FCC Part 15C Test Report

FCC ID: 2AIWXH9

Product Name:	Mini Keyboard
Trademark:	N/A
Model Name :	H9 I8, H12, H16
Prepared For : Address :	Shenzhen Haojiehua Technology Co., Ltd. Baoan Baoyuan Road, The Famous Industrial Products Exhibition Center B1-509, Shenzhen, China
Prepared By : Address :	Shenzhen BCTC Technology Co., Ltd. No.101,Yousong Road,Longhua New District, Shenzhen,China
Test Date:	Jun. 10 – Jun. 20, 2016
Date of Report :	Jun. 21, 2016
Report No.:	BCTC-160606981E

TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Haojiehua Technology Co., Ltd.
Address	:	Baoan Baoyuan Road, The Famous Industrial Products Exhibition Center B1-509, Shenzhen, China
Manufacture's Name	:	Shenzhen Haojiehua Technology Co., Ltd.
Address	:	Baoan Baoyuan Road, The Famous Industrial Products Exhibition Center B1-509, Shenzhen, China
Product description		
Product name	:	Mini Keyboard
Trademark	:	N/A
Model and/or type reference	:	H9 I8, H12, H16
Standards	:	FCC Part15.249 ANSI C63.10-2013

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Testing Engineer : Sky Huang
Sky Huang

Reviewer (Supervisor) : Jade Yang
Jade Yang

Approved & Authorized Signer(Manager): : Carson Zhang
Carson Zhang

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.249	Radiated Spurious Emission	PASS	
15.249	Bandwidth	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen BCTC Technology Co., Ltd.
Add. : No.101,Yousong Road,Longhua New District, Shenzhen,China
FCC Registered No.: 187086

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U** , where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2** , providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Mini Keyboard
Trademark	N/A
Model Name	H9 I8, H12, H16
Model Difference	The product is different for model number and outlook color.
Product Description	The EUT is a Mini Keyboard Operation Frequency: 2411~2476MHz Modulation Type: GFSK Bit Rate of Transmitter 1Mbps Number Of Channel 16 CH Antenna type: PCB antenna Antenna Gain (dBi) 0dBi Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Power	DC 3.7V DC 5V from PC
hardware version	--
Software version	--
Serial number	--
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2411	06	2436	12	2467
01	2414	07	2440	13	2469
02	2417	08	2447	14	2473
03	2424	09	2451	15	2476
04	2429	10	2455		
05	2433	11	2459		

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH00
Mode 2	CH07
Mode 3	CH15
Mode 4	Link Mode
For Conducted & Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH07
Mode 3	CH15
Mode 4	Link Mode

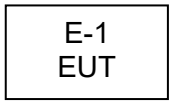
Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

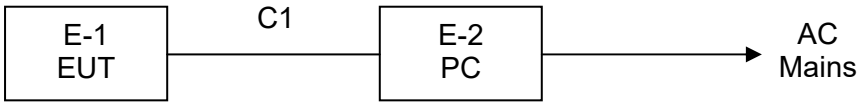
(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Emission Test



Conducted Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Mini Keyboard	N/A	H9	N/A	EUT
E-2	Notebook	ASUS	AWT8000		

Item	Shielded Type	Ferrite Core	Length	Note
C1	No	No	0.8m	Mini USB cable

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	MY45109572	2015.08.25	2016.08.24
2	Test Receiver	R&S	ESPI	101396	2015.08.25	2016.08.24
3	Bilog Antenna	SCHWARZBECK	VULB9160	VULB9160-3369	2015.08.25	2016.08.24
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.07.06	2016.07.05
5	Spectrum Analyzer	Agilent	N9020A	MY5051041	2015.07.06	2016.07.05
6	Horn Antenna	SCHWARZBECK	9120D	9120D-1275	2015.08.25	2016.08.24
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05
8	Amplifier	SCHWARZBECK	BBV9718	9718-270	2015.08.25	2016.08.24
9	Amplifier	SCHWARZBECK	BBV9743	9743-119	2015.08.25	2016.08.24
10	Loop Antenna	ARA	PLH930/B	1029	2015.07.06	2016.07.05
11	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05
12	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05
13	RF cables	R&S	N/A	N/A	2015.07.06	2016.07.05

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESCI	1166.5950K03-101165-ha	2015.08.24	2016.08.23
2	LISN	R&S	NSLK8126	8126466	2015.08.24	2016.08.23
3	LISN	R&S	NSLK8126	8126487	2015.08.24	2016.08.23
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.08.24	2016.08.23
5	RF cables	R&S	R204	R20X	2015.08.24	2016.08.23

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

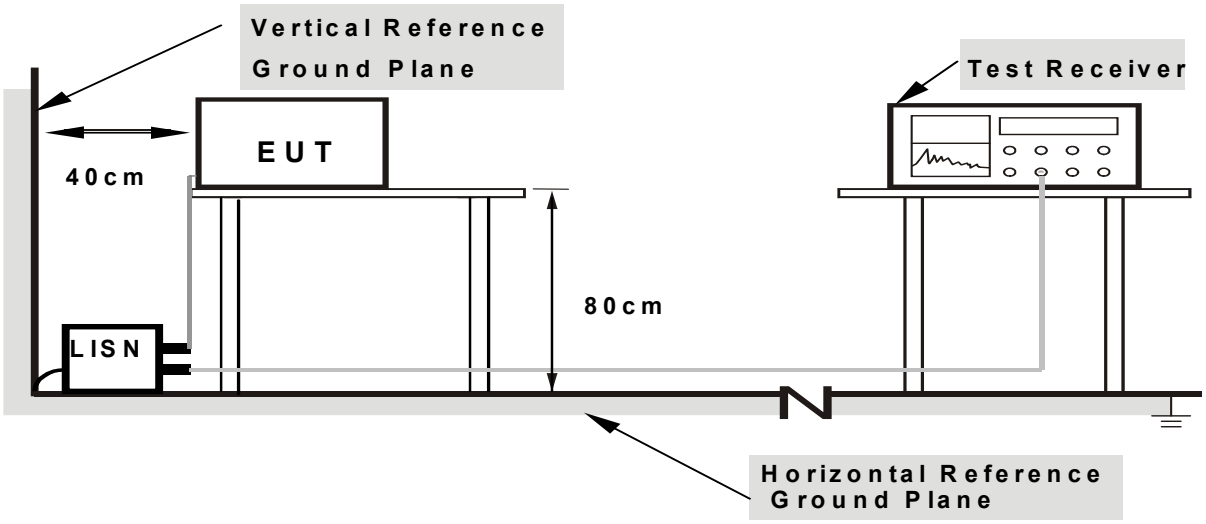
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



