

FCC REPORT

Applicant: Shenzhen Chaoyue Technology Development Co.,Ltd.

Address of Applicant: 3F,Block A1,Puhua High-tech Park,Dalang,Longhua,
Shenzhen,China

Manufacturer/Factory: Shenzhen Chaoyue Technology Development Co.,Ltd.

**Address of
Manufacturer/Factory:** 3F,Block A1,Puhua High-tech Park,Dalang,Longhua,
Shenzhen,China

Equipment Under Test (EUT)

Product Name: Hand-held automobile diagnostic instrument

Model No.: V08,V015,V016,V017,V018,V019,V510,V511,V512,V311,V312,
V313,V314,V315,V200,V201,V202,V203,V204,V205,V100,V10
1,V102,V103,V600,V601,V602,V700,V701,V702,V014U2001,F
0-01;KB30,CveckM,V01H2,V01L2,V01B2,V01HW,V02H2,
V03H2,V03HW,V04HU,V05H4,V06H4,V06H4K,V06HW,B02,
B18,B14,B11,V01H2-1,V01L2-1,V01B2-1,V01HW-1,V02H2-1,
V03H2-1,V03HW-1,V04HU-1,V05H4-1,V06H4-1,V06H4K-1,
V06HW-1,B02,VC100,VC101,VC102L4-1,VC102L2-1,
VC102W-1,VC300,VC309,V07HU,V09H4-1,V10,V11B,
V201,V310,V500,V13,V20,V12

Trade Mark: N/A

FCC ID: 2ATKM-V08

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

Date of sample receipt: May 28, 2019

Date of Test: May 28-June 04, 2019

Date of report issued: June 04, 2019

Authorized Signature:



Robinson Lo

Laboratory Manager

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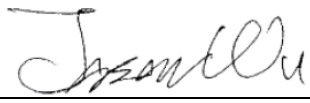
Report No.: GTS201905000225F


Test Result : PASS *

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

2 Version

Version No.	Date	Description
00	June 04, 2019	Original

Prepared By:  **Date:** June 04, 2019
Project Engineer

Check By:  **Date:** June 04, 2019
Reviewer

3 Contents

	Page
1 COVER PAGE.....	1
2 VERSION.....	3
3 CONTENTS	4
4 TEST SUMMARY	5
4.1 MEASUREMENT UNCERTAINTY	5
5 GENERAL INFORMATION.....	6
5.1 GENERAL DESCRIPTION OF EUT	6
5.2 TEST MODE	8
5.3 DESCRIPTION OF SUPPORT UNITS	8
5.4 TEST FACILITY.....	8
5.5 TEST LOCATION	8
5.6 ADDITIONAL INSTRUCTIONS.....	错误!未定义书签。
6 TEST INSTRUMENTS LIST	9
7 TEST RESULTS AND MEASUREMENT DATA.....	10
7.1 ANTENNA REQUIREMENT	10
7.2 CONDUCTED EMISSIONS	11
7.3 RADIATED EMISSION METHOD	12
7.3.1 Field Strength of The Fundamental Signal	14
7.3.2 Spurious emissions.....	15
7.3.3 Bandedge emissions.....	20
7.4 20dB OCCUPY BANDWIDTH	21
8 TEST SETUP PHOTO	23
9 EUT CONSTRUCTIONAL DETAILS	24

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 C63.4:2014 and ANSI C63.10:2013.

4.1 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:	Hand-held automobile diagnostic instrument
Model No.:	V08
Serial No.:	V015,V016,V017,V018,V019,V510,V511,V512,V311,V312,V313,V314,V315,V200,V201,V202,V203,V204,V205,V100,V101,V102,V103,V600,V601,V602,V700,V701,V702,V014U2001,F0-01;KB30,CveckM,V01H2,V01L2,V01B2,V01HW,V02H2,V03H2,V03HW,V04HU,V05H4,V06H4,V06H4K,V06HW,B02,B18,B14,B11,V01H2-1,V01L2-1,V01B2-1,V01HW-1,V02H2-1,V03H2-1,V03HW-1,V04HU-1,V05H4-1,V06H4-1,V06H4K-1,V06HW-1,B02,VC100,VC101,VC102L4-1,VC102L2-1,VC102W-1,VC300,VC309,V07HU,V09H4-1,V10,V11B,V201,V310,V500,V13,V20,V12
Test sample(s) ID:	GTS201905000225
Sample(s) Status	Engineered sample
Hardware Version:	HV1.0
Software Version:	SV1.0
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	40
Channel separation:	2MHz
Modulation type:	GFSK
Antenna Type:	PCB antenna
Antenna gain:	0dBi(declare by applicant)
Power supply:	DC 9-36V
Test Voltage :	DC 12V

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	11	2422MHz	21	2442MHz	31	2462MHz
2	2404MHz	12	2424MHz	22	2444MHz	32	2464MHz
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
9	2418MHz	19	2438MHz	29	2458MHz	39	2478MHz
10	2420MHz	20	2440MHz	30	2460MHz	40	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:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2440MHz
The Highest channel	2480MHz

5.2 Test mode

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

Pre-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)	95.11	96.96	96.42

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup":

Y axis (see the test setup photo)

5.3 Description of Support Units

None.

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.

- **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.

