

TEST REPORT

Applicant: Shanghai Notion Information Technology CO. LTD

Address of Applicant: Room 408,Building 2, Lane 666,Zhangheng Rd, Pudong New Area, Shanghai, China

Manufacturer: Shanghai Notion Information Technology Co.,Ltd

Address of Manufacturer: Room 408, Building 2, Grand Global R & D Center, Lane 666, Zhangheng Road, Pudong New Area, Shanghai, China

Equipment Under Test (EUT)

Product Name: LTE Wireless Router/LTE Mobile Wifi/LTE MiFi/4G MIFI

Model No.: M281T, M27, M271, M271s, M271T, M271Ts, M272, M272s, M272T, M272Ts, M28, M281, M281s, M281Ts, M29, M291, M291T, M291s, M291Ts, L28I, L27I, M281e, M271e, M291e, M6

FCC ID: 2AR45-M281T

Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 22
FCC CFR Title 47 Part 24
FCC CFR Title 47 Part 27

Date of sample receipt: April 09, 2024

Date of Test: April 09, 2024-June 12, 2024

Date of report issued: June 12, 2024

Test Result : PASS *

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:



Robinson Luo

Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Authorized Signature:



Robinson Luo

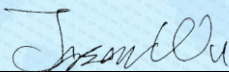
Laboratory Manager

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2 Version

Version No.	Date	Description
00	June 12, 2024	Original

Prepared By:

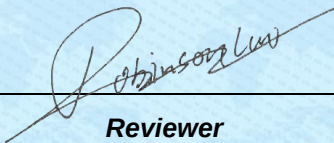


Date:

June 12, 2024

Project Engineer

Check By:


Reviewer

Date:

June 12, 2024

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4 Test Summary

Test Item	Section in CFR 47	Result
RF Output Power(ERP/EIRP)	Part 2.1046 Part 22.913 Part 24.232 Part 27.50	Pass
Peak-to-Average Ratio	Part 2.1046 Part 22.913 Part 24.232 Part 27.50	Pass
Modulation Characteristics	Part 2.1047	Pass
99% Occupied Bandwidth & 26dB Bandwidth	Part 2.1049	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 Part 24.238 Part 27.53	Pass
Out of band emission, Band Edge	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass
Frequency stability vs. temperature	Part 2.1055 Part 22.355 Part 24.235 Part 27.54	Pass
Frequency stability vs. voltage	Part 2.1055 Part 22.355 Part 24.235 Part 27.54	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 General Description of EUT

Product Name:	LTE Wireless Router/LTE Mobile Wifi/LTE MiFi/4G MIFI
Model No.:	M281T, M27, M271, M271s, M271T, M271Ts, M272, M272s, M272T, M272Ts, M28, M281, M281s, M281Ts, M29, M291, M291T, M291s, M291Ts, L28I, L27I, M281e, M271e, M291e, M6
Test Model No.:	M281T
Remark: Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are appearance color and model name for commercial purpose.	
Test sample(s) ID:	GTS2024040098-1
Sample(s) Status:	Engineer sample
S/N:	N/A
Support Bands:	WCDMA Band V, WCDMA Band IV,WCDMA Band II
TX Frequency:	WCDMA Band V: 826.40MHz-846.60MHz WCDMA Band IV: 1712.40MHz -1752.60MHz WCDMA Band II: 1852.40MHz-1907.60MHz
Modulation type:	QPSK
Antenna type:	Internal Antenna
Antenna gain:	Band II: 2.67dBi Band IV: 2.67dBi Band V: 1.39dBi
Power supply:	DC 3.8V 3000mAh Li-ion Battery The battery is charged via USB DC5V

Remark:

1. Antenna gain information provided by the customer
2. The relevant information of the sample is provided by the entrusting company, and the laboratory is not responsible for its authenticity.

Operation Frequency List:

WCDMA Band V		WCDMA Band II		WCDMA Band IV	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
4132	826.40	9262	1852.40	1312	1712.40
4133	826.60	9263	1852.60	1313	1712.60
· ∴	· ∴	· ∴	· ∴	· ∴	· ∴
4181	836.20	9399	1879.80	1411	1732.20
4182	836.40	9400	1880.00	1412	1732.40
4183	836.60	9401	1880.20	1413	1732.60
· ∴	· ∴	· ∴	· ∴	· ∴	· ∴
4232	846.40	9537	1907.40	1512	1752.40
4233	846.60	9538	1907.60	1513	1752.60

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Final test channel:

WCDMA Band V		WCDMA Band II		WCDMA Band IV	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
4132	826.40	9262	1852.40	1312	1712.40
4182	836.40	9400	1880.00	1413	1732.60
4233	846.60	9538	1907.60	1513	1752.60

5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 of the FCC CFR 47 Rules.

5.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.26:2015 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

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

- **FCC —Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

- **ISED—Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of ISED for radio equipment testing.