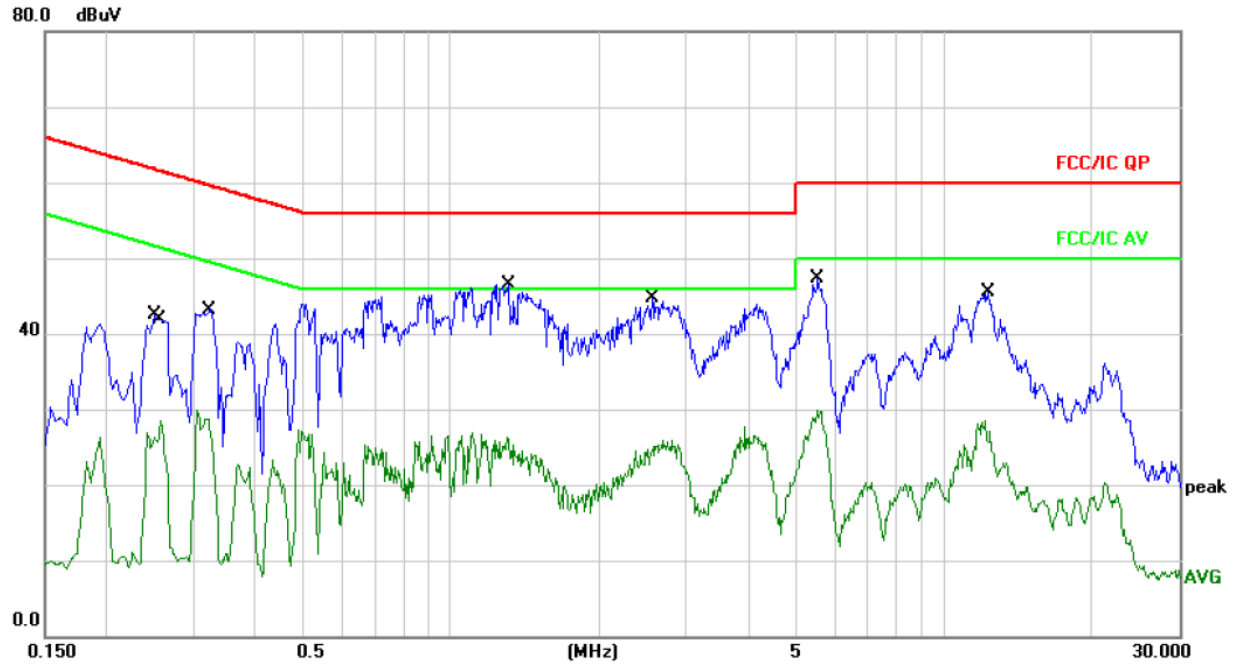
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.
We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

3.1.6 TEST RESULTS

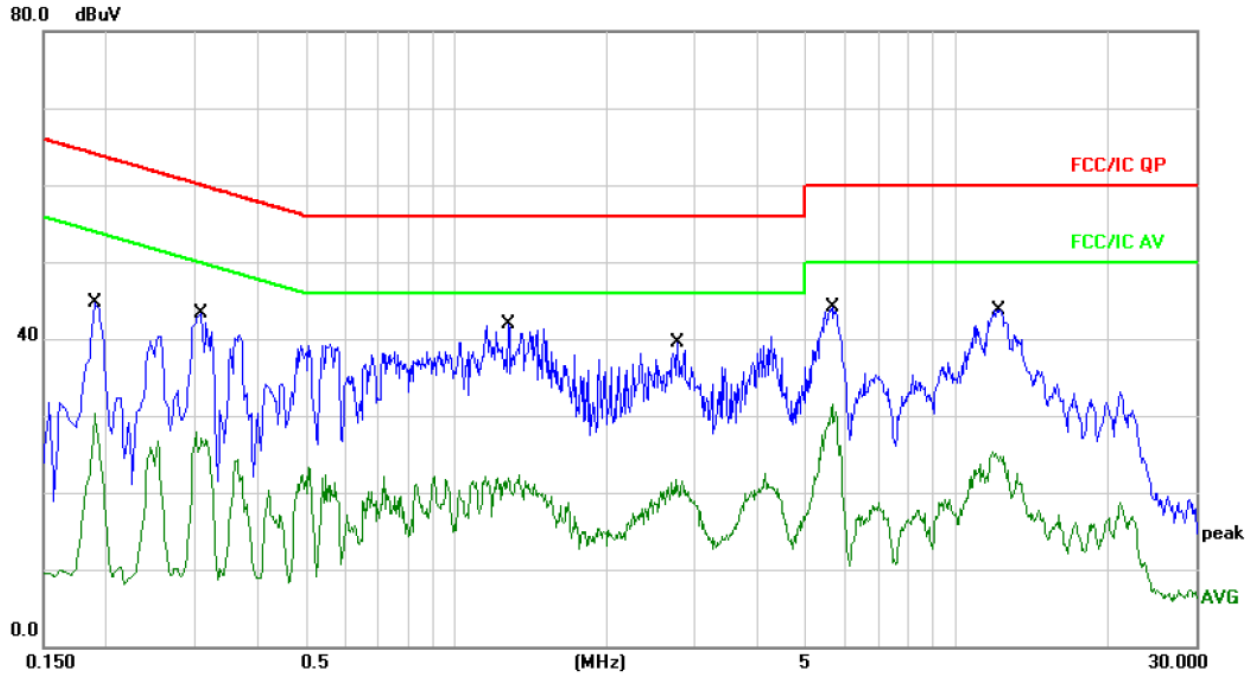
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	AC 120V/60Hz	Test Mode：	Mode 4