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

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

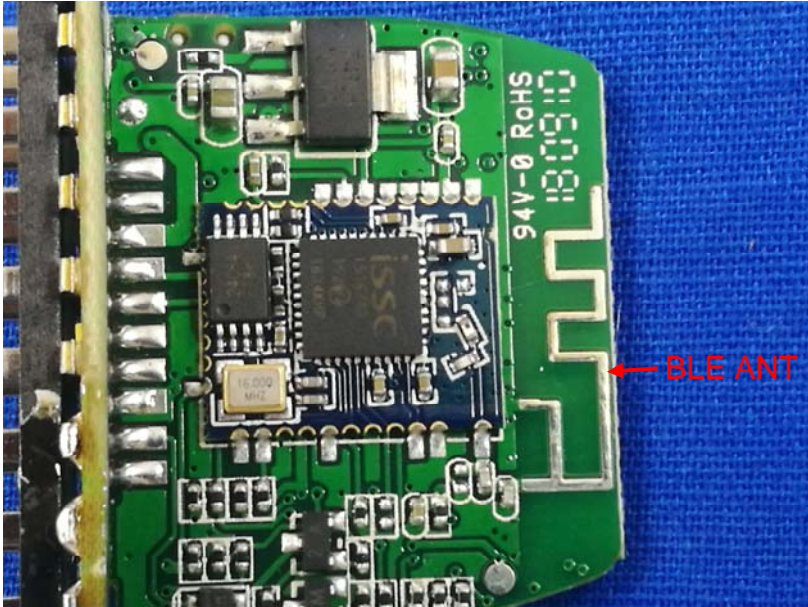
Fax: 0755-27798960

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 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 20 2018	Oct. 19 2019
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 20 2018	Oct. 19 2019
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 20 2018	Oct. 19 2019
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 27 2018	June. 26 2019

7 Test results and Measurement Data

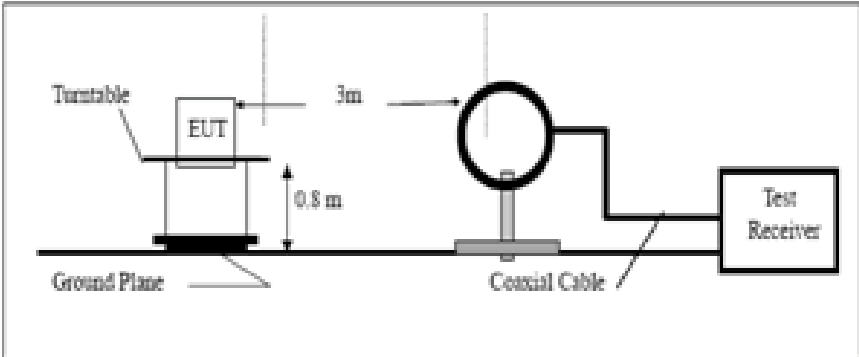
7.1 Antenna requirement

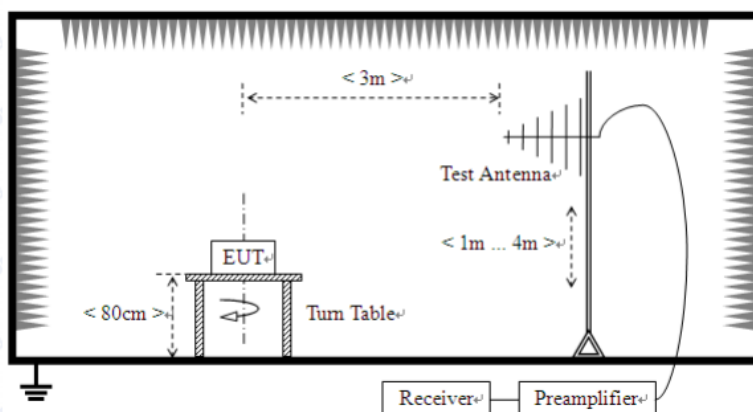
Standard requirement:	FCC Part15 C Section 15.203
<p>15.203 requirement:</p> <p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a 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>	
<p>EUT Antenna:</p>	
<p><i>The antenna is PCB antenna, the best case gain of the antenna is 0dBi.</i></p>  <p>The image shows a close-up of a green printed circuit board (PCB) with various electronic components. A prominent feature is a blue antenna element on the right side of the board. A red arrow points to this element with the text 'BLE ANT'. The PCB also has some white markings, including '94V-0 RoHS' and '180910'.</p>	

7.2 Conducted Emissions

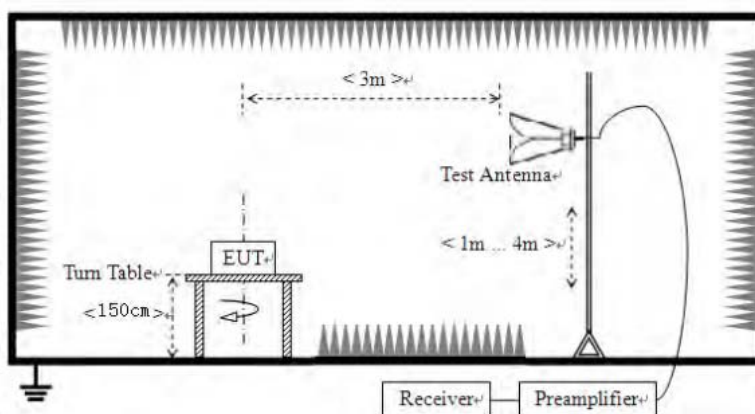
Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Test Frequency Range:	150KHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>* Decreases with the logarithm of the frequency.</p>	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
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													
Test setup:	<p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>														
Test procedure:	<ol style="list-style-type: none"> 1. The EUT 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:	<p>N/A,</p> <p>Because the EUT employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Measurements to demonstrate compliance with the conducted limits are not required for devices.</p>														

