

# FCC REPORT

**Applicant:** Posturite LTD

**Address of Applicant:** The Mill, Berwick, East Sussex, BN26 6SZ,UK

**Equipment Under Test (EUT)**

Product Name: 2.4G Wireless Dongle

Model No.: MX-168S

Trade Mark: Posturite

**FCC ID:** Y35-MX168S

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.249:2016

**Date of sample receipt:** June 26, 2017

**Date of Test:** June 29-July 04, 2017

**Date of report issued:** July 05, 2017

**Test Result :** PASS \*

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

Authorized Signature:

A circular blue ink stamp from GTS Global United Technology Services Co., Ltd. is visible. The stamp contains the text 'GTS', 'GLOBAL TESTING', and '1980'. Overlaid on the stamp is a handwritten signature in black ink, which appears to be 'Robinson Lo'.

**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	July 05, 2017	Original

Prepared By:

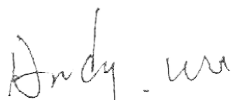


Date:

July 05, 2017

Project Engineer

Check By:



Date:

July 04, 2017

Reviewer

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## 4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

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

*Remark: Test according to ANSI C63.10 2013 and ANSI C63.4: 2014.*

### 4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 26.5GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(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:	2.4G Wireless Dongle
Model No.:	MX-168S
Operation Frequency:	2408MHz~2474MHz
Channel numbers:	34
Channel separation:	2MHz
Modulation type:	FSK
Antenna Type:	PCB antenna
Antenna gain:	-2dBi (declare by Applicant)
Power supply:	USB DC5V

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2408MHz	10	2426MHz	19	2444MHz	28	2462MHz
2	2410MHz	11	2428MHz	20	2446MHz	29	2464MHz
3	2412MHz	12	2430MHz	21	2448MHz	30	2466MHz
4	2414MHz	13	2432MHz	22	2450MHz	31	2468MHz
5	2416MHz	14	2434MHz	23	2452MHz	32	2470MHz
6	2418MHz	15	2436MHz	24	2454MHz	33	2472MHz
7	2420MHz	16	2438MHz	25	2456MHz	34	2474MHz
8	2422MHz	17	2440MHz	26	2458MHz		
9	2424MHz	18	2442MHz	27	2460MHz		

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:

Channel	Frequency
The lowest channel	2408MHz
The middle channel	2440MHz
The Highest channel	2474MHz

## 5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
<i>Remark: During the test, 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.</i>	

### Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Y	Z
Field Strength(dBuV/m)	93.25	94.68	92.81

## 5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
Lenovo	PC Host	M6900	EA05257893	Doc

## 5.4 Test Facility

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

- **FCC —Registration No.: 600491**

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 600491, June 22, 2016.

- **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

## 5.6 Other Information Requested by the Customer

None.

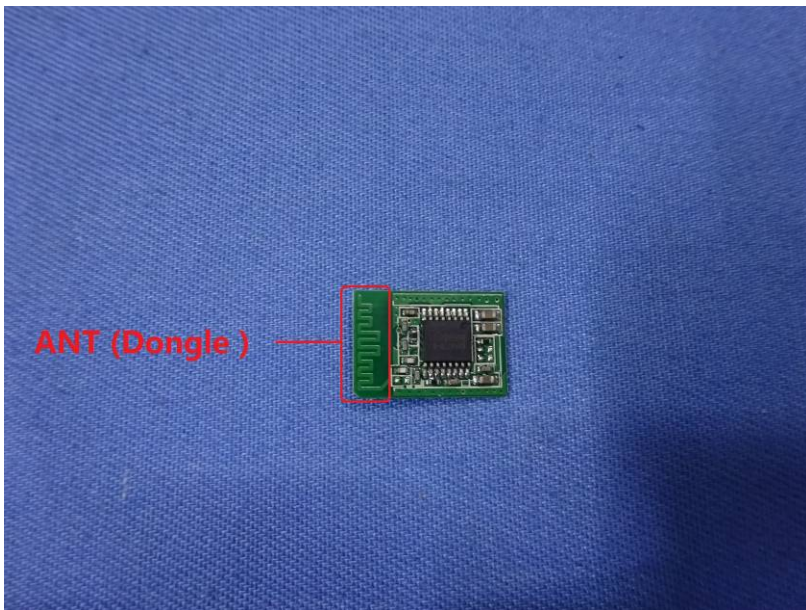
## 6 Test Instruments list

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	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 28 2017	June. 27 2018
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 28 2017	June. 27 2018
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 28 2017	June. 27 2018
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June. 28 2017	June. 27 2018
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 28 2017	June. 27 2018
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	June. 28 2017	June. 27 2018
10	Coaxial Cable	GTS	N/A	GTS211	June. 28 2017	June. 27 2018
11	Coaxial cable	GTS	N/A	GTS210	June. 28 2017	June. 27 2018
12	Coaxial Cable	GTS	N/A	GTS212	June. 28 2017	June. 27 2018
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 28 2017	June. 27 2018
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June. 28 2017	June. 27 2018
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 28 2017	June. 27 2018
16	Band filter	Amindeon	82346	GTS219	June. 28 2017	June. 27 2018
17	Power Meter	Anritsu	ML2495A	GTS540	June. 28 2017	June. 27 2018
18	Power Sensor	Anritsu	MA2411B	GTS541	June. 28 2017	June. 27 2018

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 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 28 2017	June. 27 2018
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 28 2017	June. 27 2018
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 28 2017	June. 27 2018
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. 28 2017	June. 27 2018