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2500	32.35	10.08	42.43	61.75	-19.32	QP	
2		0.2580	18.33	10.08	28.41	51.49	-23.08	AVG	
3		0.3200	33.20	10.10	43.30	59.70	-16.40	QP	
4		0.3200	18.62	10.10	28.72	49.70	-20.98	AVG	
5	*	1.3060	36.34	10.17	46.51	56.00	-9.49	QP	
6		1.3060	15.15	10.17	25.32	46.00	-20.68	AVG	
7		2.5579	34.47	10.19	44.66	56.00	-11.34	QP	
8		2.5579	15.11	10.19	25.30	46.00	-20.70	AVG	
9		5.5500	37.08	10.12	47.20	60.00	-12.80	QP	
10		5.5500	19.84	10.12	29.96	50.00	-20.04	AVG	
11		12.1660	35.41	10.13	45.54	60.00	-14.46	QP	
12		12.1660	18.44	10.13	28.57	50.00	-21.43	AVG	

Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	AC 120V/60Hz	Test Mode：	Mode 4



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1900	34.56	10.06	44.62	64.03	-19.41	QP	
2		0.1900	20.17	10.06	30.23	54.03	-23.80	AVG	
3		0.3100	33.23	10.09	43.32	59.97	-16.65	QP	
4		0.3100	16.93	10.09	27.02	49.97	-22.95	AVG	
5	*	1.2620	31.66	10.17	41.83	56.00	-14.17	QP	
6		1.2620	11.38	10.17	21.55	46.00	-24.45	AVG	
7		2.7740	29.32	10.19	39.51	56.00	-16.49	QP	
8		2.7740	11.31	10.19	21.50	46.00	-24.50	AVG	
9		5.6380	33.97	10.11	44.08	60.00	-15.92	QP	
10		5.6380	21.45	10.11	31.56	50.00	-18.44	AVG	
11		11.9420	33.52	10.13	43.65	60.00	-16.35	QP	
12		11.9420	15.02	10.13	25.15	50.00	-24.85	AVG	

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	25GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. 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.

d. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. 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.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).

h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

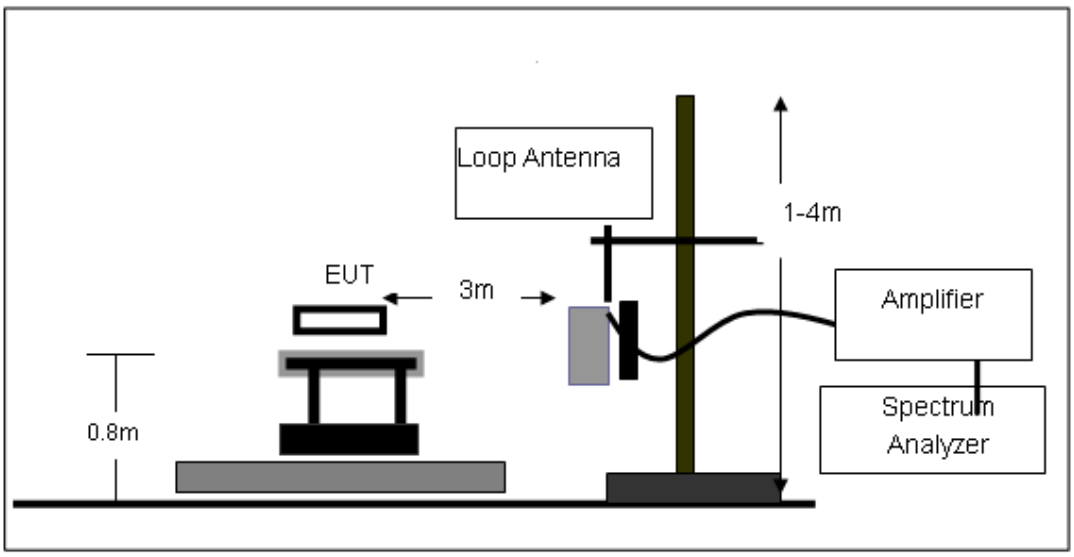
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

