TEST Report

Applicant:	Zhejiang Raying IoT Technology Co., Ltd.
Address of Applicant:	10F, North of Building No.10, Wellong Science & Technology Park, No.88 Jiangling Road, Binjiang District, Hangzhou, 310051 China
Manufacturer:	Zhejiang Raying IoT Technology Co., Ltd.
Address of Manufacturer:	10F, North of Building No.10, Wellong Science & Technology Park, No.88 Jiangling Road, Binjiang District, Hangzhou, 310051 China

Equipment Under Test (EUT)

Product Name:	USB Dongle
Model No.:	RD1100+
FCC ID:	2AOE2-RD1100
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	Dec 03, 2019
Date of Test:	Dec 03, 2019- Dec 10, 2019
Date of report issued:	Dec 10, 2019
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
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.

2 Version

Version No.	Date	Description
00	*Dec 10, 2019*	*Original*

Prepared By:	***Project Engineer***	***Date:***	*Dec 10, 2019*
Check By:	***Reviewer***	***Date:***	*Dec 10, 2019*

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
Channel Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Remark: Test according to ANSI C63.10:2013.

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

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	USB Dongle
Model No.:	RD1100+
Serial No.:	N/A
Test sample(s) ID:	GTS201912000114-1
Frequency range:	2405-2480MHz
Channel numbers:	16
Channel separation:	5MHz
Modulation technology:	O-QPSK
Antenna Type:	PCB Antenna
Antenna gain:	1dBi
Power supply:	5VDC USB IN

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2405MHz	5	2425MHz	9	2445MHz	13	2465MHz
2	2410MHz	6	2430MHz	10	2450MHz	14	2470MHz
3.	2415MHz	7	2435MHz	11	2455MHz	15	2475MHz
4	2420MHz	8	2440MHz	12	2460MHz	16	2480MHz

Note:

In section 15.31(m), 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:

Test channel	Frequency (MHz)
Lowest channel	2405MHz
Middle channel	2445MHz
Highest channel	2480MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the dutycycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	O-QPSK
Data rate	250kbps

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
DELL	Laptop	Inspiron5570	JR4G1A00DPC
DELL	AC Adaptor	HA45NM140	CN-00285K-CH200-88V-OEYC-A06

5.4 Test Facility

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

● **FCC —Registration No.: 381383**

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. Registration 381383, January 08, 2019.

● **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
Address: No. 301-309, 3/F., 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	July. 03 2015	July. 02 2020
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	June. 27 2019	June. 26 2020
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2019	June. 26 2020
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2019	June. 26 2020
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2019	June. 26 2020
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2019	June. 26 2020
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2019	June. 26 2020
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2019	June. 26 2020
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2019	June. 26 2020
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2019	June. 26 2020
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2019	June. 26 2020
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2019	June. 26 2020
15	Band filter	Amindeon	82346	GTS219	June. 27 2019	June. 26 2020
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2019	June. 26 2020
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2019	June. 26 2020
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2019	June. 26 2020
19	Splitter	Agilent	11636B	GTS237	June. 27 2019	June. 26 2020
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2019	June. 26 2020

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2014	May.15 2020
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2019	June. 26 2020
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 27 2019	June. 26 2020
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 27 2019	June. 26 2020
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 27 2019	June. 26 2020
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 27 2019	June. 26 2020

Conducted:						
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	June. 27 2019	June. 26 2020
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2019	June. 26 2020
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 27 2019	June. 26 2020
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 27 2019	June. 26 2020
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 27 2019	June. 26 2020
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 27 2019	June. 26 2020
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 27 2019	June. 26 2020
8	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2019	June. 26 2020
9	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 27 2019	June. 26 2020

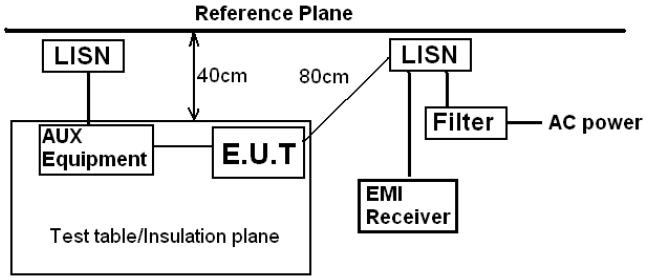
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 27 2019	June. 26 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2019	June. 26 2020

7 Test results and Measurement Data

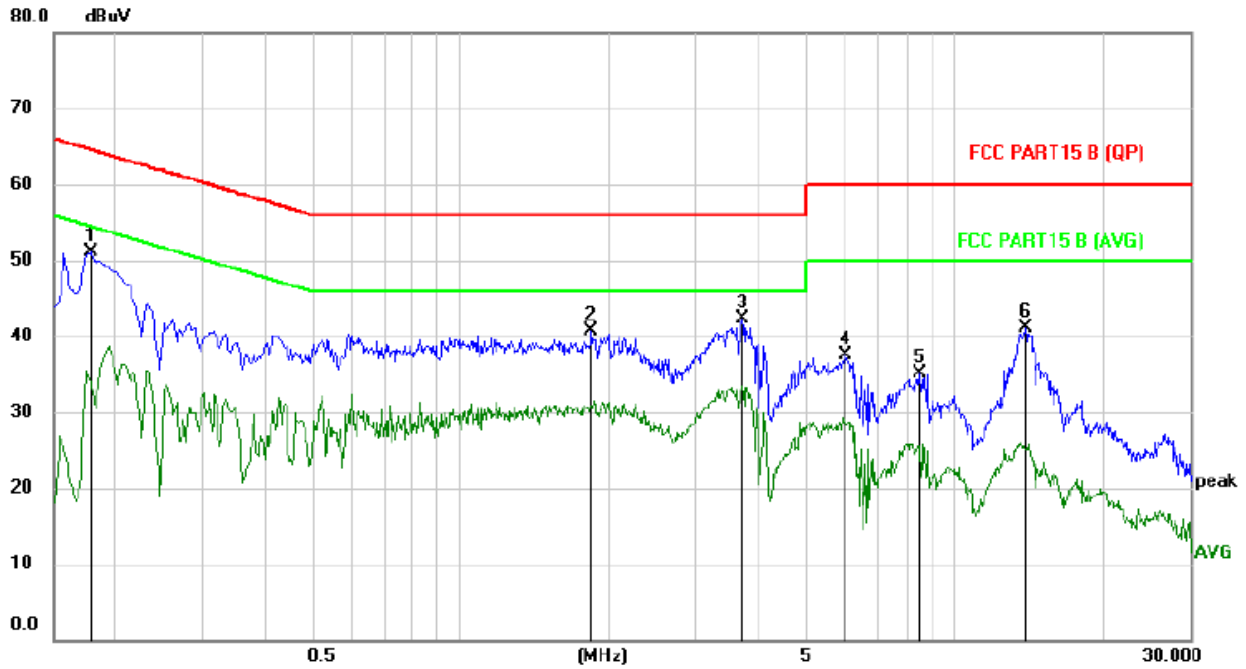
7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. **15.247(c) (1)(i) requirement:** (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is integral antenna, the best case gain of the antenna is1dBi	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 * Decreases with the logarithm of the frequency.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	PASS
Test voltage:	AC 120V 60Hz

