FCC RF Test Report

(WCDMA)

Applicant:	Sun Cupid Technology (HK) Ltd.
Address of Applicant:	16/F, CEO Tower, 77 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong.
Equipment Under Test (EUT)	
Product Name:	LTE Smart Phone
Model No.:	N6001L, A23, NUU A23
Trade Mark:	NUU
FCC ID:	2ADINN6001L
Applicable Standards:	FCC CFR Title 47 Part 2, 22H, 24E, 27L
Date of Sample Receipt:	08 Feb., 2023
Date of Test:	09 Feb., to 04 Apr., 2023
Date of Report Issued:	04 Apr., 2023
Test Result:	PASS

Tested by:	June Li ***Test Engineer***	***Date:***	*04 Apr., 2023*
Reviewed by:	Winner Zhang ***Project Engineer***	***Date:***	*04 Apr., 2023*
Approved by:	***Manager***	***Date:***	*04 Apr., 2023*

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

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1 Version

Version No.	Date	Description
00	*04 Apr., 2023*	*Original*

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3 General Information

3.1 Client Information

Applicant:	Sun Cupid Technology (HK) Ltd.
Address:	16/F, CEO Tower, 77 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong.
Manufacturer/Factory:	Suncupid (ShenZhen) Electronic Ltd
Address:	Baolong Industrial City, Longgang District, Shenzhen Hi-Tech Road, Building 1, A 7, China.

3.2 General Description of E.U.T.

Product Name:	LTE Smart Phone	
Model No.:	N6001L, A23, NUU A23	
Operation Frequency Range:	WCDMA band II:	1852.4 MHz - 1907.6 MHz
	WCDMA band IV:	1712.4 MHz - 1752.6 MHz
	WCDMA band V:	826.4 MHz - 846.6 MHz
Modulation Type:	☒RMC(QPSK) ☒HSUPA(QPSK) ☒HSDPA(QPSK,16QAM)	
Antenna Type:	Internal Antenna	
Antenna Gain:	WCDMA band II:	1.02 dBi (declare by Applicant)
	WCDMA band IV:	1.59 dBi (declare by Applicant)
	WCDMA band V:	-1.67 dBi (declare by Applicant)
Power Supply:	Rechargeable Li-ion Battery DC3.80V, 2950mAh	
AC Adapter:	Model: HJ-0501000E1-US Input: AC100-240V, 50/60Hz, 0.2A Output: DC 5.0V, 1000mA	
Remark:	Model No.: N6001L, A23, NUU A23 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.	
Test Sample Condition:	The test samples were provided in good working order with no visible defects.	

3.3 Test Mode and Environment

Test Mode:	
RMC mode:	Keep the EUT communication with simulated station in RMC mode
HSDPA mode:	Keep the EUT communication with simulated station in HSDPA mode
HSUPA mode:	Keep the EUT communication with simulated station in HSUPA mode
Remark: *The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report.*	
Operating Environment:	
Temperature:	Normal: 15℃ ~ 35℃, Extreme: -30℃ ~ +50℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 3.80 Vdc, Extreme: Low 3.30 Vdc, High 4.35 Vdc

3.4 Description of Test Auxiliary Equipment

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Anritsu	MT8820C	6201026545

3.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	3.8 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	3.6 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	5.34 dB
Note: *All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.*	

3.6 Additions to, Deviations, or Exclusions from the Method

No

3.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

3.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://jyt.lets.com

3.9 Test Instruments List

Radiated Emission(3m SAC):

Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	WXJ001-1	04-14-2021	04-13-2024
Loop Antenna	Schwarzbeck	FMZB 1519 B	WXJ002-4	03-08-2022	03-07-2023
				02-09-2023	02-08-2024
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	03-08-2022	03-07-2023
				02-09-2023	02-08-2024
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	07-02-2021	07-01-2024
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	03-08-2022	03-07-2023
				02-09-2023	02-08-2024
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	01-09-2023	01-08-2024
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	01-09-2023	01-08-2024
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-6	01-09-2023	01-08-2024
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXJ001-2	01-10-2023	01-09-2024
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXJ001-3	01-10-2023	01-09-2024
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXJ002-7	01-11-2023	01-10-2024
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	01-11-2023	01-10-2024
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	01-10-2023	01-09-2024
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	10-17-2022	10-16-2023
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	01-18-2023	01-17-2024
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	01-18-2023	01-17-2024
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	01-18-2023	01-17-2024
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Test Software	Tonscend	TS+	Version: 3.0.0.1		