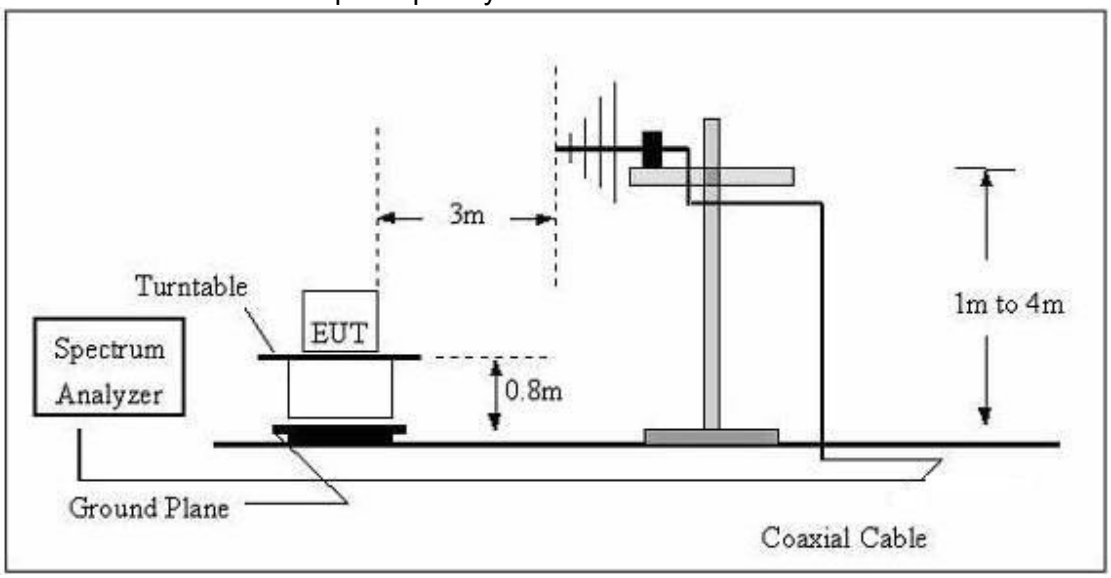
No deviation

3.2.4 TEST SETUP

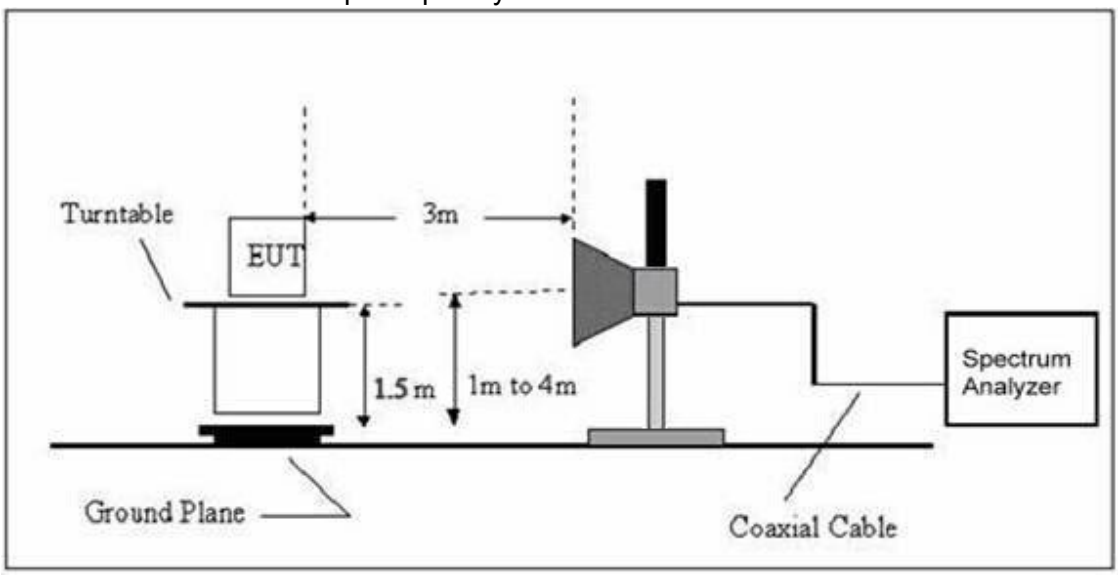
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

Temperature：	20℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 4	Polarization :	--

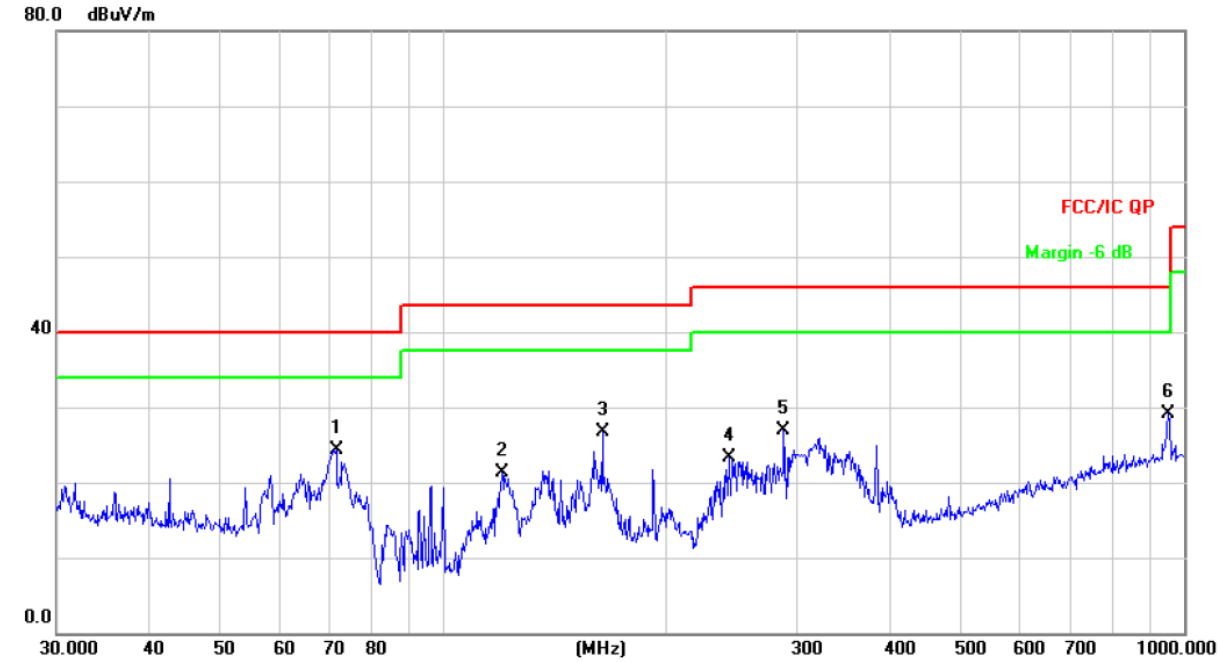
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