Test Specification: Neutral

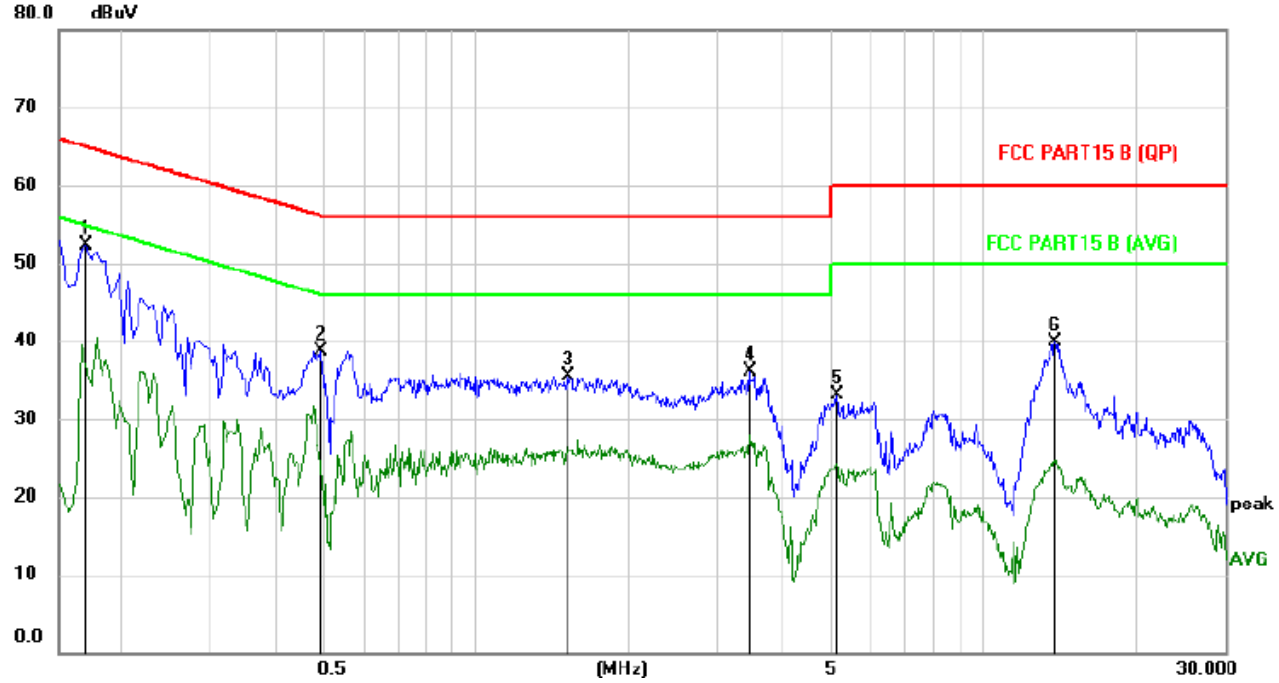


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1780	41.12	9.89	51.01	64.58	-13.57	peak	
2		1.8460	30.58	10.04	40.62	56.00	-15.38	peak	
3		3.7220	31.94	10.30	42.24	56.00	-13.76	peak	
4		6.0100	27.00	10.47	37.47	60.00	-22.53	peak	
5		8.5300	24.52	10.55	35.07	60.00	-24.93	peak	
6		13.9700	30.43	10.65	41.08	60.00	-18.92	peak	

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

Test Specification: Line

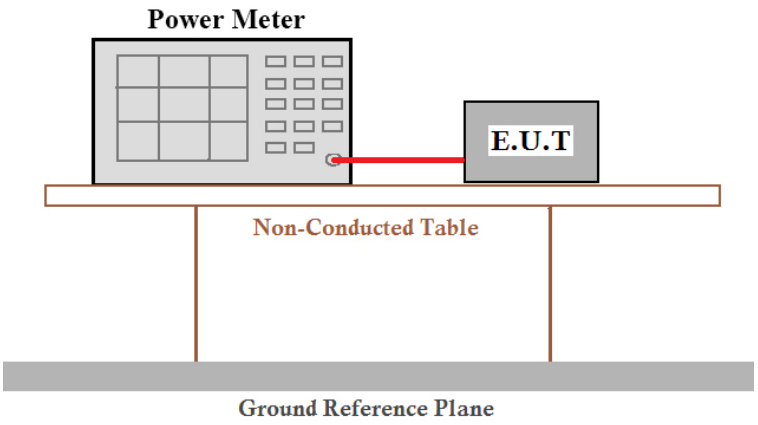


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1700	42.31	10.06	52.37	64.96	-12.59	peak	
2		0.4940	29.01	9.79	38.80	56.10	-17.30	peak	
3		1.5140	25.46	10.11	35.57	56.00	-20.43	peak	
4		3.4540	25.82	10.25	36.07	56.00	-19.93	peak	
5		5.1540	22.86	10.32	33.18	60.00	-26.82	peak	
6		13.8540	29.24	10.63	39.87	60.00	-20.13	peak	

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

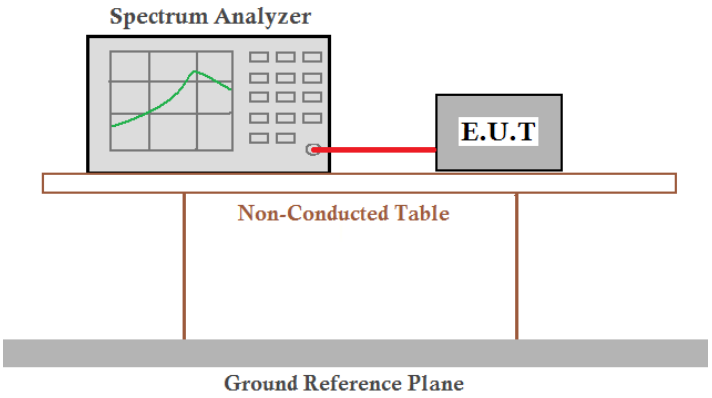
7.3 Conducted Max Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074 D01 DTS Meas Guidance V04
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Test CH	Output Power (dBm)	Limit(dBm)	Result
Lowest channel	7.429	30.00	Pass
Middle channel	7.538		
Highest channel	6.627		

7.4 Channel Bandwidth

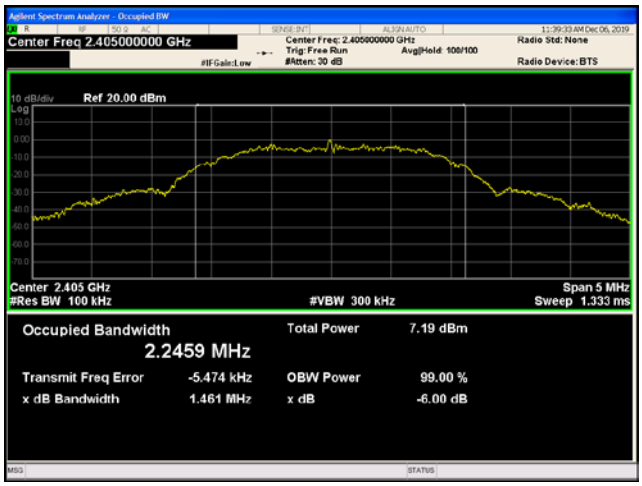
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB558074 D01 DTS Meas Guidance V04
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

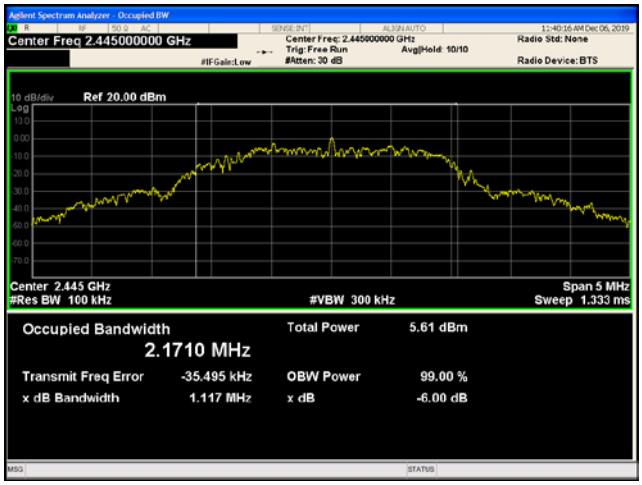
Test CH	6dB Emission Bandwidth (MHz)	Limit(kHz)	Result
Lowest	1.4605	>500	Pass
Middle	1.1166		
Highest	1.6873		
Test CH	**99%Occupy Bandwidth (MHz)**	**Limit(kHz)**	**Result**
Lowest	2.2459	N/A	N/A
Middle	2.171		
Highest	2.2698		

Test plot as follows:

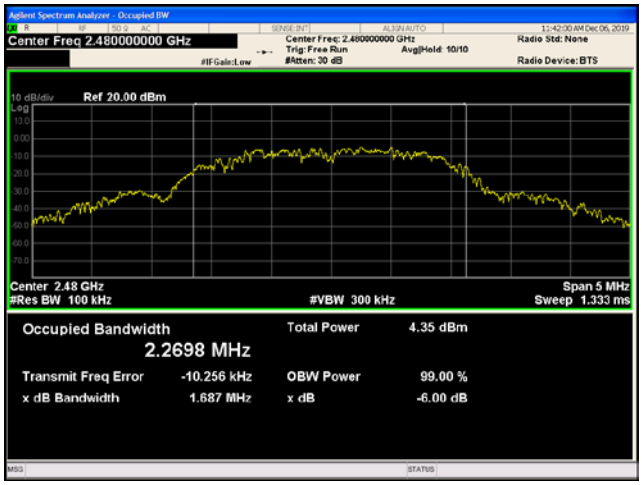
Test mode



Lowest channel

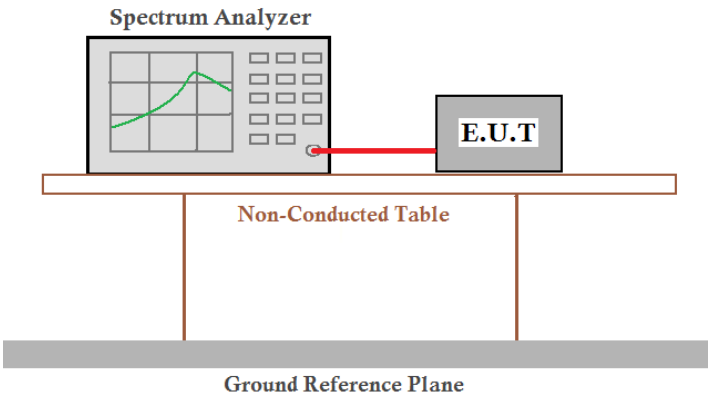


Middle channel



Highest channel

7.5 Power Spectral Density

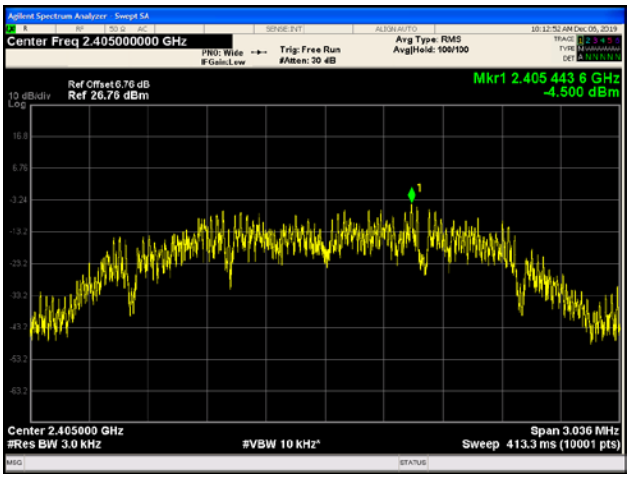
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB558074 D01 DTS Meas Guidance V04
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

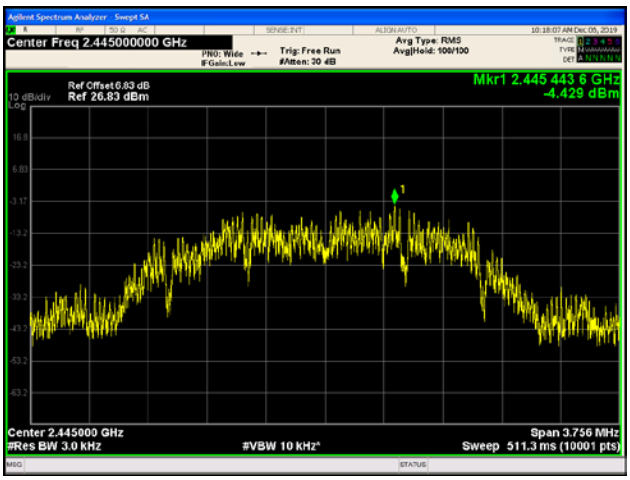
Test CH	Power Spectral Density (dBm)	Limit (dBm/3kHz)	Result
Lowest	-4.500	8.00	Pass
Middle	-4.429		
Highest	-5.510		

Test plot as follows:

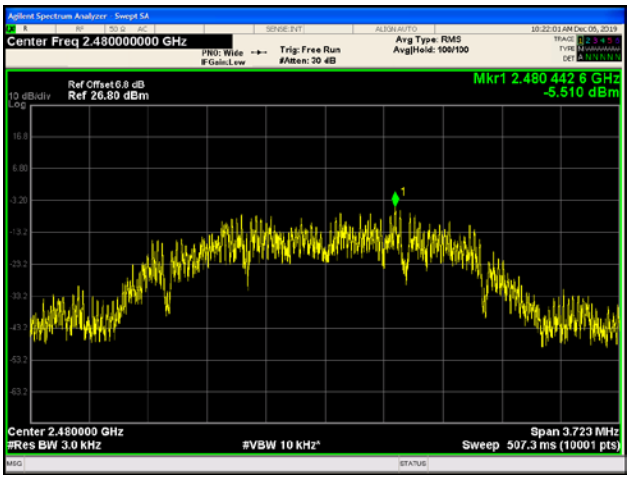
Test mode:



Lowest channel



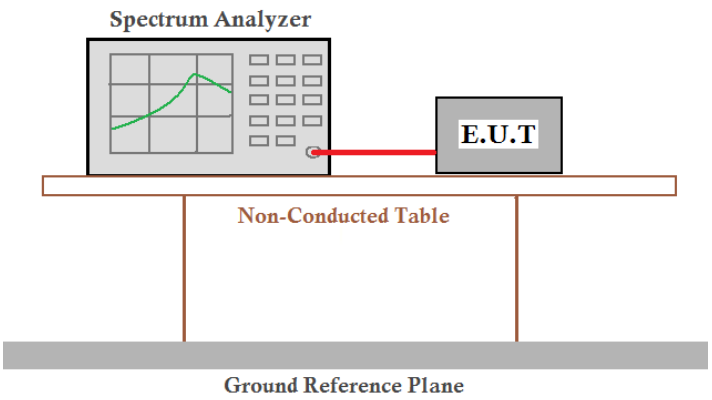
Middle channel



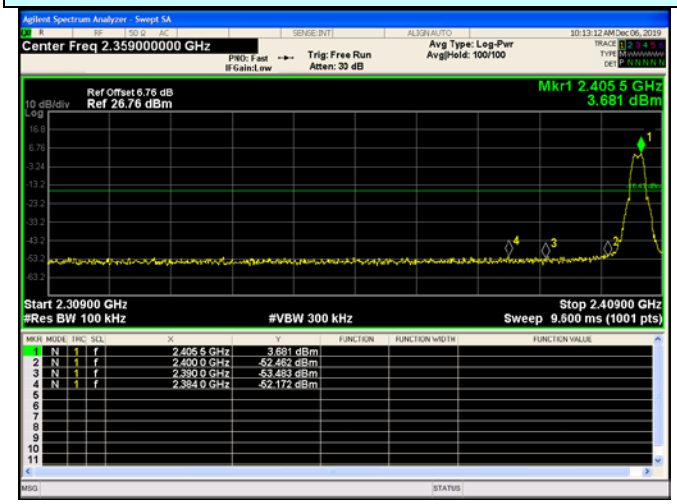
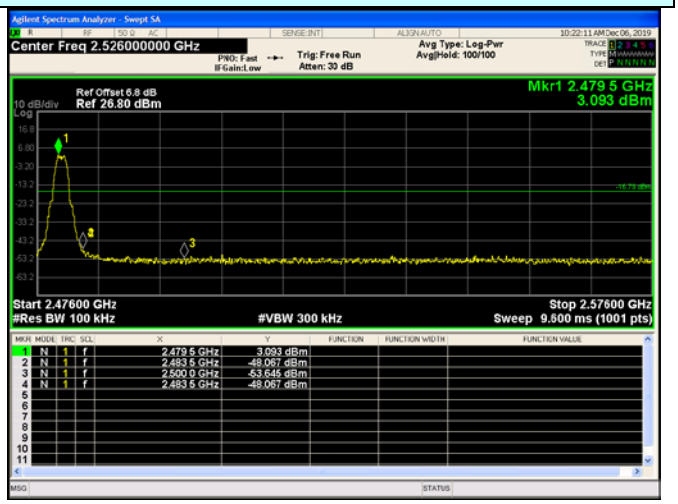
Highest channel