7.3 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	Remark
	9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
	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 (uV/m)		Remark	
	0.009MHz-0.490MHz	2400/F(kHz) @300m		Quasi-peak Value	
	0.490MHz-1.705MHz	24000/F(kHz) @30m		Quasi-peak Value	
	1.705MHz-30.0MHz	30 @30m		Quasi-peak Value	
	30MHz-88MHz	100 @3m		Quasi-peak Value	
	88MHz-216MHz	150 @3m		Quasi-peak Value	
	216MHz-960MHz	200 @3m		Quasi-peak Value	
	960MHz-1GHz	500 @3m		Quasi-peak Value	
	Above 1GHz	500 @3m		Average Value	
5000 @3m		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:	<p>Below 1GHz</p> 				



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

Measurement data:

7.3.1 Field Strength of The Fundamental Signal

GFSK

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
2402.00	93.97	27.58	5.39	30.18	96.76	114.00	-17.24	Vertical
2402.00	93.30	27.58	5.39	30.18	96.09	114.00	-17.91	Horizontal
2440.00	92.09	27.55	5.43	30.06	95.01	114.00	-18.99	Vertical
2440.00	86.21	27.55	5.43	30.06	89.13	114.00	-24.87	Horizontal
2480.00	93.22	27.52	5.47	29.93	96.28	114.00	-17.72	Vertical
2480.00	90.04	27.52	5.47	29.93	93.10	114.00	-20.90	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
2402.00	82.93	27.58	5.39	30.18	85.72	94.00	-8.28	Vertical
2402.00	81.16	27.58	5.39	30.18	83.95	94.00	-10.05	Horizontal
2440.00	80.02	27.55	5.43	30.06	82.94	94.00	-11.06	Vertical
2440.00	76.16	27.55	5.43	30.06	79.08	94.00	-14.92	Horizontal
2480.00	83.59	27.52	5.47	29.93	86.65	94.00	-7.35	Vertical
2480.00	80.48	27.52	5.47	29.93	83.54	94.00	-10.46	Horizontal

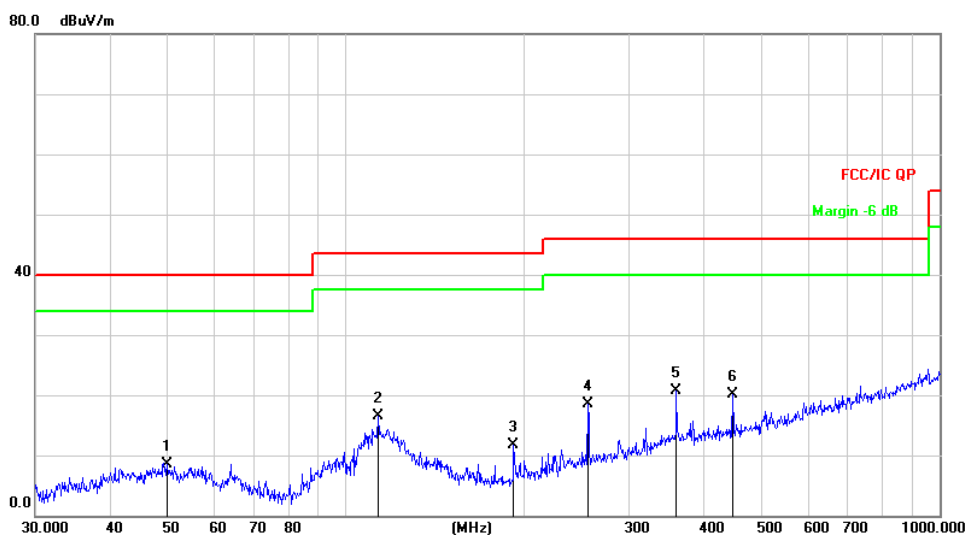
7.3.2 Spurious emissions

Below 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.

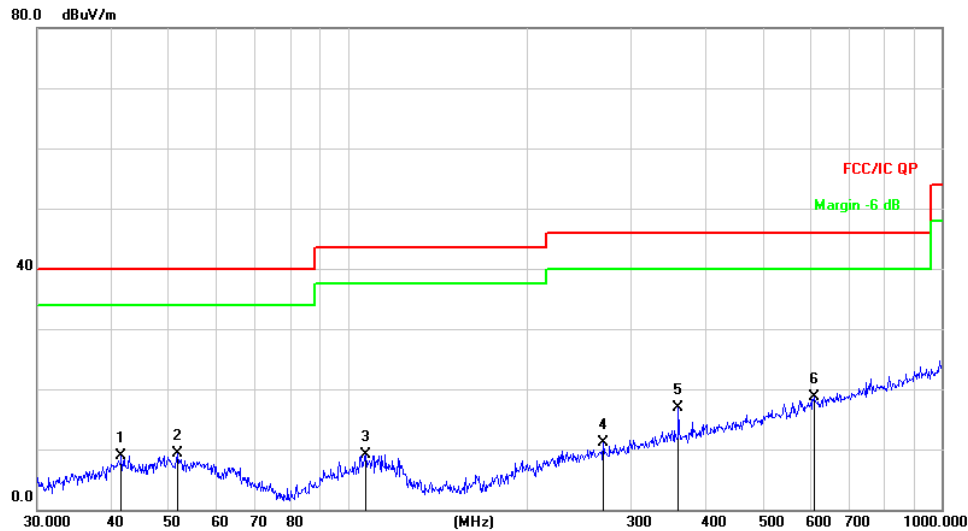
Below 1GHz

EUT :	Hand-held automobile diagnostic instrument	Model Name. :	V08
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 12V	Test Mode :	Worst mode-GFSK