## 7 Test results and Measurement Data

### 7.1 Antenna requirement

<b>Standard requirement:</b>	FCC Part15 C Section 15.203
<b>15.203 requirement:</b> <p>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.</p>	
<b>EUT Antenna:</b>	
<p><i>The antenna is PCB antenna, the best case gain of the antenna is -2dBi</i></p> 	



## 7.2 Conducted Emissions

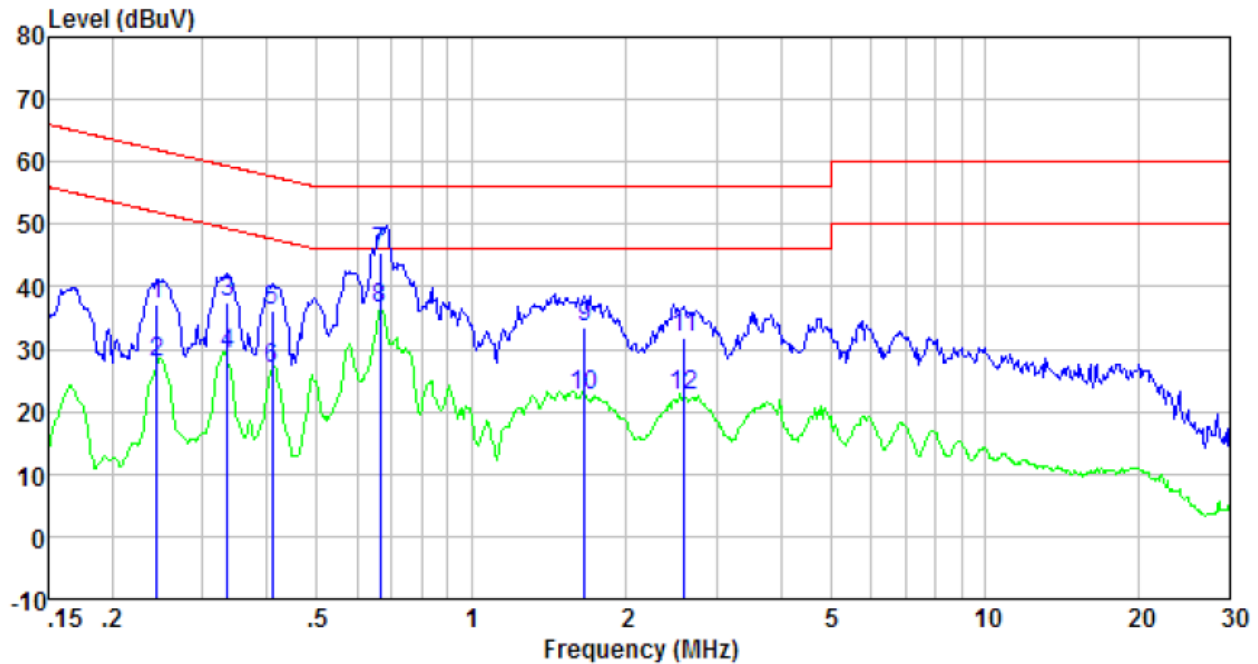
Test Requirement:	FCC Part15 C Section 15.207			
Test Method:	ANSI C63.10:2013			
Test Frequency Range:	150KHz to 30MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto			
Limit:	Frequency range (MHz)	Limit (dBuV)		
		Quasi-peak	Average	
		0.15-0.5	66 to 56*	56 to 46*
		0.5-5	56	46
		5-30	60	50
* Decreases with the logarithm of the frequency.				
Test setup:	<div><div>Reference Plane</div><div><div><div>LISN</div><div>AUX Equipment</div><div>E.U.T</div></div><div><div>LISN</div><div>Filter</div><div>EMI Receiver</div></div></div><div>40cm</div><div>80cm</div><div>AC power</div><div>Test table/Insulation plane</div></div>			
	<div>Remark:</div> <div>E.U.T: Equipment Under Test</div> <div>LISN: Line Impedance Stabilization Network</div> <div>Test table height=0.8m</div>			
Test procedure:	<div>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.</div> <div>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).</div> <div>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.</div>			
Test Instruments:	Refer to section 6.0 for details			
Test mode:	Refer to section 5.2 for details			
Test results:	Pass			

### Measurement data:

The figure is a spectral plot with 'Level (dBuV)' on the vertical axis and 'Frequency (MHz)' on the horizontal axis. The vertical axis ranges from -10 to 80 in increments of 10. The horizontal axis is logarithmic, with major ticks at 0.15, 0.2, 0.5, 1, 2, 5, 10, 20, and 30. Two signal traces are shown: a blue trace and a green trace. The blue trace exhibits multiple peaks, with the most prominent ones labeled with numbers 1 through 12. Two red lines are also present: one is a straight line sloping downwards from approximately 65 dBuV at 0.15 MHz to 55 dBuV at 0.5 MHz, then becoming horizontal; the other is a stepped line that follows a similar initial slope but then has a vertical jump at 5 MHz, remaining horizontal thereafter.

