



# TEST REPORT

**APPLICANT** : Reliance Communications LLC

**PRODUCT NAME** : Orbic AirSurf 5G UW

**MODEL NAME** : R141TL5

**BRAND NAME** : Orbic

**FCC ID** : 2ABGH-R141TL5

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

**RECEIPT DATE** : 2021-07-29

**TEST DATE** : 2021-10-26 to 2021-11-30

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Change History		
Version	Date	Reason for change
1.0	2021-12-01	First edition





# 1. Technical Information

**Note:** Provide by applicant.

## 1.1. Applicant and Manufacturer Information

<b>Applicant:</b>	Reliance Communications LLC
<b>Applicant Address:</b>	91 Colin Drive, Unit 1, HOLBROOK, New York 11741, United States
<b>Manufacturer:</b>	Unimaxcomm
<b>Manufacturer Address:</b>	35F,HBC HuiLong Center Building-II Minzhi Street,Longhua, Shenzhen, P.R. China 518110

## 1.2. Equipment Under Test (EUT) Description

<b>Product Name:</b>	Orbic AirSurf 5G UW	
<b>Sample No.:</b>	26#	
<b>Hardware Version:</b>	R141-REV12	
<b>Software Version:</b>	ORB141TL5_V1.1.9_SVZ	
<b>Modulation Type:</b>	WCDMA Mode with QPSK Modulation HSDPA Mode with QPSK Modulation HSUPA Mode with QPSK Modulation HSPA+ Mode with 16QAM Modulation	
<b>Operating Frequency Range:</b>	WCDMA Band V	Tx: 824MHz-849MHz Rx: 869MHz-894MHz
	WCDMA Band IV	Tx: 1710MHz-1755MHz Rx: 2110MHz-2155MHz
	WCDMA Band II	Tx: 1850MHz-1910MHz Rx: 1930MHz-1990MHz
<b>Antenna Type:</b>	PIFA Antenna	
<b>Antenna Gain:</b>	WCDMA Band V:	2.15dBi
	WCDMA Band IV:	4.37dBi
	WCDMA Band II:	4.54dBi





- Note 1:** The test results of all conducted test items please refer to the module FCC test report (Report No.: SZ21010262W01), which issued on Jul 02, 2021 by Shenzhen Morlab Communications Technology Co., Ltd. We only recorded the radiated test result in this report.
- Note 2:** 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 3:** The transmitter (Tx) frequency arrangement of the WCDMA IV 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 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 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:  
WCDMA mode for WCDMA band V;  
WCDMA mode for WCDMA band IV;  
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 E.R.P./E.I.R.P. and Emission Designator

Test Mode	Maximum E.R.P./E.I.R.P. (W)
WCDMA Band V	0.274
WCDMA Band IV	0.306
WCDMA Band II	0.295





## 1.4. Test Standards and Results

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

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

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

No.	Section	Description	Test Date	Test Engineer	Result	Method determination/ Remark
1	2.1046	Conducted RF Output Power	Nov 30, 2021	Chen Hao	PASS	No deviation
2	24.232(d)	Peak -Average Ratio	N/A	N/A <sub>Note1</sub>	N/A	N/A
3	2.1049	Occupied Bandwidth	N/A	N/A <sub>Note1</sub>	N/A	N/A
4	2.1055, 22.355, 24.235, 27.54	Frequency Stability	N/A	N/A <sub>Note1</sub>	N/A	N/A
5	2.1051, 22.917(a), 24.238(a), 27.53(h)	Conducted Out of Band Emissions	N/A	N/A <sub>Note1</sub>	N/A	N/A
6	2.1051, 22.917(a), 24.238(a), 27.53(h)	Band Edge	N/A	N/A <sub>Note1</sub>	N/A	N/A
7	22.913(a), 24.232(c) 27.50(d)	Transmitter Radiated Power (EIPR/E.R.P.)	Nov 30, 2021	Yin Xiaogang	PASS	No deviation
8	2.1051,	Radiated Out	Oct 26&27,	Gao Jianrou	PASS	No deviation





	22.917(a), 24.238(a), 27.53(h)	of Band Emissions	2021			
<p><b>Note 1:</b> These items except ERP/EIRP&amp;RSE please refer to the 5G module report SZ21010262W01 which the FCC ID is 2ABGH-R100ML5 and the 5G module has been certified by Shenzhen Morlab Communications Technology Co., Ltd. on 07/02/2021.</p> <p><b>Note 2:</b> The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03r01 and ANSI/TIA-603-E-2016.</p> <p><b>Note 3:</b> The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 24.5dB contains two parts that cable loss 14.5dB and Attenuator 10dB.</p> <p><b>Note 4:</b> 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.</p> <p><b>Note 5:</b> When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.</p>						

## 1.5. Environmental Conditions

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

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



## 2.47 CFR Part 2, Part 22H , 24E&27L Requirements

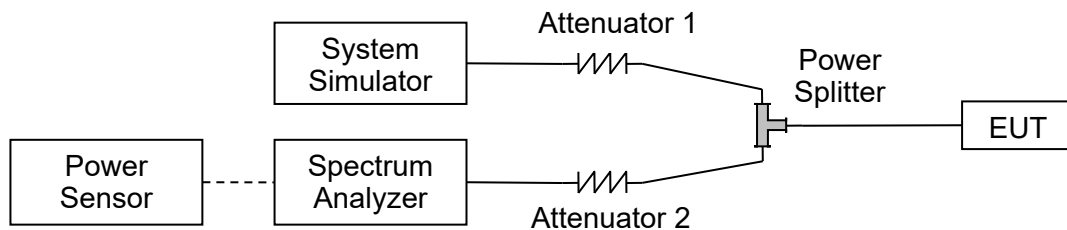
### 2.1. Conducted RF Output Power

#### 2.1.1. Requirement

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

#### 2.1.2. Test Description

Test Setup:



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



**2.1.3.Test Results**

<b>WCDMA Band V</b>	<b>Average Power (dBm)</b>		
<b>TX Channel</b>	<b>4132</b>	<b>4182</b>	<b>4233</b>
<b>Frequency (MHz)</b>	<b>826.4</b>	<b>836.4</b>	<b>846.6</b>
RMC 12.2Kbps	24.38	24.04	23.80
HSDPA Subtest-1	22.38	22.19	22.31
HSDPA Subtest-2	22.30	22.13	22.36
HSDPA Subtest-3	21.88	21.88	21.79
HSDPA Subtest-4	21.86	21.68	21.78
DC-HSDPA Subtest-1	22.41	22.35	22.38
DC-HSDPA Subtest-2	22.43	22.36	22.39
DC-HSDPA Subtest-3	21.91	21.85	21.93
DC-HSDPA Subtest-4	21.91	21.83	21.92
HSUPA Subtest-1	22.30	22.43	22.23
HSUPA Subtest-2	21.86	21.82	21.75
HSUPA Subtest-3	22.32	22.28	22.23
HSUPA Subtest-4	22.31	22.18	22.25
HSUPA Subtest-5	22.34	22.24	22.34
HSPA+ (16QAM) Subtest-1	22.39	22.29	22.31







WCDMA Band IV	Average Power (dBm)		
	1312	1413	1513
<b>TX Channel</b>	<b>1312</b>	<b>1413</b>	<b>1513</b>
<b>Frequency (MHz)</b>	<b>1712.4</b>	<b>1732.6</b>	<b>1752.6</b>
RMC 12.2Kbps	24.34	24.61	24.86
HSDPA Subtest-1	22.89	23.11	23.03
HSDPA Subtest-2	22.92	23.04	22.97
HSDPA Subtest-3	22.43	22.55	22.58
HSDPA Subtest-4	22.43	22.66	22.51
DC-HSDPA Subtest-1	22.99	23.12	23.13
DC-HSDPA Subtest-2	22.92	23.14	23.12
DC-HSDPA Subtest-3	22.42	22.67	22.60
DC-HSDPA Subtest-4	22.41	22.61	22.63
HSUPA Subtest-1	22.91	23.05	23.02
HSUPA Subtest-2	22.39	22.60	22.57
HSUPA Subtest-3	22.93	22.97	23.01
HSUPA Subtest-4	22.87	23.01	23.04
HSUPA Subtest-5	22.99	22.96	22.99
HSPA+ (16QAM) Subtest-1	22.87	23.10	22.94





WCDMA Band II	Average Power (dBm)		
	9262	9400	9538
<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	24.70	24.54	24.30
HSDPA Subtest-1	22.72	22.90	22.92
HSDPA Subtest-2	22.75	22.85	22.95
HSDPA Subtest-3	22.36	22.50	22.48
HSDPA Subtest-4	22.26	22.40	22.38
DC-HSDPA Subtest-1	22.88	22.94	22.95
DC-HSDPA Subtest-2	22.90	22.91	22.97
DC-HSDPA Subtest-3	22.35	22.42	22.45
DC-HSDPA Subtest-4	22.36	22.40	22.43
HSUPA Subtest-1	22.71	22.83	22.83
HSUPA Subtest-2	22.27	22.35	22.44
HSUPA Subtest-3	22.82	22.84	22.83
HSUPA Subtest-4	22.70	22.81	22.86
HSUPA Subtest-5	22.81	22.93	22.82
HSPA+ (16QAM) Subtest-1	22.76	22.87	22.86



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

### 2.2.1. 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.

### 2.2.2. 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:

$$\text{E.R.P. or E.I.R.P.} = P_{\text{Meas}} + G_{\text{T}}$$

Where:

E.R.P. or E.I.R.P. effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as  $P_{\text{Meas}}$ , e.g., dBm or dBW)

$P_{\text{Meas}}$  measured transmitter output power or PSD, in dBm or dBW

$G_{\text{T}}$  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.





2.2.3.Test Result

WCDMA Band V							
Band	Channel	Frequency (MHz)	Measured E.R.P.		Limit		Verdict
			dBm	W	dBm	W	
WCDMA	4132	826.4	24.38	0.274	38.5	7	PASS
	4182	836.4	24.22	0.264			PASS
	4233	846.6	24.29	0.269			PASS
HSDPA	4132	826.4	22.38	0.173	38.5	7	PASS
	4182	836.4	22.19	0.166			PASS
	4233	846.6	22.36	0.172			PASS
DC-HSD PA	4132	826.4	22.43	0.175	38.5	7	PASS
	4182	836.4	22.36	0.172			PASS
	4233	846.6	22.39	0.173			PASS
HSUPA	4132	826.4	22.34	0.171	38.5	7	PASS
	4182	836.4	22.43	0.175			PASS
	4233	846.6	22.34	0.171			PASS
HSPA+	4132	826.4	22.39	0.173	38.5	7	PASS
	4182	836.4	22.29	0.169			PASS
	4233	846.6	22.31	0.170			PASS

**Note 1:** For the HSDPA and HSUPA mode, all the subtests were tested and just the worst data were recorded in this report.





WCDMA Band IV							
Band	Channel	Frequency (MHz)	Measured E.I.R.P.		Limit		Verdict
			dBm	W	dBm	W	
WCDMA	1312	1712.4	24.34	0.272	30	1	PASS
	1413	1732.6	24.61	0.289			PASS
	1513	1752.6	24.86	0.306			PASS
HSDPA	1312	1712.4	22.92	0.196	30	1	PASS
	1413	1732.6	23.11	0.205			PASS
	1513	1752.6	23.03	0.201			PASS
DC-HSD PA	1312	1712.4	22.99	0.199	30	1	PASS
	1413	1732.6	23.14	0.206			PASS
	1513	1752.6	23.13	0.206			PASS
HSUPA	1312	1712.4	22.99	0.199	30	1	PASS
	1413	1732.6	23.05	0.202			PASS
	1513	1752.6	23.04	0.201			PASS
HSPA+	1312	1712.4	22.87	0.194	30	1	PASS
	1413	1732.6	23.10	0.204			PASS
	1513	1752.6	22.94	0.197			PASS

**Note 1:** For the HSDPA and HSUPA mode, all the subtests were tested and just the worst data were recorded in this report.