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over
		MHz	dBuV	dB	dBuV/m	dB/m	dB Detector
1		50.0566	23.25	-14.77	8.48	40.00	-31.52 QP
2		113.3163	33.56	-16.97	16.59	43.50	-26.91 QP
3		191.7450	28.10	-16.43	11.67	43.50	-31.83 QP
4		255.6231	32.10	-13.55	18.55	46.00	-27.45 QP
5	*	360.4476	31.17	-10.40	20.77	46.00	-25.23 QP
6		447.9822	28.58	-8.47	20.11	46.00	-25.89 QP

EUT :	Hand-held automobile diagnostic instrument	Model Name. :	V08
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 12V	Test Mode :	Worst mode-GFSK



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dB/m	dB	
1		41.5670	24.22	-15.25	8.97	40.00	-31.03	QP
2		51.6616	23.99	-14.76	9.23	40.00	-30.77	QP
3		107.1337	25.38	-16.29	9.09	43.50	-34.41	QP
4		269.4284	24.25	-13.12	11.13	46.00	-34.87	QP
5		360.4476	27.21	-10.40	16.81	46.00	-29.19	QP
6	*	609.9217	23.18	-4.39	18.79	46.00	-27.21	QP

■ Above 1GHz

Test channel:	Lowest channel
---------------	----------------

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
4804.00	40.56	31.78	8.60	32.09	48.85	74.00	-25.15	Vertical
7206.00	32.60	36.15	11.65	32.00	48.40	74.00	-25.60	Vertical
9608.00	31.25	37.95	14.14	31.62	51.72	74.00	-22.28	Vertical
12010.00	*					74.00		Vertical
14412.00	*					74.00		Vertical
4804.00	45.09	31.78	8.60	32.09	53.38	74.00	-20.62	Horizontal
7206.00	38.30	36.15	11.65	32.00	54.10	74.00	-19.90	Horizontal
9608.00	34.71	37.95	14.14	31.62	55.18	74.00	-18.82	Horizontal
12010.00	*					74.00		Horizontal
14412.00	*					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
4804.00	29.71	31.78	8.60	32.09	38.00	54.00	-16.00	Vertical
7206.00	24.12	36.15	11.65	32.00	39.92	54.00	-14.08	Vertical
9608.00	24.23	37.95	14.14	31.62	44.70	54.00	-9.30	Vertical
12010.00	*					54.00		Vertical
14412.00	*					54.00		Vertical
4804.00	32.10	31.78	8.60	32.09	40.39	54.00	-13.61	Horizontal
7206.00	23.77	36.15	11.65	32.00	39.57	54.00	-14.43	Horizontal
9608.00	23.58	37.95	14.14	31.62	44.05	54.00	-9.95	Horizontal
12010.00	*					54.00		Horizontal
14412.00	*					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)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	39.41	31.85	8.67	32.12	47.81	74.00	-26.19	Vertical
7320.00	32.35	36.37	11.72	31.89	48.55	74.00	-25.45	Vertical
9760.00	31.00	38.35	14.25	31.62	51.98	74.00	-22.02	Vertical
12200.00	*					74.00		Vertical
14640.00	*					74.00		Vertical
4880.00	42.08	31.85	8.67	32.12	50.48	74.00	-23.52	Horizontal
7320.00	32.62	36.37	11.72	31.89	48.82	74.00	-25.18	Horizontal
9760.00	31.20	38.35	14.25	31.62	52.18	74.00	-21.82	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)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	27.39	31.85	8.67	32.12	35.79	54.00	-18.21	Vertical
7320.00	23.13	36.37	11.72	31.89	39.33	54.00	-14.67	Vertical
9760.00	20.51	38.35	14.25	31.62	41.49	54.00	-12.51	Vertical
12200.00	*					54.00		Vertical
14640.00	*					54.00		Vertical
4880.00	35.05	31.85	8.67	32.12	43.45	54.00	-10.55	Horizontal
7320.00	25.83	36.37	11.72	31.89	42.03	54.00	-11.97	Horizontal
9760.00	24.04	38.35	14.25	31.62	45.02	54.00	-8.98	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)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	38.09	31.93	8.73	32.16	46.59	74.00	-27.41	Vertical
7440.00	33.75	36.59	11.79	31.78	50.35	74.00	-23.65	Vertical
9920.00	30.78	38.81	14.38	31.88	52.09	74.00	-21.91	Vertical
12400.00	*					74.00		Vertical
14880.00	*					74.00		Vertical
4960.00	41.63	31.93	8.73	32.16	50.13	74.00	-23.87	Horizontal
7440.00	33.25	36.59	11.79	31.78	49.85	74.00	-24.15	Horizontal
9920.00	32.87	38.81	14.38	31.88	54.18	74.00	-19.82	Horizontal
12400.00	*					74.00		Horizontal
14880.00	*					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	29.00	31.93	8.73	32.16	37.50	54.00	-16.50	Vertical
7440.00	24.87	36.59	11.79	31.78	41.47	54.00	-12.53	Vertical
9920.00	22.24	38.81	14.38	31.88	43.55	54.00	-10.45	Vertical
12400.00	*					54.00		Vertical
14880.00	*					54.00		Vertical
4960.00	32.34	31.93	8.73	32.16	40.84	54.00	-13.16	Horizontal
7440.00	24.85	36.59	11.79	31.78	41.45	54.00	-12.55	Horizontal
9920.00	24.19	38.81	14.38	31.88	45.50	54.00	-8.50	Horizontal
12400.00	*					54.00		Horizontal
14880.00	*					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

