REPORT No. : SZ21010259W01

TEST REPORT

APPLICANT	:	ShenZhen Jimi IoT Co., Ltd
PRODUCT NAME	:	GPS VEHICLE TERMINAL
MODEL NAME	:	JM-VG02U, VG02U
BRAND NAME	:	JIMI
FCC ID	:	2AMLF-JM-VG02U
STANDARD(S)	:	47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E
RECEIPT DATE	:	2021-01-25
TEST DATE	:	2021-02-08 to 2021-02-25
ISSUE DATE	:	2021-03-12

Edited by: Peng Mi

Peng Mi (Rapporteur)

Approved by:

Peng Huarui (Supervisor)

DIRECTORY

Change History		
Version	Date	Reason for change
1.0	2021-03-12	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	ShenZhen Jimi IoT Co., Ltd
Applicant Address:	Subregion B, Room 05,Floor 4th, Building C, Gaoxingi Industrial Park, Liuxian 1st Road, Street Xin'an, district 67, Bao'an, Shenzhen, Guangdong, China
Manufacturer:	Huizhou Jimi Zhizao Technology Co. Ltd
Manufacturer Address:	No.12 Songyang Road, ZhongKai Development Zone, Huizhou Guangdong

1.2. Equipment Under Test (EUT) Description

Product Name:	GPS VEHICLE TERMINAL	
Serial No.:	(N/A, marked #1 by test site)	
Hardware Version:	V3.0	
Software Version:	NF6132_10_61DA1R1_D23_R0_V02_WM_20200323_1739	
Modulation Type:	GSM/GPRS Mode with GMSK Modulation EDGE Mode with 8PSK Modulation	
Operating Frequency Range:	GSM 850MHz	Tx: 824MHz-849MHz
		Rx: 869MHz-894MHz
	GSM 1900MHz	Tx: 1850MHz-1910MHz
		Rx: 1930MHz-1990MHz
Antenna Type:	FPC Antenna	
Antenna Gain:	GSM 850:	-3.0dBi
	GSM1900:	-1.8dBi
Accessory Information:	Battery	
	Brand Name:	Miyear
	Model No.:	M301520
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	50.00mAh
	Rated Voltage:	3.70V
	Charge Limit:	4.28V
	Manufacturer:	Dongguan Miyear Battery Co., Ltd

Note 1: According to the certificate holder, they declared that the models: JM-VG02U and VG02U only the model numbers are different, everything else is the same. The main measuring model is JM-VG02U, only the results for JM-VG02U were recorded in this report.

Note 2: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula F(n)=824.2+0.2*(n-128), 128<=n<=251; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 189 (836.4MHz) and 251 (848.8MHz).

Note 3: The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula F(n)=1850.2+0.2*(n-512), 512<=n<=810; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

Note 4: All test 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:
GSM mode and EDGE mode for GSM 850;
GSM mode and EDGE mode for GSM 1900;

Note 5: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. Maximum E.R.P./E.I.R.P. and Emission Designator

Test Mode	Maximum E.R.P./E.I.R.P. (W)	Emission Designator
GSM850(GPRS)	0.499	250KGXW
GSM1900(GPRS)	0.553	249KGXW

1.4. Test Standards and Results

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

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

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

No.	Section	Description	Test Date	Test Engineer	Result	Method determination/ Remark
1	2.1046	Conducted RF Output Power	Feb 22, 2021	Chen Hao Ling Keye	PASS	No deviation
2	24.232(d)	Peak -Average Ratio	Feb 08, 2021	Ling Keye	PASS	No deviation
3	2.1049	Occupied Bandwidth	Feb 08, 2021	Ling Keye	PASS	No deviation
4	2.1055, 22.355, 24.235, 27.54	Frequency Stability	Feb 17, 2021	Ling Keye	PASS	No deviation
5	2.1051, 22.917(a), 24.238(a), 27.53(h)	Conducted Out of Band Emissions	Feb 08, 2021	Ling Keye	PASS	No deviation
6	2.1051, 22.917(a), 24.238(a), 27.53(h)	Band Edge	Feb 08, 2021	Ling Keye	PASS	No deviation
7	22.913(a), 24.232(c) 27.50(d)	Transmitter Radiated Power (EIPR/E.R.P.)	Feb 25, 2021	Gao Jianrou	PASS	No deviation
8	2.1051, 22.917(a), 24.238(a),	Radiated Out of Band Emissions	Feb 19, 2021	Lin Jiayong	PASS	No deviation

	27.53(h)					

Note 1: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03r01 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.

Note 3: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 4: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% risk level.

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

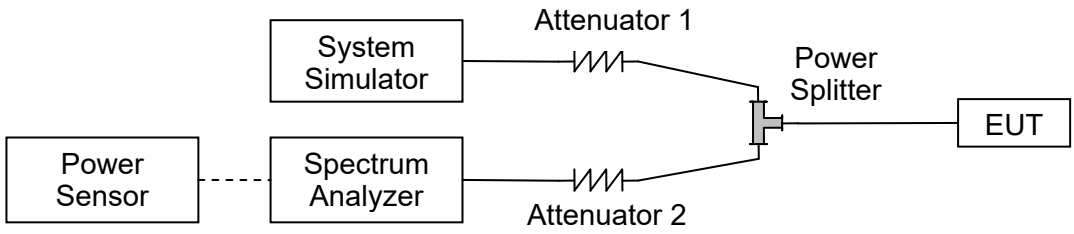
2.1. Conducted RF Output Power

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 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

2.1.3.Test Results

GSM850	Average Power (dBm)		
TX Channel	**128**	**189**	**251**
Frequency (MHz)	**824.2**	**836.4**	**848.8**
GPRS 1 Tx slot	32.13	32.03	31.79
GPRS 2 Tx slots	31.30	31.02	30.93
GPRS 3 Tx slots	29.57	29.38	29.30
GPRS 4 Tx slots	28.30	28.37	27.92

GSM1900	Average Power (dBm)		
TX Channel	**512**	**661**	**810**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
GPRS 1 Tx slot	29.23	29.08	29.17
GPRS 2 Tx slots	28.90	28.77	28.85
GPRS 3 Tx slots	27.65	27.33	26.80
GPRS 4 Tx slots	26.56	26.10	25.52

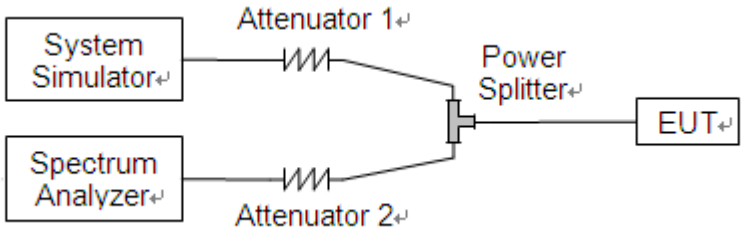
2.2. Peak to Average Ratio

2.2.1.Requirement

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

2.2.2.Test Description

Test Setup:



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:

GSM1900					
Mode	**Channel**	**Frequency (MHz)**	**Peak to Average ratio (dB)**	**Limit (dB)**	**Verdict**
GPRS	512	1850.2	0.049	13	PASS
	661	1880.0	0.076		PASS
	810	1909.8	0.080		PASS