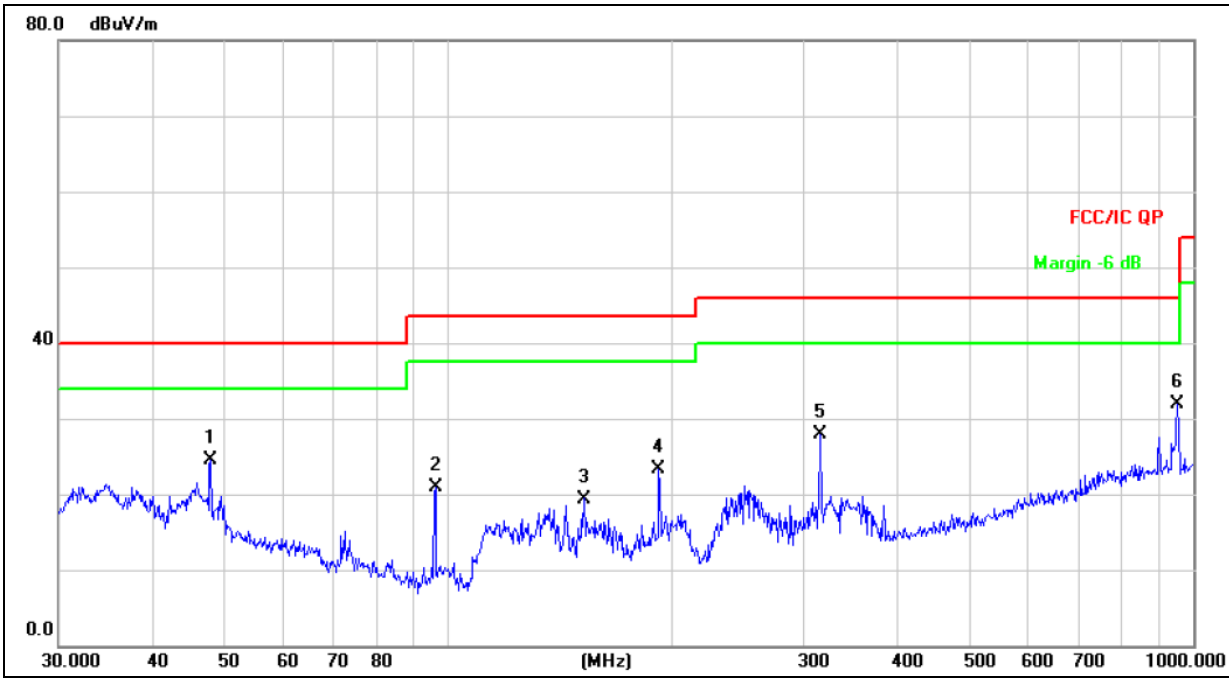
Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 3.7V		
Test Mode :	Mode 4		



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
All interfaces was connected, and BT TX mode was link.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	71.5806	39.38	-15.10	24.28	40.00	-15.72	QP			
2		119.8556	36.06	-14.72	21.34	43.50	-22.16	QP			
3		163.7550	39.86	-13.08	26.78	43.50	-16.72	QP			
4		242.5253	37.62	-14.41	23.21	46.00	-22.79	QP			
5		287.9904	39.71	-12.89	26.82	46.00	-19.18	QP			
6		952.0937	29.50	-0.46	29.04	46.00	-16.96	QP			

Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 3.7V		
Test Mode :	Mode 4		



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
All interfaces was connected, and BT TX mode was link.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		47.9940	34.40	-9.96	24.44	40.00	-15.56	QP			
2		96.0986	37.81	-16.90	20.91	43.50	-22.59	QP			
3		152.1297	32.26	-12.86	19.40	43.50	-24.10	QP			
4		191.7450	39.00	-15.69	23.31	43.50	-20.19	QP			
5		315.4808	40.01	-12.18	27.83	46.00	-18.17	QP			
6	*	952.0937	32.41	-0.46	31.95	46.00	-14.05	QP			

3.2.8 TEST RESULTS (1GHZ~25GHZ)

GFSK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2411							
V	2411.00	88.59	13.87	102.46	114.00	-11.54	PK
V	2411.00	73.23	13.87	87.10	94.00	-6.90	AV
V	4822.00	39.59	19.36	58.95	74.00	-15.05	PK
V	4822.00	25.87	19.36	45.23	54.00	-8.77	AV
V	16130.00	30.10	21.89	51.99	74.00	-22.01	PK
H	2411.00	88.56	13.87	102.43	114.00	-11.57	PK
H	2411.00	73.84	13.87	87.71	94.00	-6.29	AV
H	4822.00	40.43	19.36	59.79	74.00	-14.21	PK
H	4822.00	25.76	19.36	45.12	54.00	-8.88	AV
H	16130.00	29.85	21.89	51.74	74.00	-22.26	PK
operation frequency:2440							
V	2440.00	89.09	13.94	103.03	114.00	-10.97	PK
V	2440.00	73.37	13.94	87.31	94.00	-6.69	AV
V	4880.00	40.53	19.42	58.95	74.00	-15.05	PK
V	4880.00	25.91	19.42	45.23	54.00	-8.77	AV
V	16130.00	28.35	21.89	51.99	74.00	-22.01	PK
H	2440.00	89.11	13.94	102.43	114.00	-11.57	PK
H	2440.00	74.26	13.94	87.71	94.00	-6.29	AV
H	4880.00	41.60	19.42	59.79	74.00	-14.21	PK
H	4880.00	26.64	19.42	45.12	54.00	-8.88	AV
H	16130.00	30.02	21.89	51.74	74.00	-22.26	PK
operation frequency:2476							
V	2476.00	89.14	14.00	103.14	114.00	-10.86	PK
V	2476.00	73.47	14.00	87.47	94.00	-6.53	AV
V	4952.00	41.33	19.51	60.84	74.00	-13.16	PK
V	4952.00	26.19	19.51	45.70	54.00	-8.30	AV
V	16130.00	30.23	21.89	52.12	74.00	-21.88	PK
H	2476.00	89.17	14.00	103.17	114.00	-10.83	PK
H	2476.00	73.32	14.00	87.32	94.00	-6.68	AV
H	4952.00	41.55	19.51	61.06	74.00	-12.94	PK
H	4952.00	26.22	19.51	45.73	54.00	-8.27	AV
H	16130.00	30.56	21.89	52.45	74.00	-21.55	PK

Remark:

1. Emission Level = Meter Reading + Factor, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.3 RADIATED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

3.3.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 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.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. 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.

d. 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.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. 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.

g. Test the EUT in the lowest channel,the Highest channel

Note:

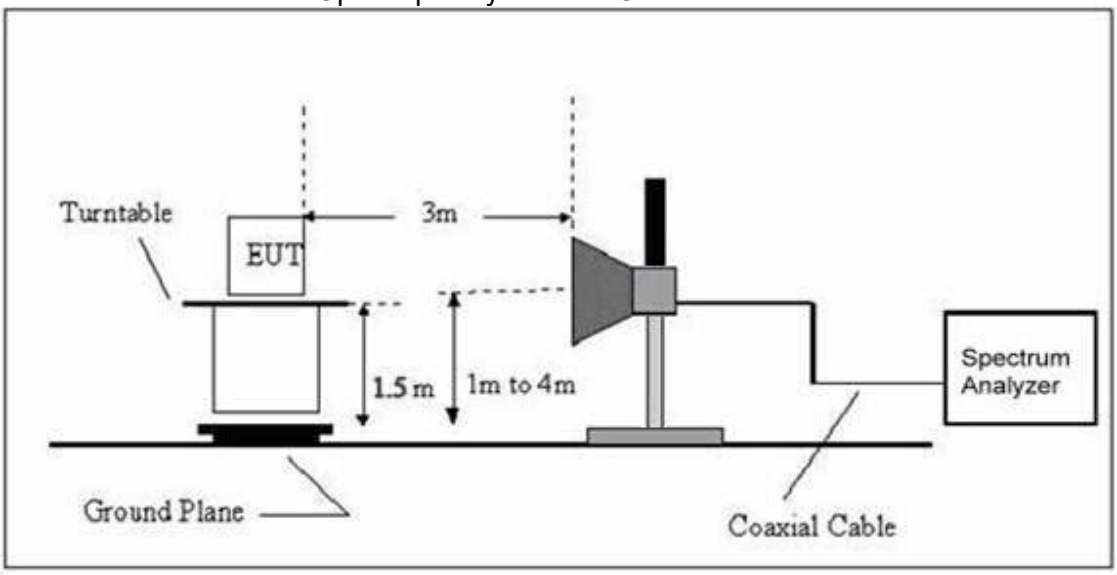
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



3.3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.6 TEST RESULT

GFSK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2411							
V	2390.00	37.41	13.83	51.24	74.00	-22.76	PK
V	2390.00	25.99	13.83	39.82	54.00	-14.18	AV
V	2400.00	37.61	13.85	51.46	74.00	-22.54	PK
V	2400.00	25.56	13.85	39.41	54.00	-14.59	AV
H	2390.00	37.70	13.83	51.53	74.00	-22.47	PK
H	2390.00	26.02	13.83	39.85	54.00	-14.15	AV
H	2400.00	37.56	13.85	51.41	74.00	-22.59	PK
H	2400.00	25.96	13.85	39.81	54.00	-14.19	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2476							
V	2483.50	37.61	14.02	51.63	74.00	-22.37	PK
V	2483.50	26.24	14.02	40.26	54.00	-13.74	AV
V	2500.00	37.55	14.06	51.61	74.00	-22.39	PK
V	2500.00	25.66	14.06	39.72	54.00	-14.28	AV
H	2483.50	37.74	14.02	51.76	74.00	-22.24	PK
H	2483.50	26.28	14.02	40.30	54.00	-13.70	AV
H	2500.00	37.36	14.06	51.42	74.00	-22.58	PK
H	2500.00	26.52	14.06	40.58	54.00	-13.42	AV

Remark:

1. Emission Level = Meter Reading + Factor, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

4. BANDWIDTH TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.249) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.249	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS

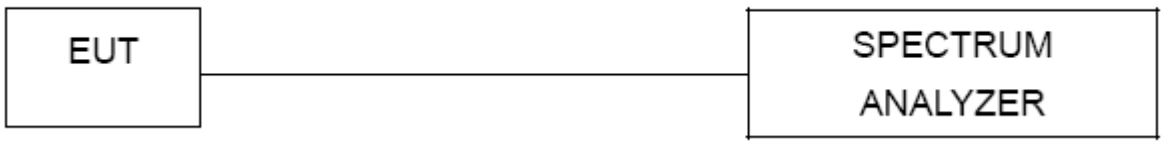
4.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