Test channel:	Lowest channel
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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
2390.00	42.30	27.59	5.38	30.18	45.09	74.00	-28.91	Horizontal
2400.00	54.11	27.58	5.39	30.18	56.90	74.00	-17.10	Horizontal
2390.00	44.34	27.59	5.38	30.18	47.13	74.00	-26.87	Vertical
2400.00	43.42	27.58	5.39	30.18	46.21	74.00	-27.79	Vertical

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
2390.00	31.82	27.59	5.38	30.18	34.61	54.00	-19.39	Horizontal
2400.00	32.13	27.58	5.39	30.18	34.92	54.00	-19.08	Horizontal
2390.00	32.31	27.59	5.38	30.18	35.10	54.00	-18.90	Vertical
2400.00	34.99	27.58	5.39	30.18	37.78	54.00	-16.22	Vertical

Test channel:	Highest channel
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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	45.38	27.53	5.47	29.93	48.45	74.00	-25.55	Horizontal
2500.00	43.43	27.55	5.49	29.93	46.54	74.00	-27.46	Horizontal
2483.50	44.75	27.53	5.47	29.93	47.82	74.00	-26.18	Vertical
2500.00	46.12	27.55	5.49	29.93	49.23	74.00	-24.77	Vertical

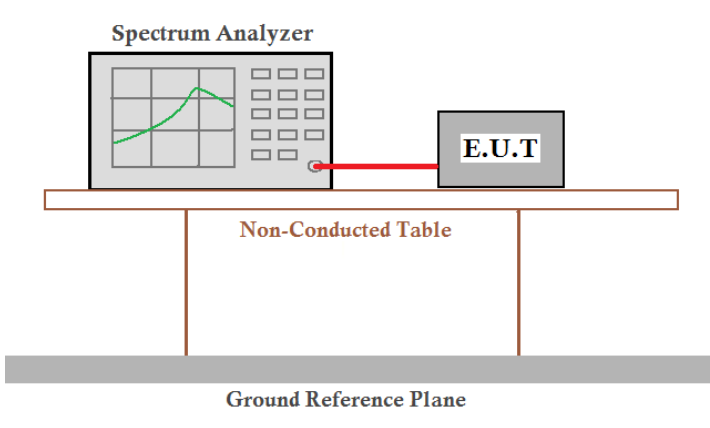
Average value:

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	33.37	27.53	5.47	29.93	36.44	54.00	-17.56	Horizontal
2500.00	34.65	27.55	5.49	29.93	37.76	54.00	-16.24	Horizontal
2483.50	33.81	27.53	5.47	29.93	36.88	54.00	-17.12	Vertical
2500.00	34.44	27.55	5.49	29.93	37.55	54.00	-16.45	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor

7.4 20dB Occupy Bandwidth

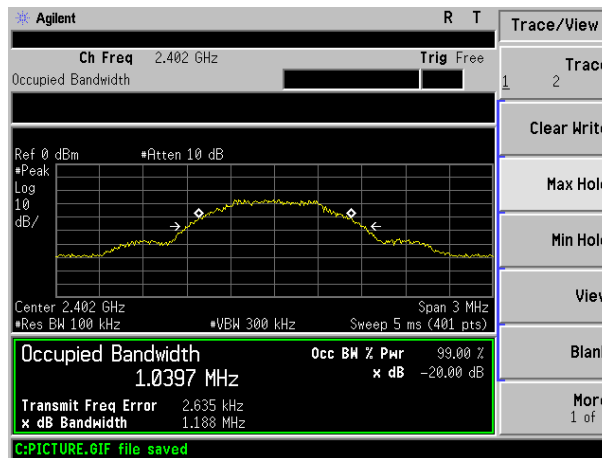
Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2013
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by 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

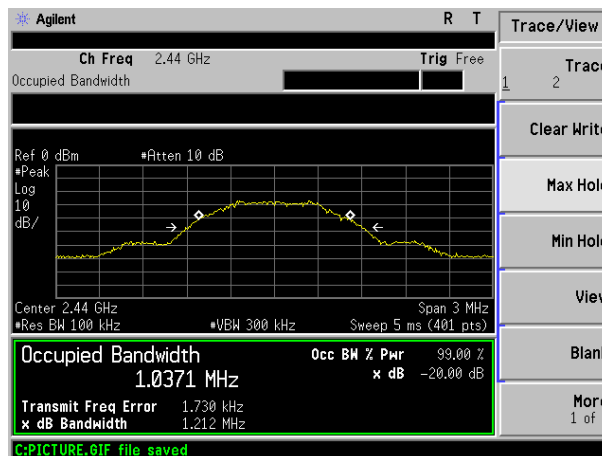
EUT :	Hand-held automobile diagnostic instrument	Model Name. :	V08
Temperature :	26 °C	Relative Humidity :	54%
Test Voltage :	DC 12V	Pressure :	1010hPa
Test Mode :	Transmitting mode		

Test channel	20dB bandwidth(MHz)	Result
Lowest	1.188	Pass
Middle	1.212	Pass
Highest	1.199	Pass