GSM1900(GPRS), CH512, 1850.2MHz

GSM1900(GPRS), CH661, 1880.0MHz

GSM1900(GPRS), CH810, 1909.8MHz

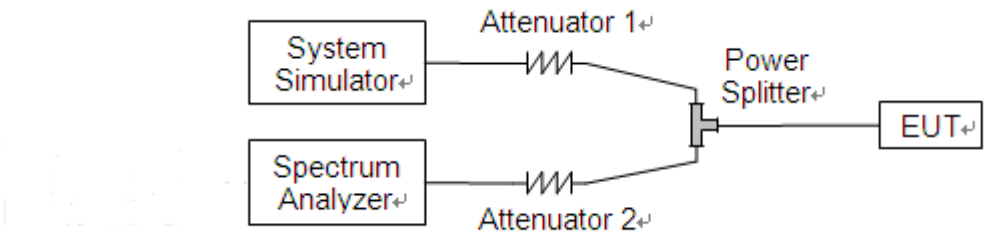
2.3. Occupied Bandwidth

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:

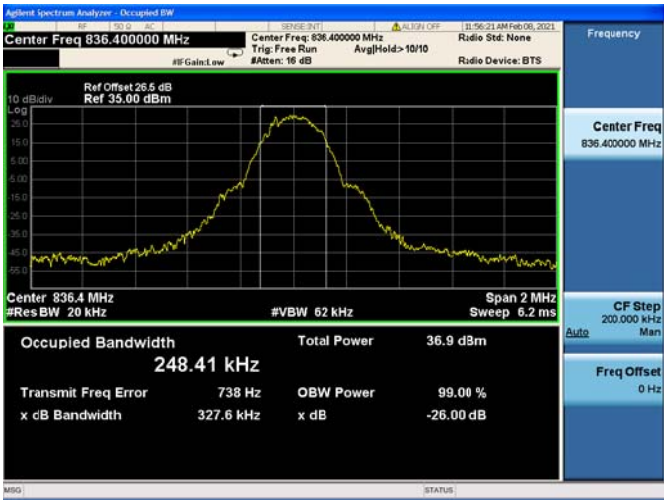


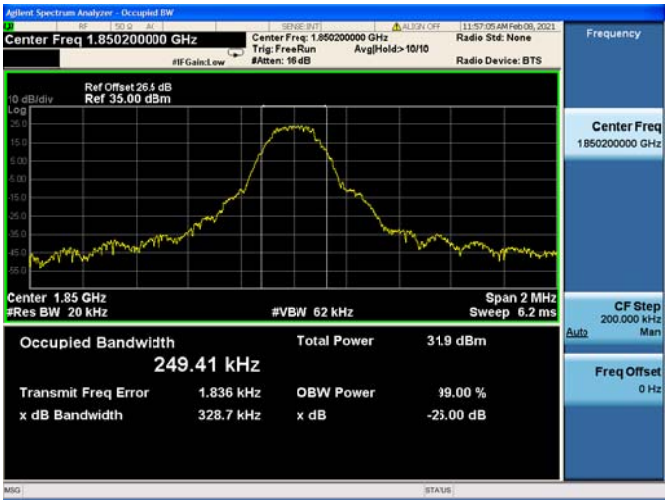
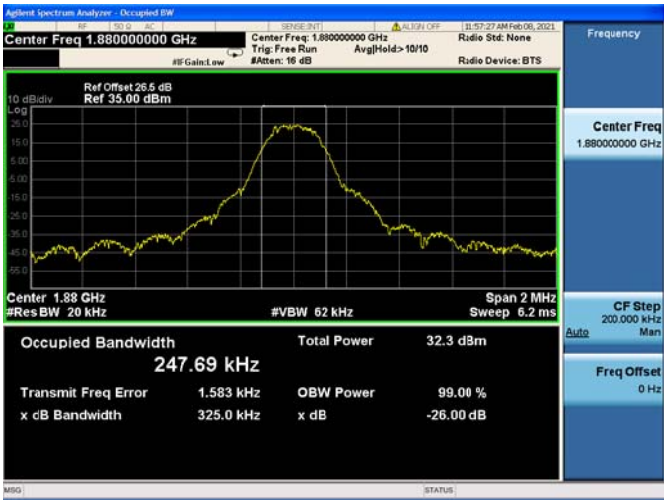
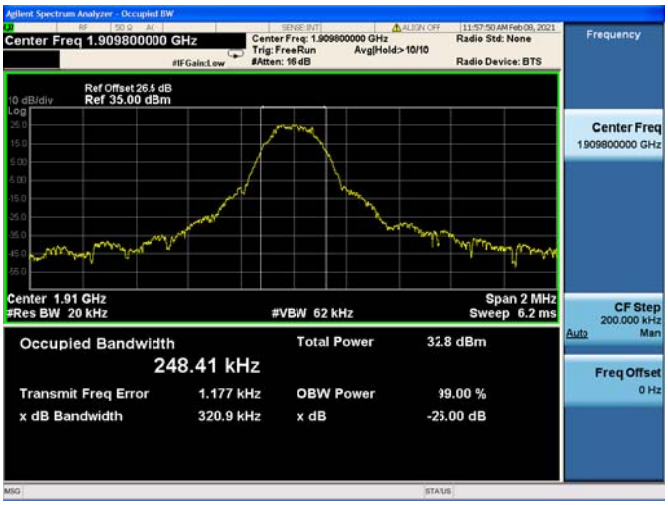
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

GSM850				
Mode	**Channel**	**Frequency (MHz)**	**99% Occupied Bandwidth (kHz)**	**26dB Bandwidth (kHz)**
GPRS	128	824.2	243.81	324.1
	189	836.4	248.41	327.6
	251	848.8	250.75	324.2

GSM1900				
Mode	**Channel**	**Frequency (MHz)**	**99% Occupied Bandwidth (kHz)**	**26dB Bandwidth (kHz)**
GPRS	512	1850.2	249.41	328.7
	661	1880.0	247.69	325.0
	810	1909.8	248.41	320.9

GSM850(GPRS), CH128, 824.2MHz	GSM850(GPRS), CH189, 836.4MHz
	
GSM850(GPRS), CH251, 848.8MHz	
	

GSM1900(GPRS), CH512, 1850.2MHz	GSM1900(GPRS), CH661, 1880.0MHz
	
GSM1900(GPRS), CH810, 1909.8MHz	
	

2.4. Frequency Stability

2.4.1.Requirement

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

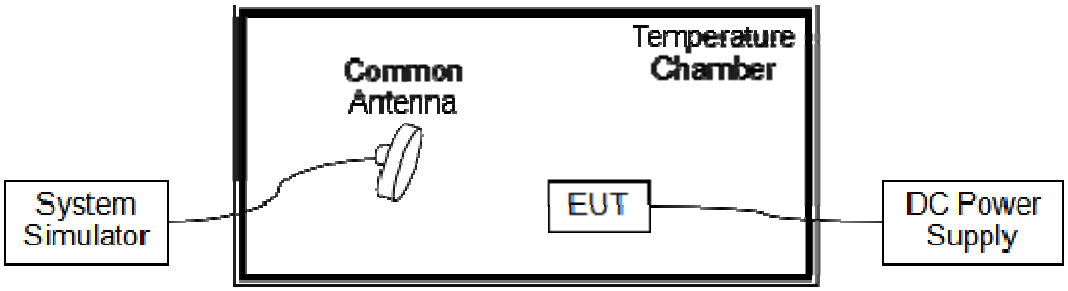
(a) The temperature is varied from-30°C to +50°C at intervals of not more than 10°C.