Conducted Method:

Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9020B	WXJ081-1	06-29-2022	06-28-2023
Simulated Station	Rohde & Schwarz	CMW500	WXJ081	06-29-2022	06-28-2023
Temperature Humidity Chamber	ZHONG ZHI	CZ-A-80D	WXJ032-3	01-09-2023	01-08-2025
DC Power Supply	Keysight	E3642A	WXJ025-2	N/A	
RF Control Unit	Tonscend	JS0806-1	WXG010	N/A	
Band Reject Filter Group	Tonscend	JS0806-F	WXG010-1	N/A	
Test Software	Tonscend	TS+	Version: 2.6.9.0526		

4 Measurement Setup and Procedure

4.1 Test Channel

According to ANSI C63.26-2015 chapter 5.1.2.1 Table 2 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

WCDMA band II					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
9262	1852.4	9400	1880.0	9538	1907.6

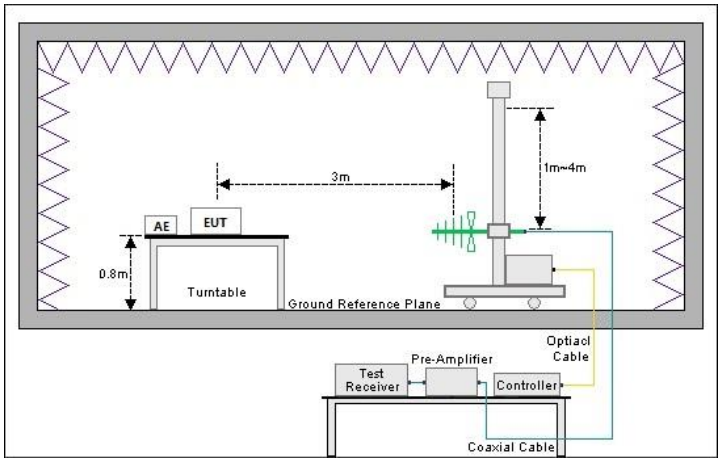
WCDMA band IV					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1312	1712.4	1413	1732.6	1513	1752.6

WCDMA band V					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
4132	826.4	4183	836.6	4233	846.6

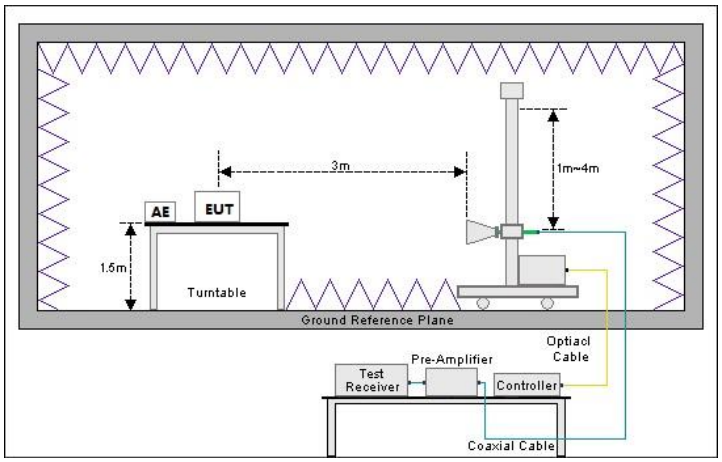
4.2 Test Setup

1) Radiated emission measurement:

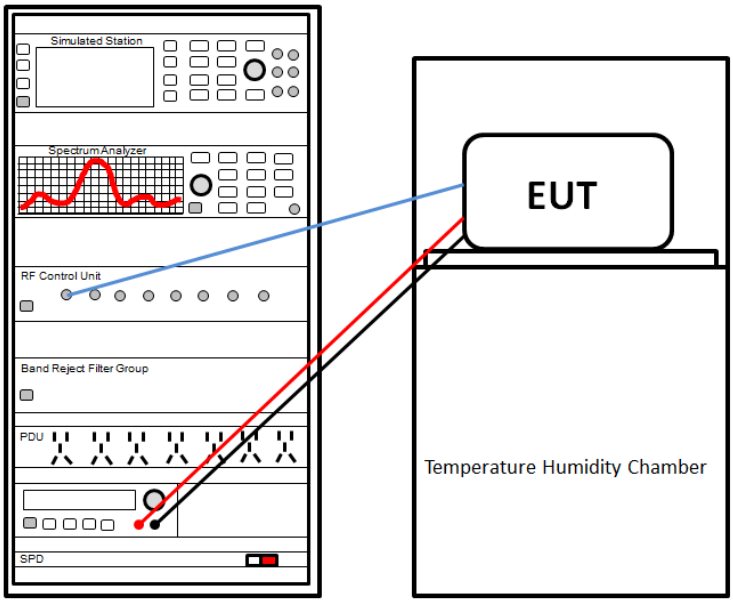
Below 1GHz (3m SAC)