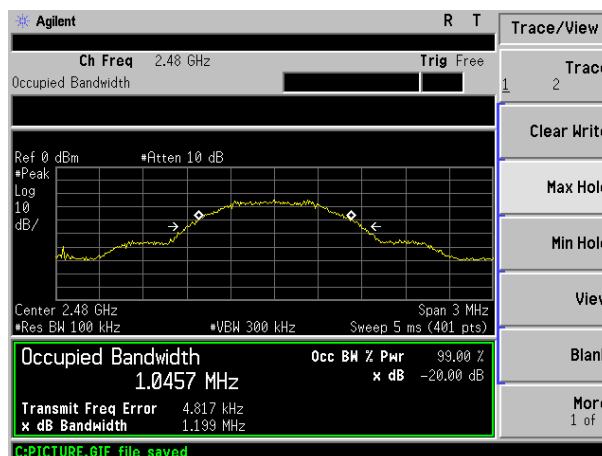
Test plot as follows:



Lowest channel



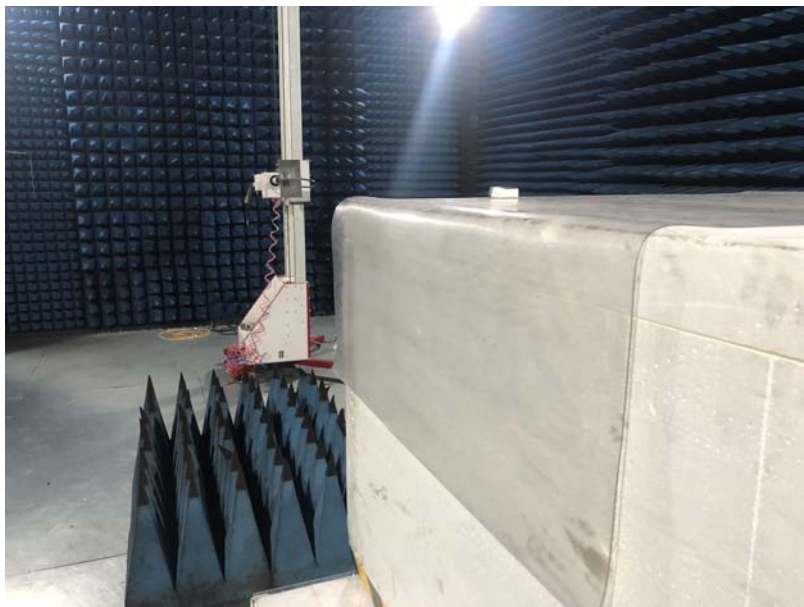
Middle channel



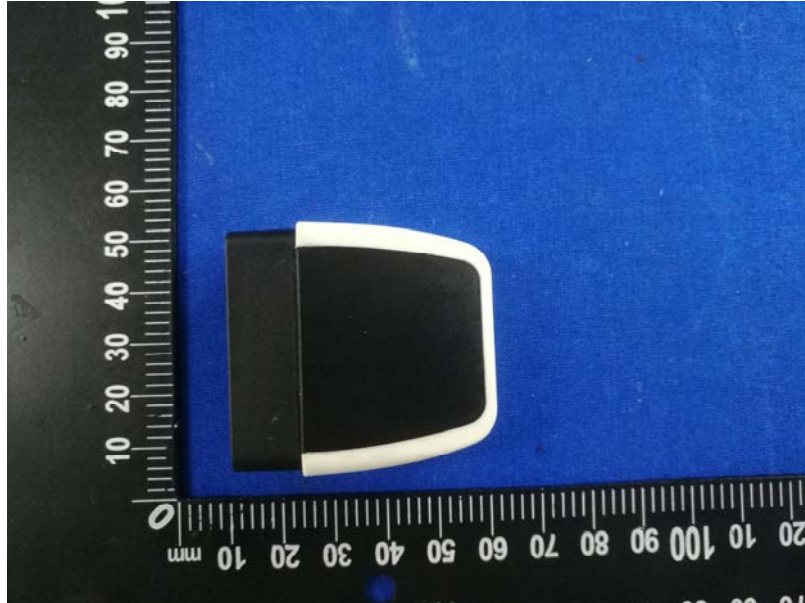
Highest channel

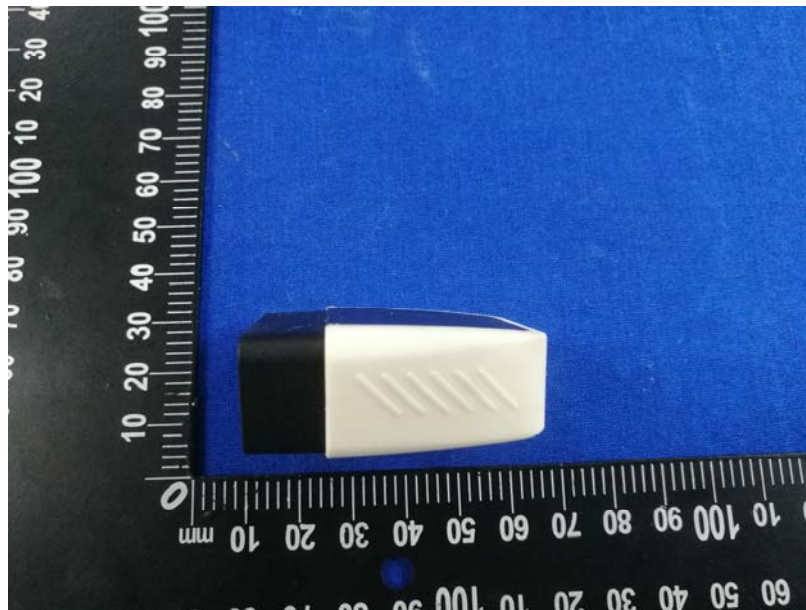
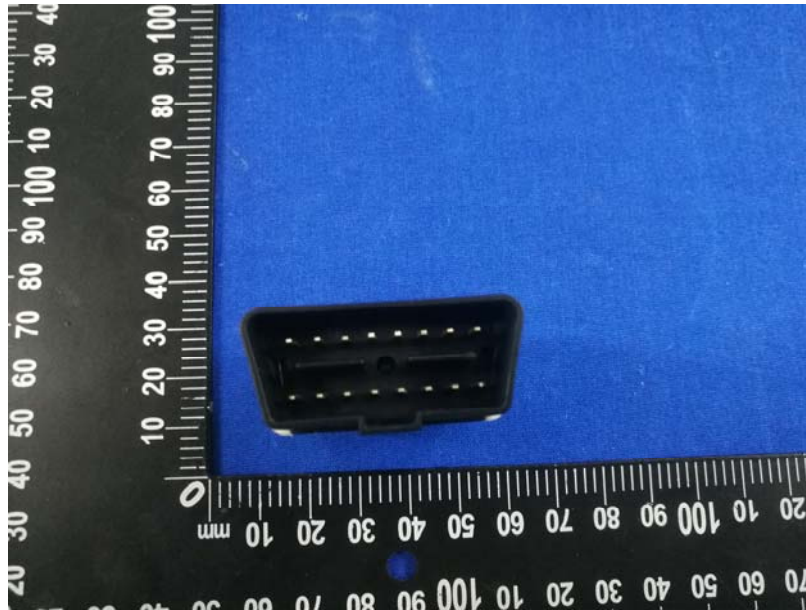
8 Test Setup Photo

