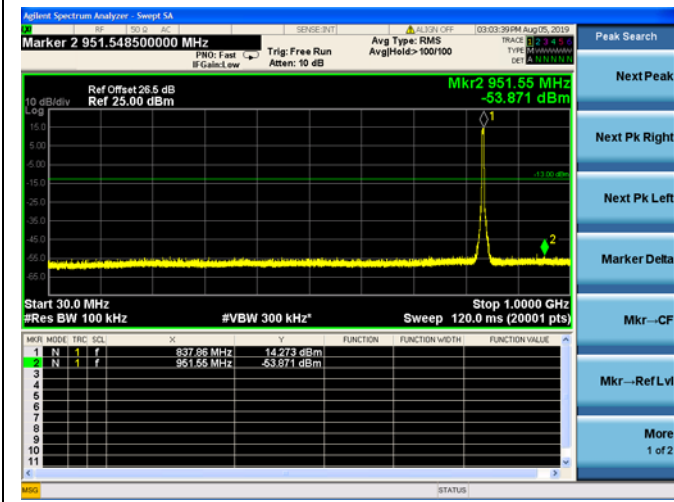
The measurement frequency range is from 30MHz to the 10<sup>th</sup> harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.



WCDMA Band V CH4132 826.4MHz

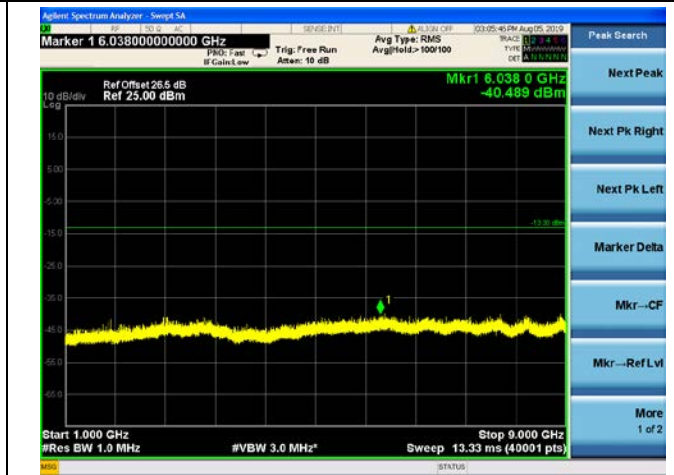
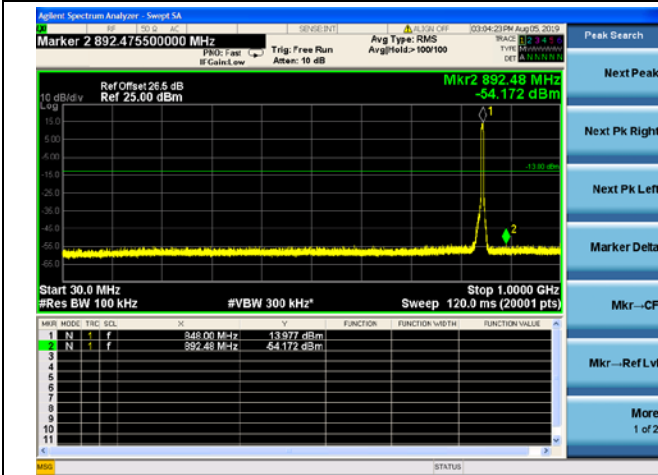


WCDMA Band V CH4183 836.4MHz

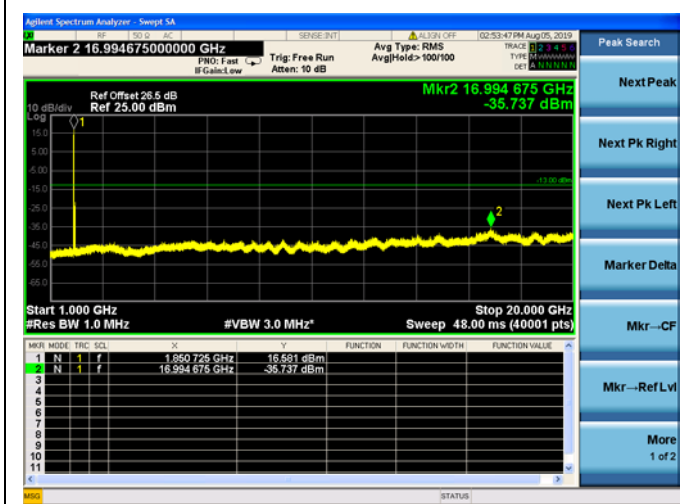
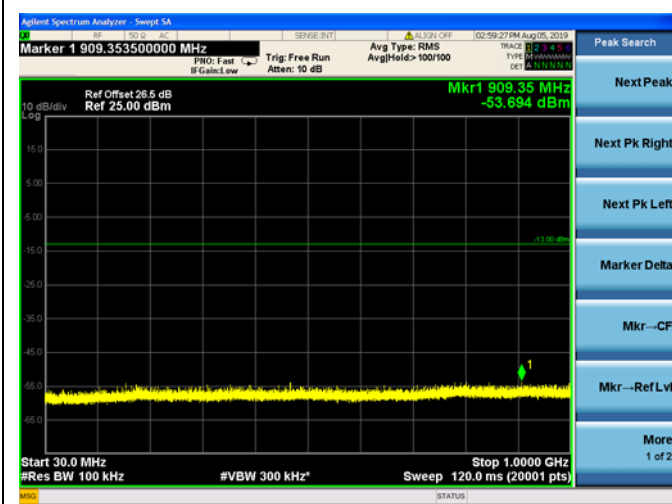