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	June 23, 2021	June 22, 2024
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 13, 2024	April 12, 2025
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 19, 2023	March 18, 2025
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	April 17, 2023	April 16, 2025
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 13, 2024	April 12, 2025
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 13, 2024	April 12, 2025
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 13, 2024	April 12, 2025
11	Horn Antenna (18-26.5GHz)	/	UG-598A/U	GTS664	Oct. 29, 2023	Oct. 28, 2024
12	Horn Antenna (26.5-40GHz)	A.H Systems	SAS-573	GTS665	Oct. 29, 2023	Oct. 28, 2024
13	FSV·Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	April 13, 2024	April 12, 2025
14	Amplifier	/	LNA-1000-30S	GTS650	April 13, 2024	April 12, 2025
15	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov.07, 2024
16	Wideband Amplifier	/	WDA-01004000-15P35	GTS602	April 13, 2024	April 12, 2025
17	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 18, 2024	April 17, 2025
18	RE cable 1	GTS	N/A	GTS675	July 31. 2023	July 30. 2024
19	RE cable 2	GTS	N/A	GTS676	July 31. 2023	July 30. 2024
20	RE cable 3	GTS	N/A	GTS677	July 31. 2023	July 30. 2024
21	RE cable 4	GTS	N/A	GTS678	July 31. 2023	July 30. 2024
22	RE cable 5	GTS	N/A	GTS679	July 31. 2023	July 30. 2024
23	RE cable 6	GTS	N/A	GTS680	July 31. 2023	July 30. 2024
24	RE cable 7	GTS	N/A	GTS681	July 31. 2023	July 30. 2024
25	RE cable 8	GTS	N/A	GTS682	July 31. 2023	July 30. 2024

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 13, 2024	April 12, 2025
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 13, 2024	April 12, 2025
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 13, 2024	April 12, 2025
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 13, 2024	April 12, 2025
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 13, 2024	April 12, 2025
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 13, 2024	April 12, 2025
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 13, 2024	April 12, 2025
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 13, 2024	April 12, 2025
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 18, 2024	April 17, 2025
10	EXA Signal Analyzer	Keysight	N9010B	MY60241168	Nov. 03, 2023	Nov. 02, 2024
11	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 13, 2024	April 12, 2025

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
2	Barometer	KUMAO	SF132	GTS647	April 18, 2024	April 17, 2025

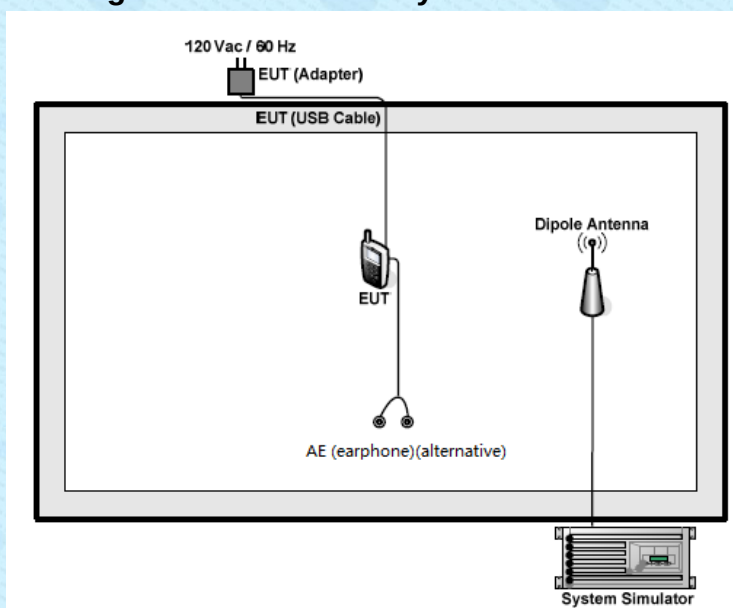
7 System test configuration

7.1 Test mode

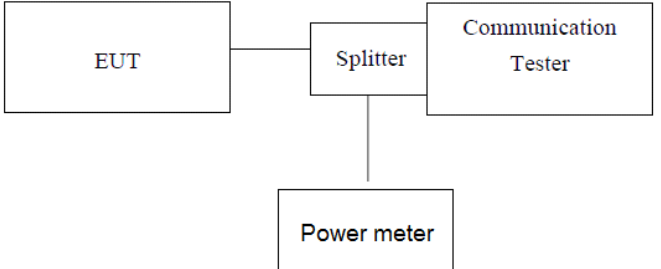
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on the worst emission.

Test modes		
Band	Radiated	Conducted
WCDMA II	■ RMC/HSUPA/HSDPA link	■ RMC/HSUPA/HSDPA link
WCDMA Band IV	■ RMC/HSUPA/HSDPA link	■ RMC/HSUPA/HSDPA link
WCDMA Band V	■ RMC/HSUPA/HSDPA link	■ RMC/HSUPA/HSDPA link

7.2 Configuration of Tested System

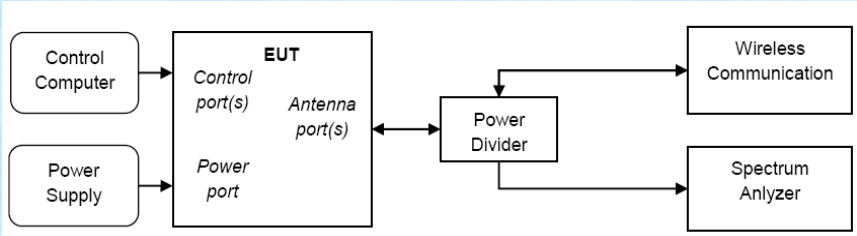


7.3 Conducted Output Power and ERP/EIRP

Test Requirement:	FCC part 22.913 and FCC part 24.232 and FCC part 27.50
Test Method:	FCC part 2.1046 & FCC KDB 971168 D01 V03r01
Limit:	WCDMA Band V: 7W(38.45dBm) WCDMA Band IV: 1W(30dBm) WCDMA Band II: 2W(33.01dBm)
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst power. 6. EIRP=measured power+ antenna gain ERP=EIRP-2.15
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