WCDMA Band II							
Band	Channel	Frequency (MHz)	Measured E.I.R.P.		Limit		Verdict
			dBm	W	dBm	W	
WCDMA	9262	1852.4	24.70	0.295	33	2	PASS
	9400	1880.0	24.54	0.284			PASS
	9538	1907.6	24.30	0.269			PASS
HSDPA	9262	1852.4	22.75	0.188	33	2	PASS
	9400	1880.0	22.90	0.195			PASS
	9538	1907.6	22.95	0.197			PASS
DC-HSD PA	9262	1852.4	22.90	0.195	33	2	PASS
	9400	1880.0	22.94	0.197			PASS
	9538	1907.6	22.97	0.198			PASS
HSUPA	9262	1852.4	22.82	0.191	33	2	PASS
	9400	1880.0	22.93	0.196			PASS
	9538	1907.6	22.86	0.193			PASS
HSPA+	9262	1852.4	22.76	0.189	33	2	PASS
	9400	1880.0	22.87	0.194			PASS
	9538	1907.6	22.86	0.193			PASS

**Note 1:** For the HSDPA and HSUPA mode, all the subtests were tested and just the worst data were recorded in this report.

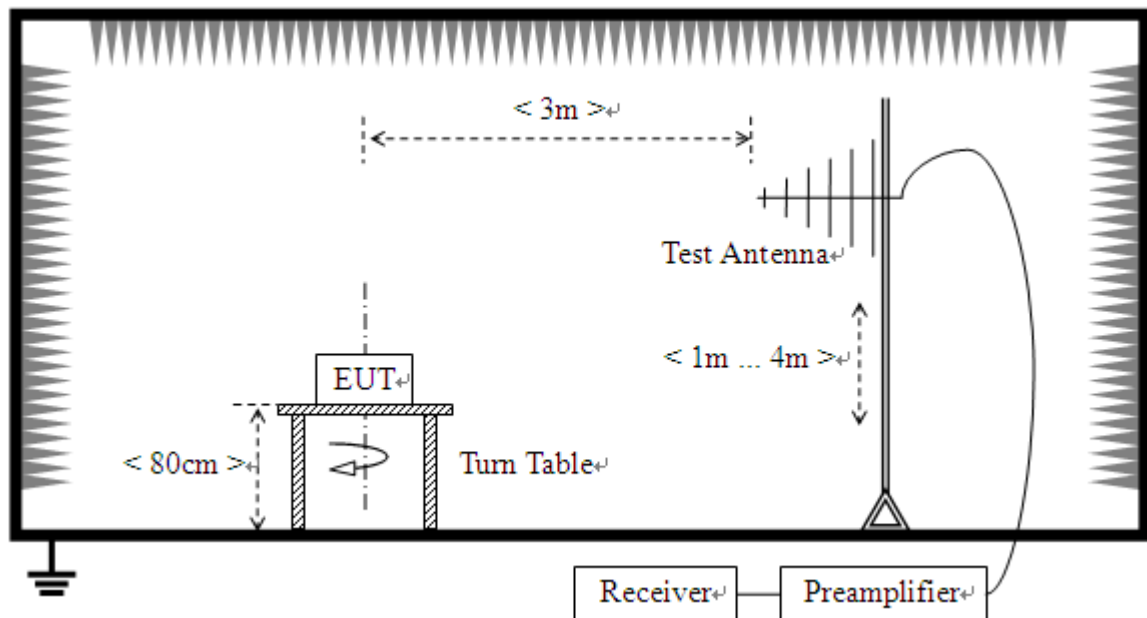


## 2.3. Radiated Out of Band Emissions

### 2.3.1. Requirement

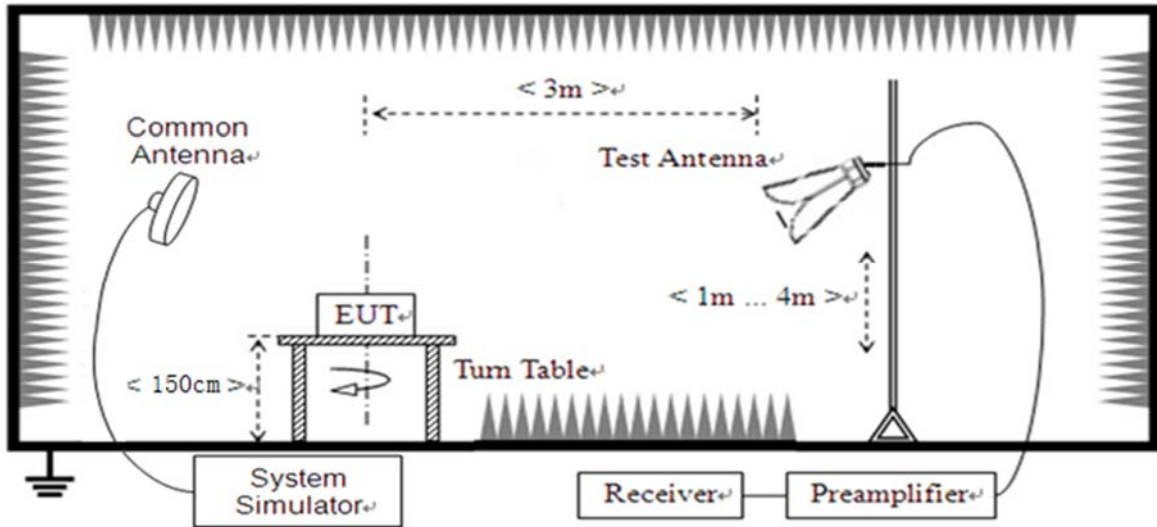
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43+10*\log(P)$ dB. This calculated to be -13dBm. The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency.

### 2.3.2. Test Description



(For the test frequency from 30MHz to 1GHz)





(For the test frequency 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.