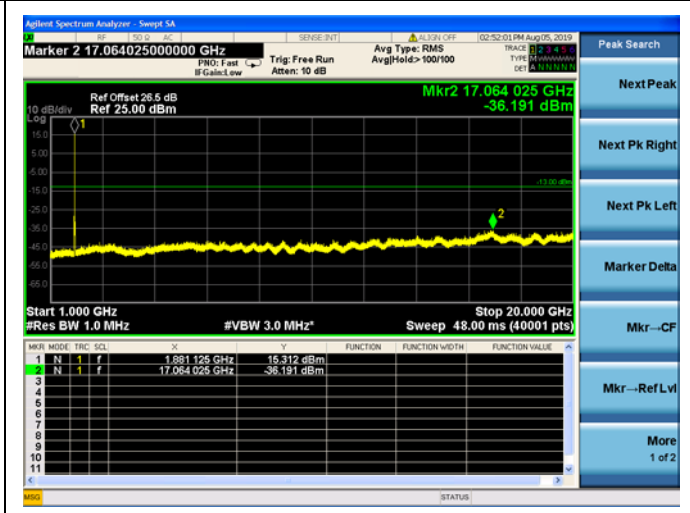
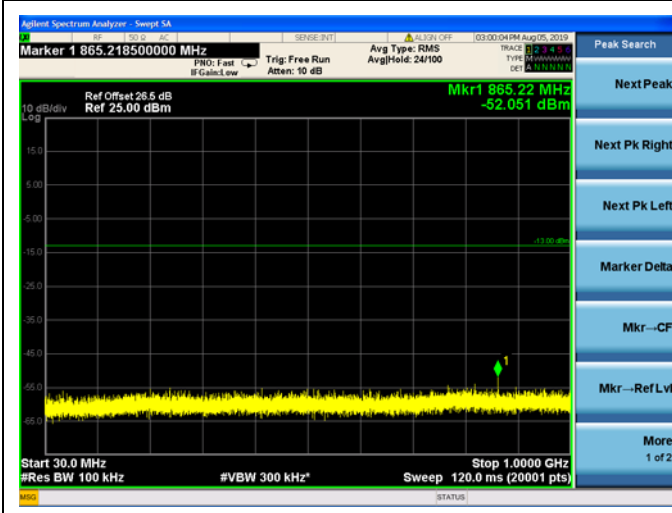
**WCDMA Band V CH4233 846.6MHz**



**WCDMA Band II CH9262 1852.4MHz**

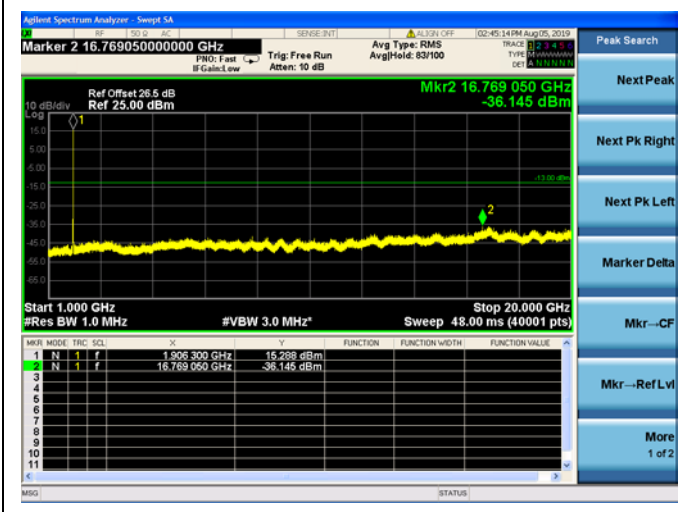
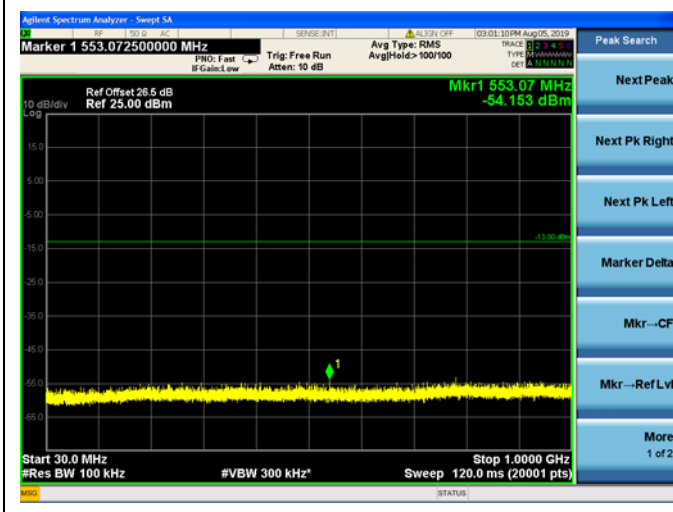


**WCDMA Band II CH9400 1880.0MHz**





WCDMA Band II CH9538 1907.6MHz



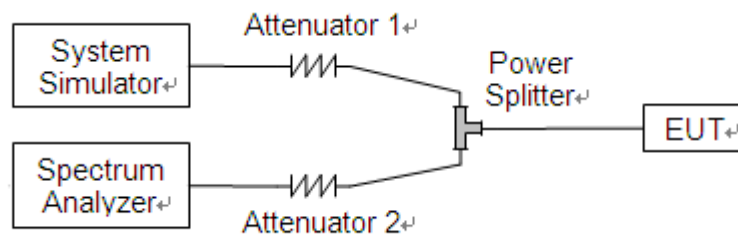
## 2.6. Band Edge

### 2.6.1. Requirement

According to FCC section 22.917(b), 24.238(b) 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:



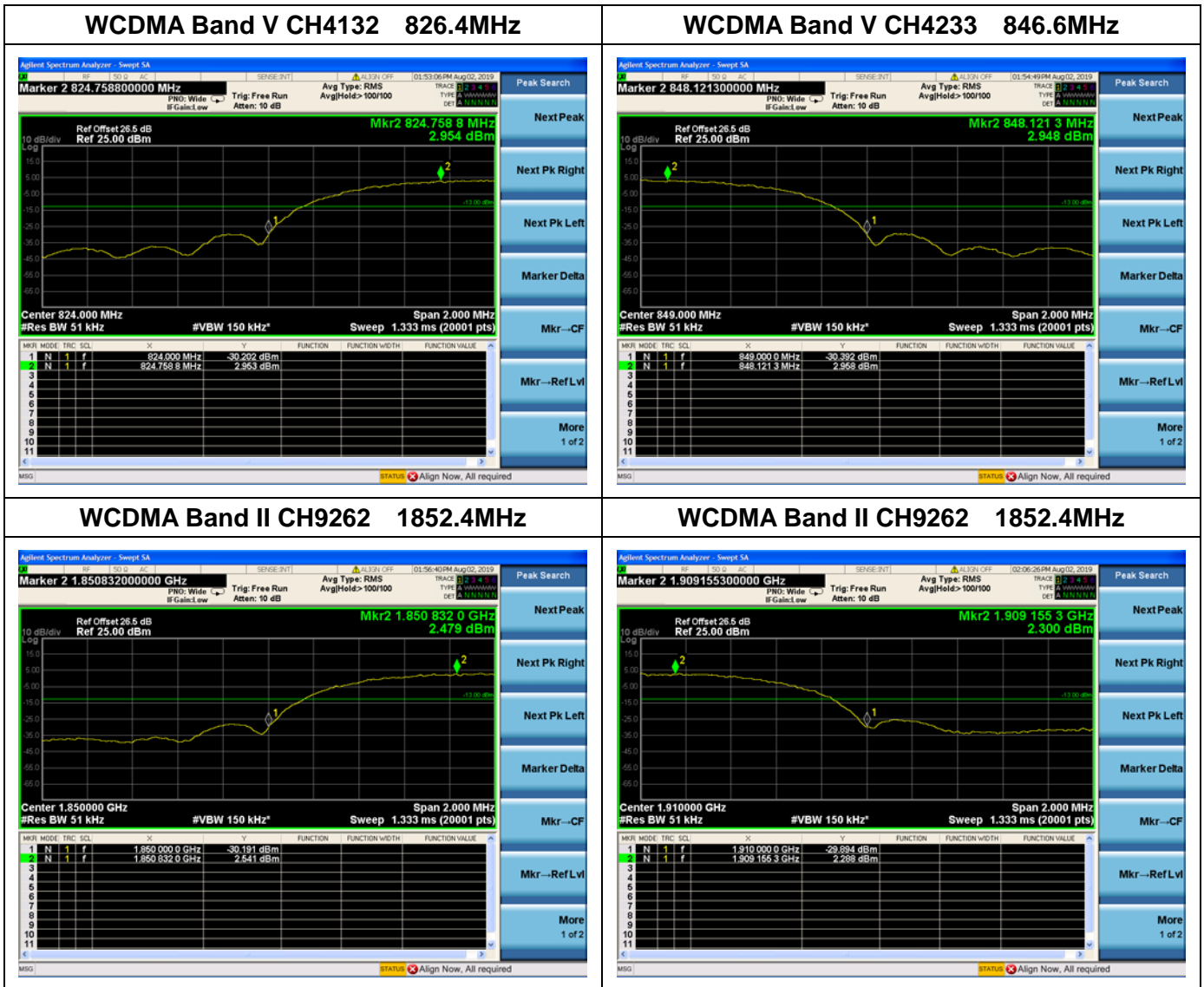
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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



## 2.7. Transmitter Radiated Power (EIRP/ERP)

### 2.7.1. Requirement

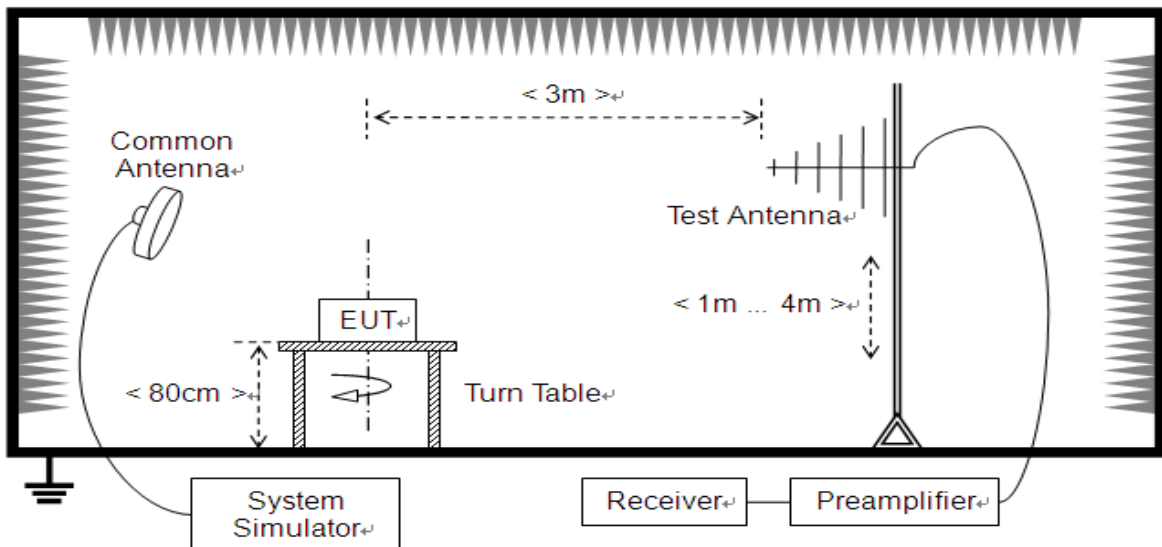
According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts.