Freq MHz	Reading level dBuV	11SN/1SN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.332	40.09	0.43	0.10	40.62	59.40	-18.78	QP
0.332	32.83	0.43	0.10	33.36	49.40	-16.04	Average
0.592	41.17	0.31	0.12	41.60	56.00	-14.40	QP
0.592	32.56	0.31	0.12	32.99	46.00	-13.01	Average
0.665	47.48	0.29	0.13	47.90	56.00	-8.10	QP
0.665	39.76	0.29	0.13	40.18	46.00	-5.82	Average
0.720	42.36	0.28	0.13	42.77	56.00	-13.23	QP
0.720	34.57	0.28	0.13	34.98	46.00	-11.02	Average
1.403	36.79	0.23	0.13	37.15	56.00	-18.85	QP
1.403	26.96	0.23	0.13	27.32	46.00	-18.68	Average
1.762	37.00	0.21	0.14	37.35	56.00	-18.65	QP
1.762	26.18	0.21	0.14	26.53	46.00	-19.47	Average

## Neutral:

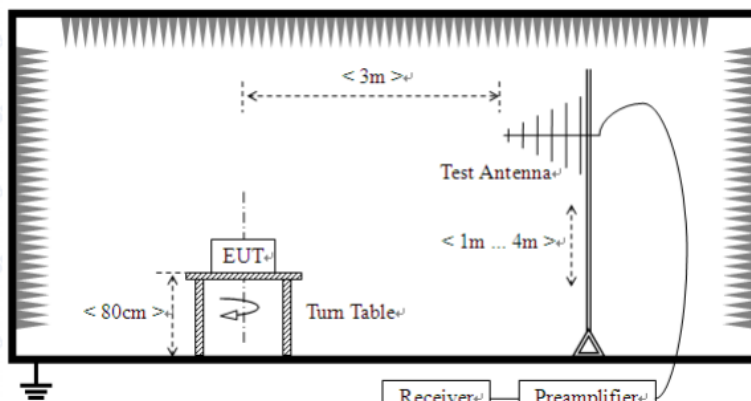


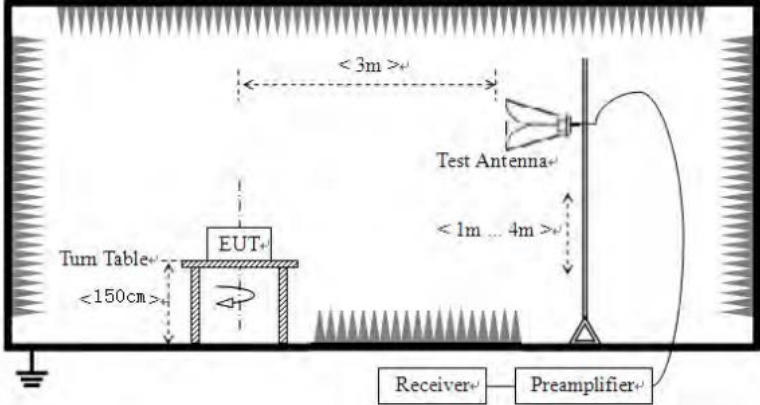
Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.244	36.71	0.42	0.11	37.24	61.95	-24.71	QP
0.244	27.36	0.42	0.11	27.89	51.95	-24.06	Average
0.336	37.03	0.41	0.10	37.54	59.31	-21.77	QP
0.336	28.51	0.41	0.10	29.02	49.31	-20.29	Average
0.408	35.72	0.39	0.11	36.22	57.68	-21.46	QP
0.408	26.25	0.39	0.11	26.75	47.68	-20.93	Average
0.665	45.17	0.25	0.13	45.55	56.00	-10.45	QP
0.665	36.21	0.25	0.13	36.59	46.00	-9.41	Average
1.662	33.09	0.20	0.14	33.43	56.00	-22.57	QP
1.662	22.22	0.20	0.14	22.56	46.00	-23.44	Average
2.594	31.36	0.20	0.15	31.71	56.00	-24.29	QP
2.594	22.16	0.20	0.15	22.51	46.00	-23.49	Average

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

## 7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	30MHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark
	2400MHz-2483.5MHz		94.00		Average Value
			114.00		Peak Value
Limit: (Spurious Emissions)	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.00		Quasi-peak Value
	88MHz-216MHz		43.50		Quasi-peak Value
	216MHz-960MHz		46.00		Quasi-peak Value
	960MHz-1GHz		54.00		Quasi-peak Value
	Above 1GHz		54.00		Average Value
			74.00		Peak Value
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				
Test setup:	Below 1GHz				
	<div></div>				
	Above 1GHz				

	
Test Procedure:	<ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> </ol>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

## Measurement data:

## 7.3.1 Field Strength of The Fundamental Signal

### Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2408.00	90.58	27.58	5.39	30.18	93.37	114.00	-20.63	Vertical
2408.00	88.24	27.58	5.39	30.18	91.03	114.00	-22.97	Horizontal
2440.00	89.03	27.55	5.43	30.06	91.95	114.00	-22.05	Vertical
2440.00	87.28	27.55	5.43	30.06	90.20	114.00	-23.80	Horizontal
2474.00	91.62	27.52	5.47	29.93	94.68	114.00	-19.32	Vertical
2474.00	88.65	27.52	5.47	29.93	91.71	114.00	-22.29	Horizontal

### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2408.00	80.14	27.58	5.39	30.18	82.93	94.00	-11.07	Vertical
2408.00	77.78	27.58	5.39	30.18	80.57	94.00	-13.43	Horizontal
2440.00	78.37	27.55	5.43	30.06	81.29	94.00	-12.71	Vertical
2440.00	75.50	27.55	5.43	30.06	78.42	94.00	-15.58	Horizontal
2474.00	81.26	27.52	5.47	29.93	84.32	94.00	-9.68	Vertical
2474.00	78.22	27.52	5.47	29.93	81.28	94.00	-12.72	Horizontal

Remark: RBW 3MHz VBW 3MHz peak detector is for PK Value, RMS detector is for AV value