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

Note: The operating temperature of EUT is from 0°C to 35°C, which are specified by the applicant.

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 separately12.0V, 13.8V and 11.0V, which are specified by the applicant; the normal temperature here used is 20°C.

GSM850(GPRS), CH189, 836.4MHz Limit =±2.5ppm					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	12.0	+20(Ref)	24	0.029	PASS
100		-20	-16	-0.019	
100		-10	34	0.041	
100		0	44	0.053	
100		+10	51	0.061	
100		+20	50	0.060	
100		+30	38	0.045	
100		+40	17	0.020	
100		+45	29	0.035	
115	13.8	+20	42	0.050	
85	11.0	+20	53	0.063	

GSM1900(GPRS), CH661, 1880.0MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	12.0	+20(Ref)	27	0.014	PASS
100		-20	30	0.016	
100		-10	15	0.008	
100		0	-22	-0.012	
100		+10	19	0.010	
100		+20	44	0.023	
100		+30	21	0.011	
100		+40	17	0.009	
100		+45	-20	-0.011	
115	13.8	+20	-17	-0.009	
85	11.0	+20	14	0.007	

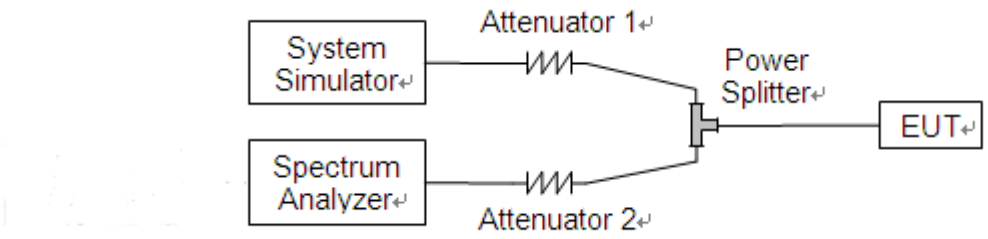
2.5. Conducted Out of Band Emissions

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. The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency.

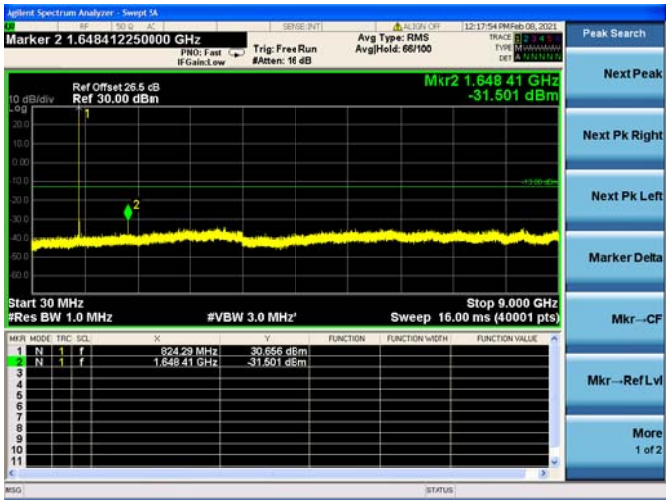
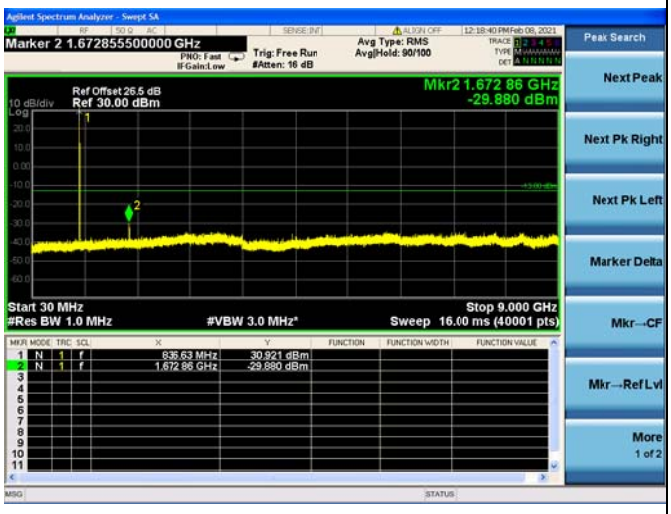
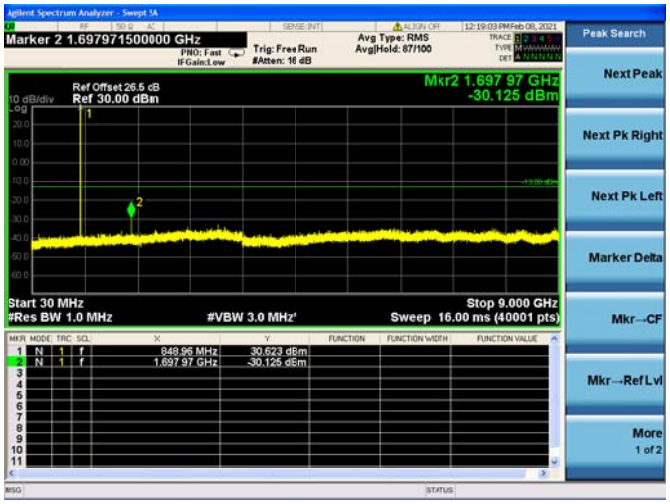
2.5.2.Test Description

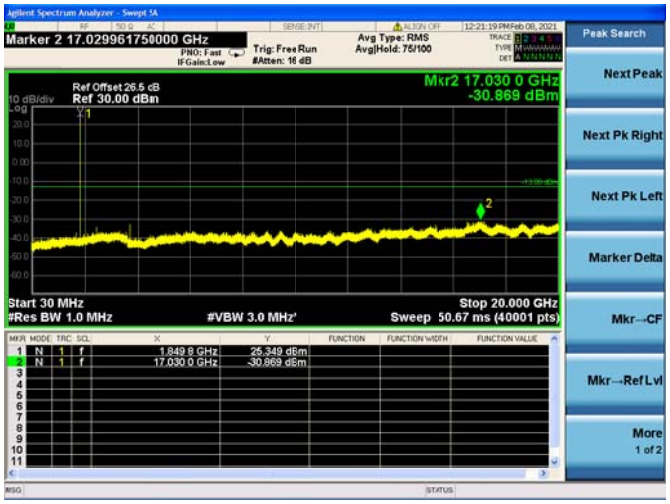
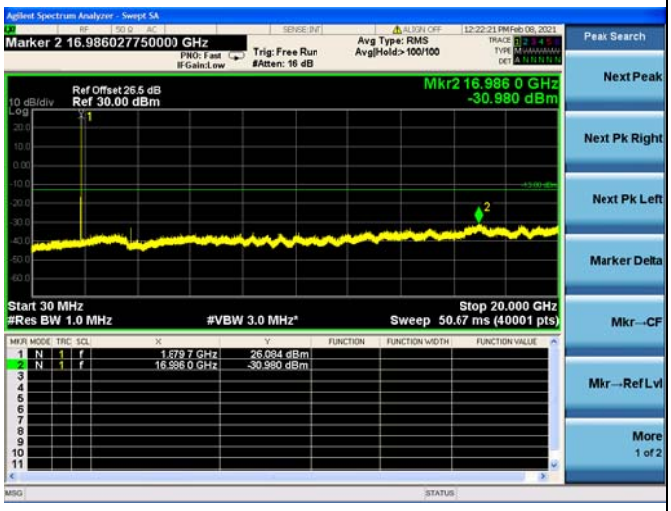
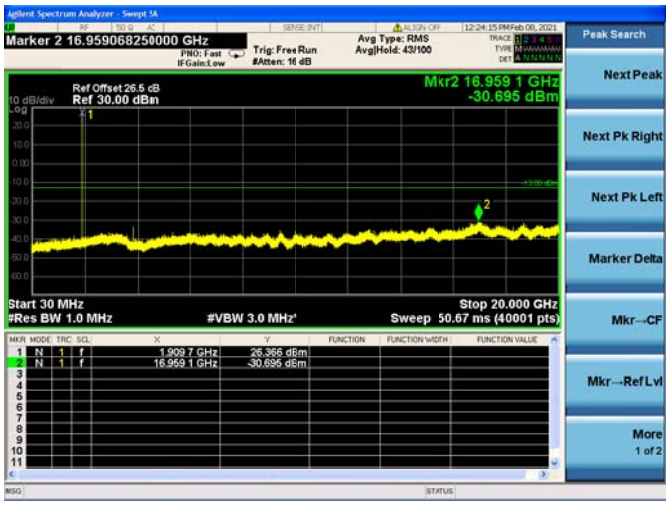
Test Setup:



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

GSM850(GPRS), CH128, 824.2MHz	GSM850(GPRS), CH189, 836.4MHz
	
GSM850(GPRS), CH251, 848.8MHz	
	

GSM1900(GPRS), CH512, 1850.2MHz	GSM1900(GPRS), CH661, 1880.0MHz
	
GSM1900(GPRS), CH810, 1909.8MHz	
	

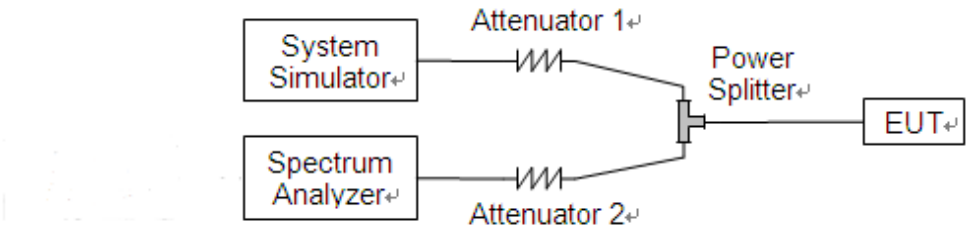
2.6. Band Edge

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

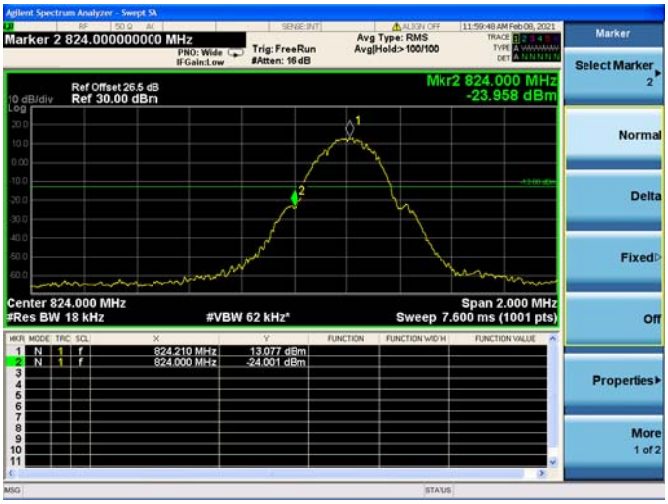
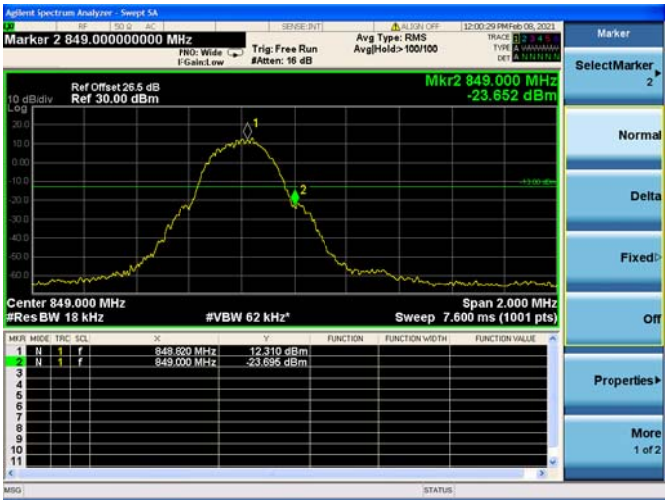
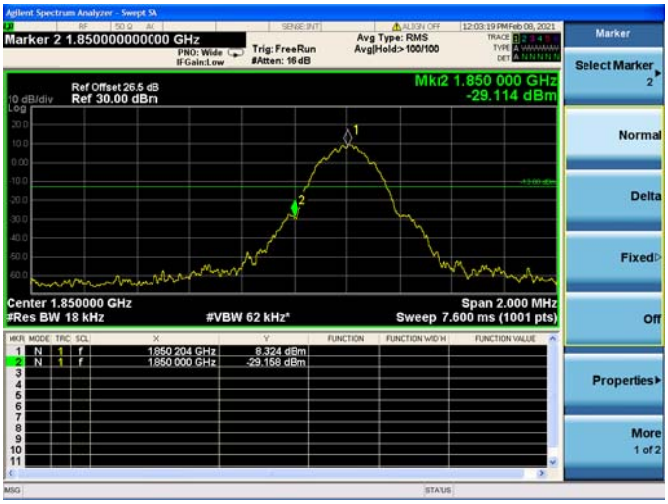
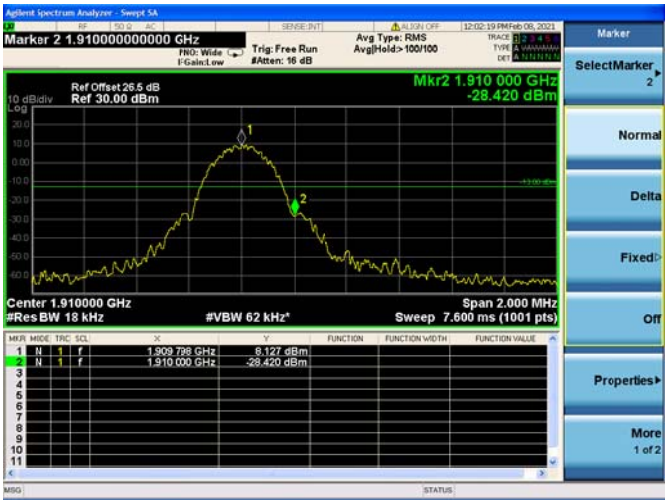
Test Setup:



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.