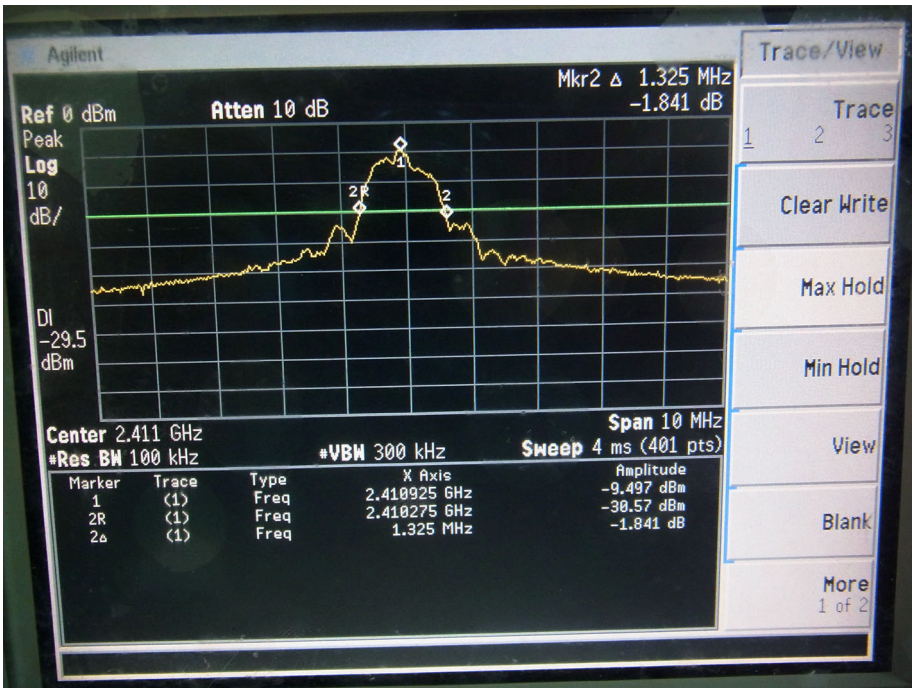
4.1.5 TEST RESULTS

Temperature：	25℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX Mode		

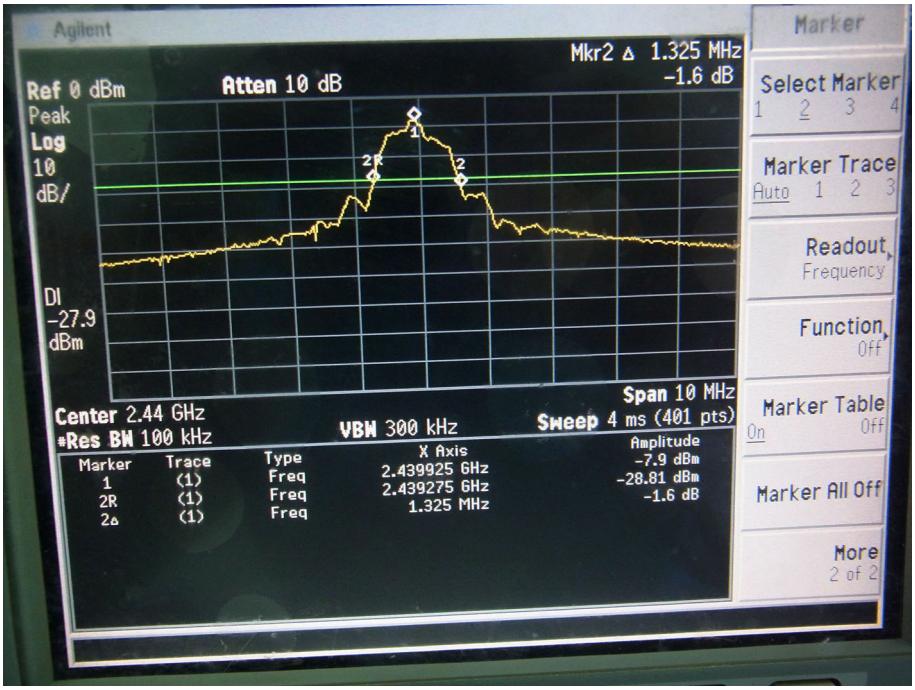
	Frequency (MHz)	20dB bandwidth (MHz)	Result
GFSK	2411	1.325	Pass
	2441	1.325	Pass
	2476	1.350	Pass

GFSK

2411MHz



2440MHz



2476MHz

5. ANTENNA REQUIREMENT

5.1 STANDARD REQUIREMENT

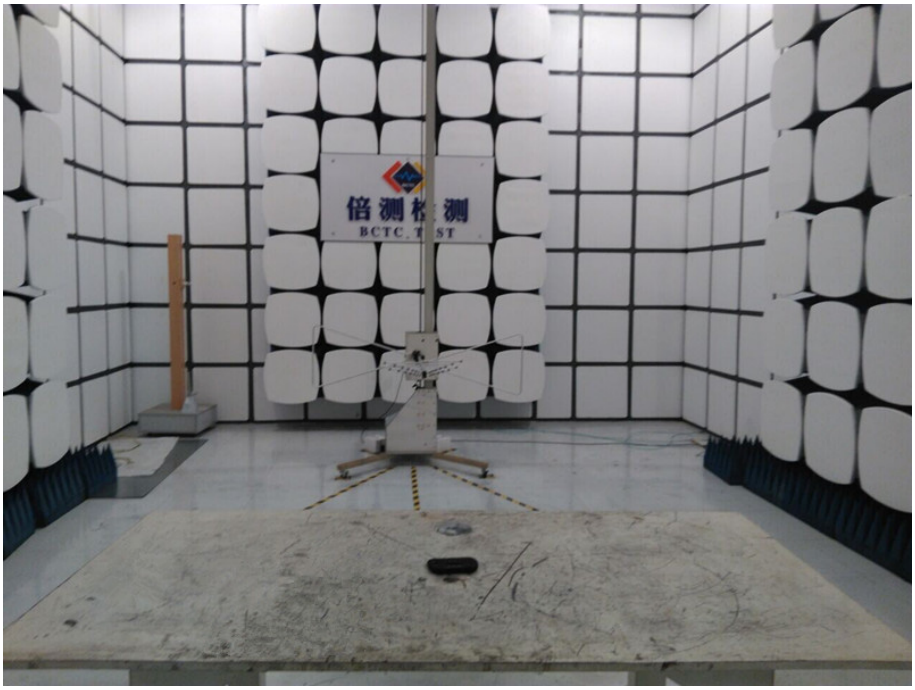
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

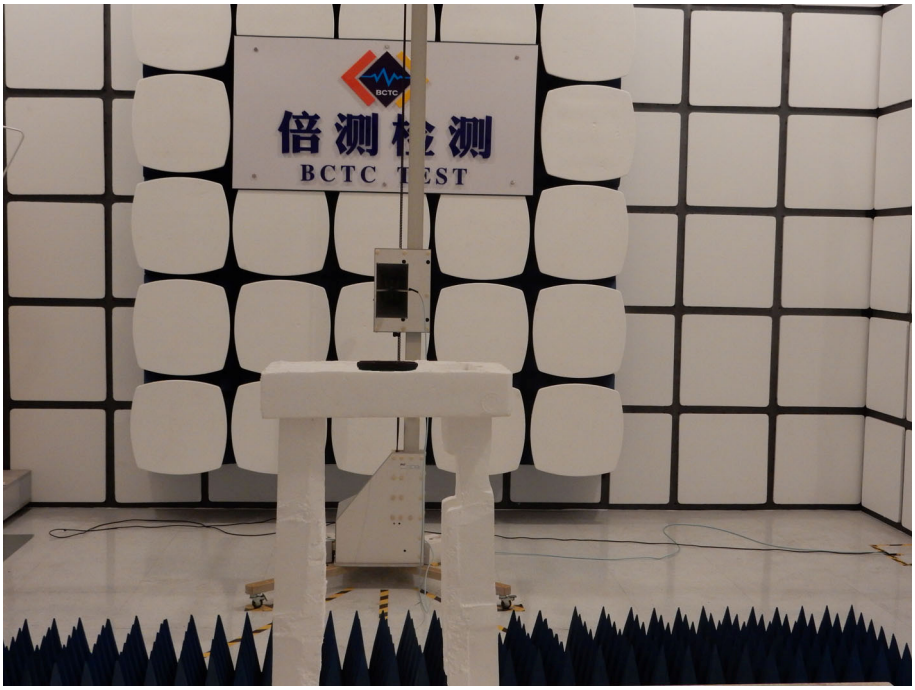
5.2 EUT ANTENNA

The EUT antenna is PCB antenna,. It comply with the standard requirement.