## 7.3.2 Spurious emissions

### ■ Below 1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
79.80	34.12	7.30	1.03	29.80	12.65	40.00	-27.35	Vertical
131.76	36.43	8.10	1.45	29.50	16.48	43.50	-27.02	Vertical
196.51	38.70	10.03	1.82	29.21	21.34	43.50	-22.16	Vertical
267.55	38.67	12.43	2.21	29.77	23.54	46.00	-22.46	Vertical
318.82	37.81	13.85	2.46	29.89	24.23	46.00	-21.77	Vertical
372.01	39.21	14.91	2.72	29.63	27.21	46.00	-18.79	Vertical
139.36	34.62	7.30	1.50	29.46	13.96	43.50	-29.54	Horizontal
178.13	40.52	8.70	1.73	29.28	21.67	43.50	-21.83	Horizontal
201.39	44.75	10.30	1.85	29.21	27.69	43.50	-15.81	Horizontal
266.61	41.11	12.43	2.21	29.77	25.98	46.00	-20.02	Horizontal
294.11	37.22	13.31	2.33	29.97	22.89	46.00	-23.11	Horizontal
798.98	30.20	21.30	4.45	29.20	26.75	46.00	-19.25	Horizontal

■ Above 1GHz

Test channel:	Lowest channel
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**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4816.00	35.67	31.78	8.60	32.09	43.96	74.00	-30.04	Vertical
7224.00	30.75	36.15	11.65	32.00	46.55	74.00	-27.45	Vertical
9632.00	30.50	37.95	14.14	31.62	50.97	74.00	-23.03	Vertical
12040.00	*					74.00		Vertical
14448.00	*					74.00		Vertical
4816.00	39.62	31.78	8.60	32.09	47.91	74.00	-26.09	Horizontal
7224.00	32.36	36.15	11.65	32.00	48.16	74.00	-25.84	Horizontal
9632.00	29.77	37.95	14.14	31.62	50.24	74.00	-23.76	Horizontal
12040.00	*					74.00		Horizontal
14448.00	*					74.00		Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4816.00	24.79	31.78	8.60	32.09	33.08	54.00	-20.92	Vertical
7224.00	19.62	36.15	11.65	32.00	35.42	54.00	-18.58	Vertical
9632.00	18.80	37.95	14.14	31.62	39.27	54.00	-14.73	Vertical
12040.00	*					54.00		Vertical
14448.00	*					54.00		Vertical
4816.00	28.84	31.78	8.60	32.09	37.13	54.00	-16.87	Horizontal
7224.00	21.68	36.15	11.65	32.00	37.48	54.00	-16.52	Horizontal
9632.00	18.39	37.95	14.14	31.62	38.86	54.00	-15.14	Horizontal
12040.00	*					54.00		Horizontal
14448.00	*					54.00		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.
3. “\*”, means this data is the too weak instrument of signal is unable to test.



Test channel:	Middle channel
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**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	36.39	31.85	8.67	32.12	44.79	74.00	-29.21	Vertical
7320.00	31.22	36.37	11.72	31.89	47.42	74.00	-26.58	Vertical
9760.00	30.93	38.35	14.25	31.62	51.91	74.00	-22.09	Vertical
12200.00	*					74.00		Vertical
14640.00	*					74.00		Vertical
4880.00	40.48	31.85	8.67	32.12	48.88	74.00	-25.12	Horizontal
7320.00	32.89	36.37	11.72	31.89	49.09	74.00	-24.91	Horizontal
9760.00	30.26	38.35	14.25	31.62	51.24	74.00	-22.76	Horizontal
12200.00	*					74.00		Horizontal
14640.00	*					74.00		Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	25.38	31.85	8.67	32.12	33.78	54.00	-20.22	Vertical
7320.00	20.02	36.37	11.72	31.89	36.22	54.00	-17.78	Vertical
9760.00	19.15	38.35	14.25	31.62	40.13	54.00	-13.87	Vertical
12200.00	*					54.00		Vertical
14640.00	*					54.00		Vertical
4880.00	29.51	31.85	8.67	32.12	37.91	54.00	-16.09	Horizontal
7320.00	22.13	36.37	11.72	31.89	38.33	54.00	-15.67	Horizontal
9760.00	18.80	38.35	14.25	31.62	39.78	54.00	-14.22	Horizontal
12200.00	*					54.00		Horizontal
14640.00	*					54.00		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.
3. “\*”, means this data is the too weak instrument of signal is unable to test.

Test channel:	Highest channel
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## Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4948.00	35.78	31.93	8.73	32.16	44.28	74.00	-29.72	Vertical
7422.00	30.82	36.59	11.79	31.78	47.42	74.00	-26.58	Vertical
9896.00	30.57	38.81	14.38	31.88	51.88	74.00	-22.12	Vertical
12370.00	*					74.00		Vertical
14844.00	*					74.00		Vertical
4948.00	39.76	31.93	8.73	32.16	48.26	74.00	-25.74	Horizontal
7422.00	32.44	36.59	11.79	31.78	49.04	74.00	-24.96	Horizontal
9896.00	29.85	38.81	14.38	31.88	51.16	74.00	-22.84	Horizontal
12370.00	*					74.00		Horizontal
14844.00	*					74.00		Horizontal

## Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4948.00	24.93	31.93	8.73	32.16	33.43	54.00	-20.57	Vertical
7422.00	19.71	36.59	11.79	31.78	36.31	54.00	-17.69	Vertical
9896.00	18.88	38.81	14.38	31.88	40.19	54.00	-13.81	Vertical
12370.00	*					54.00		Vertical
14844.00	*					54.00		Vertical
4948.00	28.99	31.93	8.73	32.16	37.49	54.00	-16.51	Horizontal
7422.00	21.78	36.59	11.79	31.78	38.38	54.00	-15.62	Horizontal
9896.00	18.48	38.81	14.38	31.88	39.79	54.00	-14.21	Horizontal
12370.00	*					54.00		Horizontal
14844.00	*					54.00		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.
3. “\*”, means this data is the too weak instrument of signal is unable to test.