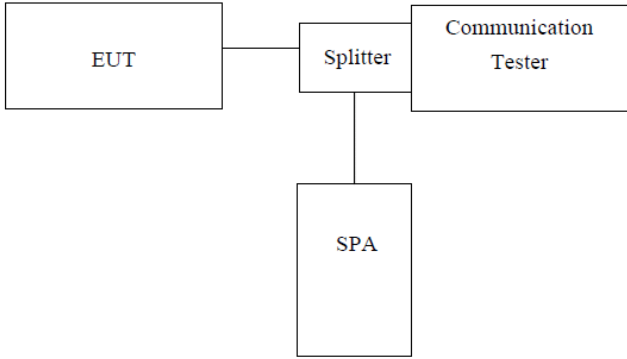
Measurement Data: The detailed test data see Appendix

7.4 Peak-to-Average Ratio

Test Requirement:	FCC part 22.913, FCC part 24.232 and part 27.50
Test Method:	FCC part 2.1046 & FCC KDB 971168 D01 V03r01
Limit:	13db
Test setup:	 <pre> graph LR CC[Control Computer] --> EUT[EUT] PS[Power Supply] --> EUT EUT --> PD[Power Divider] PD --> WC[Wireless Communication] PD --> SA[Spectrum Analyzer] </pre>
Test Procedure:	A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode. Test Settings 1. The signal analyzer's CCDF measurement profile enabled 2. Frequency= carrier center frequency 3. Measurement BW > EBW of signal 4. for continuous transmissions, set to 1ms 5. Record the maximum PAPR level associated with a probability of 0.1%.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix

7.5 Occupy Bandwidth

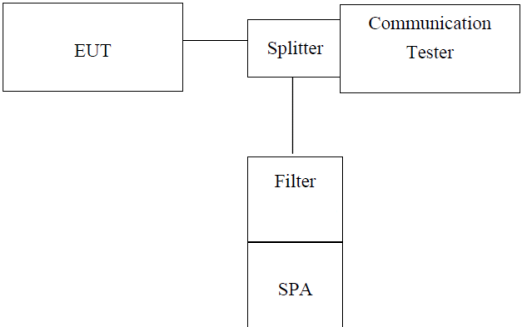
Test Requirement:	FCC part 2.1049
Test Method:	FCC part 2.1049 & FCC KDB 971168 D01 V03r01
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix

7.6 MODULATION CHARACTERISTIC

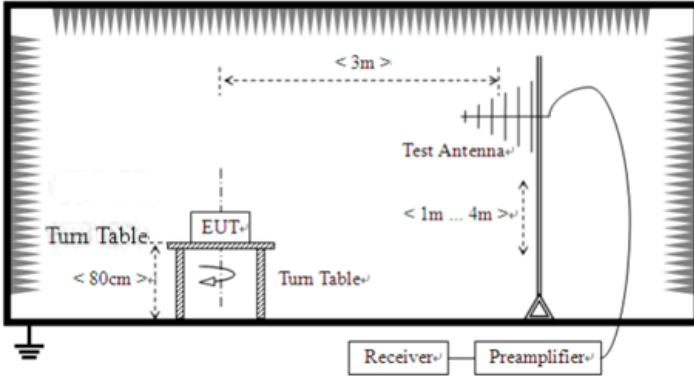
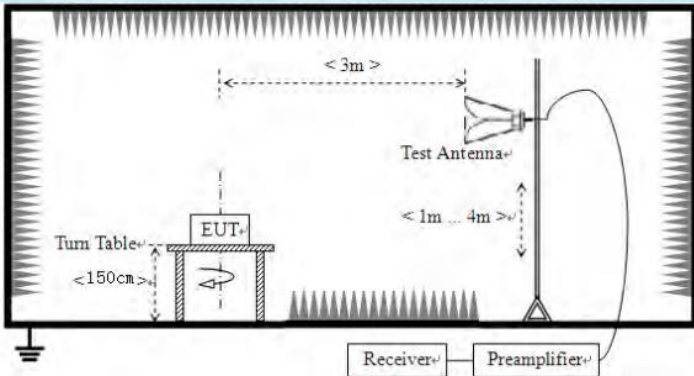
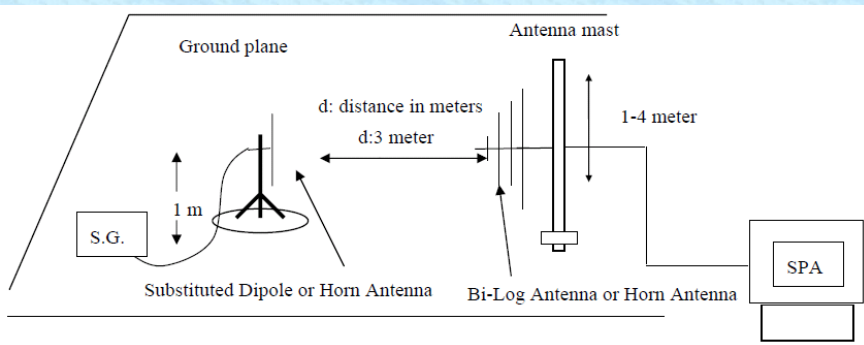
According to FCC § 2.1047(d), Part 22H there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