GSM850(GPRS), CH128, 824.2MHz	GSM850(GPRS), CH251, 848.8MHz
	
GSM1900(GPRS), CH512, 1850.2MHz	**GSM1900(GPRS), CH810, 1909.8MHz**
	

2.7. Determining E.R.P. and/or E.I.R.P. from conducted RF output power measurements

2.7.1.Requirement

According to FCC section 22.913, the Effective Radiated Power (E.R.P.) 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

The test setups refer to section 2.1.3
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.
The relevant equation for determining the maximum E.R.P. or E.I.R.P. from the measured RF output power is given in Equation (1) as follows:
E.R.P. or E.I.R.P. = P_{Meas} + G_T
Where:
E.R.P. or E.I.R.P. effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, e.g., dBm or dBW)
P_{Meas} measured transmitter output power or PSD, in dBm or dBW
G_T gain of the transmitting antenna, in dBd (E.R.P.) or dBi (E.I.R.P.)
For devices utilizing multiple antennas, see ANSI C63.25-2015 6.4 for guidance with respect to determining the effective array transmit antenna gain term to be used in the above equation.
The following equations demonstrate the mathematical relationship between E.R.P. and E.I.R.P.:
a) E.R.P. = E.I.R.P. − 2.15, where E.R.P. and E.I.R.P. are expressed in consistent units.
b) E.I.R.P. = E.R.P. + 2.15, where E.R.P. and E.I.R.P. are expressed in consistent units.

2.7.3.Test Result

GSM850								
Band	Channel	Frequency (MHz)	PCL	Measured E.R.P.		Limit		Verdict
				dBm	W	dBm	W	
GPRS	128	824.20	5	26.98	0.499	38.5	7	PASS
	189	836.40	5	26.88	0.488			PASS
	251	848.80	5	26.64	0.461			PASS
Note 1: For the GPRS mode, all the slots were tested and just the worst data were recorded in this report.								

GSM1900								
Band	Channel	Frequency (MHz)	PCL	Measured E.I.R.P.		Limit		Verdict
				dBm	W	dBm	W	
GPRS	512	1850.2	0	27.43	0.553	33	2	PASS
	661	1880.0	0	27.28	0.535			PASS
	810	1909.8	0	27.37	0.546			PASS
Note 1: For the GPRS mode, all the slots were tested and just the worst data were recorded in this report.								

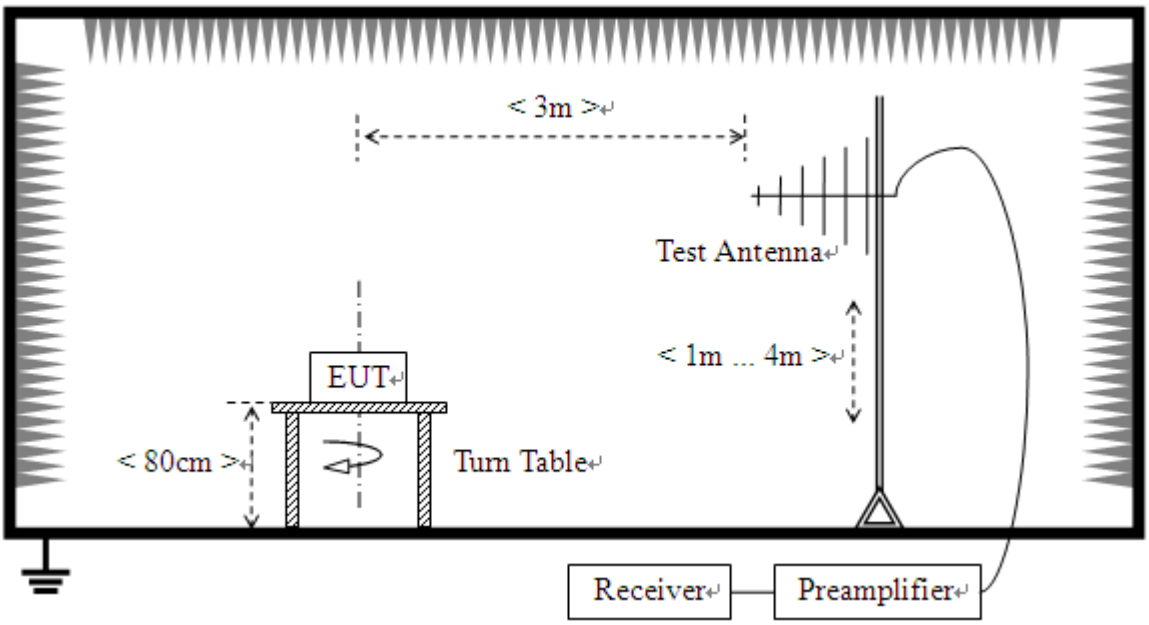
2.8. Radiated Out of Band Emissions

2.8.1.Requirement

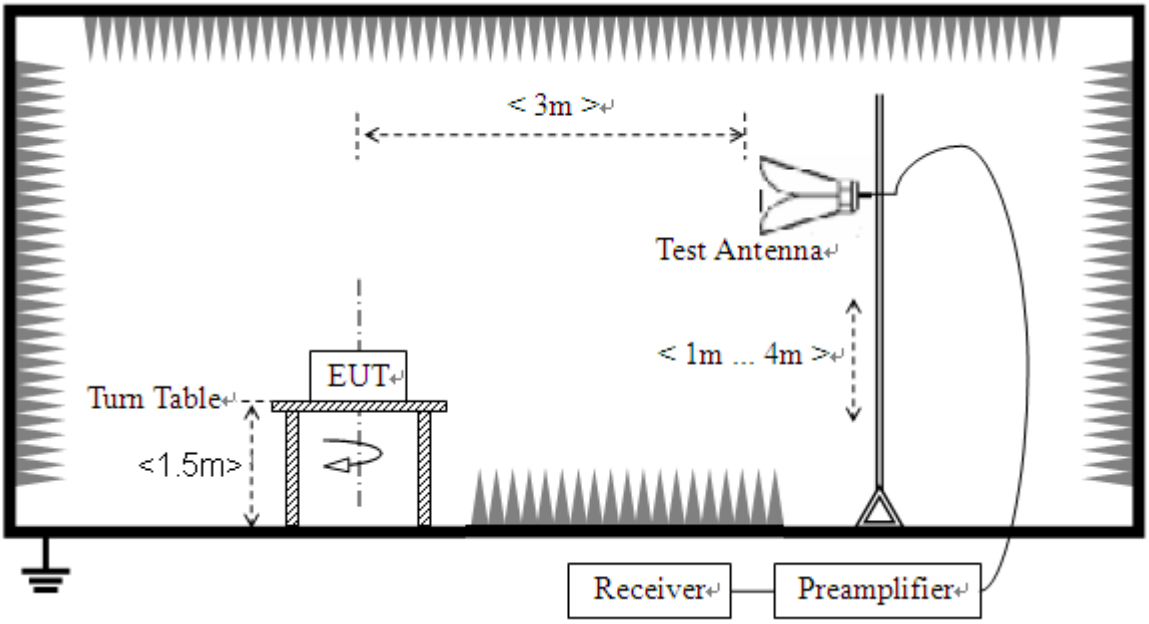
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm. The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency.

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 and only the test result of the maximum output power was recorded.
In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground and the Turn Table is actuated to turn from 0° to 360°to determine the maximum value of the radiated power. The emission levels at both horizontal and vertical polarizations should be tested. 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 Procedure

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements.

2.8.4.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 substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST\_TX} - P_{SUBST\_RX} - L_{SUBST\_CABLES} + G_{SUBST\_TX\_ANT}$

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

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

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST\_TX\_ANT}$ is substitution antenna gain.