### 7.3.3 Bandedge emissions

All of the restriction bands were tested, and only the data of worst case was exhibited.

Test channel:	Lowest channel
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#### Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	35.83	27.59	5.38	30.18	38.62	74.00	-35.38	Horizontal
2400.00	51.61	27.58	5.39	30.18	54.40	74.00	-19.60	Horizontal
2390.00	35.70	27.59	5.38	30.18	38.49	74.00	-35.51	Vertical
2400.00	52.89	27.58	5.39	30.18	55.68	74.00	-18.32	Vertical

#### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	27.97	27.59	5.38	30.18	30.76	54.00	-23.24	Horizontal
2400.00	38.79	27.58	5.39	30.18	41.58	54.00	-12.42	Horizontal
2390.00	27.41	27.59	5.38	30.18	30.20	54.00	-23.80	Vertical
2400.00	39.77	27.58	5.39	30.18	42.56	54.00	-11.44	Vertical

Test channel:	Highest channel
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#### Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.09	27.53	5.47	29.93	40.16	74.00	-33.84	Horizontal
2500.00	37.61	27.55	5.49	29.93	40.72	74.00	-33.28	Horizontal
2483.50	36.76	27.53	5.47	29.93	39.83	74.00	-34.17	Vertical
2500.00	37.93	27.55	5.49	29.93	41.04	74.00	-32.96	Vertical

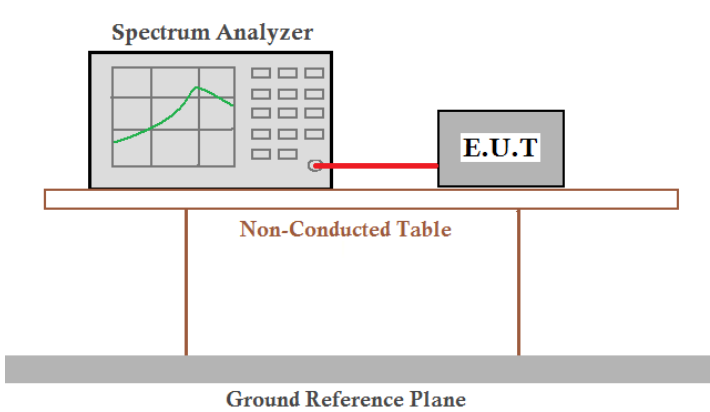
#### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	30.71	27.53	5.47	29.93	33.78	54.00	-20.22	Horizontal
2500.00	29.72	27.55	5.49	29.93	32.83	54.00	-21.17	Horizontal
2483.50	31.34	27.53	5.47	29.93	34.41	54.00	-19.59	Vertical
2500.00	29.06	27.55	5.49	29.93	32.17	54.00	-21.83	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

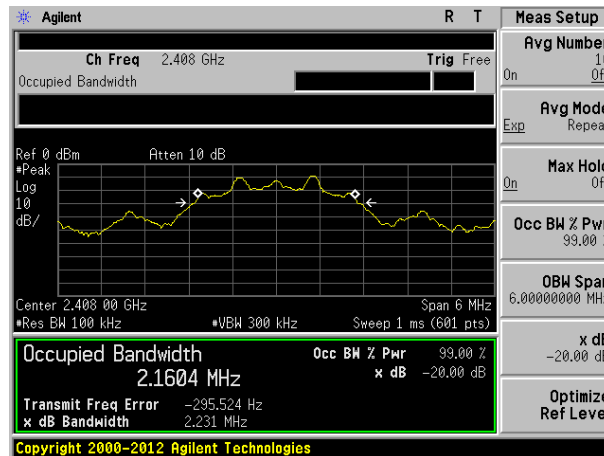
## 7.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2013
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

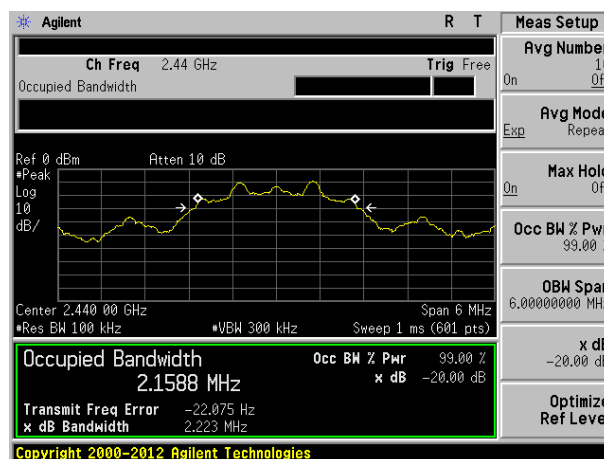
### Measurement Data

Test channel	20dB bandwidth(MHz)	Result
Lowest	2.231	Pass
Middle	2.223	Pass
Highest	2.231	Pass