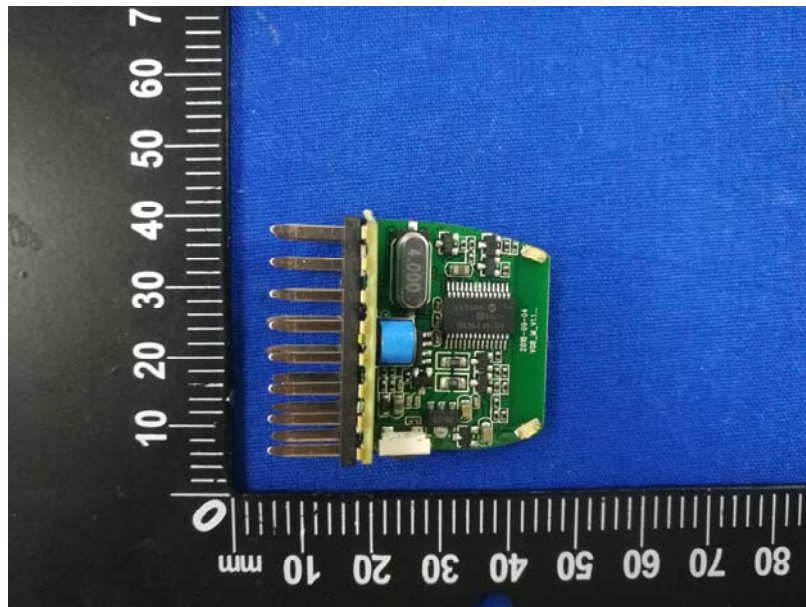
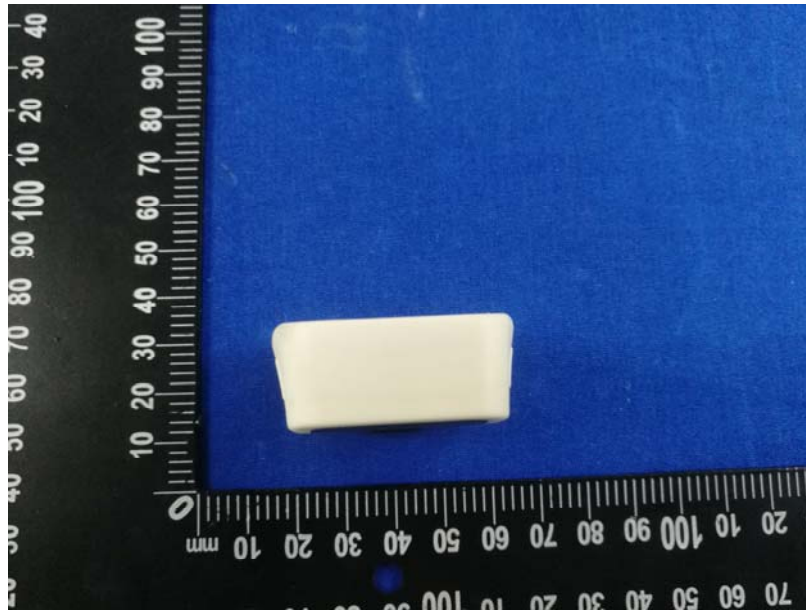
Radiated Emission