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

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

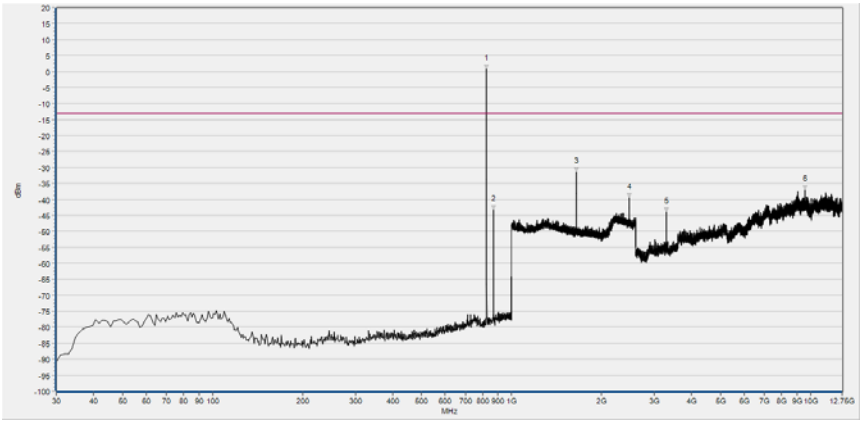
Note1: The power of the EUT transmitting frequency should be ignored.

Note2: All test mode and condition mentioned were considered and evaluated respectively by performing full test, only the worst data were recorded and reported.

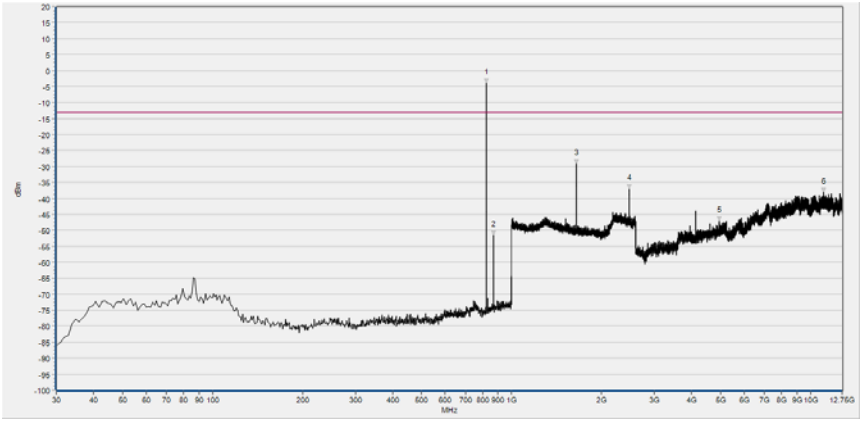
Note3: All spurious emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note4: N/A means the frequency is the basic frequency or the base station frequency, they are no need to verdict.

GSM850(GPRS), Low Channel

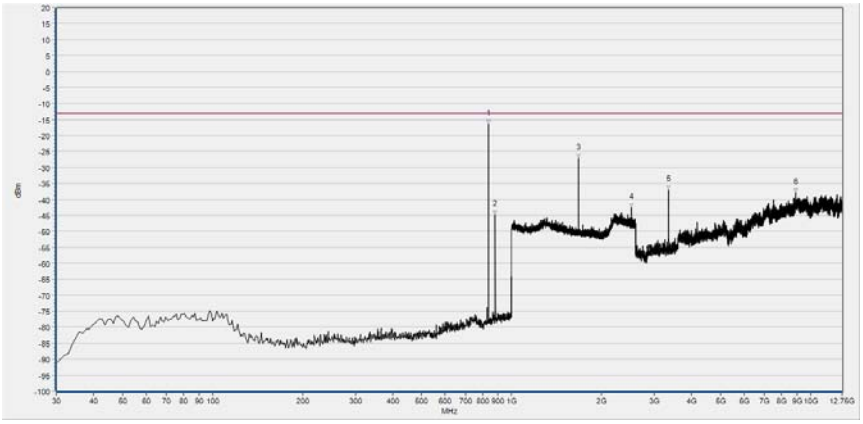


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	824.430	0.74	-13.00	Horizontal	N/A
2	869.050	-43.28	-13.00	Horizontal	N/A
3	1648.579	-31.40	-13.00	Horizontal	PASS
4	2472.589	-39.37	-13.00	Horizontal	PASS
5	3297.709	-43.81	-13.00	Horizontal	PASS
6	9566.012	-36.97	-13.00	Horizontal	PASS

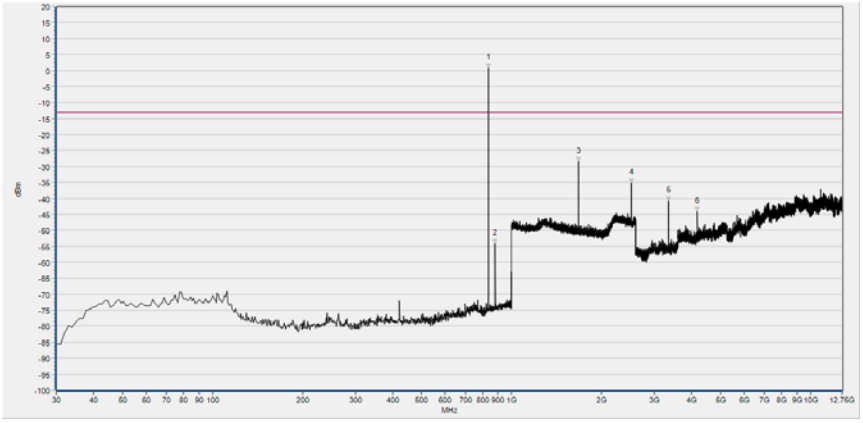


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	824.430	-3.85	-13.00	Vertical	N/A
2	869.050	-51.46	-13.00	Vertical	N/A
3	1648.579	-29.27	-13.00	Vertical	PASS
4	2473.229	-36.98	-13.00	Vertical	PASS
5	4936.770	-47.02	-13.00	Vertical	PASS
6	11055.565	-38.01	-13.00	Vertical	PASS

GSM850(GPRS), Mid Channel

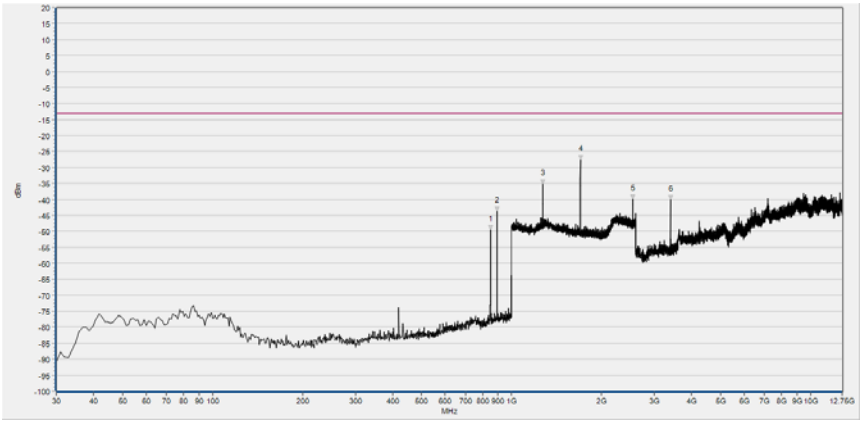


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	837.040	-16.47	-13.00	Horizontal	N/A
2	881.660	-44.81	-13.00	Horizontal	N/A
3	1673.549	-27.24	-13.00	Horizontal	PASS
4	2509.724	-42.62	-13.00	Horizontal	PASS
5	3347.545	-36.99	-13.00	Horizontal	PASS
6	8921.831	-37.85	-13.00	Horizontal	PASS