### 2.3.3. 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.







### 2.3.4. 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.

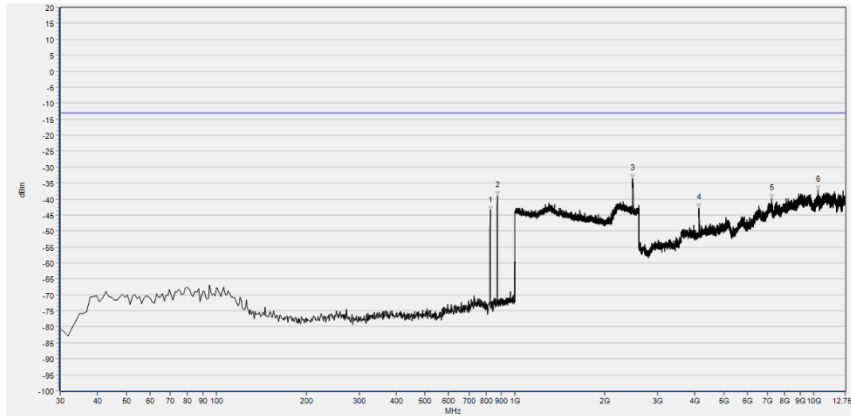
**Note2:** All test mode and condition mentioned were considered and evaluated respectively by performing full test, only the worst data were recorded and reported.

**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.

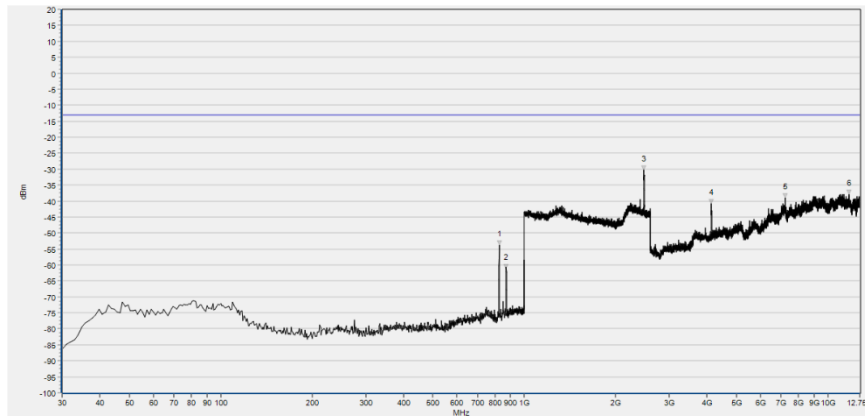
**Note4:** N/A means the frequency is the basic frequency or the base station frequency, they are no need to verdict.



WCDMA Band V(WCDMA), Low Channel



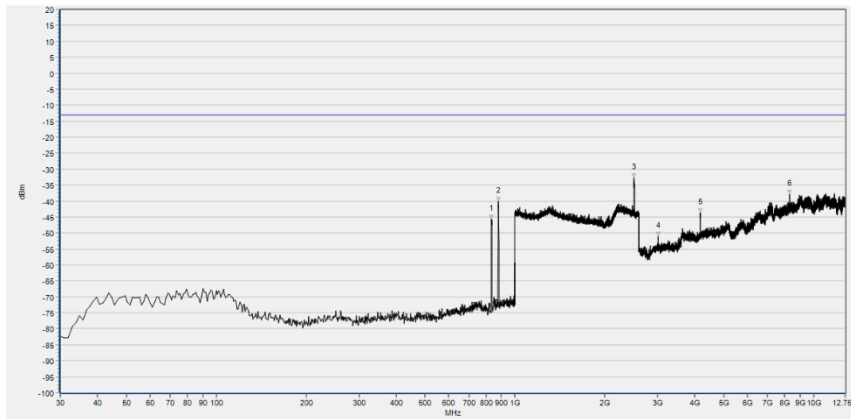
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	828.310	-43.61	-13.00	Horizontal	N/A
2	872.930	-39.04	-13.00	Horizontal	N/A
3	2477.071	-33.72	-13.00	Horizontal	PASS
4	4124.623	-42.73	-13.00	Horizontal	PASS
5	7218.167	-39.86	-13.00	Horizontal	PASS
6	10322.786	-37.25	-13.00	Horizontal	PASS



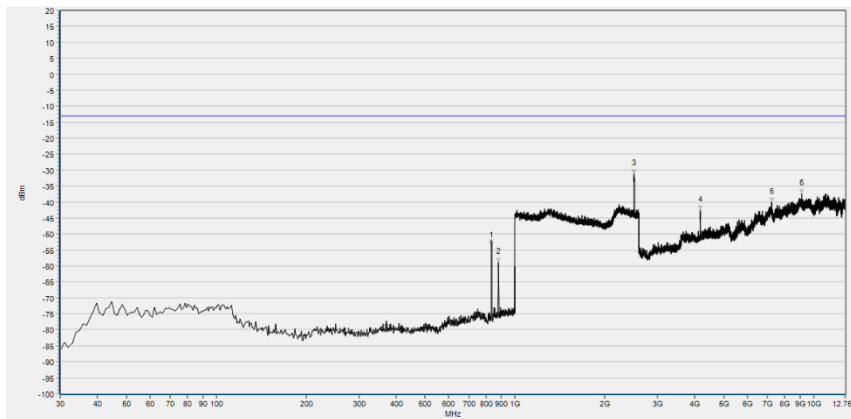
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	827.340	-53.78	-13.00	Vertical	N/A
2	870.990	-61.21	-13.00	Vertical	N/A
3	2475.790	-30.26	-13.00	Vertical	PASS
4	4126.468	-40.75	-13.00	Vertical	PASS
5	7234.779	-38.91	-13.00	Vertical	PASS
6	11744.044	-37.89	-13.00	Vertical	PASS