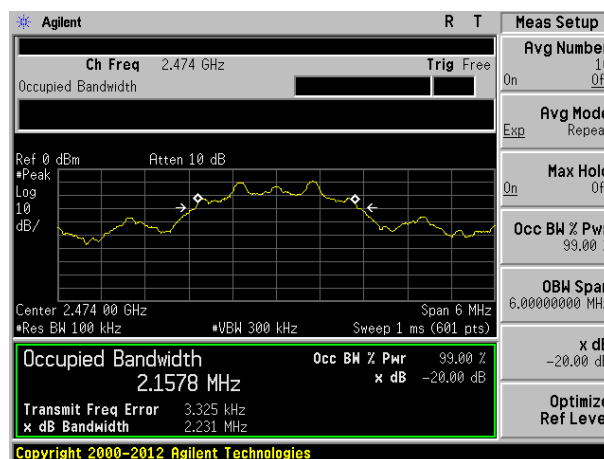
Test plot as follows:



Lowest channel



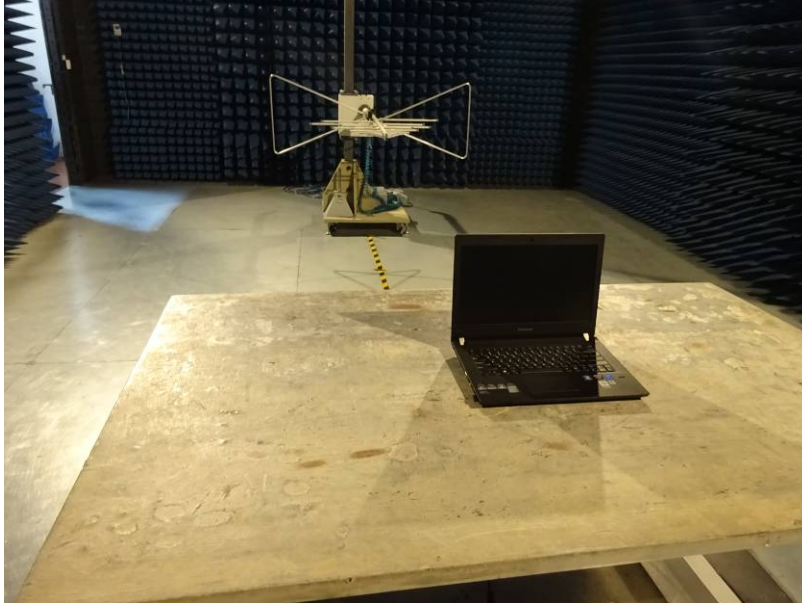
Middle channel



Highest channel

## 8 Test Setup Photo

Radiated Emission

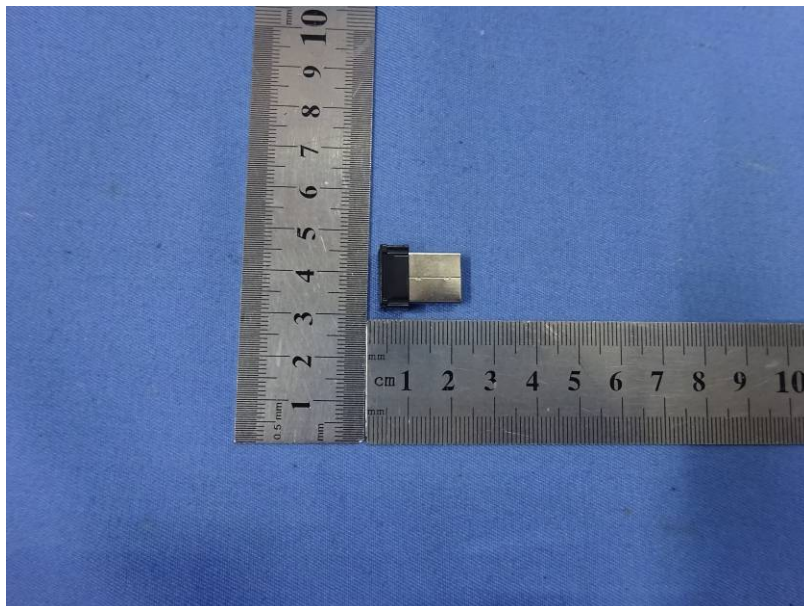
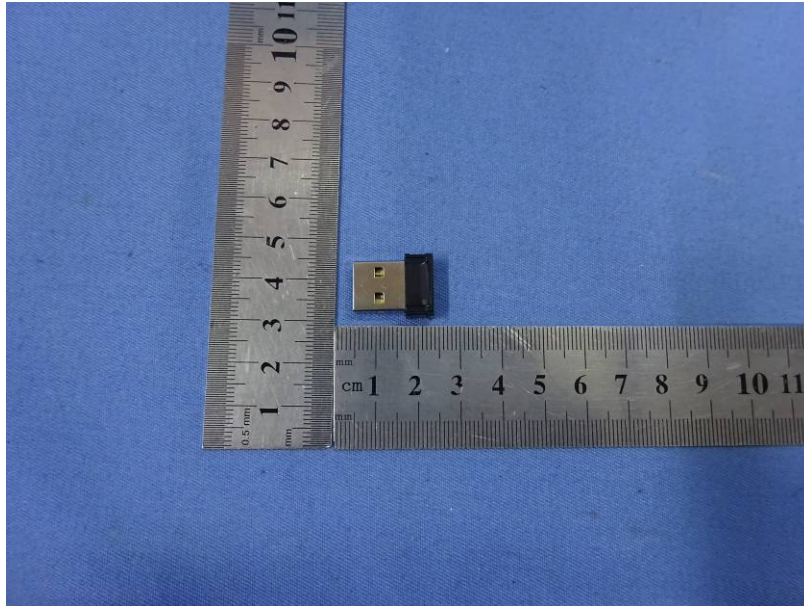