6. TEST SEUUP PHOTO

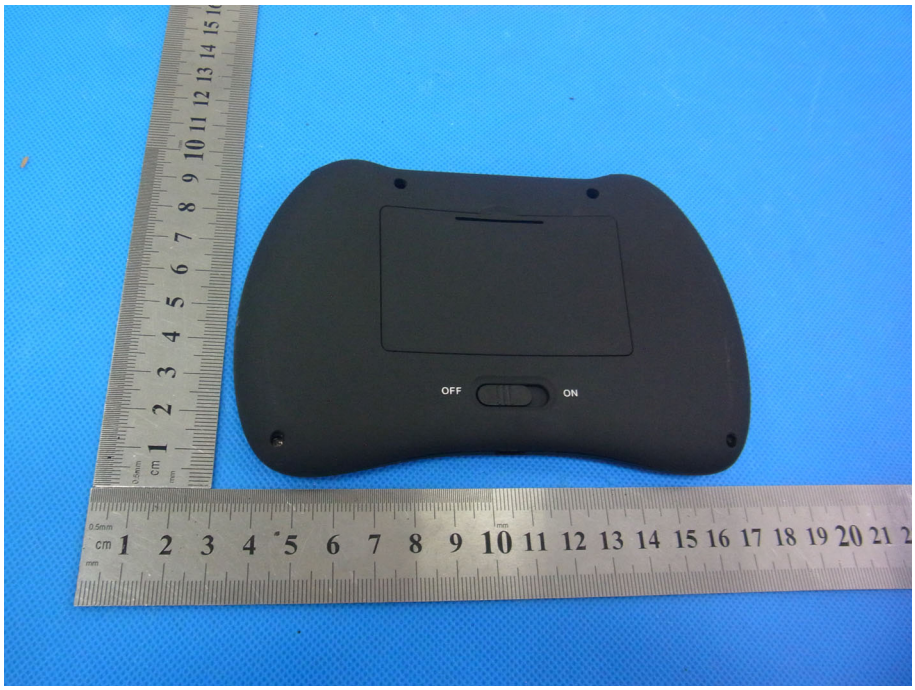
Radiated Measurement Photos

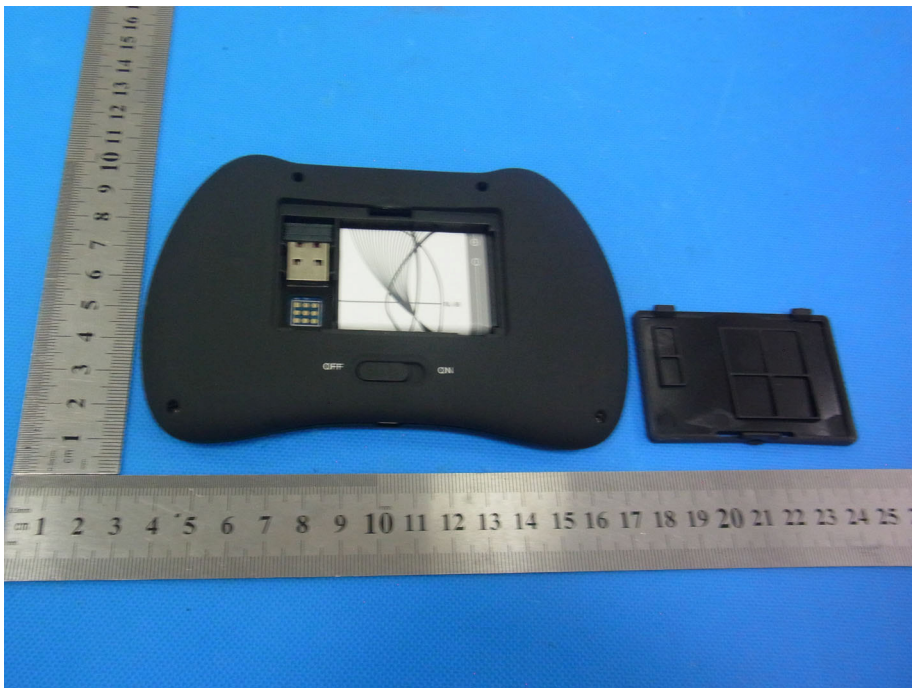




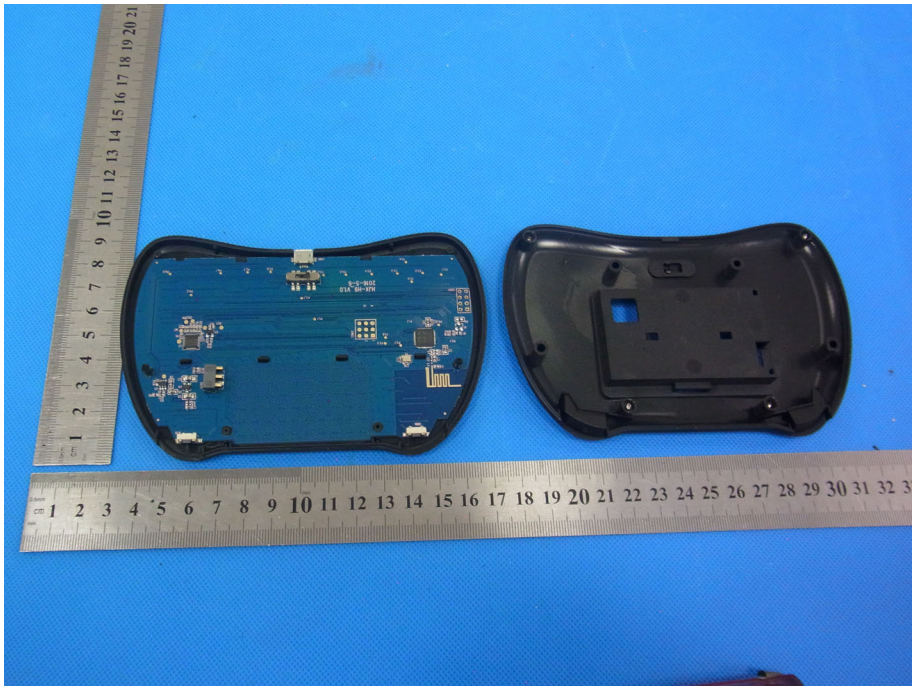
Conducted Measurement Photos

7. EUT PHOTO




OFF
ON


OFF
ON



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