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

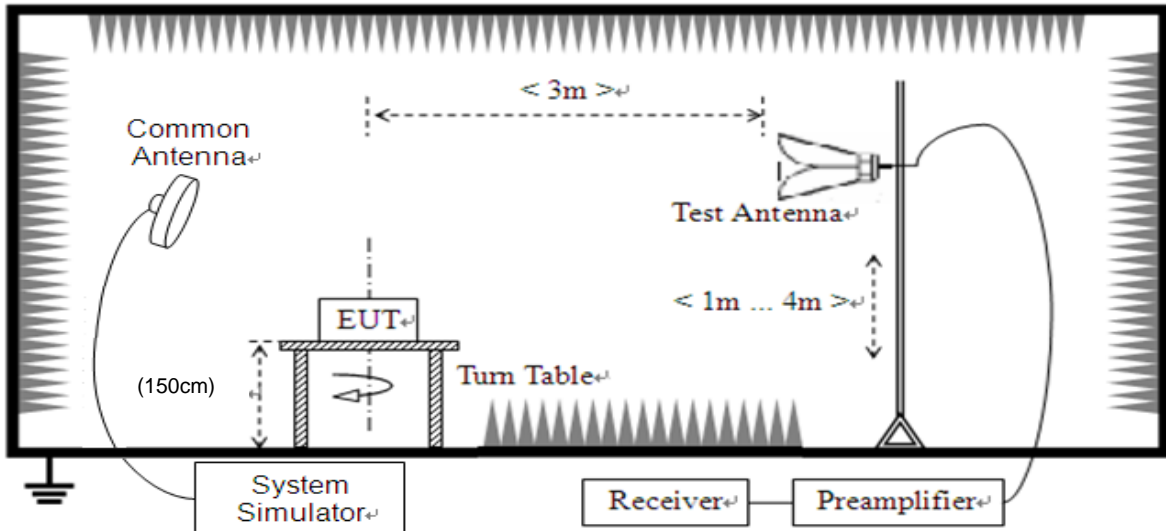
### 2.7.2. Test Description

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  $A_{\text{SUBST}}$  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.

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

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

**WCDMA Test verdict:**

Band	Channel	Frequency (MHz)	Measured ERP/EIRP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA Band V	4132	826.4	22.50	0.178	38.5	7	PASS
	4182	836.4	22.75	0.188			PASS
	4233	846.6	22.48	0.177			PASS
WCDMA Band II	9262	1852.4	21.84	0.153	33	2	PASS
	9400	1880.0	21.88	0.154			PASS
	9538	1907.6	21.81	0.152			PASS