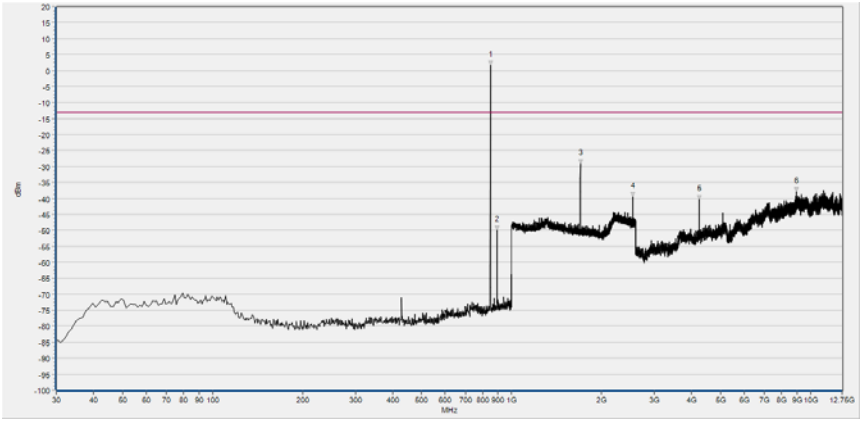


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	837.040	0.68	-13.00	Vertical	N/A
2	881.660	-54.14	-13.00	Vertical	N/A
3	1673.549	-28.54	-13.00	Vertical	PASS
4	2510.364	-35.14	-13.00	Vertical	PASS
5	3347.545	-40.89	-13.00	Vertical	PASS
6	4183.688	-44.11	-13.00	Vertical	PASS

GSM850(GPRS), High Channel

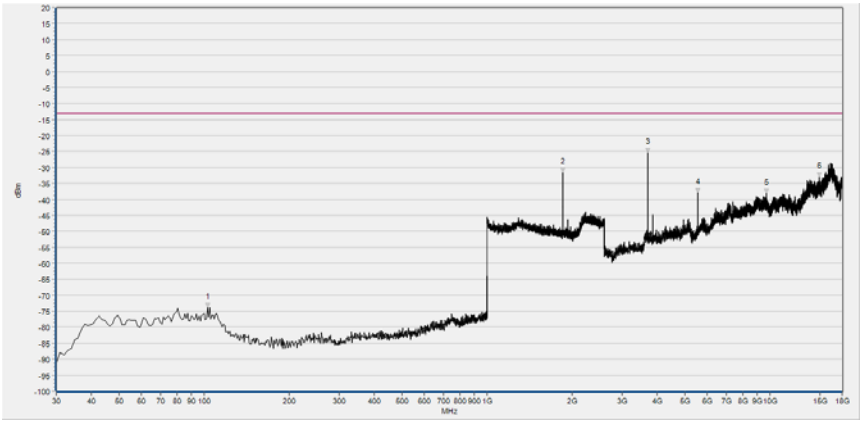


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	849.650	-49.59	-13.00	Horizontal	N/A
2	894.270	-43.63	-13.00	Horizontal	N/A
3	1273.389	-35.22	-13.00	Horizontal	PASS
4	1697.879	-27.62	-13.00	Horizontal	PASS
5	2546.859	-39.90	-13.00	Horizontal	PASS
6	3395.536	-40.12	-13.00	Horizontal	PASS

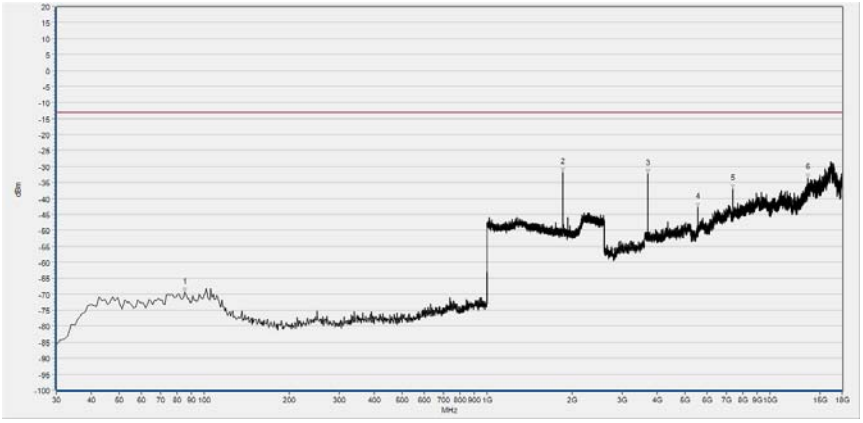


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	848.680	1.69	-13.00	Vertical	N/A
2	894.270	-49.85	-13.00	Vertical	N/A
3	1697.879	-29.07	-13.00	Vertical	PASS
4	2546.859	-39.37	-13.00	Vertical	PASS
5	4244.599	-40.33	-13.00	Vertical	PASS
6	8966.130	-37.90	-13.00	Vertical	PASS

GSM1900(GPRS), Low Channel

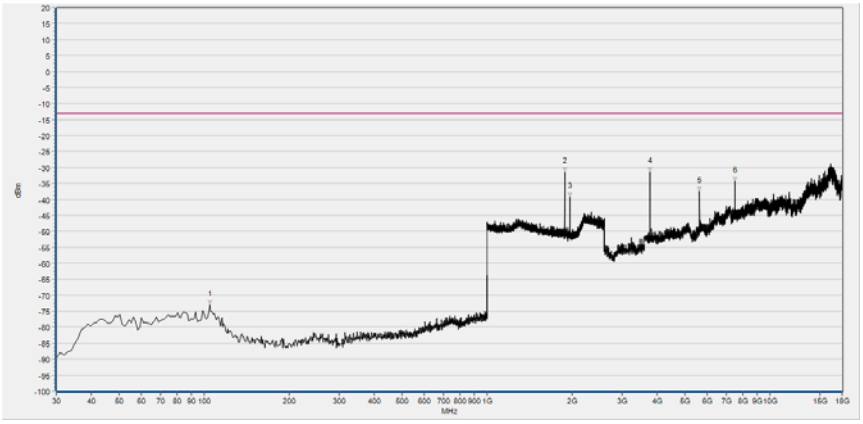


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	102.750	-73.88	-13.00	Horizontal	PASS
2	1850.900	-31.63	-13.00	Horizontal	N/A
3	3700.600	-25.47	-13.00	Horizontal	PASS
4	5551.737	-37.97	-13.00	Horizontal	PASS
5	9710.493	-38.14	-13.00	Horizontal	PASS
6	14950.245	-32.91	-13.00	Horizontal	PASS