## Conducted Emission

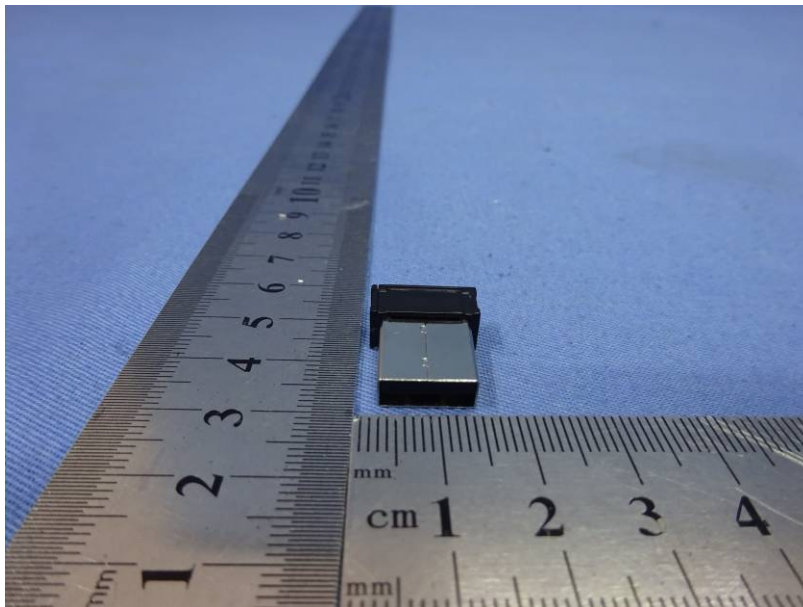
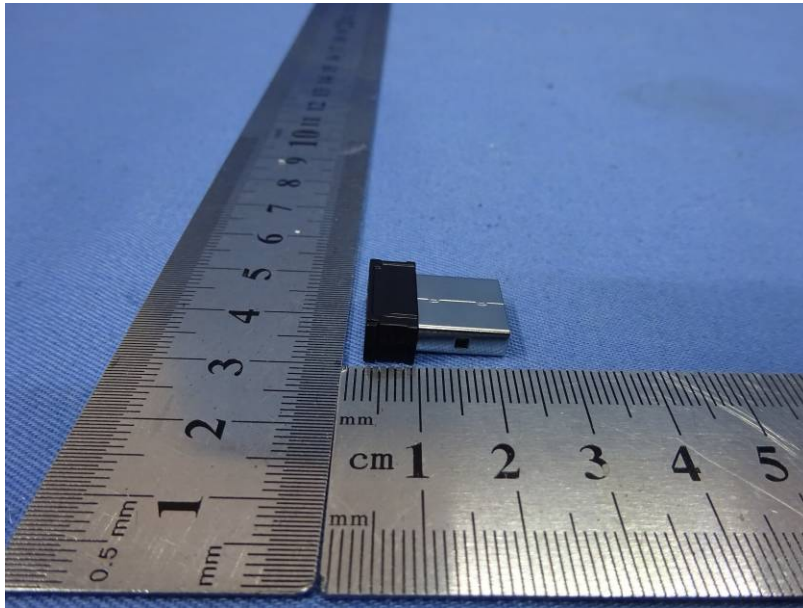


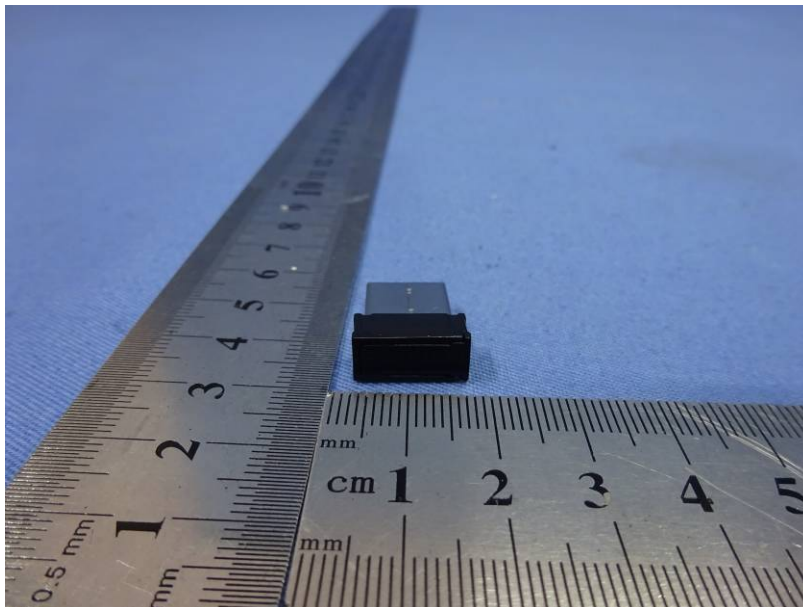
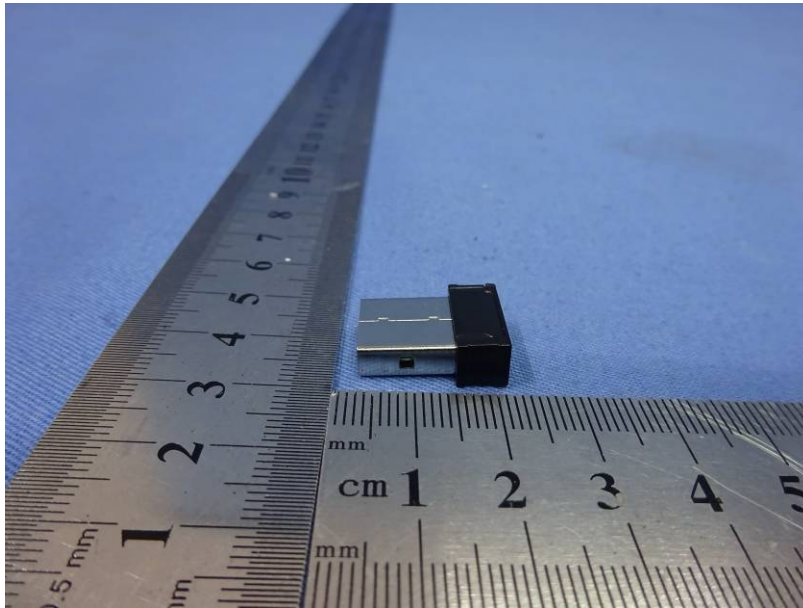