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

## 2.8. Radiated Out of Band Emissions

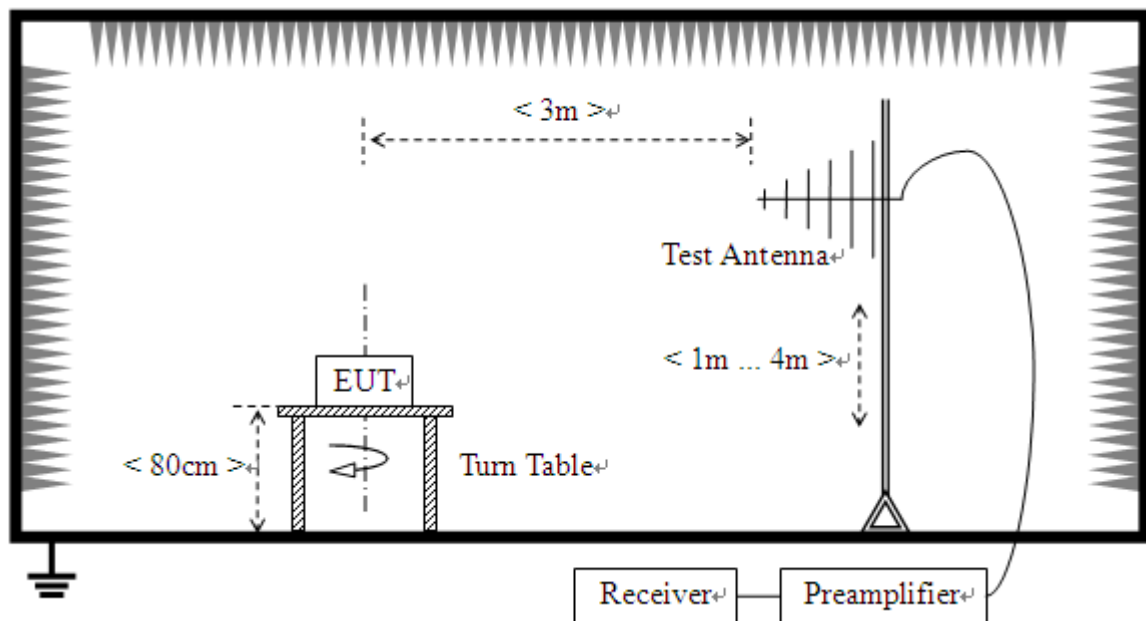
### 2.8.1. Requirement

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

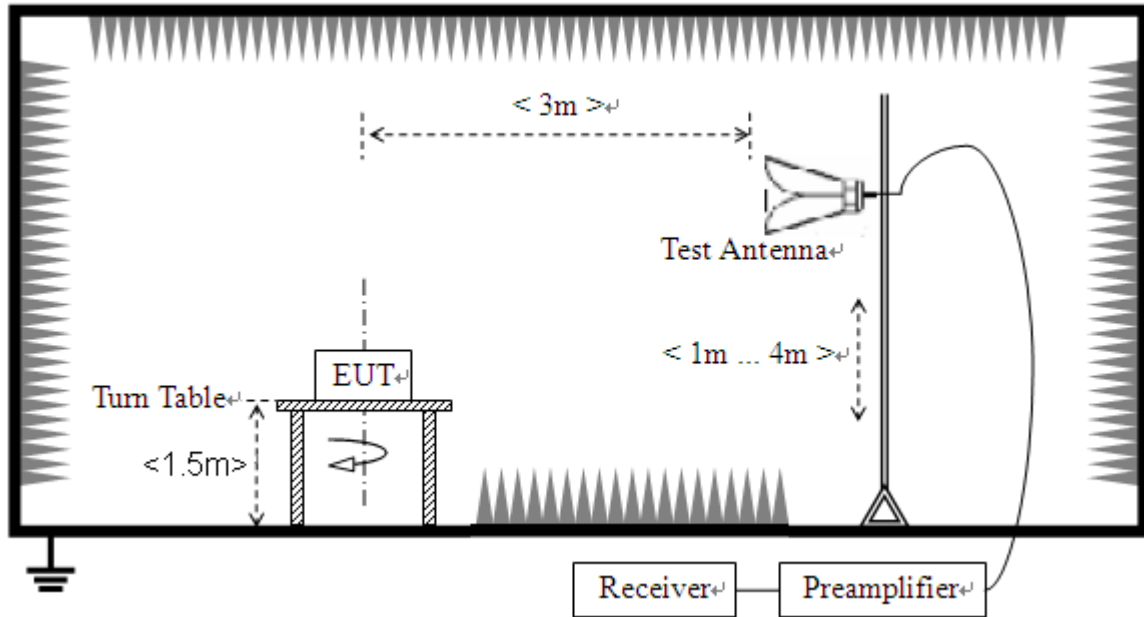
### 2.8.2. Test Description

Test Setup:

- 1) 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) and 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.

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

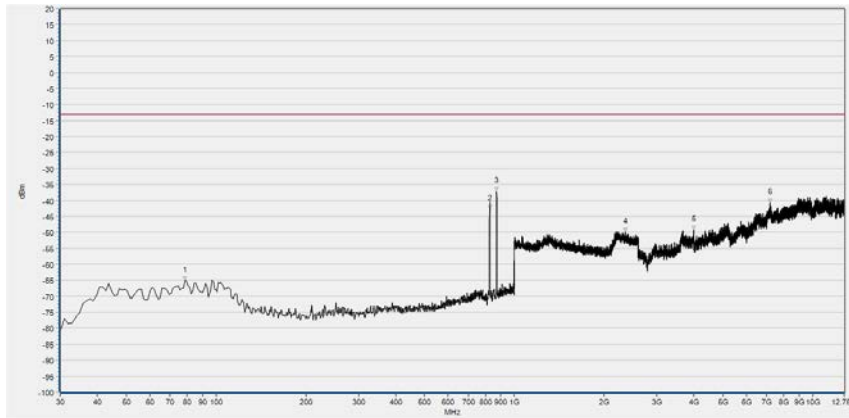
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels 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		
WCDMA Band V	4132	826.4	< -25	< -25	-13	PASS
	4183	836.4	< -25	< -25		PASS
	4233	846.6	< -25	< -25		PASS
WCDMA Band II	9262	1852.4	< -25	< -25	-13	PASS
	9400	1880.0	< -25	< -25		PASS
	9538	1907.6	< -25	< -25		PASS

**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.

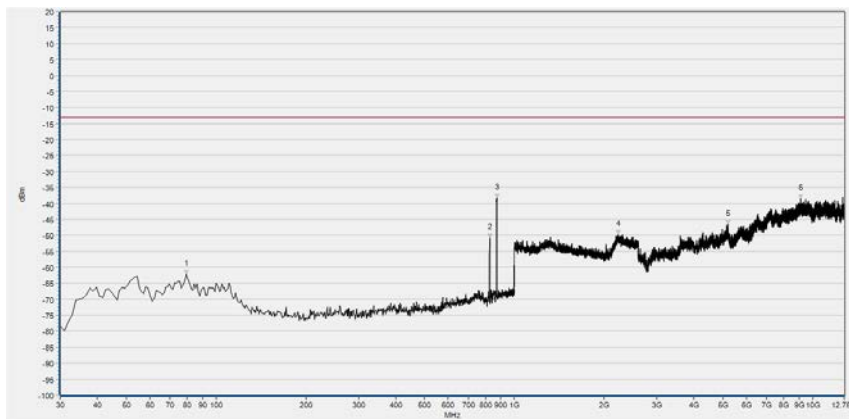
**Note 2:** All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.