WCDMA Band V(WCDMA), Mid Channel



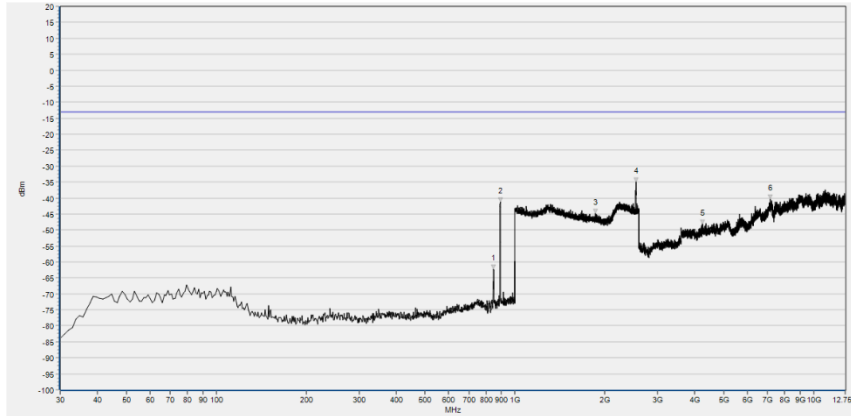
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	834.130	-45.65	-13.00	Horizontal	N/A
2	878.750	-40.05	-13.00	Horizontal	N/A
3	2501.401	-32.76	-13.00	Horizontal	PASS
4	3022.686	-51.14	-13.00	Horizontal	PASS
5	4172.613	-43.68	-13.00	Horizontal	PASS
6	8323.795	-37.89	-13.00	Horizontal	PASS



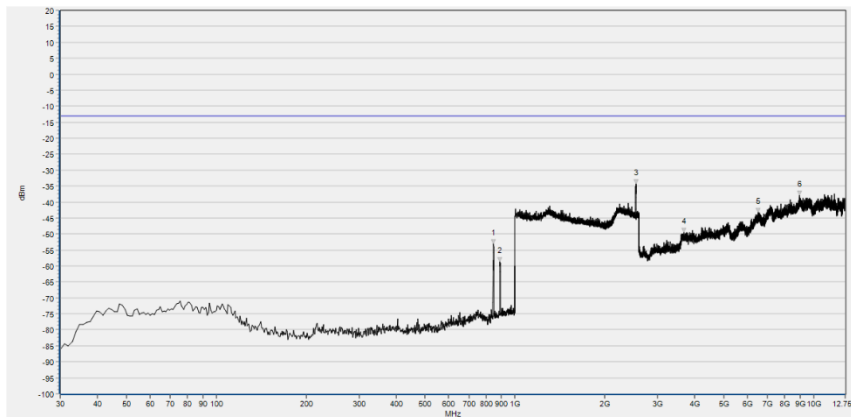
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	833.160	-53.65	-13.00	Vertical	N/A
2	879.720	-58.98	-13.00	Vertical	N/A
3	2508.443	-31.22	-13.00	Vertical	PASS
4	4181.842	-42.63	-13.00	Vertical	PASS
5	7216.321	-40.15	-13.00	Vertical	PASS
6	9139.634	-37.36	-13.00	Vertical	PASS



WCDMA Band V(WCDMA), High Channel



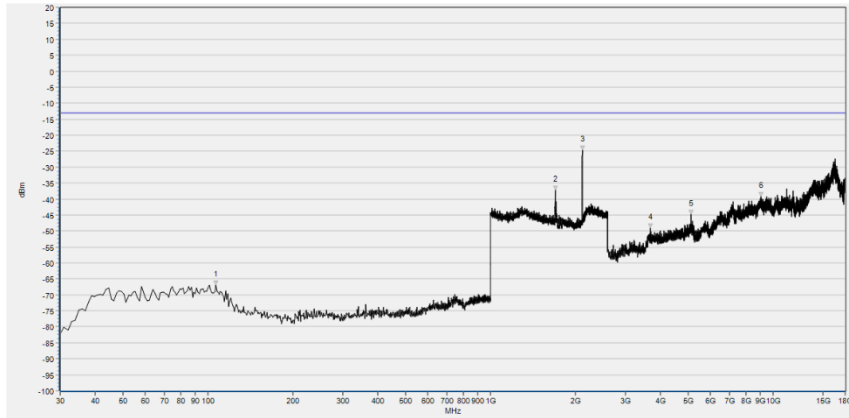
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	847.710	-62.27	-13.00	Horizontal	N/A
2	892.330	-41.30	-13.00	Horizontal	N/A
3	1856.663	-44.83	-13.00	Horizontal	PASS
4	2537.255	-34.96	-13.00	Horizontal	PASS
5	4233.524	-48.17	-13.00	Horizontal	PASS
6	7162.793	-40.39	-13.00	Horizontal	PASS



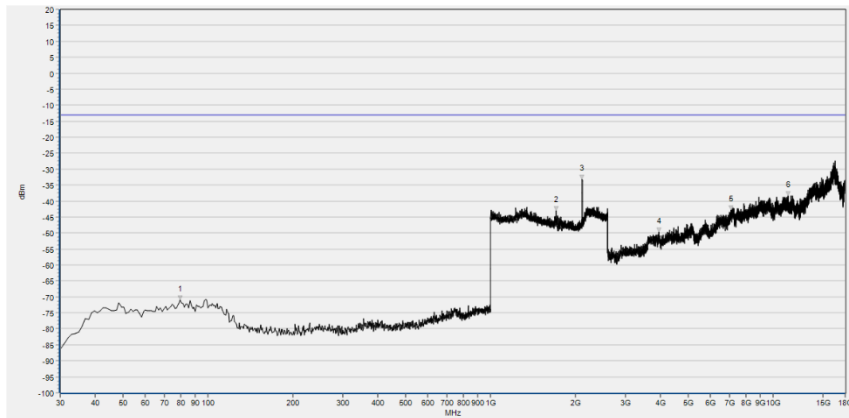
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	847.710	-53.06	-13.00	Vertical	N/A
2	890.390	-58.70	-13.00	Vertical	N/A
3	2541.737	-34.31	-13.00	Vertical	PASS
4	3676.096	-49.61	-13.00	Vertical	PASS
5	6525.996	-43.29	-13.00	Vertical	PASS
6	8977.205	-37.95	-13.00	Vertical	PASS