Above 1GHz (3m SAC)



2) Conducted test method



4.3 Test Procedure

Test method	Test step
Radiated emission	**For below 1GHz:** 1. The EUT was placed on the table top of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. **For above 1GHz:** 1. The EUT was placed on the table top of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method	1. The WCDMA antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

5 Test Results

5.1 Summary

5.1.1 Clause and Data Summary

Test items	Standard clause	Test data	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	See SAR Report	Pass
RF Output Power	Part 2.1046 Part 22.913 (a)(5) Part 24.232 (c) Part 27.50 (d)(4)	Appendix – WCDMA	Pass
Peak-to-Average Power Ratio	Part 24.232 (d) Part 27.50(d)(5)	Appendix – WCDMA	Pass
Modulation Characteristics	Part 2.1047	Appendix – WCDMA	Pass
26dB Emission Bandwidth 99% Occupied Bandwidth	Part 2.1049	Appendix – WCDMA	Pass
Out of Band Emission at Antenna Terminals	Part 2.1051 Part 22.917 (a) Part 24.238 (a) Part 27.53(h)	Appendix – WCDMA	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a) Part 27.53(h)	See Section 5.2	Pass
Frequency Stability vs. Temperature	Part 22.355 Part 24.235 Part 27.54 Part 2.1055(a)(1)(b)	Appendix – WCDMA	Pass
Frequency Stability vs. Voltage	Part 22.355 Part 24.235 Part 27.54 Part 2.1055(d)(2)	Appendix – WCDMA	Pass

Remark:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (Fundamental Frequency below 1GHz)/1.0dB (Fundamental Frequency above 1GHz) (provided by the customer).*

Test Method:	*ANSI/TIA-603-E-2016* *ANSI C63.26-2015*

5.1.2 Test Limit

<table>
<tr><th>Test items</th><th>Limit</th></tr>
<tr><td>RF Output Power</td><td>WCDMA band II: 2W EIRP
WCDMA band IV: 1W EIRP
WCDMA band V: 7W ERP</td></tr>
<tr><td>Peak-to-Average Power Ratio</td><td>The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB</td></tr>
<tr><td>Modulation Characteristics</td><td>N/A</td></tr>
<tr><td>26dB Emission Bandwidth
99% Occupied Bandwidth</td><td>N/A</td></tr>
<tr><td>Out of Band Emission at Antenna Terminals

Field Strength of Spurious Radiation</td><td>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.</td></tr>
<tr><td>Frequency Stability vs. Temperature

Frequency Stability vs. Voltage</td><td>WCDMA band II:
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

WCDMA band IV:
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

WCDMA band V:
Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.
TABLE C-1—FREQUENCY TOLERANCE FOR TRANSMITTERS IN THE PUBLIC MOBILE SERVICES
<table>
<tr><th>Frequency range (MHz)</th><th>Base, fixed (ppm)</th><th>Mobile >3 watts (ppm)</th><th>Mobile ≤3 watts (ppm)</th></tr>
<tr><td>25 to 50</td><td>20.0</td><td>20.0</td><td>50.0</td></tr>
<tr><td>50 to 450</td><td>5.0</td><td>5.0</td><td>50.0</td></tr>
<tr><td>450 to 512</td><td>2.5</td><td>5.0</td><td>5.0</td></tr>
<tr><td>821 to 896</td><td>1.5</td><td>2.5</td><td>2.5</td></tr>
<tr><td>928 to 929</td><td>5.0</td><td>n/a</td><td>n/a</td></tr>
<tr><td>929 to 960</td><td>1.5</td><td>n/a</td><td>n/a</td></tr>
<tr><td>2110 to 2220</td><td>10.0</td><td>n/a</td><td>n/a</td></tr>
</table></td></tr>
</table>