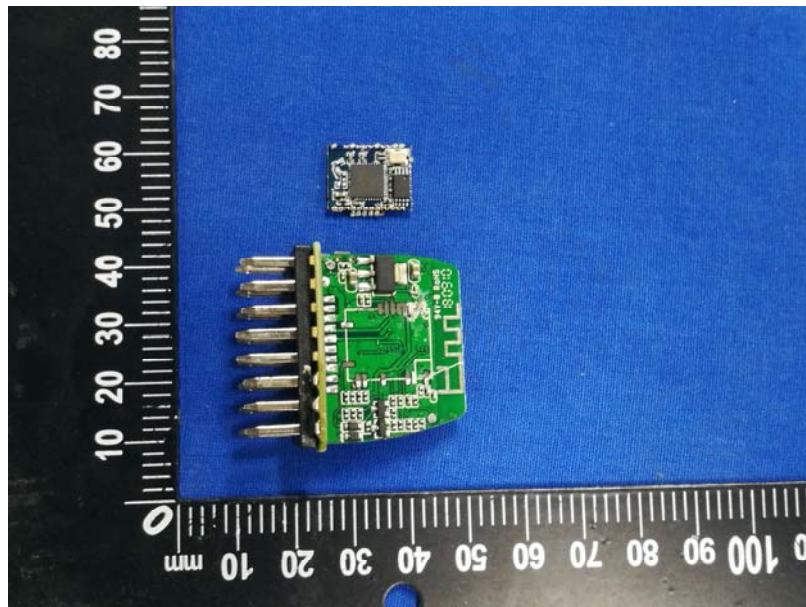
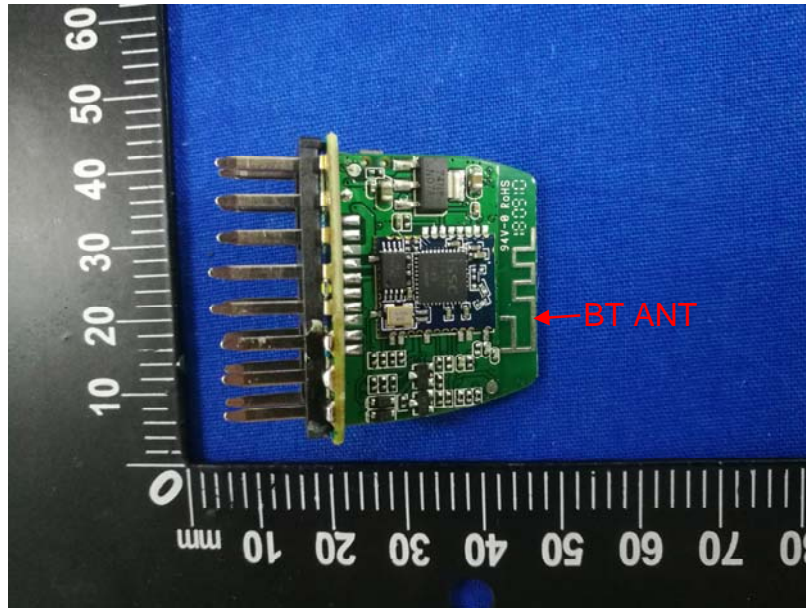


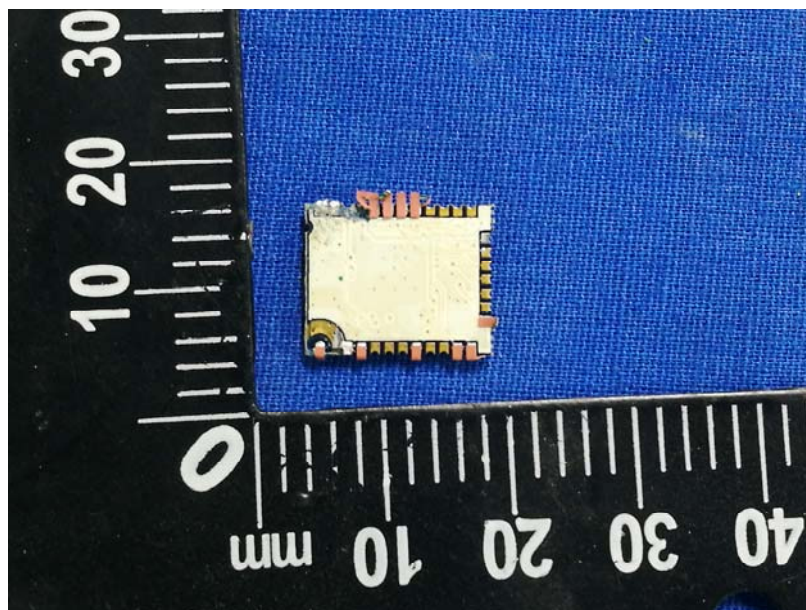
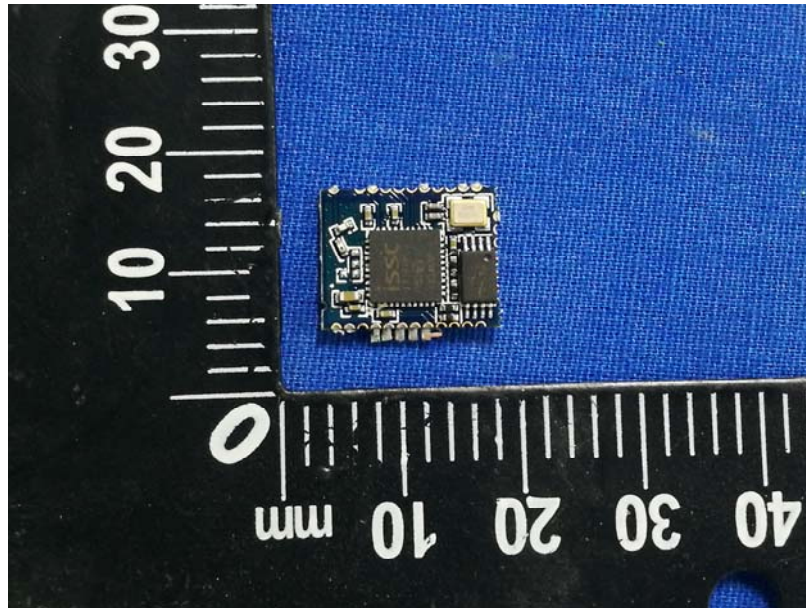
9 EUT Constructional Details











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