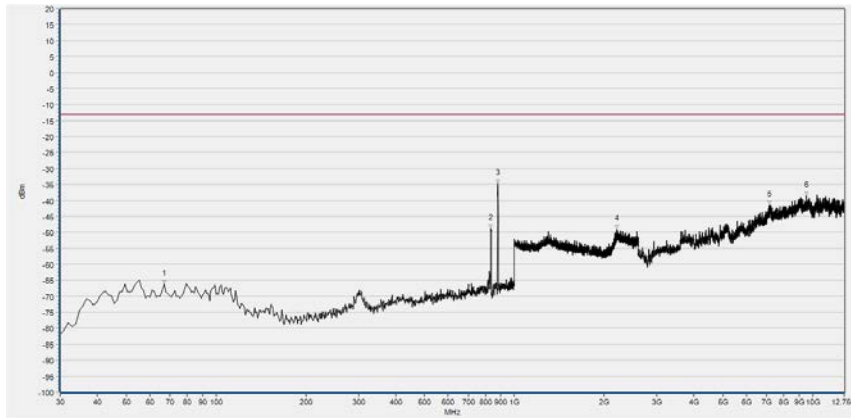
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	78.500	-65.11	-13.00	Horizontal	PASS
2	826.370	-42.75	-13.00	Horizontal	NA
3	871.960	-37.11	-13.00	Horizontal	NA
4	2352.221	-49.88	-13.00	Horizontal	PASS
5	3982.497	-49.23	-13.00	Horizontal	PASS
6	7177.560	-40.70	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4132, Horizontal)



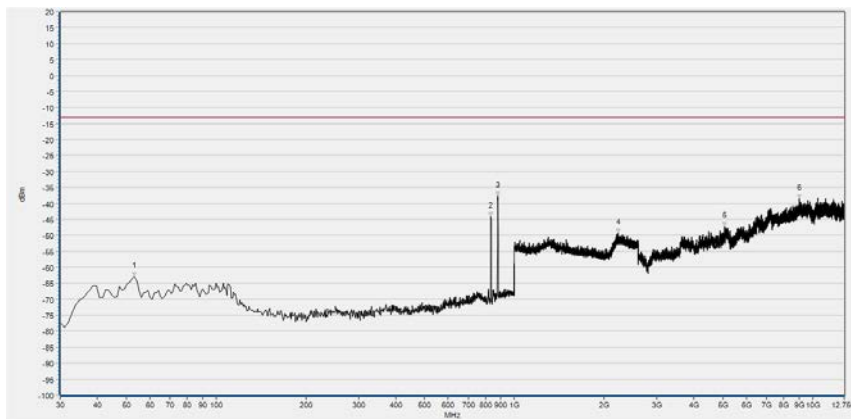
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	79.470	-62.27	-13.00	Vertical	PASS
2	827.340	-50.90	-13.00	Vertical	N/A
3	872.930	-38.30	-13.00	Vertical	N/A
4	2224.170	-49.62	-13.00	Vertical	PASS
5	5197.027	-46.65	-13.00	Vertical	PASS
6	9095.336	-38.65	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4132, Vertical)



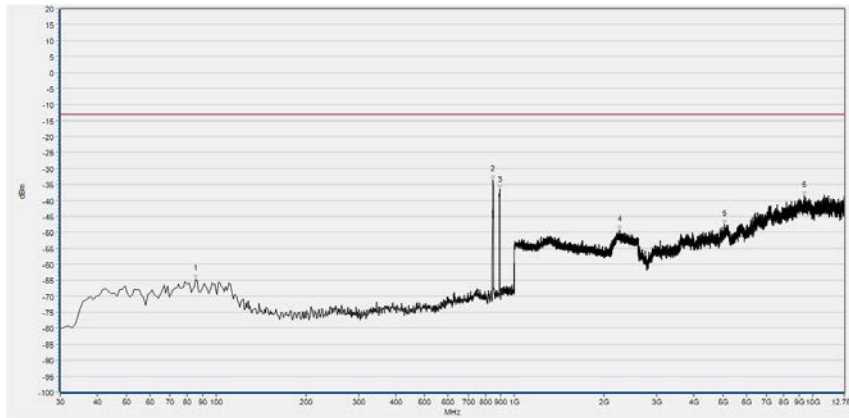
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	66.897	-66.19	-13.00	Horizontal	PASS
2	832.993	-48.83	-13.00	Horizontal	PASS
3	881.542	-34.74	-13.00	Horizontal	NA
4	2206.269	-49.16	-13.00	Horizontal	PASS
5	7165.639	-41.55	-13.00	Horizontal	PASS
6	9500.917	-38.45	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4183, Horizontal)



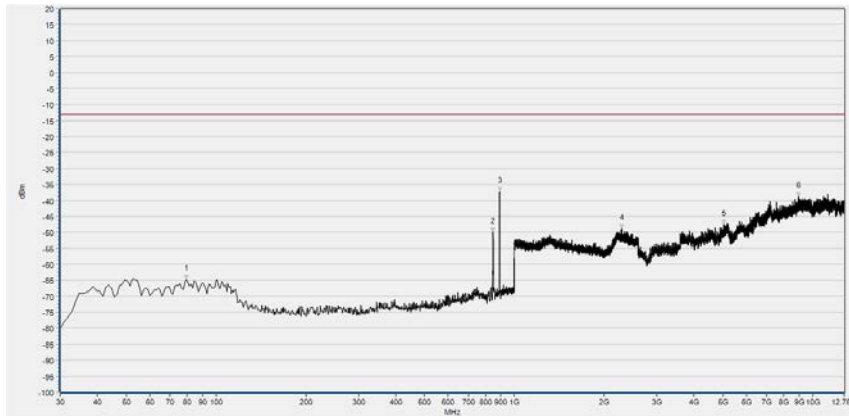
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	53.280	-62.99	-13.00	Vertical	PASS
2	834.130	-44.09	-13.00	Vertical	N/A
3	881.660	-37.63	-13.00	Vertical	N/A
4	2229.292	-49.25	-13.00	Vertical	PASS
5	5065.976	-47.34	-13.00	Vertical	PASS
6	9019.658	-38.58	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4183, Vertical)