7.6 Band edges

7.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D01 DTS Meas Guidance V04
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

Test mode:	
	
Lowest channel	Highest channel

7.6.2 Radiated Emission Method

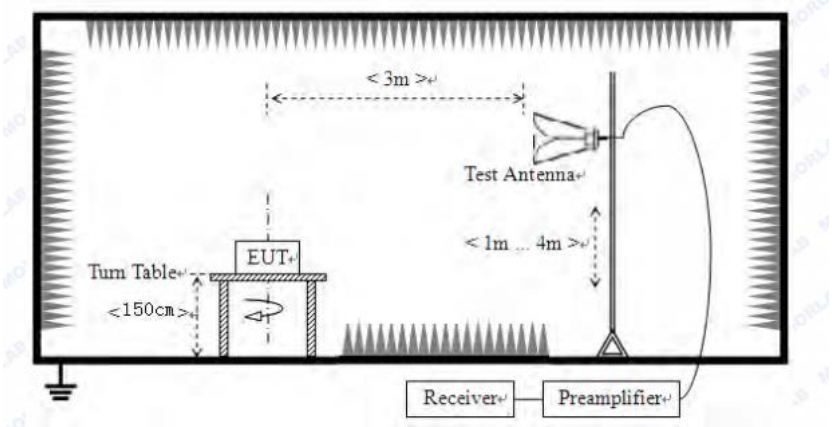
Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10:2013
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
Above 1GHz	Peak	1MHz	3MHz	Peak
	RMS	1MHz	3MHz	Average

Limit:

Frequency	Limit (dBuV/m @3m)	Value
Above 1GHz	54.00	Average
	74.00	Peak

Test setup:



Test Procedure:

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test

	worst case mode is recorded in the report.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

Remark: The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

Test mode:		Test channel:	Lowest

Peak value:

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)	Polarization
2310.00	42.40	27.91	5.30	24.64	50.97	74.00	-23.03	Vertical
2390.00	41.03	27.59	5.38	24.71	49.29	74.00	-24.71	Vertical
2310.00	38.53	27.91	5.30	24.64	47.10	74.00	-26.90	Horizontal
2390.00	42.31	27.59	5.38	24.71	50.57	74.00	-23.43	Horizontal

Average value:

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)	Polarization
2310.00	36.45	27.91	5.30	24.64	45.02	54.00	-8.98	Vertical
2390.00	39.28	27.59	5.38	24.71	47.54	54.00	-6.46	Vertical
2310.00	33.21	27.91	5.30	24.64	41.78	54.00	-12.22	Horizontal
2390.00	36.14	27.59	5.38	24.71	44.40	54.00	-9.60	Horizontal

Test mode:		Test channel:	Highest

Peak value:

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)	Polarization
2483.50	45.16	27.53	5.47	24.80	53.36	74.00	-20.64	Vertical
2500.00	38.58	27.55	5.49	24.86	46.76	74.00	-27.24	Vertical
2483.50	43.50	27.53	5.47	24.80	51.70	74.00	-22.30	Horizontal
2500.00	34.81	27.55	5.49	24.86	42.99	74.00	-31.01	Horizontal

Average value:

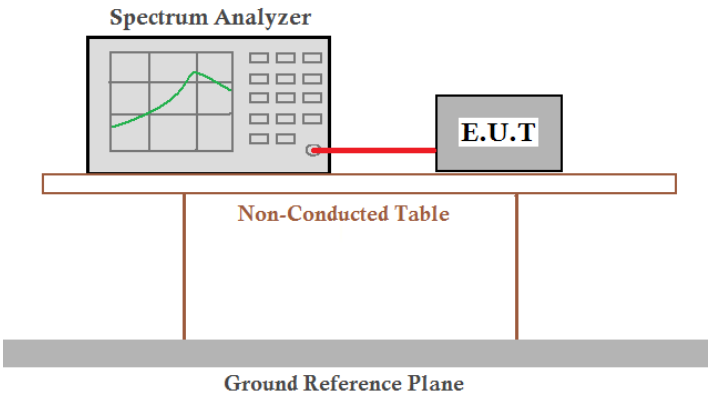
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	36.51	27.53	5.47	24.80	44.71	54.00	-9.29	Vertical
2500.00	33.65	27.55	5.49	24.86	41.83	54.00	-12.17	Vertical
2483.50	39.67	27.53	5.47	24.80	47.87	54.00	-6.13	Horizontal
2500.00	30.54	27.55	5.49	24.86	38.72	54.00	-15.28	Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

7.7 Spurious Emission

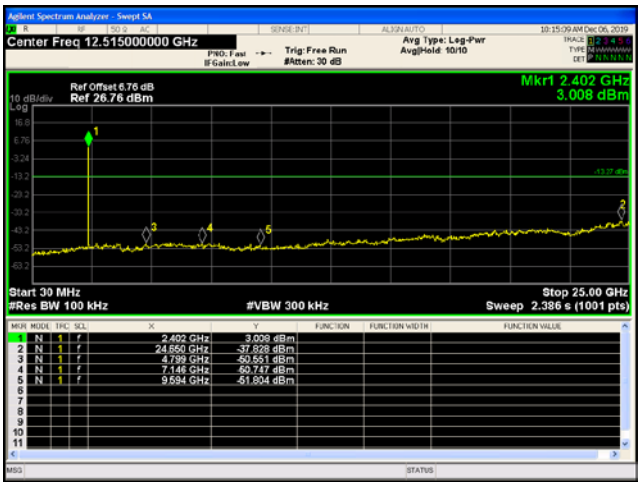
7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D01 DTS Meas Guidance V04
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

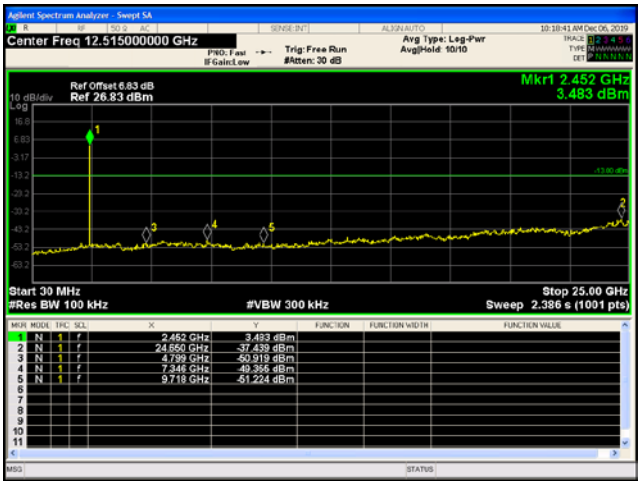
Test mode:	

Lowest channel



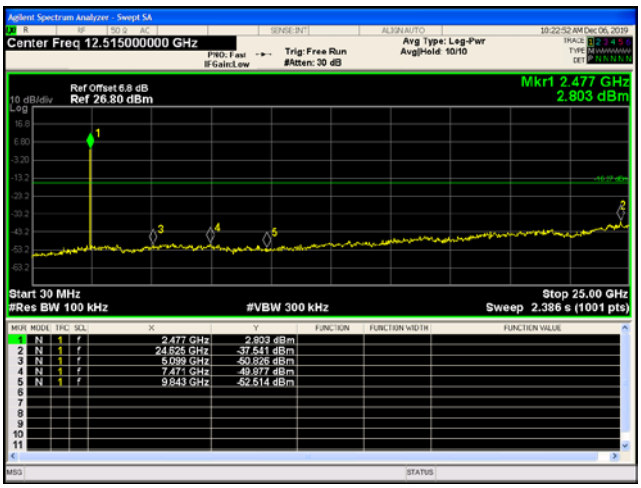
30MHz~25GHz

Middle channel



30MHz~25GHz

Highest channel



30MHz~25GHz

7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 25GHz
Test site:	Measurement Distance: 3m