7.7 Out of band emission at antenna terminals

Test Requirement:	FCC part 22.917 and FCC part 24.238 and FCC part 27.53
Test Method:	FCC part 2.1051 & FCC KDB 971168 D01 V03r01
Limit:	-13dBm
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix

7.8 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917 and FCC part 24.238 and Part 27.53
Test Method:	FCC part 2.1053, ANSI C63.26:2015 & FCC KDB 971168 D01 V03r01
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 

Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$ $\text{ERP} = \text{EIRP} - 2.15$
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data

Pre-scan all test modes, found worst case at WCDMA band II , and so only show the test result of it.

Below 1GHz**WCDMA Band II (Lowest channel)**

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
68.63	-45.38	21.65	0.93	30.00	-52.80	-13.00	-39.80	Vertical
88.03	-50.51	25.13	1.09	30.00	-54.29	-13.00	-41.29	Vertical
106.01	-56.01	25.13	1.25	30.00	-59.63	-13.00	-46.63	Vertical
166.07	-46.78	22.36	1.66	30.00	-52.76	-13.00	-39.76	Vertical
216.02	-58.65	24.55	1.93	30.00	-62.17	-13.00	-49.17	Vertical
356.68	-64.50	27.07	2.65	30.00	-64.78	-13.00	-51.78	Vertical
44.12	-68.00	25.44	0.71	30.00	-71.85	-13.00	-58.85	Horizontal
87.73	-60.22	25.13	1.09	30.00	-64.00	-13.00	-51.00	Horizontal
185.14	-52.70	22.36	1.77	30.00	-58.57	-13.00	-45.57	Horizontal
263.82	-60.91	25.71	2.19	30.00	-63.01	-13.00	-50.01	Horizontal
411.82	-63.03	28.16	2.91	30.00	-61.96	-13.00	-48.96	Horizontal
704.23	-65.97	32.08	4.10	30.00	-59.79	-13.00	-46.79	Horizontal

WCDMA Band II (Middle channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
84.41	-49.46	21.65	1.07	30.00	-56.74	-13.00	-43.74	Vertical
90.22	-52.96	25.13	1.11	30.00	-56.72	-13.00	-43.72	Vertical
104.17	-58.72	25.13	1.23	30.00	-62.36	-13.00	-49.36	Vertical
167.82	-52.42	22.36	1.67	30.00	-58.39	-13.00	-45.39	Vertical
216.02	-59.29	24.55	1.93	30.00	-62.81	-13.00	-49.81	Vertical
266.61	-62.20	25.71	2.21	30.00	-64.28	-13.00	-51.28	Vertical
51.48	-62.65	25.44	0.79	30.00	-66.42	-13.00	-53.42	Horizontal
80.08	-55.93	21.65	1.03	30.00	-63.25	-13.00	-50.25	Horizontal
88.34	-58.86	25.13	1.10	30.00	-62.63	-13.00	-49.63	Horizontal
165.49	-44.11	22.36	1.66	30.00	-50.09	-13.00	-37.09	Horizontal
264.75	-56.47	25.71	2.19	30.00	-58.57	-13.00	-45.57	Horizontal
414.72	-61.71	28.55	2.92	30.00	-60.24	-13.00	-47.24	Horizontal

WCDMA Band II (Highest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
58.41	-57.07	25.44	0.85	30.00	-60.78	-13.00	-47.78	Vertical
66.73	-48.22	21.65	0.91	30.00	-55.66	-13.00	-42.66	Vertical
87.42	-43.72	21.65	1.09	30.00	-50.98	-13.00	-37.98	Vertical
169.01	-48.08	22.36	1.68	30.00	-54.04	-13.00	-41.04	Vertical
216.02	-59.79	24.55	1.93	30.00	-63.31	-13.00	-50.31	Vertical
261.98	-62.95	25.13	2.18	30.00	-65.64	-13.00	-52.64	Vertical
79.52	-53.82	21.65	1.02	30.00	-61.15	-13.00	-48.15	Horizontal
83.82	-55.30	21.65	1.06	30.00	-62.59	-13.00	-49.59	Horizontal
169.01	-41.54	22.36	1.68	30.00	-47.50	-13.00	-34.50	Horizontal
264.75	-55.09	25.71	2.19	30.00	-57.19	-13.00	-44.19	Horizontal
413.27	-64.62	28.55	2.92	30.00	-63.15	-13.00	-50.15	Horizontal
687.15	-67.20	32.08	4.05	30.00	-61.07	-13.00	-48.07	Horizontal