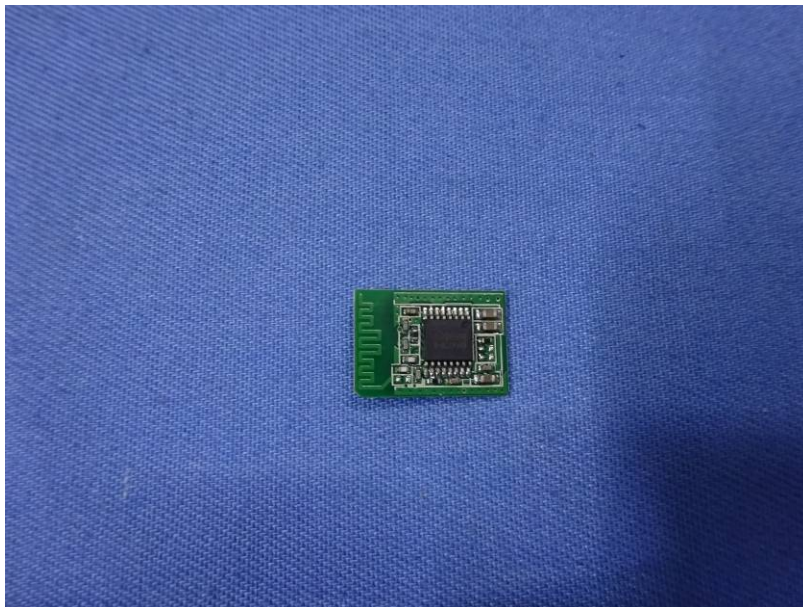
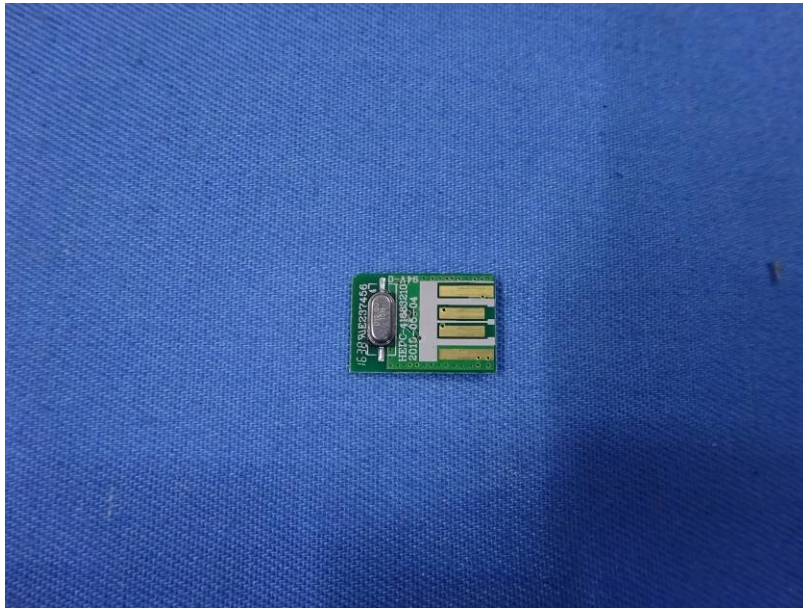
## 9 EUT Constructional Details

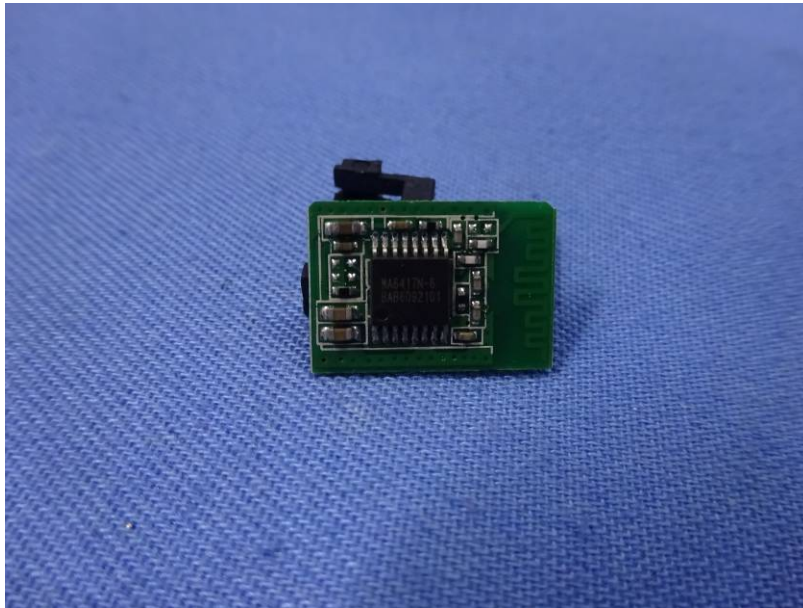












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