Receiver setup:

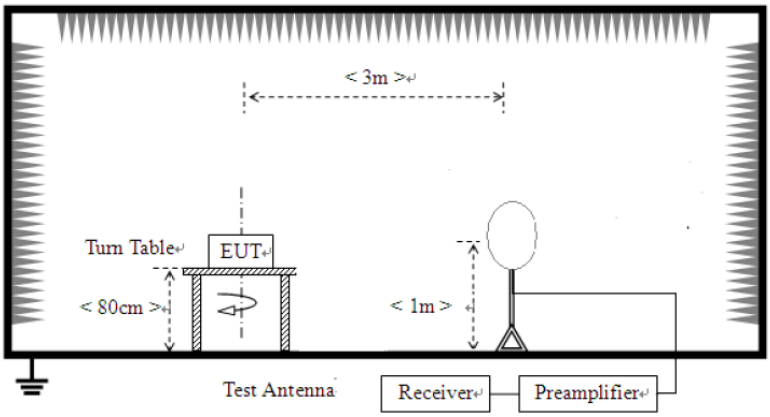
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

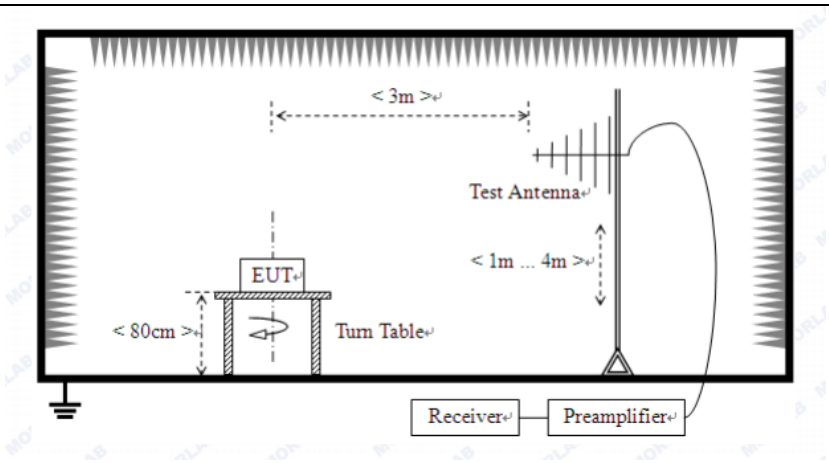
Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	30m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	
Above 1GHz	500	Average	
	5000	Peak	

Test setup:

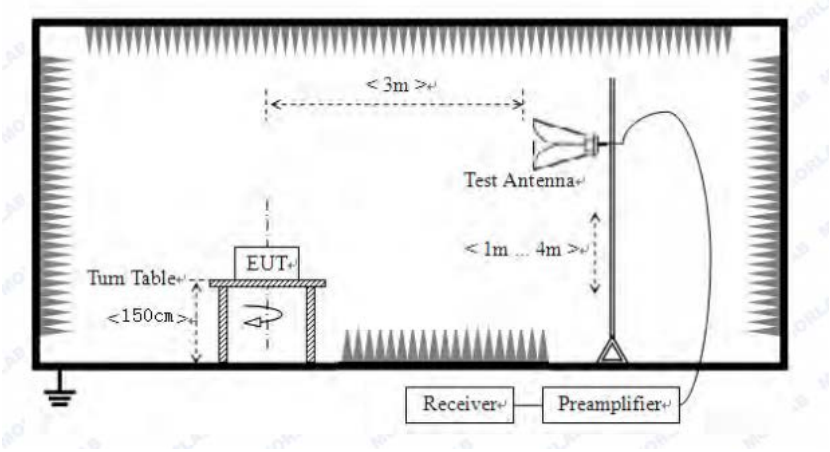
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the

	limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass
Test voltage:	AC120V 60Hz

Remark:

Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

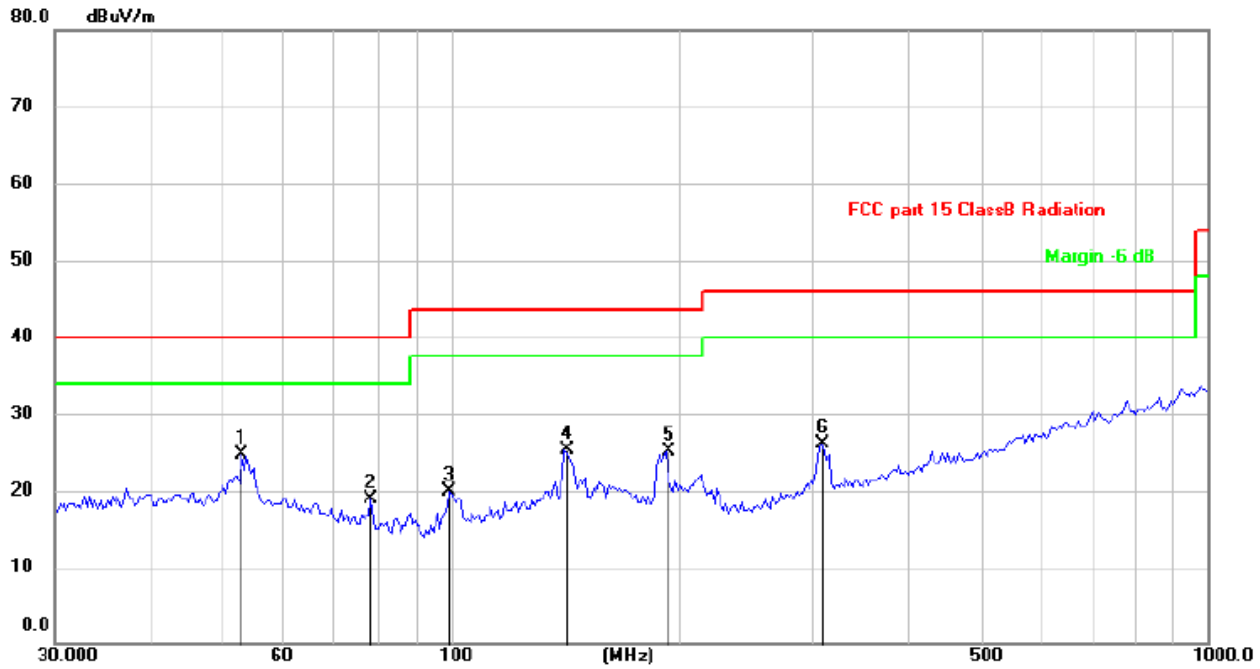
Measurement data:

- **9kHz~30MHz**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

■ **Below 1GHz**

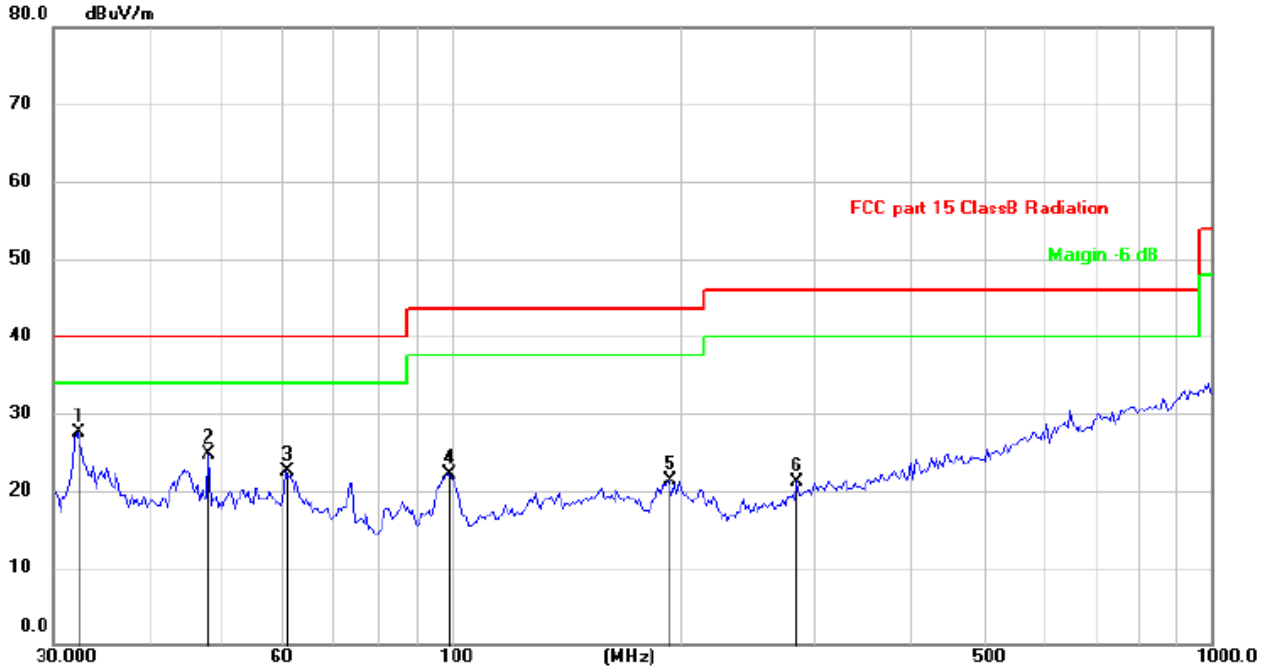
Mode:	**Transmitting mode**	**Test by:**	**Jason**
Temp./Hum.(%H):	**26℃/56%RH**	**Polarziation:**	**Horizontal**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	*	52.9453	31.39	-6.63	24.76	40.00	-15.24	peak			
2		78.4133	29.18	-10.29	18.89	40.00	-21.11	peak			
3		99.5281	29.82	-9.93	19.89	43.50	-23.61	peak			
4		141.3298	32.10	-6.72	25.38	43.50	-18.12	peak			
5		192.4186	34.01	-8.95	25.06	43.50	-18.44	peak			
6		307.8313	31.67	-5.53	26.14	46.00	-19.86	peak			

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Measurement – Limit

Mode:	**Transmitting mode**	**Test by:**	**Jason**
Temp./Hum.(%H):	**26℃/56%RH**	**Polarziation:**	**Vertical**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	*	32.1795	34.66	-7.20	27.46	40.00	-12.54	peak			
2		47.9940	31.05	-6.38	24.67	40.00	-15.33	peak			
3		60.4919	29.55	-7.10	22.45	40.00	-17.55	peak			
4		98.8326	32.13	-9.99	22.14	43.50	-21.36	peak			
5		192.4186	30.21	-8.95	21.26	43.50	-22.24	peak			
6		284.9767	27.36	-6.30	21.06	46.00	-24.94	peak			

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Measurement – Limit

■ **Above 1GHz**

Test channel:	Lowest

Peak value:

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)	polarization
4810.00	39.60	31.62	8.61	32.08	47.75	74.00	-26.25	Vertical
7215.00	36.41	36.23	11.67	31.63	52.68	74.00	-21.32	Vertical
9620.00	32.45	38.03	14.11	31.82	52.77	74.00	-21.23	Vertical
12025.00	*					74.00		Vertical
14430.00	*					74.00		Vertical
16835.00	*					74.00		Vertical
4810.00	40.62	31.62	8.61	32.08	48.77	74.00	-25.23	Horizontal
7215.00	35.18	36.23	11.67	31.63	51.45	74.00	-22.55	Horizontal
9620.00	33.49	38.03	14.11	31.82	53.81	74.00	-20.19	Horizontal
12025.00	*					74.00		Horizontal
14430.00	*					74.00		Horizontal
16835.00	*					74.00		Horizontal

Average value:

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)	polarization
4810.00	29.39	31.62	8.61	32.08	37.54	54.00	-16.46	Vertical
7215.00	23.58	36.23	11.67	31.63	39.85	54.00	-14.15	Vertical
9620.00	24.48	38.03	14.11	31.82	44.80	54.00	-9.20	Vertical
12025.00	*					54.00		Vertical
14430.00	*					54.00		Vertical
16835.00	*					54.00		Vertical
4810.00	28.59	31.62	8.61	32.08	36.74	54.00	-17.26	Horizontal
7215.00	23.78	36.23	11.67	31.63	40.05	54.00	-13.95	Horizontal
9620.00	22.03	38.03	14.11	31.82	42.35	54.00	-11.65	Horizontal
12025.00	*					54.00		Horizontal
14430.00	*					54.00		Horizontal
16835.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test channel:	Middle

Peak value:

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)	polarization
4890.00	41.38	31.89	8.69	32.28	49.68	74.00	-24.32	Vertical
7335.00	34.77	36.38	11.81	32.12	50.84	74.00	-23.16	Vertical
9780.00	34.24	38.36	14.36	31.76	55.20	74.00	-18.80	Vertical
12225.00	*					74.00		Vertical
14670.00	*					74.00		Vertical
17115.00	*					74.00		Vertical
4890.00	42.65	31.89	8.69	32.28	50.95	74.00	-23.05	Horizontal
7335.00	36.68	36.38	11.81	32.12	52.75	74.00	-21.25	Horizontal
9780.00	38.15	38.36	14.36	31.76	59.11	74.00	-14.89	Horizontal
12225.00	*					74.00		Horizontal
14670.00	*					74.00		Horizontal
17115.00	*					74.00		Horizontal

Average value:

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)	polarization
4890.00	30.84	31.89	8.69	32.28	39.14	54.00	-14.86	Vertical
7335.00	22.46	36.38	11.81	32.12	38.53	54.00	-15.47	Vertical
9780.00	24.44	38.36	14.36	31.76	45.40	54.00	-8.60	Vertical
12225.00	*					54.00		Vertical
14670.00	*					54.00		Vertical
17115.00	*					54.00		Vertical
4890.00	29.80	31.89	8.69	32.28	38.10	54.00	-15.90	Horizontal
7335.00	23.50	36.38	11.81	32.12	39.57	54.00	-14.43	Horizontal
9780.00	24.82	38.36	14.36	31.76	45.78	54.00	-8.22	Horizontal
12225.00	*					54.00		Horizontal
14670.00	*					54.00		Horizontal
17115.00	*					54.00		Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

Test channel:	Highest

Peak value:

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)	polarization
4960.00	45.21	32.15	8.82	32.26	53.92	74.00	-20.08	Vertical
7440.00	34.37	36.63	11.81	31.98	50.83	74.00	-23.17	Vertical
9920.00	38.05	38.72	14.56	31.87	59.46	74.00	-14.54	Vertical
12400.00	*					74.00		Vertical
14880.00	*					74.00		Vertical
17360.00	*					74.00		Vertical
4960.00	47.07	32.15	8.82	32.26	55.78	74.00	-18.22	Horizontal
7440.00	35.01	36.63	11.81	31.98	51.47	74.00	-22.53	Horizontal
9920.00	32.89	38.72	14.56	31.87	54.30	74.00	-19.70	Horizontal
12400.00	*					74.00		Horizontal
14880.00	*					74.00		Horizontal
17360.00	*					74.00		Horizontal

Average value:

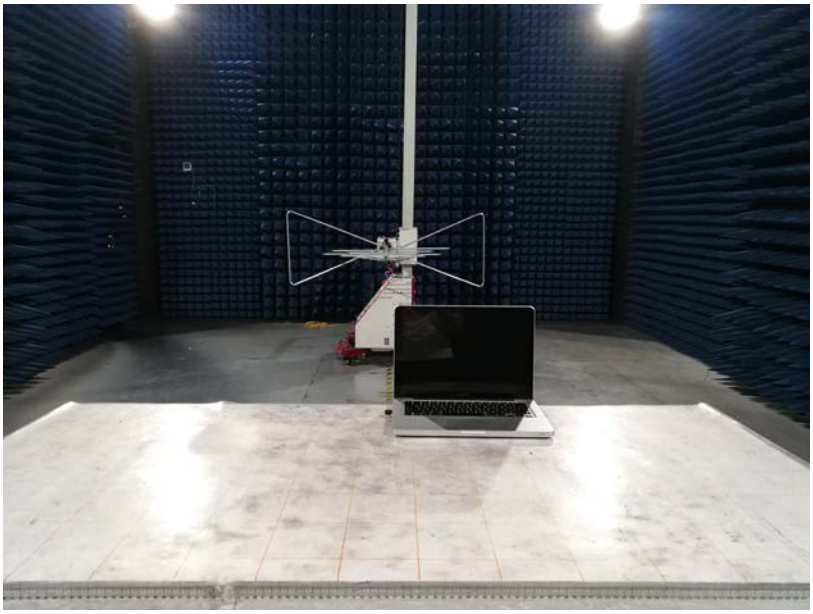
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	36.17	32.15	8.82	32.26	44.88	54.00	-9.12	Vertical
7440.00	24.35	36.63	11.81	31.98	40.81	54.00	-13.19	Vertical
9920.00	25.45	38.72	14.56	31.87	46.86	54.00	-7.14	Vertical
12400.00	*					54.00		Vertical
14880.00	*					54.00		Vertical
17360.00	*					54.00		Vertical
4960.00	35.03	32.15	8.82	32.26	43.74	54.00	-10.26	Horizontal
7440.00	24.34	36.63	11.81	31.98	40.80	54.00	-13.20	Horizontal
9920.00	23.43	38.72	14.56	31.87	44.84	54.00	-9.16	Horizontal
12400.00	*					54.00		Horizontal
14880.00	*					54.00		Horizontal
17360.00	*					54.00		Horizontal

Remark:

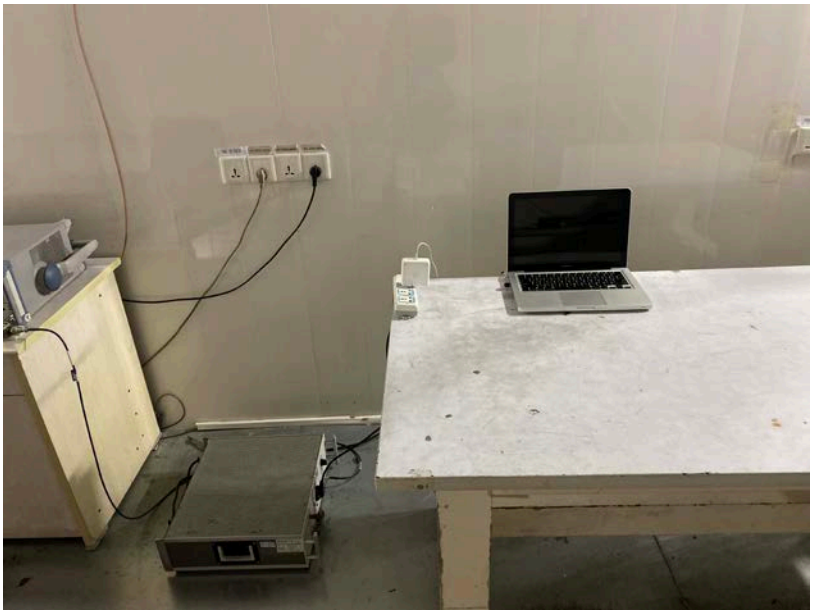
1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*