WCDMA Band IV(WCDMA), Low Channel



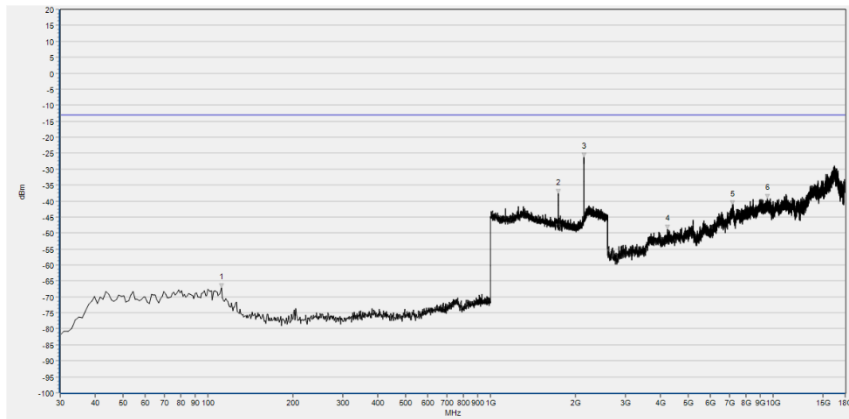
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	106.707	-66.95	-13.00	Horizontal	PASS
2	1693.147	-37.11	-13.00	Horizontal	N/A
3	2112.556	-24.80	-13.00	Horizontal	N/A
4	3673.046	-49.15	-13.00	Horizontal	PASS
5	5133.722	-44.83	-13.00	Horizontal	PASS
6	9066.511	-39.20	-13.00	Horizontal	PASS



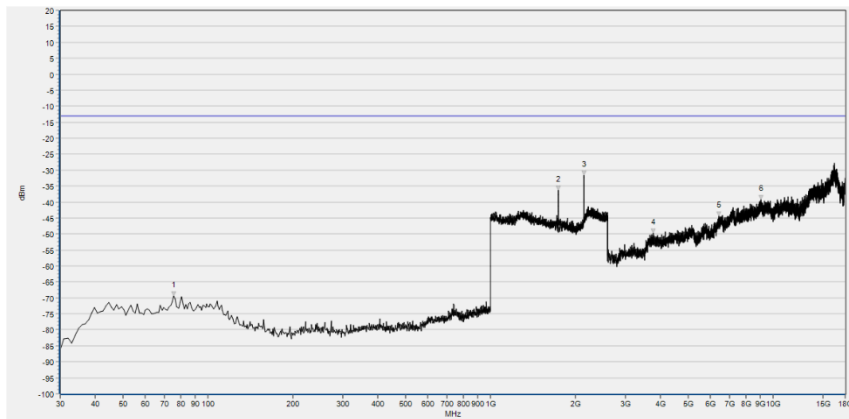
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	79.520	-70.92	-13.00	Vertical	PASS
2	1710.755	-42.91	-13.00	Vertical	N/A
3	2110.955	-33.19	-13.00	Vertical	N/A
4	3947.725	-49.74	-13.00	Vertical	PASS
5	7084.714	-42.86	-13.00	Vertical	PASS
6	11315.286	-38.30	-13.00	Vertical	PASS



WCDMA Band IV(WCDMA), Mid Channel



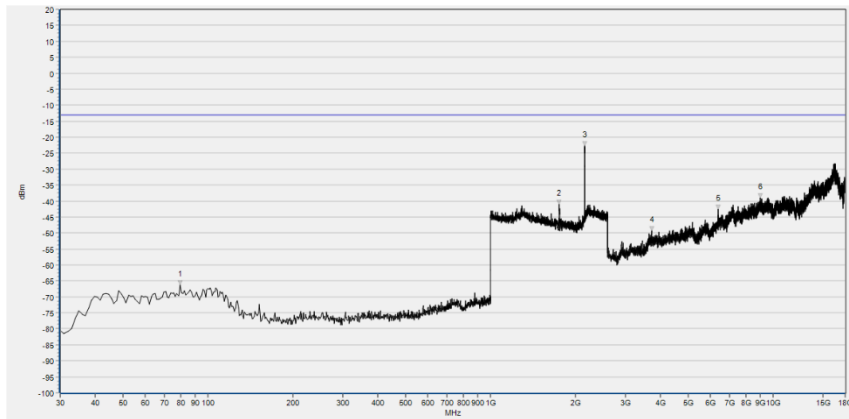
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	111.562	-67.13	-13.00	Horizontal	PASS
2	1738.769	-37.69	-13.00	Horizontal	N/A
3	2138.969	-26.21	-13.00	Horizontal	N/A
4	4230.105	-48.92	-13.00	Horizontal	PASS
5	7197.666	-41.20	-13.00	Horizontal	PASS
6	9551.692	-39.33	-13.00	Horizontal	PASS



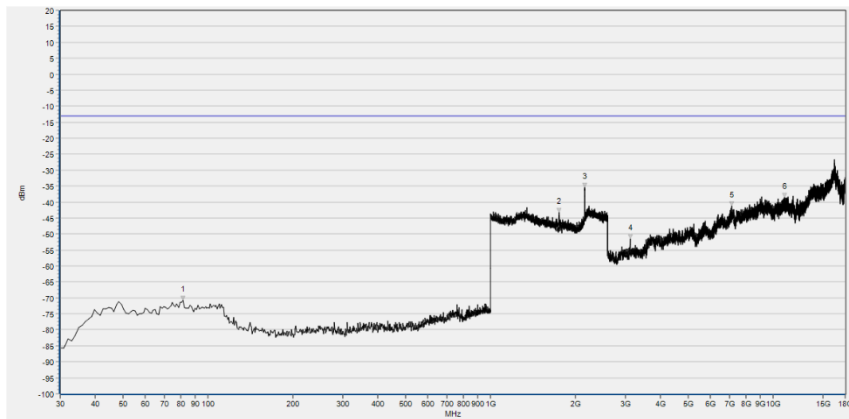
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	75.636	-69.38	-13.00	Vertical	PASS
2	1738.769	-36.28	-13.00	Vertical	N/A
3	2138.969	-31.66	-13.00	Vertical	N/A
4	3773.162	-49.82	-13.00	Vertical	PASS
5	6412.135	-44.38	-13.00	Vertical	PASS
6	9051.109	-39.33	-13.00	Vertical	PASS