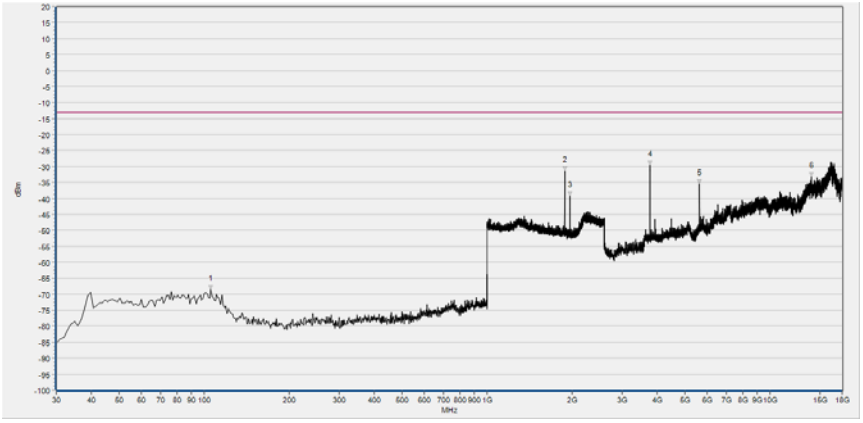


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	85.290	-69.43	-13.00	Vertical	PASS
2	1850.900	-31.83	-13.00	Vertical	N/A
3	3700.600	-32.30	-13.00	Vertical	PASS
4	5551.737	-42.79	-13.00	Vertical	PASS
5	7400.073	-37.01	-13.00	Vertical	PASS
6	13589.198	-33.69	-13.00	Vertical	PASS

GSM1900(GPRS), Mid Channel

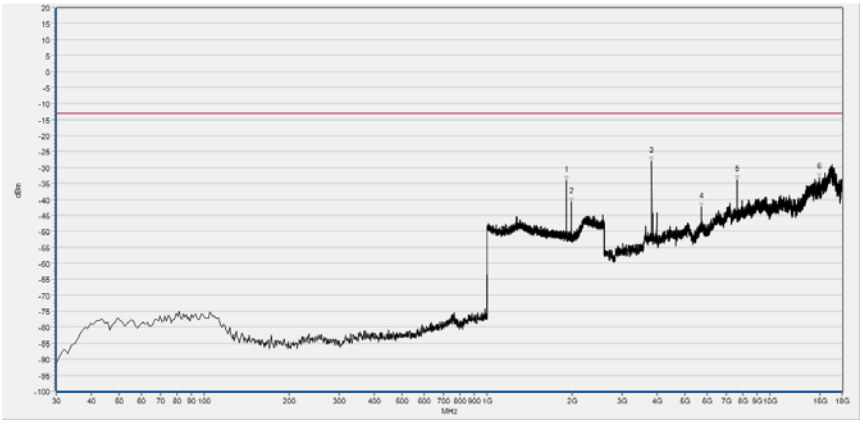


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	104.690	-73.02	-13.00	Horizontal	PASS
2	1880.352	-31.49	-13.00	Horizontal	N/A
3	1960.384	-39.26	-13.00	Horizontal	N/A
4	3759.411	-31.44	-13.00	Horizontal	PASS
5	5641.353	-37.40	-13.00	Horizontal	PASS
6	7520.495	-34.35	-13.00	Horizontal	PASS

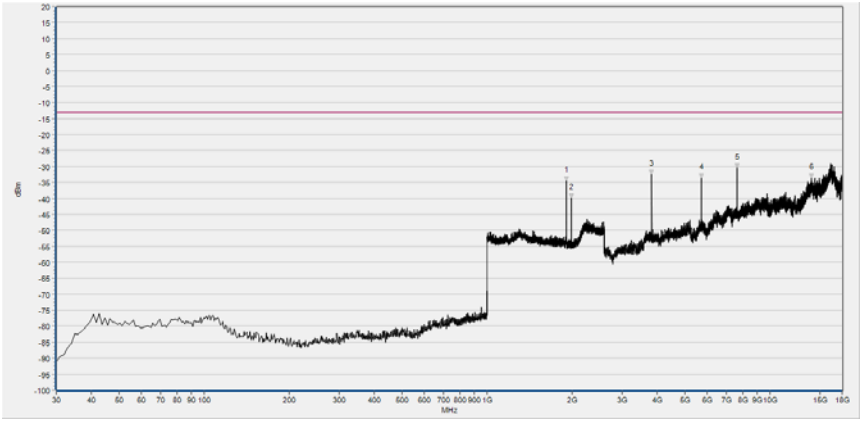


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	105.660	-68.47	-13.00	Vertical	PASS
2	1880.352	-31.40	-13.00	Vertical	N/A
3	1960.384	-39.20	-13.00	Vertical	N/A
4	3759.411	-29.52	-13.00	Vertical	PASS
5	5641.353	-35.40	-13.00	Vertical	PASS
6	14023.277	-33.11	-13.00	Vertical	PASS

GSM1900(GPRS), High Channel



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	1910.444	-34.07	-13.00	Horizontal	N/A
2	1990.476	-40.70	-13.00	Horizontal	N/A
3	3821.022	-28.05	-13.00	Horizontal	PASS
4	5730.969	-42.37	-13.00	Horizontal	PASS
5	7640.917	-33.81	-13.00	Horizontal	PASS
6	14947.445	-33.29	-13.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	1910.444	-34.45	-13.00	Vertical	N/A
2	1990.476	-39.90	-13.00	Vertical	N/A
3	3821.022	-32.48	-13.00	Vertical	PASS
4	5730.969	-33.70	-13.00	Vertical	PASS
5	7640.917	-30.45	-13.00	Vertical	PASS
6	14028.878	-33.53	-13.00	Vertical	PASS

Annex A Test Uncertainty

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

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

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

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

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

2. Identification of the Responsible Testing Location

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

3. Facilities and Accreditations

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

4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Power Splitter	NW521	1506A	Weinschel	2020.04.15	2021.04.14
Attenuator 1	(N/A.)	10dB	Resnet	N/A	N/A
Attenuator 2	(N/A.)	3dB	Resnet	N/A	N/A
EXA Signal Analzyer	MY51511149	N9020A	Agilent	2020.07.27	2021.07.26
System Simulator	6200995016	MT8820C	Anritsu	2020.10.28	2021.10.27
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	HA06-21216 2-3-3-II	HUT705P	CHONGQING HANBA EXPERIMENTAL EQUIPMENT CO.,LTD	2020.03.25	2021.03.24
Computer	T430i	Think Pad	Lenovo	N/A	N/A

4.2 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
System Simulator	152038	CMW500	R&S	2020.11.19	2021.11.18
Receiver	MY54130016	N9038A	Agilent	2020.07.21	2021.07.20
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2019.07.26	2022.07.25
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
Coaxial cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2020.07.21	2021.07.20
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2020.07.21	2021.07.20
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2020.07.21	2021.07.20
Notch Filter	N/A	WRCG-GSM 850	Wainwright	2020.07.21	2021.07.20
Notch Filter	N/A	WRCG-GSM 1900	Wainwright	2020.07.21	2021.07.20
Notch Filter	N/A	WRCGV-W Band V	Wainwright	2020.07.21	2021.07.20
Notch Filter	N/A	WRCGV-W Band II	Wainwright	2020.07.21	2021.07.20

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Notch Filter	N/A	WRCGV-W Band IV	Wainwright	2020.07.21	2021.07.20
Anechoic Chamber	N/A	9m*6m*6m	CRT	2019.07.13	2022.07.12

END OF REPORT