WCDMA Band IV (Lowest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
45.06	-59.46	25.44	0.72	33.70	-67.00	-13.00	-54.00	Vertical
70.83	-62.00	21.65	0.95	33.60	-73.00	-13.00	-60.00	Vertical
119.86	-66.05	23.18	1.36	33.39	-74.90	-13.00	-61.90	Vertical
293.08	-67.73	26.16	2.32	32.71	-71.96	-13.00	-58.96	Vertical
429.52	-67.51	28.55	2.99	32.21	-68.18	-13.00	-55.18	Vertical
584.79	-66.96	31.11	3.66	31.81	-64.00	-13.00	-51.00	Vertical
38.48	-61.01	25.44	0.65	33.74	-68.66	-13.00	-55.66	Horizontal
69.11	-58.67	21.65	0.93	33.60	-69.69	-13.00	-56.69	Horizontal
141.83	-58.93	21.23	1.52	33.20	-69.38	-13.00	-56.38	Horizontal
246.82	-69.24	25.13	2.11	32.75	-74.75	-13.00	-61.75	Horizontal
403.25	-67.83	28.16	2.87	32.29	-69.09	-13.00	-56.09	Horizontal
742.26	-66.18	32.73	4.24	31.45	-60.66	-13.00	-47.66	Horizontal

WCDMA Band IV (Middle channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
38.89	-54.68	25.44	0.65	33.74	-62.33	-13.00	-49.33	Vertical
96.10	-59.71	25.13	1.16	33.60	-67.02	-13.00	-54.02	Vertical
159.78	-60.08	21.23	1.63	33.06	-70.28	-13.00	-57.28	Vertical
254.73	-63.79	25.13	2.15	32.74	-69.25	-13.00	-56.25	Vertical
394.86	-64.26	28.16	2.83	32.32	-65.59	-13.00	-52.59	Vertical
631.69	-63.95	31.73	3.84	31.72	-60.10	-13.00	-47.10	Vertical
39.02	-54.23	25.44	0.65	33.74	-61.88	-13.00	-48.88	Horizontal
66.27	-51.87	21.65	0.91	33.61	-62.92	-13.00	-49.92	Horizontal
161.47	-58.21	21.23	1.64	33.05	-68.39	-13.00	-55.39	Horizontal
250.30	-63.47	25.13	2.12	32.74	-68.96	-13.00	-55.96	Horizontal
404.67	-62.21	28.16	2.88	32.29	-63.46	-13.00	-50.46	Horizontal
574.63	-62.15	31.11	3.63	31.83	-59.24	-13.00	-46.24	Horizontal

WCDMA Band IV (Highest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
39.02	-54.73	25.44	0.65	33.74	-62.38	-13.00	-49.38	Vertical
66.97	-55.52	21.65	0.92	33.61	-66.56	-13.00	-53.56	Vertical
112.13	-64.42	25.13	1.30	33.47	-71.46	-13.00	-58.46	Vertical
186.44	-61.52	22.36	1.77	32.88	-70.27	-13.00	-57.27	Vertical
261.98	-64.32	25.13	2.18	32.73	-69.74	-13.00	-56.74	Vertical
549.02	-62.70	30.70	3.52	31.89	-60.37	-13.00	-47.37	Vertical
39.30	-53.42	25.44	0.65	33.74	-61.07	-13.00	-48.07	Horizontal
88.03	-68.96	25.13	1.09	33.60	-76.34	-13.00	-63.34	Horizontal
159.78	-59.80	21.23	1.63	33.06	-70.00	-13.00	-57.00	Horizontal
325.60	-65.93	26.62	2.49	32.59	-69.41	-13.00	-56.41	Horizontal
463.97	-63.48	29.41	3.15	32.10	-63.02	-13.00	-50.02	Horizontal
821.71	-62.03	33.62	4.54	31.20	-55.07	-13.00	-42.07	Horizontal

WCDMA Band V (lowest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
39.58	-54.01	25.44	0.66	33.73	-61.64	-13.00	-48.64	Vertical
66.73	-46.41	21.65	0.91	33.61	-57.46	-13.00	-44.46	Vertical
150.01	-58.63	21.23	1.57	33.13	-68.96	-13.00	-55.96	Vertical
324.46	-63.41	26.62	2.49	32.59	-66.89	-13.00	-53.89	Vertical
485.61	-61.71	29.41	3.24	32.04	-61.10	-13.00	-48.10	Vertical
689.57	-61.54	32.08	4.05	31.62	-57.03	-13.00	-44.03	Vertical
41.28	-56.88	25.44	0.68	33.72	-64.48	-13.00	-51.48	Horizontal
86.81	-64.70	21.65	1.08	33.60	-75.57	-13.00	-62.57	Horizontal
137.42	-60.05	21.23	1.49	33.23	-70.56	-13.00	-57.56	Horizontal
177.51	-63.65	22.36	1.73	32.94	-72.50	-13.00	-59.50	Horizontal
343.18	-63.89	27.07	2.59	32.52	-66.75	-13.00	-53.75	Horizontal
506.48	-62.60	29.89	3.33	31.98	-61.36	-13.00	-48.36	Horizontal