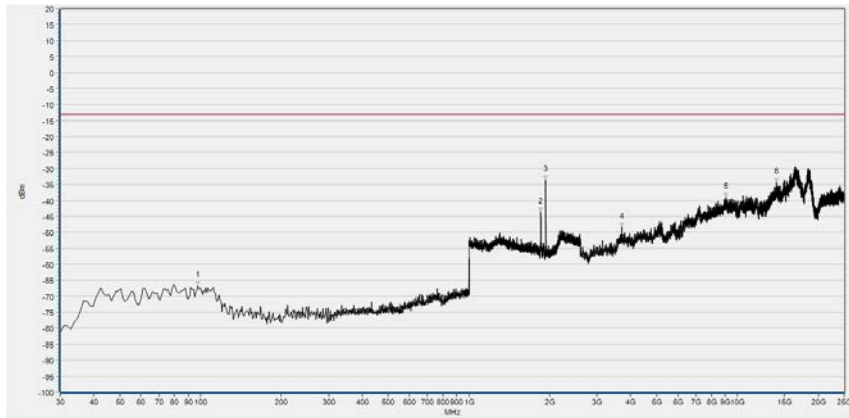
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	85.290	-64.76	-13.00	Horizontal	PASS
2	847.710	-33.70	-13.00	Horizontal	N/A
3	892.330	-36.43	-13.00	Horizontal	N/A
4	2252.981	-49.19	-13.00	Horizontal	PASS
5	5067.821	-47.44	-13.00	Horizontal	PASS
6	9351.900	-38.65	-13.00	Horizontal	PASS

(WCDMA Band V, Channel = 4233, Horizontal)



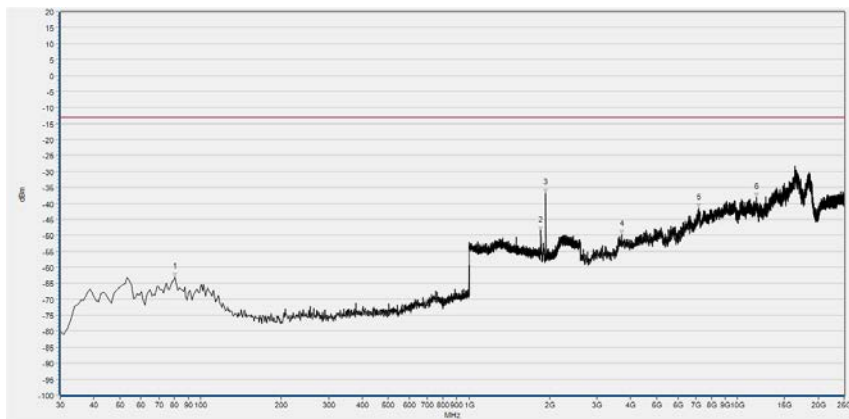
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	79.470	-64.60	-13.00	Vertical	PASS
2	847.710	-49.90	-13.00	Vertical	N/A
3	892.330	-37.13	-13.00	Vertical	N/A
4	2296.519	-48.87	-13.00	Vertical	PASS
5	5041.980	-47.43	-13.00	Vertical	PASS
6	8953.210	-38.86	-13.00	Vertical	PASS

(WCDMA Band V, Channel = 4233, Vertical)



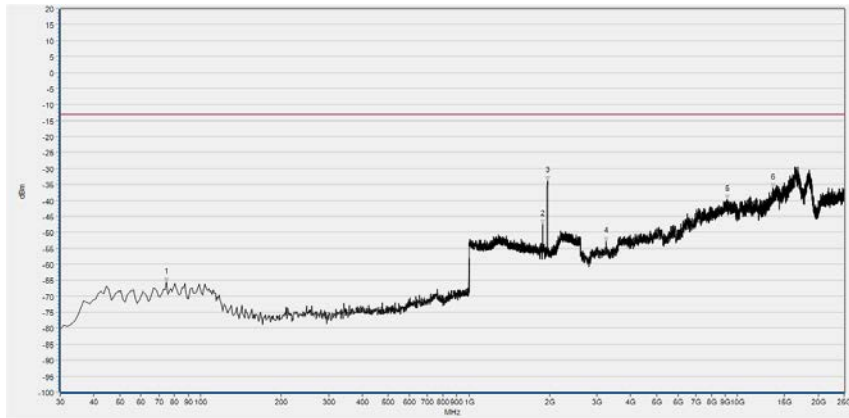
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	97.900	-66.72	-13.00	Horizontal	PASS
2	1850.900	-43.76	-13.00	Horizontal	N/A
3	1933.493	-33.73	-13.00	Horizontal	N/A
4	3703.910	-48.43	-13.00	Horizontal	PASS
5	9076.814	-39.07	-13.00	Horizontal	PASS
6	13973.122	-34.32	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9262, Horizontal)



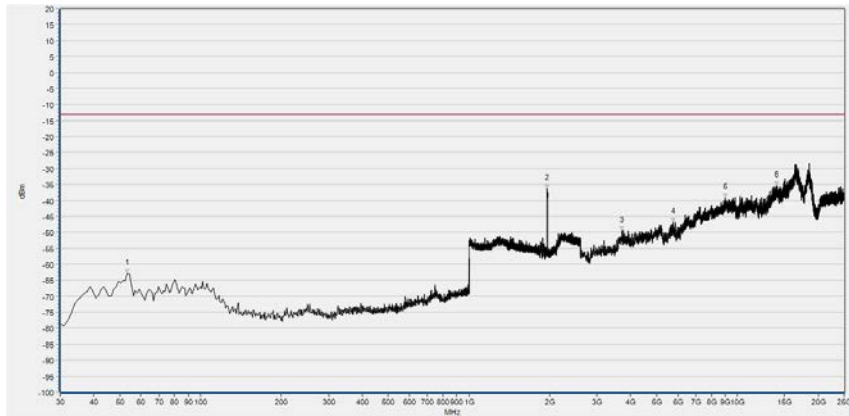
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	80.440	-63.22	-13.00	Vertical	PASS
2	1851.541	-48.68	-13.00	Vertical	N/A
3	1932.853	-36.87	-13.00	Vertical	N/A
4	3703.910	-49.66	-13.00	Vertical	PASS
5	7182.651	-41.45	-13.00	Vertical	PASS
6	11801.964	-38.21	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9262, Vertical)