8 Test Setup Photo

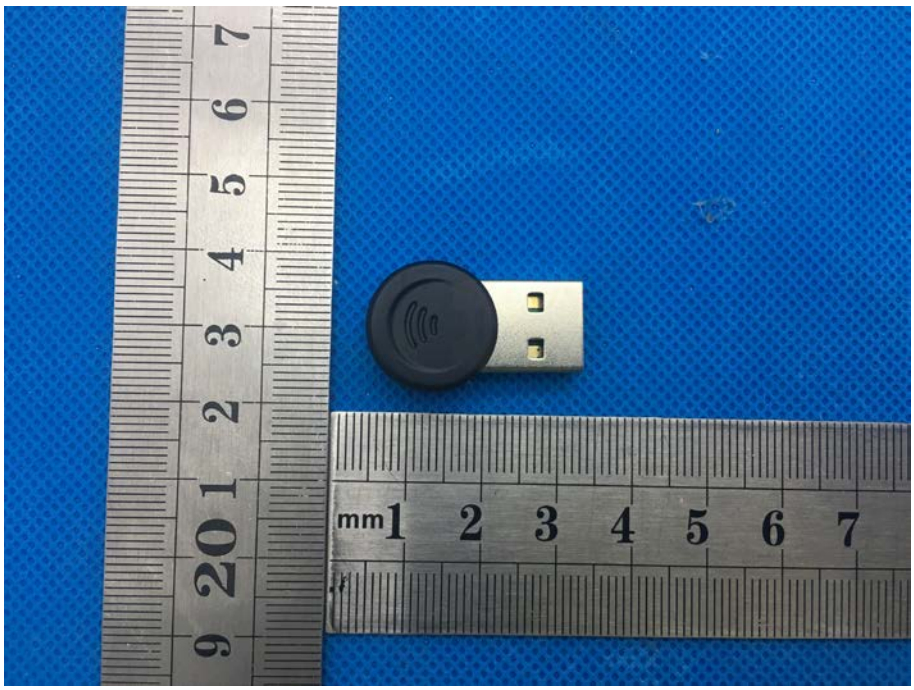
Radiated Emission

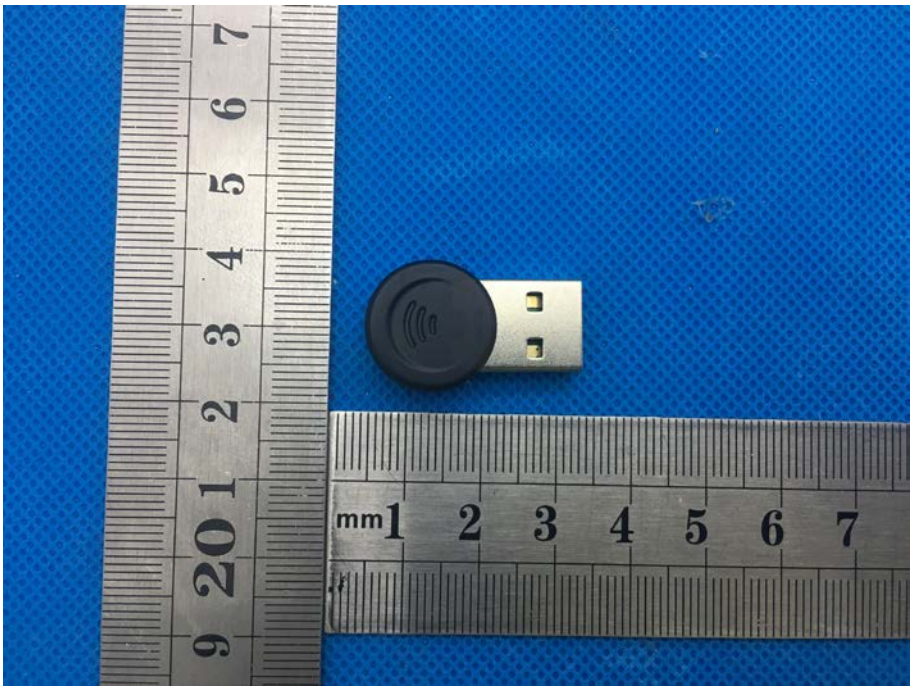


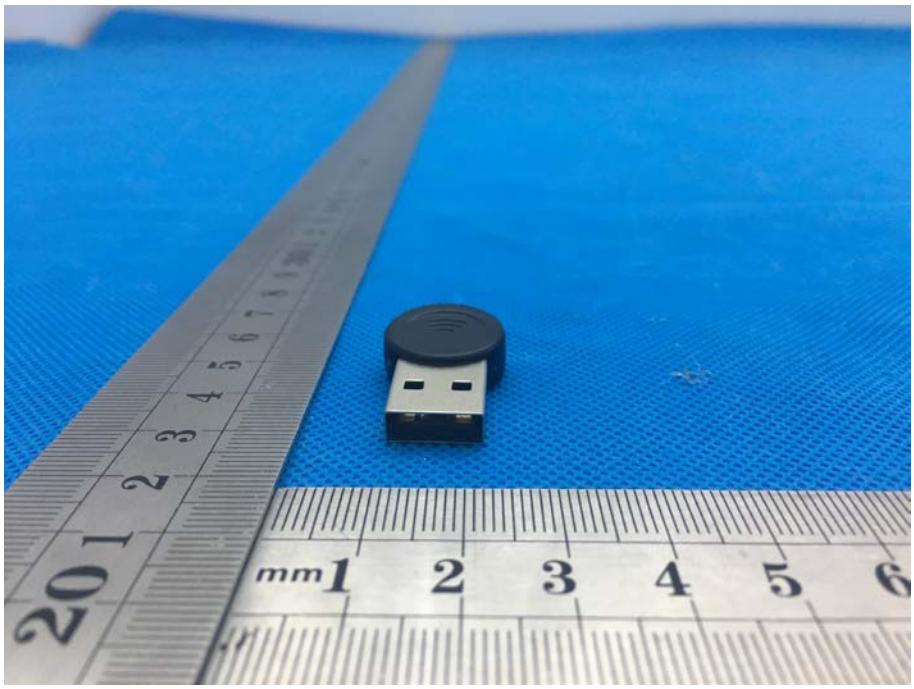
Conducted Emission

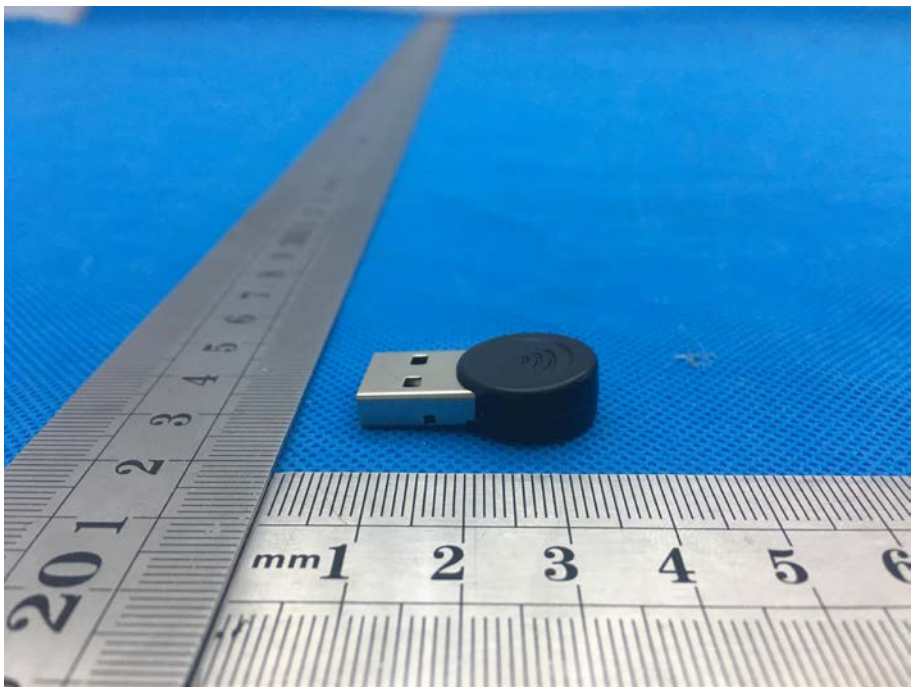


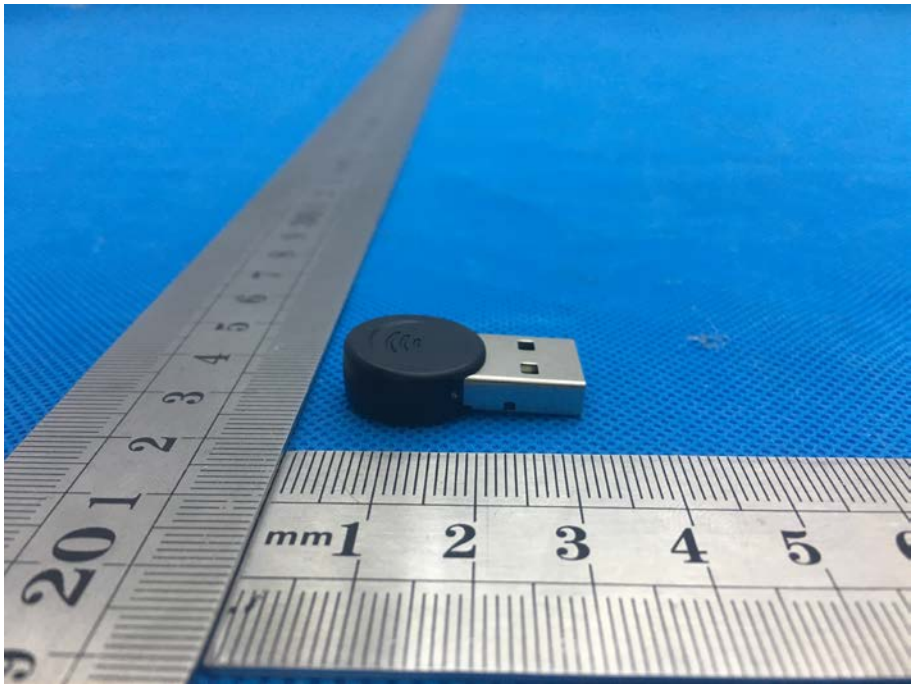
9 EUT Constructional Details

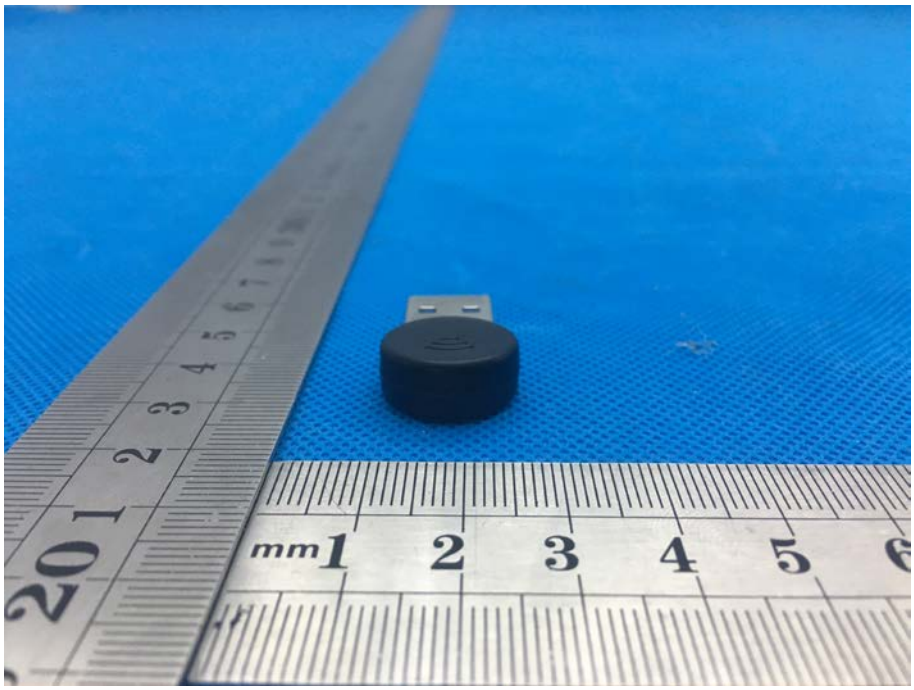





mm 1 2 3 4 5 6


mm 1 2 3 4 5 6





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