WCDMA Band V (Middle channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
38.48	-55.28	25.44	0.65	33.74	-62.93	-13.00	-49.93	Vertical
57.80	-51.78	25.44	0.84	33.65	-59.15	-13.00	-46.15	Vertical
103.44	-52.58	25.13	1.22	33.56	-59.79	-13.00	-46.79	Vertical
216.02	-57.56	24.55	1.93	32.78	-63.86	-13.00	-50.86	Vertical
397.63	-62.62	28.16	2.84	32.31	-63.93	-13.00	-50.93	Vertical
696.86	-61.95	32.08	4.08	31.61	-57.40	-13.00	-44.40	Vertical
39.44	-54.40	25.44	0.65	33.74	-62.05	-13.00	-49.05	Horizontal
92.79	-61.61	25.13	1.13	33.60	-68.95	-13.00	-55.95	Horizontal
141.83	-53.39	21.23	1.52	33.20	-63.84	-13.00	-50.84	Horizontal
274.19	-63.23	25.71	2.24	32.72	-68.00	-13.00	-55.00	Horizontal
420.58	-63.07	28.55	2.95	32.24	-63.81	-13.00	-50.81	Horizontal
601.43	-62.28	31.51	3.73	31.78	-58.82	-13.00	-45.82	Horizontal

WCDMA Band V (Highest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
38.08	-55.01	25.44	0.64	33.74	-62.67	-13.00	-49.67	Vertical
66.27	-47.37	21.65	0.91	33.61	-58.42	-13.00	-45.42	Vertical
131.76	-59.66	23.18	1.45	33.28	-68.31	-13.00	-55.31	Vertical
340.78	-63.32	27.07	2.57	32.53	-66.21	-13.00	-53.21	Vertical
684.75	-61.23	31.91	4.04	31.63	-56.91	-13.00	-43.91	Vertical
881.41	-61.64	34.05	4.79	31.02	-53.82	-13.00	-40.82	Vertical
39.44	-53.61	25.44	0.65	33.74	-61.26	-13.00	-48.26	Horizontal
68.39	-53.37	21.65	0.93	33.61	-64.40	-13.00	-51.40	Horizontal
141.83	-53.41	21.23	1.52	33.20	-63.86	-13.00	-50.86	Horizontal
308.91	-63.12	26.16	2.41	32.66	-67.21	-13.00	-54.21	Horizontal
492.47	-61.60	29.89	3.27	32.02	-60.46	-13.00	-47.46	Horizontal
760.70	-60.36	32.73	4.32	31.39	-54.70	-13.00	-41.70	Horizontal

Above 1GHz
WCDMA Band II (Lowest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
1493.00	-44.45	24.91	3.86	38.82	-54.50	-13.00	-41.50	Vertical
3312.00	-45.50	29.12	5.34	38.54	-49.58	-13.00	-36.58	Vertical
3805.00	-48.76	29.91	6.31	38.32	-50.86	-13.00	-37.86	Vertical
5199.00	-49.53	32.40	6.93	38.48	-48.68	-13.00	-35.68	Vertical
6185.00	-49.84	33.87	9.26	38.74	-45.45	-13.00	-32.45	Vertical
7120.00	-48.74	36.20	9.91	38.94	-41.57	-13.00	-28.57	Vertical
1833.00	-45.87	25.13	7.53	38.53	-51.74	-13.00	-38.74	Horizontal
2870.00	-46.23	28.48	4.83	38.60	-51.52	-13.00	-38.52	Horizontal
4366.00	-50.04	31.13	6.13	38.27	-51.05	-13.00	-38.05	Horizontal
5777.00	-51.10	33.35	8.02	38.66	-48.39	-13.00	-35.39	Horizontal
6576.00	-50.27	35.00	9.43	38.82	-44.66	-13.00	-31.66	Horizontal
7171.00	-48.31	36.20	9.66	38.95	-41.40	-13.00	-28.40	Horizontal

WCDMA Band II (Middle channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
1901.00	-44.61	25.41	6.11	38.48	-51.57	-13.00	-38.57	Vertical
3720.00	-48.00	29.74	5.71	38.37	-50.92	-13.00	-37.92	Vertical
4230.00	-48.90	30.86	5.87	38.25	-50.42	-13.00	-37.42	Vertical
5539.00	-51.00	32.88	6.89	38.61	-49.84	-13.00	-36.84	Vertical
6508.00	-49.59	34.73	9.43	38.80	-44.23	-13.00	-31.23	Vertical
7511.00	-49.27	36.32	9.13	39.05	-42.87	-13.00	-29.87	Vertical
1782.00	-45.17	24.96	7.82	38.57	-50.96	-13.00	-37.96	Horizontal
2836.00	-45.66	28.37	4.69	38.60	-51.20	-13.00	-38.20	Horizontal
3312.00	-45.46	29.12	5.34	38.54	-49.54	-13.00	-36.54	Horizontal
4230.00	-48.29	30.86	5.87	38.25	-49.81	-13.00	-36.81	Horizontal
4774.00	-48.52	31.95	7.55	38.35	-47.37	-13.00	-34.37	Horizontal
6185.00	-48.68	33.87	9.26	38.74	-44.29	-13.00	-31.29	Horizontal