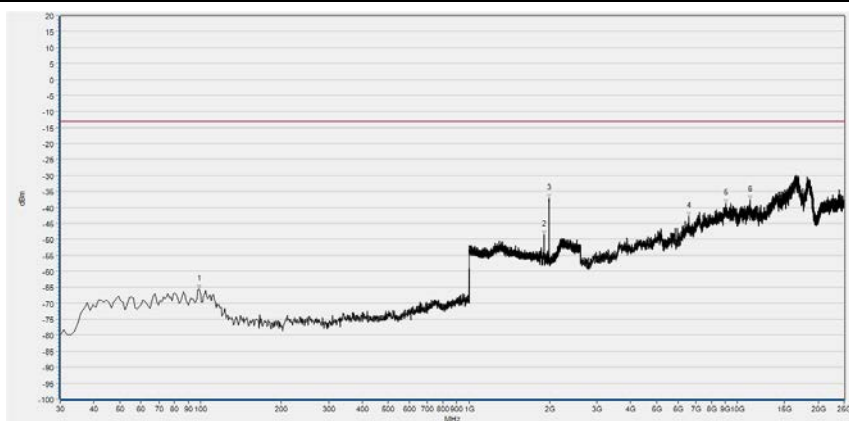
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	74.620	-65.63	-13.00	Horizontal	PASS
2	1879.072	-47.59	-13.00	Horizontal	NA
3	1960.384	-33.92	-13.00	Horizontal	NA
4	3239.534	-52.83	-13.00	Horizontal	PASS
5	9158.283	-39.65	-13.00	Horizontal	PASS
6	13586.143	-36.12	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9400, Horizontal)



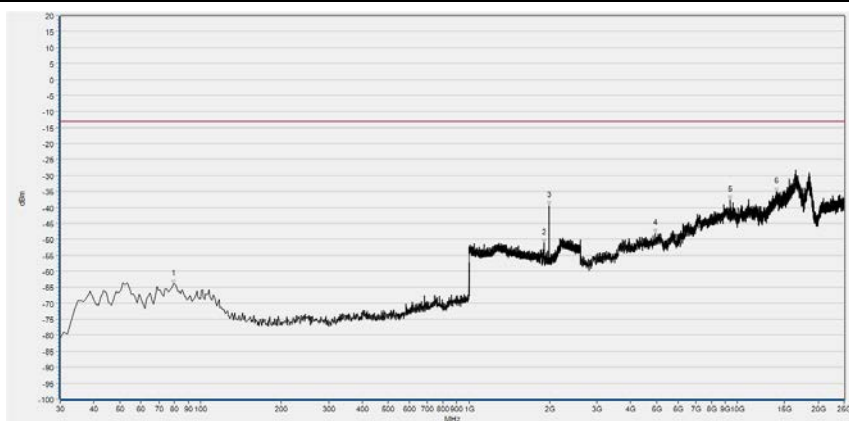
Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	53.280	-62.89	-13.00	Vertical	PASS
2	1958.463	-36.37	-13.00	Vertical	NA
3	3720.204	-49.45	-13.00	Vertical	PASS
4	5752.864	-46.82	-13.00	Vertical	PASS
5	9003.492	-39.21	-13.00	Vertical	PASS
6	13973.122	-35.52	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9400, Vertical)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	98.870	-65.65	-13.00	Horizontal	PASS
2	1907.883	-48.57	-13.00	Horizontal	N/A
3	1986.635	-37.11	-13.00	Horizontal	N/A
4	6608.292	-42.81	-13.00	Horizontal	PASS
5	9052.373	-38.88	-13.00	Horizontal	PASS
6	11182.797	-37.58	-13.00	Horizontal	PASS

(WCDMA Band II, Channel = 9538, Horizontal)



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	79.470	-64.08	-13.00	Vertical	PASS
2	1908.523	-51.39	-13.00	Vertical	N/A
3	1986.635	-39.35	-13.00	Vertical	N/A
4	4946.318	-48.06	-13.00	Vertical	PASS
5	9406.765	-37.74	-13.00	Vertical	PASS
6	13969.049	-35.13	-13.00	Vertical	PASS

(WCDMA Band II, Channel = 9538, 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

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

### 2. Identification of the Responsible Testing Location

<b>Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
<b>Address:</b>	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	2019.04.17	2020.04.16
Attenuator 1	(N/A.)	10dB	Resnet	2019.04.17	2020.04.16
Attenuator 2	(N/A.)	3dB	Resnet	2019.04.17	2020.04.16
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2018.11.06	2019.11.05
Wireless synthesizer	MY48364176	8960 -E5515C	Agilent	2019.04.17	2020.04.16
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	2019.04.17	2020.04.16
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	2019.05.18	2020.05.18
Receiver	MY54130016	N9038A	Agilent	2019.05.08	2020.05.07
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.08	2020.05.07
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2019.08.06	2020.08.05
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2019.08.02	2020.08.01
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	2019.05.08	2020.05.07
18-26.5GHz pre-Amplifier	MA03	TS-PR18	Rohde& Schwarz	2019.05.08	2020.05.07
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