WCDMA Band IV(WCDMA), High Channel



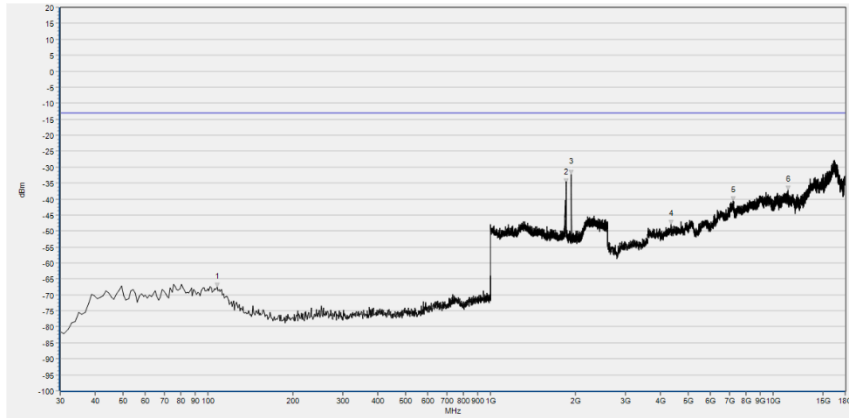
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	79.520	-66.23	-13.00	Horizontal	PASS
2	1750.775	-41.05	-13.00	Horizontal	N/A
3	2150.975	-22.75	-13.00	Horizontal	N/A
4	3714.119	-49.35	-13.00	Horizontal	PASS
5	6401.867	-42.68	-13.00	Horizontal	PASS
6	9028.005	-38.88	-13.00	Horizontal	PASS



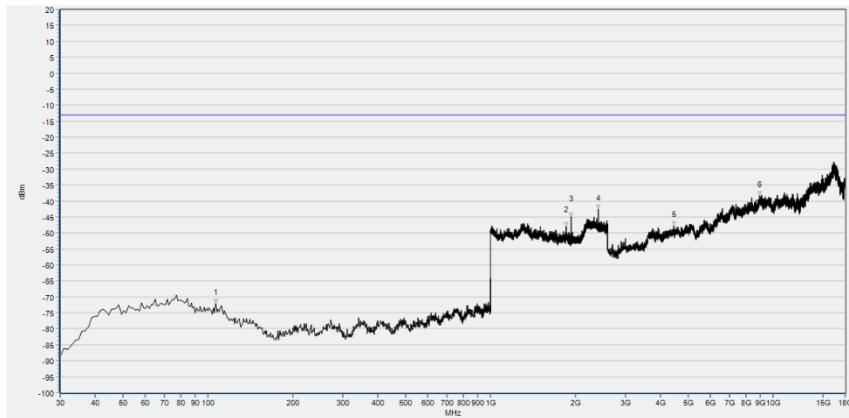
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	81.461	-70.77	-13.00	Vertical	PASS
2	1751.576	-43.28	-13.00	Vertical	N/A
3	2150.975	-35.52	-13.00	Vertical	N/A
4	3118.553	-51.60	-13.00	Vertical	PASS
5	7136.056	-41.13	-13.00	Vertical	PASS
6	10963.594	-38.60	-13.00	Vertical	PASS



WCDMA Band II(WCDMA), Low Channel



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	107.600	-67.66	-13.00	Horizontal	PASS
2	1850.900	-34.98	-13.00	Horizontal	N/A
3	1934.134	-32.23	-13.00	Horizontal	N/A
4	4344.717	-47.83	-13.00	Horizontal	PASS
5	7240.444	-40.47	-13.00	Horizontal	PASS
6	11303.983	-37.10	-13.00	Horizontal	PASS

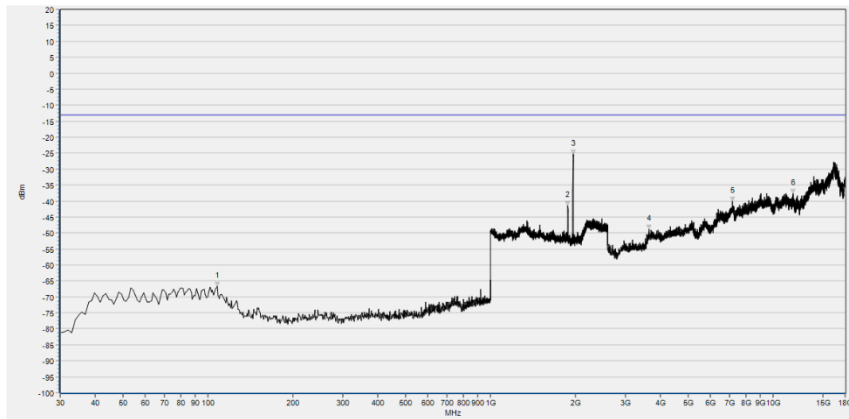


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	106.630	-72.17	-13.00	Vertical	PASS
2	1850.900	-47.90	-13.00	Vertical	N/A
3	1932.213	-45.04	-13.00	Vertical	N/A
4	2402.161	-42.50	-13.00	Vertical	PASS
5	4456.738	-47.76	-13.00	Vertical	PASS
6	8940.353	-38.25	-13.00	Vertical	PASS