WCDMA Band II (Highest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
1595.00	-44.49	24.90	3.73	38.72	-54.58	-13.00	-41.58	Vertical
2836.00	-45.73	28.37	4.69	38.60	-51.27	-13.00	-38.27	Vertical
3125.00	-45.40	28.95	5.35	38.57	-49.67	-13.00	-36.67	Vertical
4128.00	-49.26	30.61	5.89	38.23	-50.99	-13.00	-37.99	Vertical
5607.00	-50.87	33.01	6.86	38.62	-49.62	-13.00	-36.62	Vertical
6780.00	-48.23	35.66	10.00	38.86	-41.43	-13.00	-28.43	Vertical
1578.00	-45.02	24.90	3.75	38.74	-55.11	-13.00	-42.11	Horizontal
3550.00	-45.10	29.50	4.94	38.47	-49.13	-13.00	-36.13	Horizontal
3856.00	-47.04	30.01	6.24	38.29	-49.08	-13.00	-36.08	Horizontal
4621.00	-49.39	31.74	8.61	38.32	-47.36	-13.00	-34.36	Horizontal
5607.00	-49.90	33.01	6.86	38.62	-48.65	-13.00	-35.65	Horizontal
6831.00	-48.70	35.76	10.13	38.87	-41.68	-13.00	-28.68	Horizontal

WCDMA Band IV (Lowest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
2139.00	-45.61	26.68	4.38	38.46	-53.01	-13.00	-40.01	Vertical
3771.00	-47.36	29.84	6.10	38.34	-49.76	-13.00	-36.76	Vertical
5216.00	-48.54	32.40	6.94	38.49	-47.69	-13.00	-34.69	Vertical
6270.00	-49.31	34.04	9.32	38.75	-44.70	-13.00	-31.70	Vertical
7664.00	-48.58	36.40	9.32	39.10	-41.96	-13.00	-28.96	Vertical
8242.00	-48.88	36.78	8.74	39.27	-42.63	-13.00	-29.63	Vertical
1748.00	-44.96	24.90	7.05	38.60	-51.61	-13.00	-38.61	Horizontal
3346.00	-45.25	29.19	5.34	38.53	-49.25	-13.00	-36.25	Horizontal
4655.00	-48.31	31.81	8.37	38.33	-46.46	-13.00	-33.46	Horizontal
5760.00	-50.38	33.32	7.91	38.65	-47.80	-13.00	-34.80	Horizontal
6610.00	-49.43	35.14	9.46	38.82	-43.65	-13.00	-30.65	Horizontal
7817.00	-48.76	36.40	9.38	39.15	-42.13	-13.00	-29.13	Horizontal

WCDMA Band IV (Middle channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
1935.00	-45.67	25.68	5.41	38.45	-53.03	-13.00	-40.03	Vertical
3431.00	-46.02	29.26	5.26	38.51	-50.01	-13.00	-37.01	Vertical
5063.00	-47.76	32.30	6.66	38.43	-47.23	-13.00	-34.23	Vertical
6831.00	-48.00	35.76	10.13	38.87	-40.98	-13.00	-27.98	Vertical
7443.00	-48.92	36.30	9.03	39.03	-42.62	-13.00	-29.62	Vertical
8242.00	-48.72	36.78	8.74	39.27	-42.47	-13.00	-29.47	Vertical
1833.00	-45.12	25.13	7.53	38.53	-50.99	-13.00	-37.99	Horizontal
3601.00	-46.86	29.50	4.81	38.44	-50.99	-13.00	-37.99	Horizontal
5369.00	-48.86	32.54	7.05	38.55	-47.82	-13.00	-34.82	Horizontal
6610.00	-49.07	35.14	9.46	38.82	-43.29	-13.00	-30.29	Horizontal
8004.00	-48.49	36.51	8.93	39.20	-42.25	-13.00	-29.25	Horizontal
8344.00	-48.94	36.89	8.93	39.30	-42.42	-13.00	-29.42	Horizontal

WCDMA Band IV (Highest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
1833.00	-45.03	25.13	7.53	38.53	-50.90	-13.00	-37.90	Vertical
3482.00	-46.36	29.36	5.12	38.50	-50.38	-13.00	-37.38	Vertical
4689.00	-49.09	31.88	8.14	38.34	-47.41	-13.00	-34.41	Vertical
6457.00	-49.95	34.53	9.43	38.79	-44.78	-13.00	-31.78	Vertical
7596.00	-49.33	36.40	9.26	39.08	-42.75	-13.00	-29.75	Vertical
8786.00	-48.41	37.67	9.56	39.44	-40.62	-13.00	-27.62	Vertical
1816.00	-45.56	25.06	7.89	38.55	-51.16	-13.00	-38.16	Horizontal
4604.00	-50.24	31.71	8.72	38.32	-48.13	-13.00	-35.13	Horizontal
6032.00	-51.54	33.66	9.29	38.71	-47.30	-13.00	-34.30	Horizontal
7375.00	-48.73	36.30	9.03	39.01	-42.41	-13.00	-29.41	Horizontal
8021.00	-48.45	36.54	8.91	39.21	-42.21	-13.00	-29.21	Horizontal
8497.00	-47.89	37.10	9.40	39.35	-40.74	-13.00	-27.74	Horizontal