5.2 Field Strength of Spurious Radiation Measurement

WCDMA band II						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3704.80	-48.68	-1.34	-50.02	-13.00	37.02	Vertical
5557.20	-50.34	5.49	-44.85	-13.00	31.85	Vertical
3704.80	-49.14	-1.83	-50.97	-13.00	37.97	Horizontal
5557.20	-50.99	3.83	-47.16	-13.00	34.16	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760.00	-48.71	-1.05	-49.76	-13.00	36.76	Vertical
5640.00	-50.24	7.11	-43.13	-13.00	30.13	Vertical
3760.00	-49	-1.55	-50.55	-13.00	37.55	Horizontal
5640.00	-51.12	4.44	-46.68	-13.00	33.68	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3815.20	-48.98	-0.77	-49.75	-13.00	36.75	Vertical
5722.80	-50.47	8.52	-41.95	-13.00	28.95	Vertical
3815.20	-48.91	-1.25	-50.16	-13.00	37.16	Horizontal
5722.80	-50.70	5.82	-44.88	-13.00	31.88	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

WCDMA band IV

Lowest channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3424.40	-49.92	-4.09	-54.01	-13.00	41.01	Vertical
5136.60	-51.17	4.64	-46.53	-13.00	33.53	Vertical
6848.80	-52.44	10.69	-41.75	-13.00	28.75	Vertical
3424.40	-49.61	-4.19	-53.80	-13.00	40.80	Horizontal
5136.60	-50.62	4.17	-46.45	-13.00	33.45	Horizontal
6848.80	-51.68	9.63	-42.05	-13.00	29.05	Horizontal

Middle channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3464.80	-49.77	-3.02	-52.79	-13.00	39.79	Vertical
5197.20	-50.84	4.11	-46.73	-13.00	33.73	Vertical
6929.60	-52.57	11.18	-41.39	-13.00	28.39	Vertical
3464.80	-49.36	-3.13	-52.49	-13.00	39.49	Horizontal
5197.20	-50.71	3.61	-47.10	-13.00	34.10	Horizontal
6929.60	-51.75	9.86	-41.89	-13.00	28.89	Horizontal

Highest channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3505.20	-49.35	-2.01	-51.36	-13.00	38.36	Vertical
5257.80	-51.16	3.73	-47.43	-13.00	34.43	Vertical
7010.40	-52.26	11.08	-41.18	-13.00	28.18	Vertical
3505.20	-49.03	-2.16	-51.19	-13.00	38.19	Horizontal
5257.80	-50.31	3.33	-46.98	-13.00	33.98	Horizontal
7010.40	-51.94	9.57	-42.37	-13.00	29.37	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

WCDMA band V						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1652.80	-44.28	-11.41	-55.69	-13.00	42.69	Vertical
2479.20	-49.70	-6.45	-56.15	-13.00	43.15	Vertical
3305.60	-47.35	-4.89	-52.24	-13.00	39.24	Vertical
1652.80	-40.57	-11.32	-51.89	-13.00	38.89	Horizontal
2479.20	-49.55	-6.78	-56.33	-13.00	43.33	Horizontal
3305.60	-49.56	-5.17	-54.73	-13.00	41.73	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.20	-44.73	-11.47	-56.20	-13.00	43.20	Vertical
2509.80	-49.21	-6.40	-55.61	-13.00	42.61	Vertical
3346.40	-47.76	-4.96	-52.72	-13.00	39.72	Vertical
1673.20	-40.52	-11.39	-51.91	-13.00	38.91	Horizontal
2509.80	-49.66	-6.70	-56.36	-13.00	43.36	Horizontal
3346.40	-49.26	-5.17	-54.43	-13.00	41.43	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1697.60	-45.18	-11.54	-56.72	-13.00	43.72	Vertical
2546.40	-48.98	-6.24	-55.22	-13.00	42.22	Vertical
3395.20	-48.10	-5.05	-53.15	-13.00	40.15	Vertical
1697.60	-40.34	-11.48	-51.82	-13.00	38.82	Horizontal
2546.40	-49.42	-6.56	-55.98	-13.00	42.98	Horizontal
3395.20	-49.23	-5.16	-54.39	-13.00	41.39	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

------End of report------