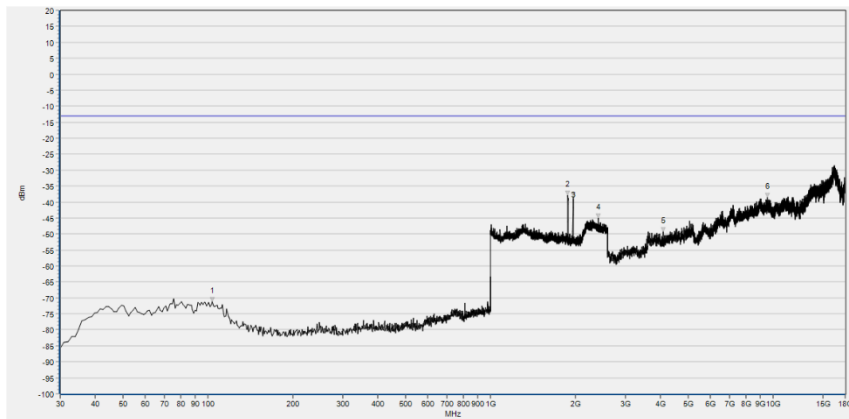




WCDMA Band II(WCDMA), Mid Channel



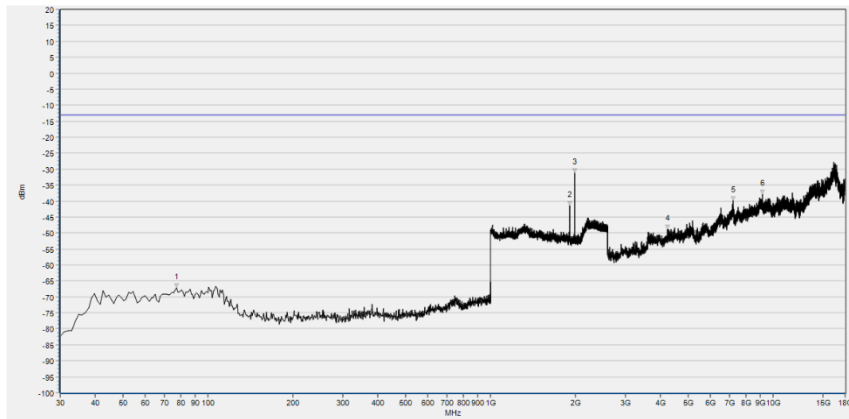
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	107.600	-66.68	-13.00	Horizontal	PASS
2	1878.431	-41.43	-13.00	Horizontal	N/A
3	1961.024	-25.26	-13.00	Horizontal	N/A
4	3638.989	-48.78	-13.00	Horizontal	PASS
5	7167.630	-40.22	-13.00	Horizontal	PASS
6	11746.463	-37.55	-13.00	Horizontal	PASS



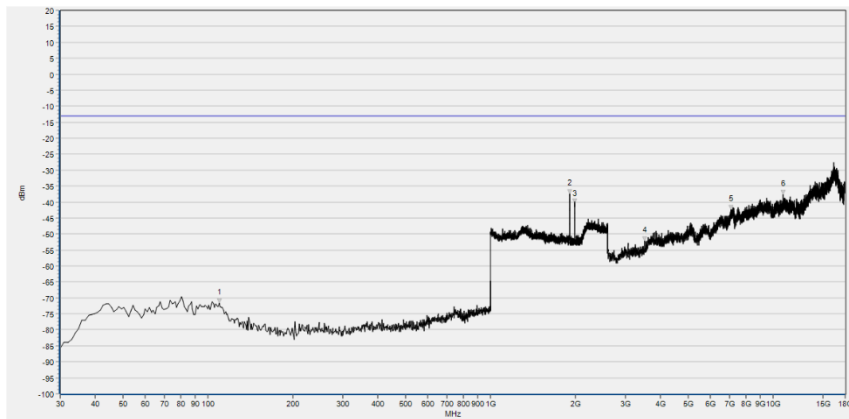
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	103.720	-71.09	-13.00	Vertical	PASS
2	1878.431	-37.84	-13.00	Vertical	N/A
3	1959.744	-38.42	-13.00	Vertical	N/A
4	2402.161	-44.94	-13.00	Vertical	PASS
5	4081.469	-49.18	-13.00	Vertical	PASS
6	9567.667	-38.61	-13.00	Vertical	PASS



WCDMA Band II(WCDMA), High Channel



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	77.530	-67.22	-13.00	Horizontal	PASS
2	1908.523	-41.42	-13.00	Horizontal	N/A
3	1987.915	-31.25	-13.00	Horizontal	N/A
4	4232.697	-48.85	-13.00	Horizontal	PASS
5	7223.641	-39.96	-13.00	Horizontal	PASS
6	9147.590	-37.90	-13.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	109.540	-71.69	-13.00	Vertical	PASS
2	1908.523	-37.48	-13.00	Vertical	PASS
3	1985.994	-40.30	-13.00	Vertical	PASS
4	3507.365	-52.21	-13.00	Vertical	PASS
5	7080.815	-42.45	-13.00	Vertical	PASS
6	10867.103	-37.71	-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	$\pm 2.22\text{dB}$
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.
<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.
<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 List of Software Used

Description	Manufacturer	Software Version
Morlab FCC Test System	MORLAB	V2.8
MORLAB EMCR V1.2	MORLAB	V1.0

##### 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
				2021.10.20	2022.10.19
Receiver	MY54130016	N9038A	Agilent	2021.07.16	2022.07.15
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	S020180L32 03	Tonscend	2021.07.16	2022.07.15
18-26.5GHz pre-Amplifier	46732	S10M100L38 02	Tonscend	2021.07.16	2022.07.15
26-40GHz pre-Amplifier	56774	S40M400L40 02	Tonscend	2021.07.16	2022.07.15





Equipment Name	Serial No.	Model No.	Manufacturer	Cal. Date	Due Date
Notch Filter	N/A	WRCG-GSM 850	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCG-GSM 1900	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCGV-W Band V	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCGV-W Band II	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCGV-W Band IV	Wainwright	2021.07.16	2022.07.15
Anechoic Chamber	N/A	9m*6m*6m	CRT	2019.07.13	2022.07.12

————— END OF REPORT —————