WCDMA Band V (Lowest channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
1816.00	-44.32	25.06	7.89	38.55	-49.92	-13.00	-36.92	Vertical
3822.00	-47.40	29.94	6.29	38.31	-49.48	-13.00	-36.48	Vertical
4570.00	-46.90	31.64	8.37	38.31	-45.20	-13.00	-32.20	Vertical
5709.00	-48.96	33.22	7.56	38.64	-46.82	-13.00	-33.82	Vertical
6916.00	-47.06	35.93	10.32	38.88	-39.69	-13.00	-26.69	Vertical
7834.00	-47.18	36.40	9.34	39.15	-40.59	-13.00	-27.59	Vertical
1782.00	-45.68	24.96	7.82	38.57	-51.47	-13.00	-38.47	Horizontal
1782.00	-45.68	24.96	7.82	38.57	-51.47	-13.00	-38.47	Horizontal
5607.00	-50.72	33.01	6.86	38.62	-49.47	-13.00	-36.47	Horizontal
7018.00	-49.01	36.10	10.42	38.91	-41.40	-13.00	-28.40	Horizontal
8378.00	-47.18	36.96	8.99	39.31	-40.54	-13.00	-27.54	Horizontal
10231.00	-48.08	38.43	10.22	39.62	-39.05	-13.00	-26.05	Horizontal

WCDMA Band V (Middle channel)

Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarity
1799.00	-44.12	25.00	8.20	38.56	-49.48	-13.00	-36.48	Vertical
3295.00	-44.81	29.10	5.35	38.54	-48.90	-13.00	-35.90	Vertical
5216.00	-47.42	32.40	6.94	38.49	-46.57	-13.00	-33.57	Vertical
6882.00	-48.48	35.86	10.24	38.88	-41.26	-13.00	-28.26	Vertical
7596.00	-47.34	36.40	9.26	39.08	-40.76	-13.00	-27.76	Vertical
9330.00	-46.37	38.10	9.81	39.60	-38.06	-13.00	-25.06	Vertical
1697.00	-45.56	24.90	5.90	38.64	-53.40	-13.00	-40.40	Horizontal
3618.00	-49.50	29.54	4.94	38.43	-53.45	-13.00	-40.45	Horizontal
4366.00	-50.04	31.13	6.13	38.27	-51.05	-13.00	-38.05	Horizontal
6134.00	-51.98	33.80	9.27	38.73	-47.64	-13.00	-34.64	Horizontal
7511.00	-48.70	36.32	9.13	39.05	-42.30	-13.00	-29.30	Horizontal
8786.00	-47.99	37.67	9.56	39.44	-40.20	-13.00	-27.20	Horizontal

WCDMA Band V (Highest channel)

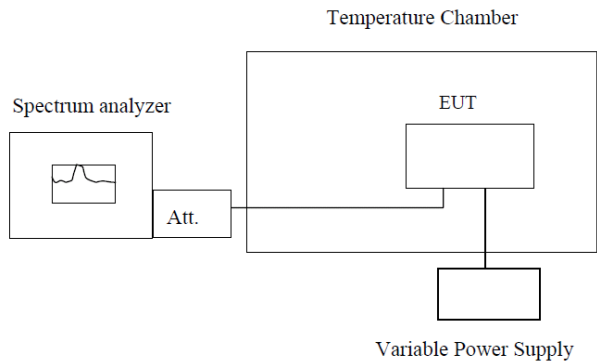
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarity
1714.00	-45.84	24.90	6.28	38.63	-53.29	-13.00	-40.29	Vertical
3584.00	-46.64	29.50	4.84	38.45	-50.75	-13.00	-37.75	Vertical
5199.00	-49.31	32.40	6.93	38.48	-48.46	-13.00	-35.46	Vertical
6100.00	-51.60	33.80	9.27	38.72	-47.25	-13.00	-34.25	Vertical
7324.00	-48.90	36.30	9.17	39.00	-42.43	-13.00	-29.43	Vertical
8548.00	-46.74	37.20	9.60	39.36	-39.30	-13.00	-26.30	Vertical
2343.00	-46.30	27.00	4.62	38.54	-53.22	-13.00	-40.22	Horizontal
3125.00	-44.59	28.95	5.35	38.57	-48.86	-13.00	-35.86	Horizontal
4621.00	-48.77	31.74	8.61	38.32	-46.74	-13.00	-33.74	Horizontal
5658.00	-50.52	33.12	7.21	38.63	-48.82	-13.00	-35.82	Horizontal
6950.00	-48.94	36.00	10.40	38.89	-41.43	-13.00	-28.43	Horizontal
8378.00	-49.55	36.96	8.99	39.31	-42.91	-13.00	-29.91	Horizontal

7.9 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC part 22.355 and FCC part 24.235 and Part 27.54
Test Method:	FCC Part 2.1055 & FCC KDB 971168 D01 V03r01
Limit:	±2.5ppm
Test setup:	Temperature Chamber <pre>graph LR; SA[Spectrum analyzer] --- Att[Att.]; Att --- EUT[EUT]; EUT --- VPS[Variable Power Supply]; subgraph TC [Temperature Chamber]; EUT; end</pre> Variable Power Supply Note : Measurement setup for testing on Antenna connector
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix

7.10 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC part 22.355 and FCC part 24.235 and Part 27.54
Test Method:	FCC Part 2.1055 & FCC KDB 971168 D01 V03r01
Limit:	±2.5ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix

8 Test setup photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

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